Relationship between Security and Privacy, Quality of Internet Connection and Internet Banking Acceptance in Uganda: Testing for Perceived Value as a Mediator using Multiple Regression

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Abstract

The study sought to examine the extent to which Perceived value (PV) mediated the relationships between Security and Privacy (SP) and Quality of internet Connection (QIC) and Internet Banking Acceptance (IBA) in Uganda. The motivation for the study was the fact that internet banking in Uganda has not been widely adopted by banks’ customers and there was need to identify the areas that needed to be focused on in order to enhance Internet Banking Acceptance. Findings reveal that Perceived Value substantially mediated the relationships between Security and Privacy and Quality of Internet Connection and Internet Banking Acceptance. Perceived Value accounted for 44.6% and 51.3% of the direct effect of QIC and SP on IBA respectively. We conclude that whereas both QIC and SP have direct influence on IBA, PV has substantial positive mediating impact on the relationship between the two and Internet Banking Acceptance in Uganda. These findings raise implications for bank managers, owners and policy makers which have to be addressed if the competitiveness of banks in Uganda. It follows, therefore, that Bank Managers need to model their strategies to achieve the positive effects of Perceived ease of use, Perceived Cost and Perceived Usefulness.

Introduction

In order for many companies to stay competitive, businesses have always strived to improve themselves by creating better products and services for their customers (Seetharam & et al., 2008). Since the mid-1990s in Uganda, there has been a fundamental shift in banking delivery channels toward using self-service channels such as online banking services. The evolution of internet banking has altered the nature of personal-customer banking relationships and has enabled electronic channels to perform many banking functions that would traditionally be performed over the counter (Giannakoudi, 1999). The emergence of Internet banking has therefore prompted many banks in Uganda to rethink their information technology strategies in order to stay competitive. Internet banking has helped customers to view their account details, pay bills, and transfer money between accounts, tracking of expenditures and monitoring transaction history known as internet banking is beginning to gather attentions from commercial banks (Chou, 2000). This new development offers the banking sector additional opportunities improving customer service and competitiveness in an emerging market segment, (Hun, 2005; Swartz, 2001). However
adopting Internet banking service by customers has not been an easy decision. For this
decision to be taken it should be based on full understanding of, and a thorough analysis of
the relevant market conditions, and customers’ behavior (Davis, 1989).

Although in recent years, internet banking has grown rapidly in Uganda, there is
some evidence supporting the opposite fact that online banking acceptance is faced with
problems. Reports have shown that internet banking adoption in Uganda has not been
widely adopted by bank customers’ that is at 39% (Kisaame, 2010). Kahyana, (2005) finds
that if the user of the ATM card is not conscious about security, then chances that
unauthorized withdrawal of cash from a user's account might be carried out by a malicious
person. Thus internet banking in Uganda has raised concerns in the banking industry due to
poor perception of the usefulness, ease of use and cost of this innovation. The increasing
number of cases of fraud and embezzlement raise the question of safety and security of the
banking system. In addition to foregoing, the low level of reliability and quality of internet
connectivity has not eliminated the problem of long queues at ATMs thus impacting the
acceptance of this innovation (Namubiru, 2008). Thus the purpose of this study was to
understand the variable mix of the factors that influence acceptance of Internet Banking
Services in Uganda.

Hypothesis Development

Security and Privacy and Internet Banking

Security and privacy of transactions over the internet is a burning issue and thus an
important factor that customers consider before adopting internet banking. Some
customers avoid internet banking if they perceive it as being easily susceptible to fraud as
poor perception can damage consumers’ confidence of the online system as a whole
(Howcroft et al., 2002). Security of Internet transactions is of paramount concern to most
customers particularly where financial information is involved (Hedberg and Taylor, 2001;
Stafford, 2001). Banks must convince their customers that internet banking is secure and
that sufficient safeguards have been taken to assure security at the transaction level. This
means that safeguarding the privacy of customer’s financial information and profile by
banks is imperative if the public is to embrace Internet banking. According to Luarn and Lin
(2005), bank clients are more worried about their personal information and money being
transferred to third party without their knowledge. Thus, the existence of trust is very
important in a relationship which is a kind of insurance against risks and unexpected
behavior. Without internet banking security, the use of online banking is not possible
(Pikkarainen et al., 2004). The importance of security and privacy to the acceptance of
online banking has been noted in many banking studies elsewhere (Roboff and Charles,
1998; Sathy, 1999; Hamlet and Strube, 2000; Tan and Teo, 2000; Polatoglu and Ekin, 2001;
Black et al., 2002; Giglio, 2002; Howcroft et al., 2002). Privacy and security were also found
to be significant obstacles to the adoption of online banking in Australia (Sathy, 1999).
Roboff and Charles (1998) found that people have a weak understanding of online banking
security risks although they are aware of the risks. Furthermore, they found that consumers often rely on banks that are more concerned about privacy and security issues.

Hoffman and Novak (1998) noted that as the amount of products and services offered via the Internet grows rapidly, consumers are more and more concerned about security and privacy issues. Westin and Maurici, (1998); Cranor et al., (1999) finds that privacy issues have proven important barriers to the use of online services. From the above literature, we constructed the first hypothesis as:-

\[ H1: \text{Security and Privacy positively influence Perceived Value of Internet Banking.} \]

Quality of Internet connection and Internet Banking

Quality of internet services describe the extent to which internet accessibility is fast and reliable and sufficient information is available at the banking website according to customer requirement. The quality of the Internet connection has significant effects on the usage of online banking acceptance (Al-Somali et al., 2009). Quality of internet connection is especially important in the context of internet banking because many people become reluctant to use the system when they experience frequent delay in response, frequent disconnection, lack of access, and poor security (Delone and McLean, 1992; Seddon, 1997; Lee, 1999; Lin and Lu, 2000). Sathye (1999) noted that without a proper Internet connection the use of online banking is not possible. Thus, we constructed the second hypothesis as:-

\[ H2: \text{Quality of internet Connection positively influences Internet Banking Acceptance} \]

Perceived Value and Internet Banking Acceptance

Technology Acceptance Model posits that Perceived Usefulness (PU), Perceived Ease of Use (PEOU) and Perceived Cost (PC) are significant factors affecting acceptance of an information system (Davis et al., 1989). Davis defined PU as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989). According to TAM PEOU is a major factor that affect acceptance of information system (Davis et al., 1989). PEOU is defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989).

PU is defined as the degree of which an individual believes that using a system would improve his or her job performance (Davis, 1989). The effect of PU on Internet Banking has been validated in many existing studies (Luarn and Lin, 2005; Lin and Wang, 2005; Guriting and Ndubisi, 2006). For example, Wong and Hiew (2005) suggested that the usage of internet banking is strongly driven by the usefulness of the mobile service, which includes ubiquity, personalization, localization, timeliness and network stability. Hence, in this study, PU is defined as the extent to which individual believes that the use of internet banking will improve his or her job performance and daily activities. This construct not only assess the extrinsic characteristics of internet banking, but it also shows how internet banking can help the users to achieve task-related goals, such as effectiveness and efficiency (Ho and Kwok, 2003).
Although an individual may believe that an application is useful, he or she might also find that the system is difficult to use (Davis, 1989). PEOU has been considered as an important determinant in adoption of past information technologies such as intranet (Chang, 2004), 3G (Liao et al., 2007), online banking (Guriting and Ndubisi, 2006; Jahangir and Begum, 2008), wireless internet (Lu et al., 2003), internet commerce (Cho et al., 2007) and m-commerce (Lin and Wang, 2005; Wang and Barnes, 2007; Kurnia et al., 2006; Mallat et al., 2006; Luarn and Lin, 2005). According to Rogers (1995), complexity of one particular system will become the inhibitor that discourages the adoption of an innovation.

Once again borrowing from Davis (1989), PEOU refers to the degree to which an individual believes that using internet banking would be free of physical and mental effort. For example, someone may find using services on mobile devices tedious and complex due to the constraints of physical features of m-commerce such as its small display screen or difficulty in keying in data.

Price or cost factor is one of the reasons that could slow down the development of m-commerce. Cost factor may consist of initial purchase price (e.g. handset fee), ongoing usage cost (subscription fee, service fee and communication fee), maintenance cost and upgrade cost (Luarn and Lin, 2005). Pagani (2004) stated that price or cost factor was one of the main determinants of 3G services adoption. Anil et al. (2003) also stated that cost is one of the factors influencing the adoption of m-commerce in Singapore. Sathye (1999) stressed the importance of price or cost factors in adoption of innovations. He stated that cost is one of the reasons that prevent consumers from Singapore and Australia to use internet banking.

Carlsson et al. (2006) also found that cost related issues is more important than privacy and security issues when it comes to the adoption of 3G services among users in Finland. In this study, the cost factor is tested in “Perceived cost” construct which is defined as the extent to which individual perceive that using m-commerce is costly.

**H3: Perceived Value positively influences Internet Banking Acceptance**

Ramayah et al (2003), observed that perceived ease of use, and perceived usefulness of using internet banking act as intervening variables between external factors and intention to use internet banking. Also, Ericksson et al (2005), observed that perceived ease of use mediates ease of use and use as an outcome. They also observed that no amount of ease of use can compensate for lack of usefulness. It is concluded that customers pursue an integrated perception of the banking services which, in our study, are covered by Perceived Value of Internet as a global construct operationalised by Perceived usefulness, Perceived cost and Perceived ease of use. Pikkarainen et. al. (2004) identifies the importance of a decent Internet connection and its quality in adopting Internet banking and he concluded that without a proper Internet connection, the use of Internet banking is not possible. Based on the literature on mediation, we constructed the following hypotheses:-
H4: Security and Privacy positively influence Internet Banking Acceptance.

H5: Quality of Internet Connection positively influences Internet Acceptance.

H6: The relationship between Security and privacy and Internet Banking Acceptance is mediated by Perceived Value.

H7: The relationship between Quality of internet Connection and Internet Banking Acceptance is mediated by Perceived Value.

H8: The variations in between Security and privacy, Quality of internet Connections and Perceived Value significantly account for variations in Internet Banking Acceptance.

**Methodology**

A cross sectional and quantitative research design was used. A correlational analysis on the quality of internet connection, security and privacy, information on internet banking, perceived value against Internet Banking Acceptance was carried out to test the direction and strength of relationships between the study variables. A regression analysis focusing on quality of internet connection, security and privacy, information on internet banking, perceived Value was computed to establish the extent to which they contributed to internet banking acceptance.

Population was targeted from 23 registered commercial banks operating in Uganda (Bank of Uganda Report, 2008). The unit of inquiry was commercial banks clients. The respondents were selected using simple random sampling because of the feasibility and sensitivity of collecting data to answer the research question(s) and the need to address the researcher’s objectives from the entire population (Saunders *et al.*, 2000). Primary data was obtained through the use of self-administered questionnaires. The self-administered questionnaire was used as a tool for data collection because it was quicker in getting data from the respondents (Bakkabulindi, 2004). Structured Adjusted Questionnaire helped to cover a large number of respondents in a short time and generate reliable data since respondents answer the questions without the interference from the researcher’s presence. To overcome common methods bias resulting from common rater effects, a number of precautionary procedures were undertaken (Podsakoff *et al.*, 2003). These included; elimination of questionnaire ambiguity in the information inductance scale and the use of different scale anchors. In addition, testing potential and non-response bias and to detect and consider possible problems with non-response errors, the assessment and investigation of non-response-bias was conducted for example comparison of sample statistics and known values of the population, such as gender, number of years in a university and level of education.

The questionnaire were validated and pretested. Validity of instruments was obtained using the Content Validity Index (CVI). It was performed on the questionnaire to ensure that the scale items are meaningful; the statements are generally understandable and capture the issues under study. Reliability of the instruments was ascertained using the Cronbach’s
coefficient alpha (Cronbach, 1946) to test for the internal consistence of the scales used to measure the variables. The following reliability coefficients were established:

<table>
<thead>
<tr>
<th>No</th>
<th>Instrument</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Quality of internet connection</td>
<td>0.763</td>
</tr>
<tr>
<td>2</td>
<td>Security and Privacy</td>
<td>0.710</td>
</tr>
<tr>
<td>3</td>
<td>Perceived Value internet banking services</td>
<td>0.875</td>
</tr>
<tr>
<td>4</td>
<td>Internet banking acceptance</td>
<td>0.940</td>
</tr>
</tbody>
</table>

Table 1: Instrument reliability

Alpha coefficient of above 0.7 for individual test variables was accepted meaning the instrument was reliable. This was consistent with (Nunnally, 1978) and it has also been supported by Peterson (1994) who pointed out that acceptable value of Cronbach’s alpha can vary between 0.5 and 0.95 depending on the type of research.

Scales from previous studies were used to measure the study variables. A 5 point Likert scale ranging from strongly disagree “1” to strongly agree “5” was used to measure the variables. Quality of internet connection was measured basing on the scales developed by (Sathye, 1999; Pikkarainen T et al, 2004). Security and Privacy was measured basing on the scales developed by Teo Pikkarainen et al., 2004). Perceived value was measured basing on the scales developed by Davis, 1989; Fusilier and Durlabhji, 2005, Wang et al., 2003. Internet banking acceptance was measured basing on the scales developed by Eastlick and Lotz, 1999; Venkatraman, 1991; Shimand Drake, 1990 and Tan and Teo (2000).

Data from the field was compiled, sorted, edited and coded to have the required quality, accuracy and completeness. During data editing, obvious errors were detected and wherever possible eliminated (e.g. non response: for instance questionnaires that were not filled up at least three quarters were dropped; Structured Administered Questionnaires with glaring inconsistencies e.g. respondents whose ages were inconsistent with rank were dropped). During data categorizing or were categorized and each category was given an identification code. During data entry, data entry interface provided by SPSS was used.

To be consistent with the research design, data analysis was quantitative (statistical) and computerized (using SPSS) at three levels that is univariate, bivariate and multivariate. At univariate level, data analysis was based on simple statistics such as frequency counts, arithmetic means, standard deviations, relative frequencies (or percentages) from frequency tables and descriptive statistics; at bivariate level, Pearson’s Co-relation analysis and multiple regression analysis methods were found to be appropriate and finally, a Sobel Test was carried out to test Perceived Value as a mediator of the relationship between Security and Privacy and Internet Banking Acceptance using Multiple Regression.

Results

A total sample of 23 commercial banks for this study was generated using Yamane’s (1973) sample selection approach. One hundred seventy five (175) questionnaires were received from respondent banks indicating a response rate of 45.6%. Majority of the
respondents (54.3%) were male and 78% were below the age of 35. Majority of respondents were government employed (35.4%) followed by privately employed (33.1%).

**Correlation Analysis**

In order to initially discern the relationship between Information Availability, Quality of Internet Connections and Security and Privacy Perceived Value of Internet Banking Services, and Internet Banking Acceptance, the Pearson (r) correlation coefficient was employed to execute this and to test the direction and strength of relationships between the study variables. As cited in Wong and Hiew (2005) the correlation coefficient value (r) range from 0.10 to 0.29 is considered weak, from 0.30 to 0.49 is considered medium and from 0.50 to 1.0 is considered strong.

**TABLE 2: Correlation Matrix**

<table>
<thead>
<tr>
<th></th>
<th>Internet Banking Acceptance</th>
<th>Security and Privacy</th>
<th>Quality of Internet Connection</th>
<th>Perceived value of Internet Banking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Banking Acceptance Pearson Correlation</td>
<td>1</td>
<td>.657**</td>
<td>.578</td>
<td>.726**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>175</td>
<td>175</td>
<td>175</td>
</tr>
<tr>
<td>Security and Privacy     Pearson Correlation</td>
<td>.657**</td>
<td>1</td>
<td>.528**</td>
<td>.644**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>175</td>
<td>175</td>
<td>175</td>
</tr>
<tr>
<td>Quality of Internet Connection Pearson Correlation</td>
<td>.578**</td>
<td>.528**</td>
<td>1</td>
<td>.521**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>175</td>
<td>175</td>
<td>175</td>
</tr>
<tr>
<td>Perceived value of Internet Banking Pearson Correlation</td>
<td>.726**</td>
<td>.644**</td>
<td>.521**</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>175</td>
<td>175</td>
<td>175</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).**

**Testing for Multicollinearity**

Multicollinearity, a condition in which the IVs are very highly correlated (.90 or greater) and singularity, where the IVs are perfectly correlated or one IV is a combination of one or more of the other IVs was further analysed by establishing tolerance and variance
inflation factors. Tolerance is the proportion of a variable's variance that is not accounted for by the other IVs in the equation. Multicollinearity can also be detected with the help of tolerance and its reciprocal, called variance inflation factor (VIF). If the value of tolerance is less than 0.2 or 0.1 and, simultaneously, the value of VIF 10 and above, then the multicollinearity is problematic. From Table 6 we note that tolerance is greater than 0.2 and VIF is less than 10 for all IVs, which means that multicollinearity among the IVs has minimal impact on the regression results. However, according to Field (2005), correlation coefficient should not go beyond 0.8 to avoid multicollinearity. Since the highest correlation coefficient is \( r = 0.726 \) which is less than 0.8, there is no multicollinearity problem in this research (Table 2).

**Mediation Test**

Based on the works of Kenny and Baron (1986), mediation assumes a three-variable system such that there are two paths feeding into the outcome variable: the direct impact of the IV on the DV and the indirect path from the IV to the DV via the MV. There is also a relation between the MV and the DV. The conditions for existence of mediation are assessed through three steps. First the variations in levels Independent variable (IV) should significantly account for the variations in the Criterion Variable (CV). This means that, there should be a relationship to mediate. Secondly, there should a significant relationship between the IV and the mediating Variable (MV). Thirdly, when the CV is regressed on the IV while controlling for the MV then a previously significant relation between the IV and CV is no longer statistically significant or, with strong mediation, the direct IV to CV path is zero (the \( \beta = 0 \)).

The mediation test was conducted according to Baron and Kenny (1986) conceptual and statistical recommendations for assessing the presence of a mediating effect as illustrated in figure 1. To test hypotheses 6, 7 and 8, the dependant variable, Internet Banking Acceptance was regressed on Quality of internet Connection to establish that there was an effect to mediate (path c in Fig 1A). Second, Perceived Value of Internet Banking was regressed on Quality of Internet Connection to establish the relationship between the independent variable and the mediator (path a in Fig 1B). The third equation involved regressing Internet Banking acceptance on both Quality of internet Connection and Perceived value of Internet Banking. This was done to test whether Perceived Value was related to Internet Banking Acceptance. An estimate of the relation between the Quality of Internet Connection and Internet Banking Acceptance controlling for Perceived Value was also carried out. This procedure was also carried out for Security and Privacy of Internet Banking variable as seen in the figure below;
The above test indicated the potency of mediation which was further tested using Sobel’s test. The information from the Regression Analysis was used to carry out Sobel mediation Test by feeding the data into the MedGraph –PC. This programme graphically depicts mediation among three variables.

**Sobel Test**

**Table 3: Testing Perceived Value as a mediator of the relationship between Security and Privacy and Internet Banking Acceptance using Multiple Regression**

<table>
<thead>
<tr>
<th>Step for Testing for Mediation</th>
<th>B</th>
<th>SE</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing Step 1 (Path c)</td>
<td>1.133</td>
<td>0.099</td>
<td>0.657(p&lt;.001)</td>
</tr>
<tr>
<td>Outcome: Internet Banking acceptance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictor: Security and Privacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing Step 2 (path a)</td>
<td>0.768</td>
<td>0.069</td>
<td>0.644(p&lt;.001)</td>
</tr>
<tr>
<td>Outcome: Perceived Value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictor: Security and Privacy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing Step 3( path b and c‘)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome: Internet Banking Acceptance</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mediation results for Perceived Value on Security and Privacy and Internet Banking Acceptance relationship.

**Type of Mediation:** Partial

**Sobel z-value:** 12.48825 Sig < 0.000001

Direct 0.32

Indirect 0.337

The Sobel test indicated that Perceived Value partially mediated the relationship between Security and Privacy and Internet Banking Acceptance (Sobel z-value 12.48825, p < .000001, Direct 0.32, Indirect 0.337). The above data showed that IBA could be improved by focusing PV. Consequently PV should serve enhancement of IBA. This result supports hypothesis H6.

**Figure 2: The hypothesized mediation model**

The Sobel test indicated that Perceived Value partially mediated the relationship between Security and Privacy and Internet Banking Acceptance (Sobel z-value 12.48825, p < .000001, Direct 0.32, Indirect 0.337). The above data showed that IBA could be improved by focusing PV. Consequently PV should serve enhancement of IBA. This result supports hypothesis H6.
Table 4: Testing Perceived Value as a mediator of the relationship between Quality of Internet and Internet Banking Acceptance using Multiple Regression

<table>
<thead>
<tr>
<th>Step for Testing for Mediation</th>
<th>B</th>
<th>SE</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing Step 1 (Path c)</td>
<td>0.572</td>
<td>0.060</td>
<td>0.578 (p&lt;.001)</td>
</tr>
<tr>
<td>Outcome: Internet Banking acceptance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictor: Quality of Internet Connection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing Step 2 (path a)</td>
<td>0.357</td>
<td>0.044</td>
<td>0.521 (p&lt;.001)</td>
</tr>
<tr>
<td>Outcome: Perceived Value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictor: Quality of Internet connection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing Step 3 (path b and c’)</td>
<td>0.841</td>
<td>0.088</td>
<td>0.583 (p&lt;.001)</td>
</tr>
<tr>
<td>Outcome: Internet Banking Acceptance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mediator: Perceived Value(path b)</td>
<td>0.272</td>
<td>0.057</td>
<td>0.275 (p&lt;.001)</td>
</tr>
<tr>
<td>Predictor: Quality of Internet</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results in the table above indicate that PV mediates the relationship between Quality of Internet Connection and Internet Banking Acceptance. This was further verified by carrying out a Sobel Test.

The results of the Sobel Test are summarized in the figure below:

Mediation results for Perceived Value on Quality of Internet Connection and Internet Banking Acceptance relationship.

**Type of Mediation:** Partial

**Sobel z-value:** 12.48825 Sig < 0.000001

**Direct**

**Indirect** 0.258
Figure 1: The hypothesized mediation model

The Sobel test indicated that Perceived Value partially mediated the relationship between Quality of Internet connection and Internet Banking Acceptance (Sobel z-value 12.48825, p<.000001, Direct 0.32, Indirect 0.258). This result supports hypothesis H7.

Regression Model

To test H8, the dependant variable, Internet Banking Acceptance is regressed on Quality of Internet Connection, Security and Privacy, Perceived Value of Internet Banking Acceptance. The results from the two tables show that quality of internet connectivity (Beta = .207), security and privacy (Beta = .256) and perceived value (Beta = .453) significantly and positively correlated with internet banking acceptance. The results showed that quality of internet connectivity, security and privacy, perceived value if well managed can improve the rate of Internet Banking Adoption by 59% (Adjusted R Square = .589). Among the four variables, it was noted that addressing perceived value (Beta = .453) should take priority over security and privacy (Beta = .256), quality of internet connectivity (Beta = .207) if the Internet Banking is to be successfully accepted.
Table 5. Multiple Regression Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Correlations</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>- .43</td>
<td>.9</td>
<td>-</td>
<td>1.64</td>
</tr>
<tr>
<td>Security And Privacy</td>
<td>.44</td>
<td>.2</td>
<td>.256</td>
<td>3.96</td>
</tr>
<tr>
<td>Quality Of Internet</td>
<td>.20</td>
<td>.5</td>
<td>.207</td>
<td>3.57</td>
</tr>
<tr>
<td>Perceived Value</td>
<td>.65</td>
<td>.4</td>
<td>.453</td>
<td>7.03</td>
</tr>
</tbody>
</table>

|                     |                     |                          | Zero-order   | Partial | Part | Tolerance | VIF  |
|                     |                     |                          |               |         |     |           |      |
| 1 (Constant)        |                     |                          |               |         |     |           |      |
| Security And Privacy|                     |                          |               |         |     |           |      |
| Quality Of Internet |                     |                          |               |         |     |           |      |
| Perceived Value     |                     |                          |               |         |     |           |      |

The Adjusted $R^2$ gives us the idea of how well our model generalizes and ideally we would like its value to be same, or very close to, the value of $R^2$. Adjusted $R^2$ being a measure of how much of the variability in the internet banking acceptance is accounted for by the quality of internet connection, security and privacy and perceived value our results show that there is no difference for the final model. This zero difference means that if the model were derived from the population rather than sample, it would account for approximately 0% less variance in the outcome.

Discussion and conclusions

The first objective was to examine the relationship between Quality of internet connection, Security and Privacy, Perceived value and Internet Banking Acceptance. In the study, it was established that there was significant positive relationship between perceived value and internet banking acceptance in Uganda. This implies that when perceived value is high, the rate of internet banking acceptance is likely to be high. When customers believe that internet banking is the easiest, cheap, convenient, flexible and efficient way of conducting banking transactions, they are likely to adopt it. This finding is consistent with
earlier studies (Davis, 1989; Lockett & Litter, 1997; Daniel, 1998; Karjaluoto, 2002; Sathye, 1999). However, Wong and Hiew (2005), noted that the usage of internet banking is strongly driven by the usefulness of the service, which includes ubiquity, personalization, localization, timeliness and network stability. In addition, Rogers (1995), also found out that complexity of one particular system will become the inhibitor that discourages the adoption of an innovation. It is also not consistent with Sathye (1999), Carlsson et al. (2006) who stressed that cost is one of the reasons that prevent consumers from Singapore, Finland and Australia to use internet banking.

More so a significant relationship between Security and Privacy of Internet Banking and Perceived Value \((r=.644, p=.000)\) means that improved Security and Privacy of internet Banking services is associated with improved Perceived Value of Internet Banking services. When customers have the confidence and assurance about the privacy and security attached with the internet banking then certainly induces them for future transaction using the same system because of the value attached. This finding is consistent with previous banking acceptance studies (Sathye, 1999; Hamlet and Strube, 2000; Tan and Teo, 2000; Polatoglu and Ekin, 2001; Black et al., 2002; Giglio, 2002; Howcroft et al., 2002).

More so a significant relationship between Quality of Internet connection and Perceived Value of Internet Banking \((r=.521, p=.000)\) means that improved Quality of internet connection will be associated with improved Perceived Value of Internet Banking services. This finding is in line with Pikkarainen et. al. (2004) who concluded that without a proper internet connection, the value attached will not be there and use of Internet banking is not possible. The Regression analysis showed that the variations in between Security and privacy, Quality of internet Connections and Perceived Value significantly account for variations in Internet Banking Acceptance.

The second objective was to examine the extent to which Perceived Value mediates the relationship between, Quality of internet connection, and Internet Banking Acceptance. The study found out that the amount of relationship between QIC and IBA accounted for by the mediator PV was \(0.0.578-0.32 = 0.258\) representing 44.6% of the direct effect. This result showed that IBA would be improved by focusing on activities that enhance PV.

The third objective was to examine the extent to which Perceived Value mediates the relationship between, Security and Privacy of Internet Banking and Internet Banking Acceptance. The study found out that the amount of relationship between SV and IBA accounted for by the mediator PV was \(0.657-0.32 = 0.337\) representing 51.3% of the direct effect. This result showed that IBA would be improved by focusing on activities that enhance PV.

From the analysis of the extent to which Perceived value mediates the relationship between Security and privacy and Quality of Internet connection, averaging at 48%, the enhancement of Perceived value is paramount. The dimensions of Perceived Value, namely, Perceived ease of use, Perceived Cost and Perceived Usefulness have a crucial role in acceptance of Internet Banking. This view is supported by Ramayah, et al (2003) who
observes that perceived ease of use and perceived usefulness of using Internet Banking act as intervening variables between the external factors and Intention to use Internet Banking.

**Conclusion**

The major purpose of this research was to study the mediating effect of Perceived Value of Internet Banking (PV) on the relationships between Quality of Internet Connection (QIC) and Security and Privacy (SV) and Internet Banking Acceptance (IBA), respectively, in Uganda. We conclude that whereas both QIC and SV have direct influence on IBA, PV has substantial positive mediating impact on the relationship between the two and Internet Banking Acceptance in Uganda. It follows, therefore, that Bank Managers need to model their strategies to achieve the positive effects of Perceived ease of use, Perceived Cost and Perceived Usefulness.

**Limitations of the study and areas for future research**

Our sample was composed of commercial banks found in Kampala District and leaving out commercial banks in other districts in Uganda. Our findings cannot therefore be generalized across the entire country. Studies in future can extend to other parts of the country, because the results may vary. Our variables were measured using scales from previous studies. This implies any limitation in previous studies may be embedded in this study.

**References**


Kisame. J. (2010), Internet Banking Adoption in Uganda. Proceedings from the international annual conference, Kampala


Appendix

Conceptual Framework

Source: Modified from Davis et al., 1989; Teo et al., 1999)