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# The influence of complexity, perceived benefits, social influence, and demographics on adoption of Internet banking in Tanzania

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**Abstract**
This study aimed at testing the influence of perceived benefits, social influence, technological complexity, and demographic variables in the adoption of internet banking in Tanzania. Using a structured questionnaire, convenient and quota samples of bank customers was used that yielded 400 dully filled questionnaires with 200 for those who are using internet banking and 200 who have not adopted the use of internet banking with binary regression used to test the hypotheses. Binary logistic regression results successfully classifying bank customers' internet usage by 75.8% after inclusion of perceived benefits, social influence and complexity. An addition of only 3.7% accuracy in classifying bank customers arises after the inclusion of demographic variables. The results indicate that complexity, perceived benefits, and social influence contribute positively in the adoption of internet banking. The finding provides practical implications to commercial banks on how to promote internet banking effectively and efficiently that will enhance financial inclusion of the population in African developing economies context. Theoretically, the study incorporates and integrates variables into the common models used to explain internet adoption.

**Keywords***:* Internet banking, Social factors, Perceived benefit, Internet adoption

## Introduction

The continuous development of mobile technologies has made the provision of some services, especially those that do not require continuous physical customer-service provider contact to extend their provision though electronic means. A typical example of such services is banking, which is still migrating into internet banking. With the recognition of the cost and operational advantages of internet banking, banks have embraced internet banking to create a competitive advantage (Laukkanen, 2016; Xue *et al*., 2011). To the customer, internet banking provides several advantages including time and cost saving (Al-Ajam & Nor, 2015), greater control of service delivery, and convenient access to services (Montazemi & Qahri-Saremi, 2015). With particular reference to developing countries like those in sub-Saharan Africa where majority of the population lack access to financial services (Demirguc-Kunt & Klapper, 2012), internet banking offers an opportunity for financial inclusion.

Despite internet banking offering various advantages and opportunities to customers, its mass adoption, especially in developing countries, is yet to be achieved (Moodley & Govender, 2016;

Al-Ajam & Nor, 2015). In deciphering factors hindering the mass adoption of internet banking, several studies have been undertaken to capture such factors that can be categorized into demographics, socio-psychological, and contextual factors (Bhatiasevi, 2016; Martins *et al*., 2014; Venkatesh *et al*., 2003). Various models like the Technological Adoption Model-TAM (Bashir & Madhavaiah, 2015), Unified Theory of Acceptance and Use of Tehnology-UTAUT (Moodley & Govender, 2016; Martis, *et al*., 2014), Theory of Planned Behavior-TPB (Lee, 2009), Theory of Reasoned Action-TRA (Al-Ajam & Nor, 2015), Technology Innovation Diffusion-TID (Takieddine & Sun, 2015) have been developed and have integrated different factors influencing the adoption of internet banking. The results of the empirical studies seem to be inconclusive as some indicate the demographics and socio-psychological factors to influence internet adoption (Juwaheer *et al*., 2012) while others indicate the contrary (Sharma *et al*., 2015). Moreover, to date, the inclusion of social factors in influencing the adoption of internet banking has received less research attention (Bhatiasevi, 2016) as well as the results being inconclusive (Moodley and Govender, 2016).

In filling the knowledge gap, the study reported in this article aimed at testing the influence of perceived complexity, perceived value, social influence, and demographic variables on the adoption of internet banking in the context of Tanzania, a developing country in sub-Saharan Africa. Unlike many previous studies that used adoption intention as a proxy of internet adoption (Al-Ajam & Nor, 2015; Bhatiasevi, 2016; Keshwarani & Tripath, 2012), this study used the actual adoption of internet banking (Laukkanen, 2016) that captures the actual behavior rather than intention which has been observed to be limited in predicting the actual behavior (Laukkanen, 2016; Sheeran, 2002).

## Literature review

### *Theoretical perspectives on technological adoption*

The adoption of technology by individuals has been studied using several theories and/or models that include; the Theory of Reasoned Action and its derivative Theory of Planned Behavior (Al-Ajam & Nor, 2015), Technology Acceptance Model (Rawashdeh, 2015), and the Unified Theory of Acceptance and Use of Technology (Moodley & Govender, 2012). The most popular theory explaining technology acceptance appears to be the Unified Theory of Acceptance and Use of Technology-UTAUT (Martins *et al*., 2014; Venkatech et al., 2003) as it explains up to 70% in variations of intention to adopt a technology compared to its near rival, the Technology Acceptance Model that explain intention to adopt technology up to 40% (Hanafizadeh *et al*., 2014). The main factors influencing intention to adopt technology in the UTAUT model include performance expectancy, effort expectancy, social influence, facilitating conditions, and socio-demographic variables (Venkatesh *et al*., 2003). Albeit the semantic differences between the key variables among the models used to explain technology adoption, the UTAUT conceptually has several advantages as it integrates different variables to explain technology adoption. For instance, performance expectancy and effort expectancy constructs in the UTAUT reflect perceived usefulness and perceived ease of use in the Technology Adoption Model-TAM (Davis, 1989); while the social influence relates with the subjective norm in the Theory of Planned Behavior (Ajzen, 1991). In other research, effort expectancy appears to be synonymous with complexity in the use of the technology that hinders an individual's adoption of technology

(Keshwarani & Tripath, 2012; Venkatesh *et al*., 2003). In this study that aimed to appraise the influence of complexity, perceived benefits, social factors, and demographic factors on adoption of internet banking, the UTAUT model that is comprehensive as well as including all the variables used in this study was used in developing the hypotheses.

### *Perceived benefits of internet banking*

Perceived benefits as used in this study connote the benefits that an individual derives from using internet banking as compared to the conventional banking channel. Perceived benefits relates with perceived usefulness (Laukkanen, 2016) that indicates the relative advantage of using a technology. The use of perceived benefits is preferred in this study due to the nature of subjectivity of technology benefits as well as being more encompassing through the use of benefits rather than other terms like usefulness (Laukkanen, 2016). Previous studies indicate perceived benefits of internet banking to have a significant influence on intention to adopt internet banking (Bhatiasevi, 2016; Keshwarani & Tripath, 2012). Despite being informative, previous studies appears to be limited in terms of the dependent variable and the respondents used to provide information. In line with the UTAUT, many previous studies have utilized intention to adopt internet banking (Bhatiasevi, 2016; Martins *et al*., 2014) and not the actual behaviour of either adopting or not adopting internet banking (Laukkanen, 2016). As some authors indicate the presence of intention-behaviour gap (Sheeran, 2002), the use of intention as a proxy of actual behaviour is challenged. Methodologically, some of the previous studies have used convenient samples that are less heterogeneous in nature as well as the samples being accessed in a non banking physical context that rely on memory rather than using actual banking context that refreshes the memory of the customers. For instance, some have used student samples (Bashir & Madhavaiah, 2015), academic staff (Moodley & Govender, 2016), specific professionals like accountants (Rawashdeh, 2015) and the like which calls for further studies to utilize diverse samples captured under the banking consumption contexts. Contextually, the majority of studies were undertaken in other contexts apart from sub-Saharan African (Laukkanen, 2016; Rawashdeh, 2015) countries with few exceptions like Moodley and Govender (2016) undertaken in South Africa. Consequently, this study was undertaken in Tanzania, a typical developing country in sub-Saharan Africa and used actual adoption and non adoption of internet banking as a dependent variable to test the following hypothesis,

**$H_1$**: perceived benefits of internet banking have a significant positive influence on the adoption of internet banking.

### *Social influence in adoption of internet banking*

Social influence in the context of technology adoption reflects others' opinions and/or behaviour in influencing an individual to use a particular technology (Moodley & Govender, 2012). Compared to a related construct of subjective norm (Juwaheer *et al*., 2012) and social class (Devlin and Young, 2003) which is the perceived social pressure to adopt technology, as derived from the Theory of Planned Behaviour, social influence is preferred in this study as it does not connote the coercive or normative elements imbibed in subjective norm. Social influence in this study is operationalized as the influence of social network (friends, family, and colleagues) in decision to use or to not use internet banking. Albeit the presence of several studies pointing towards the positive impact of social influence on the adoption of internet banking (e.g.

Bhatiasevi, 2016; Kesharwani & Tripathy, 2012), empirical tests of social influence on the actual adoption of internet banking in a less researched sub-Saharan African context with financial inclusion being a challenge are yet to be undertaken to affirm the relationship. Such empirical gap led to the test of the following hypothesis,

**$H_2$**: Social influences positively influence the adoption of internet banking.

***Complexity***

In the literature of technology acceptance and adoption, there are several terms like complexity, perceived usefulness, and effort expectancy that have been used interchangeably as well as being measured with too similar items. Technology complexity has been defined as the degree to which a system is perceived to be relatively difficult to understand and use (Venkatesh *et al*., 2003). Perceived ease of use has been defined by Venkatesh *et al*., (2003) as the degree to which a person believes that using a technology would be free of effort. In this study, perceived ease of use and complexity of using internet banking are used as antonym, with preference of complexity due to its semantic simplicity. Research on the influence of complexity on the adoption of internet banking leads into a dilemmatic position as some indicate it to have a significant effect (Keshwarani & Triphaty, 2012) while others indicate that complexity does not have a significant impact on intention to use internet banking (Bryson *et al*., 2015; Kassim and Ramay, 2015). Such divergence of findings might be due to contextual factors, thus calling for further research. Consequently, this study hypothesized and tested the following hypothesis,

**$H_3$**: perceived complexity significantly influence the adoption of internet banking.

**Demographic variables and internet adoption**

The UTAUT considers demographic variables to be among the main factors influencing the adoption of technology. Many studies tested the influence of demographic variables like gender, education, and income on the adoption of internet banking (Laukkanen, 2016; Juwaheer *et al*., 2012; Devlin & Yeung, 2003). Unfortunately, the results are inconclusive; for instance, with respect to gender, some studies have observed males to be more likely to adopt internet banking compared to females (Laukkanen, 2016; Devlin & Yeung, 2003) while other studies have noted the otherwise (Juwaheer *et al*., 2012) or even lack of differences between the genders (Sharma *et al*., 2015). The use of age to predict the adoption of internet banking is also questionable as some results indicating age to significantly influence the adoption with younger groups more likely to embrace internet banking (Laukkanen, 2016; Juwaheer *et al*., 2012; Devlin & Yeung, 2003) while other studies observed lack of significant contribution of age in predicting the adoption of internet banking (Sharma *et al*., 2015). Logically, it is assumed that education has a positive influence on the adoption of internet banking given the fact that internet banking requires one to be literate and exposed to the use of internet that usually happens in a formal education system. Surprisingly, results from previous studies are diverging in affirming the influence of education on the adoption of internet banking with some results supporting the logic (Devlin and Yeung, 2003) and others not supporting it (Sharma *et al*., 2015; Juwaheer *et al*., 2012; Devlin & Yeung, 2003). Income is related with adoption of technology as individuals with higher income have the economic capacity to acquire the latest technology (Juwaheer *et al*., 2012). Such a notion has been tested with findings either supporting it (Juwaheer *et al*., 2012) or not supporting it (Sharma

*et al*., 2015) indicating other factors to play significant role in the adoption of internet banking. As a means of complimenting previous studies, this study aimed at testing the following hypotheses in the context of Tanzania:

**$H_4$**: male bank customers are more likely to adopt internet banking compared to female customers.

**$H_5$**: younger bank customers are more likely to adopt internet banking compared to much older customers.

**$H_6$**: bank customers with relatively higher income are more likely to adopt internet banking compared to those with relatively lower income.

**$H_7$**: highly educated bank customers are more likely to adopt internet banking compared to less educated customers.

**Study context**

This study was conducted in Tanzania, particularly in the commercial city of Dar es Salaam. Tanzania has 41 fully fledged registered commercial banks and 12 community banks catering for individual customers (BOT, 2016) with about 40% of adult population having a bank account as per 2014 records (GlobalFidex, 2014). Albeit the levels of adults having a bank account having rocketed from 17% in 2012 (BOT, 2014) to the recent estimates of 40%, the levels of financial inclusion is still low compared to the available infrastructure and facilities like internet that offers an alternative channel in accessing financial services. As from the definition of financial inclusion in Tanzania which is the regular use of financial services, through payment infrastructures to manage cash flows and mitigate shocks, which are delivered by formal providers through a range of appropriate services with dignity and fairness (BOT, 2014); the actual and absolute financial inclusion is likely to be low.

The trend of internet banking adoption and value for Tanzania is presented as Table 1 together with the number of individuals having access to internet through wireless mobile devices. On comparing the number of internet bank users with those having access to wireless internet device, the number of internet bank users is far lagging behind those having access to wireless internet. Such a trend indicates that internet banking is not fully adopted and thus hindering full financial inclusion of the population. The identification of the factors influencing internet banking adoption in the country as well as the barriers is important if the trend is to be reversed. This study aimed to provide information that can assist bankers, internet service providers, and the government at large in addressing the relatively low levels of internet banking adoption in the country and thus setting strategies to increase financial inclusion especially among the middle and low income earners.

Table 1: Tanzania Internet and mobile Banking for Five Years (2010-2014)

| Category | Dec 2010 | Dec 2011 | Dec 2012 | Dec 2013 | Dec 2014 |
|---|---|---|---|---|---|
| Internet banking | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Volume (Individuals) | 1,311,242 | 1,482,709 | 1,391,434 | 1,889,105 | 2,280,451 |
| Values (Tshs. Billion) | 10,420 | 12,040 | 17,768.44 | 22,724.86 | 27,174.15 |
| Mobile (SMS) banking | | | | | |
| Volume (Individuals) | 20,132,285 | 33,037,328 | 33,130,614 | 38,559,274 | 46,640,239 |
| Values (Tshs. Billion) | 155 | 224 | 302 | 587 | 1,162 |
| Access to wireless internet | | 3,665,680 | 6,031,323 | 7,493,823 | 11,320,031 |

Source:(Bank of Tanzania, 2014)

## Methods

### *Measurement instruments*

Data for this study were collected using a questionnaire that consisted of structured and unstructured questions. The questionnaire had two sections, with the first section capturing the demographic variables and the usage of internet banking while the second section had questions capturing the main study variables, particularly complexity, perceived benefits, and social influence. Questions from both sections were adapted from previous studies (Martins *et al*., 2014; Sharma *et al*., 2015; Venkatesh *et al*., 2003) in order to ensure validity and reliability of the items. The questions were framed in English; those that captured complexity, perceived benefits, and social influence were designed in a 5-point Likert scale fashion with 1 indicating strong disagreement and 5 for strong agreement with the mid-point of 3 standing for neither agree nor disagree. To ensure content validity, the initial developed questionnaire was shared with 5 experts in the field including academics and bankers who indicated their opinion on the questions. After modification of the questionnaire on the contents and language, the questionnaire was pilot tested using a sample of 60 undergraduate students with equal sub-sample size (30) of adopters and non adopters of internet banking. The data from the pilot study was used to perform initial exploratory factor analysis and reliability test (Cronbach alpha) as a means to appraise the construct validity and reliability of the scale items. As the study aimed at comparing internet banking adopters and non-adopters, two sets of similar questionnaires were developed. The questionnaire for non-adopters had the same questions as in the adopters set though reversed together with an additional question capturing the barriers or reasons for not adopting internet banking while that for adopters had three additional questions capturing the usage of internet banking services.

### *Data collection and analysis*

Data were collected in the last two weeks of August, 2016 by accessing customers of two major commercial banks in Tanzania. A combination of convenience and quota sampling was used to select respondents for the study. Two busy branches of the two commercial banks in Dar es

Salaam, the commercial city of Tanzania were opted for convenience. Upon getting permission from the bank authority, the bank customers were approached within the bank premises during weekdays from morning to afternoon. The researcher approached the bank customers, introduced himself, indicated the purpose of the study, and requested them to participate in the study. After giving their consent, the bank customers were asked to indicate whether they are using internet banking or not, and thereafter given the appropriate questionnaire to fill in. Upon reaching the target sample sizes of 200 for both adopters and non-adopters, the data collection exercise was terminated.

The collected data (400 questionnaires) were entered into SPSS 21 with both descriptive and inferential tests being performed. In order to harmonize the Likert-type scales to have similar direction, those from non-adopter category were reversed. Prior to the inferential analyses, exploratory factor analysis and reliability tests were performed on the perceived benefits, complexity, and social influence to appraise their validity and reliability. Thereafter, binary logistic regression using adopter (coded 1) and non-adopter (coded 0) as dependent variable was performed with complexity, perceived benefits, social influence, and demographic variables as independent variables.

## Results

The demographic characteristic of the sample is presented as Table 2. The sample appears to be dominated by younger persons who are between 18 and 35 years (75%), individuals who are single (61%), and who are relatively more educated (78%) having a bachelor's degree or above.

**Table 2: Profile of Respondents**

| Category | Descriptive Measure | Frequency | Percent |
|---|---|---|---|
| Age | 18-25 | 138 | 34.5 |
| | 26-35 | 162 | 40.5 |
| | 36-45 | 70 | 17.5 |
| | 46 and above | 30 | 7.4 |
| Sex | Male | 231 | 57.8 |
| | Female | 169 | 42.2 |
| Marital status | Single | 240 | 60.0 |
| | Married | 156 | 39.0 |
| | Others | 4 | 1.0 |
| Education level | Standard seven | 14 | 3.5 |
| | College | 74 | 18.5 |
| | Bachelor's Degree | 207 | 51.8 |
| | Postgraduate | 105 | 26.2 |
| Monthly | Below 1000000 | 274 | 68.5 |

| | | | |
|---|---|---|---|
| income | 100001-2500000 | 94 | 23.5 |
| (T.Shs.) | 2500001-3500000 | 26 | 6.5 |
| | 3500001-4500000 | 2 | 0.5 |
| | 4500001 and above | 4 | 1.0 |

1US$ ≈ Tshs. 2200 (August, 2016)

**Internet Banking Usage**

The usage of internet banking for the category of internet banking users is presented as Table 3. The results indicate a substantial number of users (53%) have started using internet banking recently (within a year) compared to almost 30% who have been using internet banking for three or more years. Those who can be considered as frequent users of internet banking (once a week and on daily basis) constituted about 40% of those who use internet banking.

**Table 3: Use of Internet Banking**

| Variable | Frequency | % |
|---|---|---|
| Start using internet banking | | |
| Less than 6 months | 36 | 18.0 |
| One year ago | 70 | 35.0 |
| Two years ago | 35 | 17.5 |
| Three and above years | 59 | 29.5 |
| Frequency of use | | |
| Have not used recently | 11 | 5.5 |
| Once a year | 20 | 10.0 |
| Once in 6 months | 35 | 17.5 |
| Once in 3 months | 53 | 26.5 |
| Once a week | 54 | 27.0 |
| Almost everyday | 27 | 13.5 |

***Reason for not Using Internet Banking***

In the non-adopter questionnaire there was a specific question requesting the respondent to indicate the main reason for not adopting internet banking. Through thematic analysis, the main reasons indicated to be the barriers or reasons for not using internet banking were counted with their frequencies and respective percentages presented as Table 4. On ranking the reasons, the main top three reasons were security, lack of knowledge on internet banking, and network problem. Other reasons that were mentioned include poor accessibility, expensive, and low income.

Table 4: Reasons for not Using Internet Banking

| Reasons | Frequency | Percent | Rank |
|---|---|---|---|
| Security | 58 | 29.0 | 1 |
| Knowledge | 52 | 26.0 | 2 |
| Network problem | 35 | 17.5 | 3 |

| | | | |
|---|---|---|---|
| Accessibility | 25 | 12.5 | 4 |
| Expensive | 5 | 2.5 | 7 |
| Low income | 7 | 3.5 | 6 |

***Exploratory factor analysis and reliability***

A series of exploratory factor analyses were performed using the data in order to come up with few meaningful dimensions to explain the three main factors (complexity, perceived benefits, and social influence). Preliminary results indicated the four items for complexity did not load into the respective dimension as well as the reliability being lower than .60 cut off point (Nunnally, 1978). As the items for complexity were only four that seemingly capturing different aspects of complexity, all of them were used singly as independent variables in the regression analysis. The results of factor and reliability analyses for perceived benefits and social influence are presented as Table 5. The KMO value is greater than .70 indicating sample adequacy for factor analysis. The Cronbach alphas for perceived value and social influence were greater than .60 that allowed the items under each factor to be combined. The resulting factor scores for the two items (perceived benefits and social influence) were saved and used as independent variables in the regression analyses.

**Table 5. Factor and reliability analyses results**

| Scale items | Component | |
|---|---|---|
| | Perceived benefits | Social influence |
| internet banking can save time | .697 | |
| easy accomplish my banking tasks | .691 | |
| internet banking is safe and secured | .659 | |
| accessing services at anytime | .631 | |
| helps me to manages my finances | .599 | |
| offer wide range of banking services | .578 | |
| internet banking save transaction fees | .532 | |
| decision to adopt internet banking was influenced by my colleagues | | .776 |
| my decision to adopt internet banking was influenced by my family | | .751 |
| decision to adopt internet banking was influenced by my friends | | .717 |
| % variance | 27.843 | 17.799 |
| Cronbach alpha | .744 | .628 |
| KMO .779, Bartlett's Test of Sphericity (Chi-square) =641.390 (p<.000) | | |

A hierarchical logistic regression was used to test the study hypotheses. As indicated in Table 6, the models are significant as the Chi-square results are significant at p<.001. The two respective Hosmer-Leme show tests in both models are not significant indicating both models to fit the data. Furthermore, both models accurately predict internet bank adoption with 75.8% and 79.5% classification accuracies for model 1 and 2 respectively.

**Table 6: logistic regression goodness of fit measure**

| Model fit statistics | Model 1 | Model 2 |
|---|---|---|
| -2 Log likelihood | 387.718 | 376.268 |
| Chi-square (df) | 166.799 (6) | 178.250 (10) |
| | P<.000 | P <.000 |
| Hosmer-Lemeshow test | 8.841 (.356) | 4.165 (.842) |
| Cox and Snell (Nagelkerke $R^2$) | .337 (.450) | .378 (.504) |
| Classification percentage | 75.8 | 79.5 |

The regression coefficients, Wald, and Exp (B) of the analyses are presented in Table 6. The results for model 1 without the demographic variables indicate complexity in interacting (B= 1.038) with the Internet to be the main factor influencing internet banking adoption followed by perceived benefits (B= .744), and skill needed to use internet (B= .468). In model 2 that include the demographic variables, the three factors still significantly contribute towards internet banking adoption, while only age among the demographic variables contributes significantly towards internet banking adoption. On appraising the odd ratio particularly with respect to age, model 2 indicates younger customers are likely to adopt internet banking compared to the relatively older groups. Using 26-35 years age group in comparison with the 18-25 years age group, the latter group is 5 times (1/.020) more likely to adopt internet banking than the former group. On comparing the 36-45 age group, the 18-25 age group is 3.7 (1/0.21) more likely to adopt internet banking compared to the 36-45 age group.

**Table 7: Binary logistic regression results**

| Model | Independent variable | B | S.E. | Wald | Sig. | Exp(B) |
|---|---|---|---|---|---|---|
| Model 1 | Perceived benefits | .744 | .150 | 24.431 | .000 | 2.104 |
| | Social influence | .197 | .131 | 2.255 | .133 | 1.218 |
| | learning | .068 | .125 | .302 | .583 | 1.071 |
| | interaction | 1.038 | .127 | 66.869 | .000 | 2.823 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | skillful | .468 | .130 | 13.017 | .000 | 1.598 |
| | efforts | -.053 | .109 | .235 | .628 | .949 |
| | Constant | -5.142 | .805 | 40.794 | .000 | .006 |
| Model 2 | Perceived benefits | .821 | .166 | 24.567 | .000 | 2.272 |
| | Social influence | .201 | .139 | 2.078 | .149 | 1.222 |
| | learning | .184 | .131 | 1.957 | .162 | 1.202 |
| | interaction | 1.101 | .135 | 66.754 | .000 | 3.006 |
| | skillful | .480 | .138 | 12.075 | .001 | 1.616 |
| | efforts | -.122 | .116 | 1.104 | .293 | .885 |
| | age | | | 6.097 | .107 | |
| | 26-35 | -1.394 | .602 | 5.371 | .020 | .248 |
| | 36-45 | -1.317 | .571 | 5.327 | .021 | .268 |
| | 46 and above | -.976 | .597 | 2.676 | .102 | .377 |
| | Education | | | 2.297 | .317 | |
| | Graduate | .423 | .418 | 1.027 | .311 | 1.527 |
| | postgraduate | .554 | .365 | 2.296 | .130 | 1.740 |
| | gender(male) | .456 | .278 | 2.689 | .101 | 1.578 |
| | income | | | 2.143 | .709 | |
| | income(1) | -20.076 | 16933.900 | .000 | .999 | .000 |
| | income(2) | -19.636 | 16933.900 | .000 | .999 | .000 |
| | income(3) | -20.332 | 16933.900 | .000 | .999 | .000 |
| | income(4) | 3.550 | 31851.015 | .000 | 1.000 | 34.807 |
| | Constant | 14.902 | 16933.900 | .000 | .999 | 2963066.97 |

**Discussions and implications**

The study reported in this article aimed at testing the influence of perceived benefits, complexity, social influence, and demographic variables on adoption of internet banking in Tanzania. The results indicate that respondents embraced internet banking recently, as 53% adopted it within the last year. Internet banking appears to be used sparingly as 40.5% of the users indicated to use it either on a monthly or daily basis. Of those who are yet to adopt internet banking, the main reasons for not adopting include security, lack of knowledge, network problems, accessibility, expensive, and perceived low income. The results of the logistic regression indicate perceived benefits, complexity (interaction and skills needed), and age to significantly predicts the adoption of internet banking. Consequently, hypotheses 1, 3, and 5 were not rejected while the others were rejected. The qualitatively identified barriers to the adoption of internet banking are mainly the functional barriers that have been identified to be the main ones compared to psychological barriers (Laukkanen *et al*., 2008).

The results offer partial support to the UTAUT model that was adopted in this study as only three main variables (perceived benefits, complexity, and age) predicts the adoption of internet

bank in Tanzania. The influence of perceived benefits of internet banking on adoption of internet banking supports previous studies (Sharma *et al*., 2015; Juwaheer *et al*., 2012), thus further affirming the utility of the construct in predicting internet banking adoption. Reflecting previous studies (Bashir and Madhavaiah, 2015; Keshwarani and Tripathy, 2012), this study observed complexity to influence the adoption of internet bank. Moreover, this study expands the utility of complexity as a construct in adoption models by specifically testing the influence of the facets under the construct with perceived ease in interaction with internet banking and the skills needed to use the service. Such extension and amplification of the construct indicate complexity as a be multidimensional concept. . Thus it can be said that the dimensions of complexity might have higher content validity but low convergent validity. In conjunction with results from previous studies that indicate demographic variables to either influence (Laukkanen, 2016; Devlin and Yeung, 2003) or not influence (Juwaheer *et al*., 2012) the adoption of internet banking and the results of this study that indicated only age to exert an influence on internet banking adoption. Thus is can be concluded that demographic variables can be assumed to be contextual factors rather than universal antecedents of internet banking adoption.

The results of the present study provide several practical implications that can assist bank marketers to expand the use of internet banking facilities. For instance, the significance influence of perceived benefits of internet banking, interaction, and skills needed to use internet banking can be leveraged by marketers in their marketing initiatives. Specifically, when promoting the use of internet banking, marketers can include both verbal and pictorial contents that indicate the benefits of internet banking and ease of use of internet banking. As a means of overcoming the perceived complexity of internet banking, marketers can assist the potential adopters by having advertisements that not only dramatize the use of internet banking but also educate the potential adopters on the use of the same. In further enticing customers to adopt internet banking, marketers need to communicate with customers to overcome the perceived barriers of internet banking adoption as well as enhancing the internet banking services. For instance, banks can further educate their customers on a regular basis on the importance of not sharing or displaying their confidential information. On the aspect of designing internet banking services, bankers can have different tariffs and packages to cater for different income groups so as to entice those with lower incomes to use the facilities. As a means of increasing the frequency of internet banking, bankers can try to segment users basing on frequency and set service charges differently to encourage frequent use of internet banking.

As many governments are eager to elevate the financial inclusion of the adult population, the findings from this study provide practical insights to raise financial inclusion. The governments, through their central banks that are responsible in regulating and monitoring commercial banks and other financial institutions, can set rules and regulations to encourage the adoption of internet banking. For instance, central banks can further compel commercial banks to reduce service charges for internet bank transactions which can motivate customers to vividly perceive the monetary advantages of using and thus adopting internet banking. As security emerged as the main barrier to the adoption of internet banking, the government through communication regulatory authorities can set strict security policies and create mechanism to penalize those involved in security breaches; such a strategy will increase perceived level of security to the customers. Internet banking adoption being considered as a means to increasing financial inclusion (BOT, 2014), and financial inclusion being an objective of the governments especially in developing countries, then the promotion of internet banking should also be undertaken by the

governments through central banks and association of bankers. Such a strategy will create mass awareness of the advantages of internet banking compared to each bank promoting it individually. Moreover, the joint promotion of internet banking by the government and private financial institutions should be undertaken using social marketing approaches (Saunders *et al*., 2015) that are more geared to changing mind sets indicating the advantages of internet banking as well as trying to overcome the technological fear of the customers.

As no study can be considered to be perfect, this one had several limitations that need to be considered in extrapolation of the findings as well as providing direction for future studies. Albeit using samples of actual bank customers under the two categories of adopters and non-adopters of internet banking, the sample was drawn from an urban setting that might not reflect rural context. Future studies can compliment results of this study by comparing urban and rural samples in internet banking adoption. In the context of sub-Saharan African countries where substantial sizes of the populations do not have a bank account, it will be interesting to compare internet banking adopters, non-adopters, and those who do not have a bank account to appraise the gradation in the use of banking services. The use of complexity in the adoption of internet banking as a multidimensional concept with the items under it failing to converge into a single logical factor as well as having low reliability (less than .60), further conceptualization of the concept is needed.

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