

Modelling and Measuring Acceptance and Use of Internet Banking: The Systematic Development of an Instrument

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ABSTRACT

A model representing the acceptance and use of Internet banking is developed and tested. The model was based on seven constructs: facilitating conditions, social influence, price value, anxiety, performance expectancy, effort expectancy, and behavioural intention, as determinants of use and acceptance of Internet banking. Data on 63 responses from a convenience-sampling-based survey were analysed using Exploratory and Confirmatory Factor Analysis techniques to explore and verify the underlying factor structure. Stepwise multiple regression was used to test the model. The results indicate that all the seven factors are important determinants of Internet banking. This has implications for bank marketing and service delivery, as well as banking policy.

Keywords: Internet banking, adoption, small business, factor analysis.

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1. INTRODUCTION

Over the past few decades the Internet has revolutionized entire industries including the banking sector. Advances in information technologies have dramatically transformed the banking industry. Gone are the days when consumers had to physically go to their bank to carry out transactions. Internet banking can be done anywhere and anytime if one has access to the Internet and a computer or mobile device. Internet banking is one of the latest banking technologies and the most rapidly diffused banking technology in the industry (Kim et al. 2005).

Definitions of Internet banking may vary among researchers, but a simple definition is the act of conducting financial intermediation on the Internet (VanHoose, 2003). Internet banking has evolved into a one stop service and information system that promises great benefits to both banks and consumers including small and medium enterprises. It has become increasingly prevalent because it presents a potentially low-cost alternative to brick and mortar branch banking for both banks and customers. The

services customers use through Internet banking range from writing checks, paying bills, transferring funds, printing statements, applying for loans, trading stocks or mutual funds, and inquiring about account balances (Nasri, 2011; Turban et al. 2000). Internet banking has brought efficiency and convenience to many customers, since customers can transact any service 24 hours a day, seven days a week without having to physically go to the bank; it allows them to conduct a wide range of transactions electronically anytime and anywhere, faster, and with lower fees compared to traditional branch banking (Krauter and Faullant, 2008).

Many financial institutions employ Internet banking to reduce costs associated with having personnel serve customers physically, shorten processing periods, increase speed, improve the flexibility of business transactions, and provide better overall service (Shih and Fang, 2004; Nasri, 2011; Sankari et al. 2015). Adoption of Internet banking will likely allow Small and Medium Enterprises (SMEs) greater access to global markets and reduced transaction costs; provide substantial benefits via improved efficiencies and raised revenues; facilitate access to potential customers and suppliers; improve productivity, and information exchange and management (UNCTAD, 2012). Internet banking has played an important role in enabling e-payment which provides an online transaction platform to support many e-commerce applications such as online shopping, online auction, and Internet stock transactions (Maitlo et al. 2015; Nasri, 2011).

The services that Internet banking offers are growing due to an increasingly competitive business environment (Bruno, 2006; Singh et al. 2015). However, despite all the apparent advantages of Internet banking and the increasing number of Internet users, the acceptance and use of Internet banking by SMEs has been slow (Al-Fahim et al, 2014). Like many other technologies, Internet banking faces many obstacles in its adoption. Consumer's use of Internet banking requires acceptance of the technology which involves changing behavior patterns. Thus, there is need to determine the factors influencing perception and adoption of Internet banking by SMEs.

We sought to identify and better understand the factors influencing perception and use of Internet banking by SMEs. The knowledge gained will generate a better understanding of what drives businesses' perceptions of Internet banking and what can be done to improve Internet banking adoption by small and medium enterprises. Additionally, it is in the banks' and clients' interest to direct their communication from bank branches to online channels to be more productive and cost-effective for both parties.

2. LITERATURE REVIEW

2.1 The Concept of Internet Banking

Nottingham Building Society and the Bank of Scotland were the first to introduce Internet Banking in the early 1980s (Tait and Davis, 1989). The services were however suspended following limited uptake by the banks' customers. In 1981, New York City became the first place in the United States to test this innovative way of doing business, as four of its major banks — Citibank, Chase Manhattan, Chemical and, Manufacturers Hanover — made online banking available to their customers (Sarreal, 2018). At the time, customers did not embrace the initiative, so it failed to gain momentum; the next wave of innovation came in the mid-1990s when, buoyed by the rising growth of information technology and electronic services, banks resumed the quest to introduce Internet Banking (Sarreal, 2018). It was expected that Internet banking services such as viewing transactions, bill payments, and online loan application would become standard practice

(Jenkins, 2007). However, despite the continuing increase in the number of Internet users and despite all the apparent advantages of Internet banking for customers, the growth rate of global Internet users who have adopted Internet banking did not rise as strongly as expected (White and Nteli, 2004).

According to Woods (2014), customers were hesitant to use online banking at first for several reasons. Many did not trust its security features, were unsure how to use it, and did not care to invest time to learn it. After easing into e-commerce, the idea slowly began to catch on. In 2001, Bank of America made history as the first financial institution to gain more than 3 million online banking customers, about twenty percent of its customer base (Woods, 2014). By 2006, eighty percent of U.S. banks were offering Internet banking services and by 2018 Internet banking had finally become standard practice (Sarreal, 2018).

2.2 Factors Influencing Internet Banking Adoptions

The topic of Internet banking has attracted much academic research in recent years i.e., banking journals have devoted special issues on the topic (e.g. Chuwa, 2015; Karjaluo et al, 2002; Waite and Harrison, 2002; Bradley and Stewart, 2003; Murkherjee and Nath, 2003). Thus, Internet banking is the latest delivery channel for banking services and it is becoming an increasingly prevalent technology in financial institutions (Nasri, 2001).

Several studies indicate that online bankers are the most profitable and wealthiest segment of the industry (Mols, 1998; Robinson, 2000; Sheshunoff, 2000). The fundamental reasons for Internet banking development and diffusion are cost savings for banks and reduction of branch networks, leading to self-service channels that take less time and effort on the part of customers (Chuwa, 2015; Karjaluo et al. 2003; Maitlo et al. 2015). Indeed, for customers, Internet banking provides other advantages including cost savings, value added services, and freedom to bank from any place (Chuwa, 2015; Pikkarainen et al, 2004).

Many financial institutions are now employing Internet banking as one of their distribution channels because Internet banking services benefit both banks and their customers (Alsmadi, 2012; Karjaluo, 2002). As the Internet technology has grown so has Internet based services. Internet banking plays an important role in enabling e-commerce for SMEs (Maitlo et al. 2015; Nasri, 2011).

Internet banking offers many benefits to SMEs; however, in global terms most SMEs have not adopted Internet banking as quickly as expected (Al-Fahim et al. 2014; Chuwa, 2015; White and Nteli, 2004). Like any other information technology, Internet banking faces many obstacles in its adoption because it requires the acceptance of technology which can be complicated as it involves the change of behavior patterns (Nasri, 2011). Several researchers have conducted studies on Internet banking adoption using information technology adoption models. These studies show that there are several variables that influence the adoption and usage of Internet banking.

Acceptance and use of technology has been the subject of much research, and in recent years several theories that offer new insights have emerged at both the individual and organizational levels; these studies have focused on individual countries or sets of countries (Im et al. 2011). Various theoretical models that have been developed in psychology and sociology have been employed to attempt to explain the acceptance and use of technology. Psychology models have been valuable in understanding what drives users to accept and use technology and include such theories as the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980), Theory of Planned Behavior (TPB) (Harrison

et al. 1997), and the Social Cognitive Theory (SCT). Other models developed by various scholars specifically to understand technology acceptance and technology use include: Technology Acceptance Model (TAM) and Extended TAM (TAM2) (Davis, 1980; Venkatesh and Davis, 2000); User Acceptance of Information Technology: Toward A Unified View (UTAUT) (Venkatesh et al. 2003); and Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology (UTAUT2) by Venkatesh et al. (2012). The UTAUT2 model extended the UTAUT by adding three more constructs: hedonic motivation, price value, and experience and habit to study acceptance and use of technology in a consumer context. These models and theories have served as baselines in many studies and have been applied in understanding a variety of technologies in both organizational and non-organizational settings (Venkatesh, et al. 2012). Some of these models have also been applied in understanding the acceptance and use of Internet banking (Nasri, 2011; Yuen, 2010; Pikkarainen et al. 2004). We now turn our attention to the most studied and valid constructs from prior models as we try to build a testable model.

Facilitating Conditions (FC)

The amount of information available online (Pikkarainen et al. 2004) as well as such things as quality of such information (Alwan and Abdelhalim, 2016) have been found to influence adoption of Internet banking. Indeed, Pikkarainen et al. (2004) found that the clearer and more understandable the information on a bank's website concerning Internet banking, the more likely it is, that a customer is going to use Internet banking. Other factors such as availability of Internet and convenience (24-hour service availability, home access) have been found to be a strong predictor of Internet banking use (Gerrard et al. 2006; Nasri, 2011; Sathye, 1999). In the UTAUT model, Facilitating Conditions, is defined as the consumers' perception of the resources and support available to perform a behavior (e.g., Brown and Venkatesh, 2005; Venkatesh et al. 2003; Venkatesh, et al. 2012). The term Facilitating Conditions is also used in the Model of PC Utilization (MPCU) (Thompson, et al. 1991); similar constructs including compatibility (IDT), and perceived behavioral control (C-TAM-TPB, TPB/DTPB; Malhotra et al. 2014), have been applied in the literature, to capture the same concept. We believe that Facilitating Conditions (FC) is an antecedent to other variables which will be discussed herein.

Social Influence (SI)

Social influence may affect the adoption of Internet banking for early adopters (Al-Abdallah and Al Qeisi, 2013; Montazemi and Saremi, 2013; Tsai et al. 2013). Montazem and Saremi (2013) found that Internet banking services create uncertainty on the expected outcomes for the potential adopters and so they tend to interact with their social network (e.g., friends, peers, online chats groups) to consult on their adoption decisions. The feedback received from one's social network often influences perceptions of perceived usefulness, ease of use, and trusting beliefs towards Internet banking (Montazem and Saremi, 2013). In the UTAUT model, Social Influence (SI) construct refers to the degree to which an individual perceives that others important to them believe he or she should use the new system. Similar constructs are represented in other models including subjective norms, by TRA, TAM2, TPB/DTPB, and combined TAM-TPB models; social factors by MPCU; and image (Malhotra, et al. 2014). According to the TAM2 model, subjective norm and image are two determinants of perceived usefulness (Performance Expectancy) that represent the social influences (Venkatesh and Davis, 2000). According

to the TAM3 model, social influence is a direct determinant of perceived usefulness (Performance Expectancy). We conclude that Facilitating Conditions is an antecedent of Social Influence and that Social Influence (SI), in turn, affects Performance Expectancy.

Price Value (PV)

One of the benefits associated with Internet banking is low costs – there are fee reductions (10-50% of the ordinary fees) for the electronic payments, and reduced costs associated with expenses in transportation to and from a physical bank building (Chuwa, 2015; Simona et al. 2010). According to Krauter and Faullant (2008), Internet banking allows customers to conduct a wide range of transactions electronically anytime and anywhere, faster, and with lower fees compared to using traditional brick and mortar bank branches. Chuwa (2015) found that perception of cost plays an important part in the consumer decision-making process and when viewed negatively, hampers customer acceptance of Internet banking. Chuwa's (2015) findings resonate well with others in marketing research that see monetary cost and quality combined as determinants of perceived value—that is, Performance Expectancy—of products or services (Ziethaml, 1988). In the UTAUT2 model this is known as Price Value (PV) and is defined as cognitive trade-off between the perceived benefits of the application and the monetary cost for using them (Dodds et al. 1991; Venkatesh, et al. 2012). When the benefits of using a technology exceed the monetary cost, price value is supposed to be positive, and to have a positive impact on the behavioral intention to use technology (Venkatesh, et al. 2012). We believe that Facilitating Conditions (FC) is an antecedent to Price Value (PV) and that Price Value affects Performance Expectancy.

Anxiety (ANX)

Anxiety is drawn from the SCT model and is defined as the state of evoking anxious or emotional reactions when it comes to performing a behavior (e.g., in our case, using Internet banking) (Bandura, 1986). In this study we will use Anxiety to represent the feeling of nervousness or fear associated with using Internet banking. Customers fear using Internet banking because they do not trust its security. This arises from the use of open public networks and has been emphasized as being the most inhibiting factor in the adoption and use of Internet banking (Sathye, 1999; Polatoglu and Ekin, 2001; Tan and Teo, 2000; Malhotra et al. 2014; Alwan and Abdelhalim, 2016). Indeed, security/trust has been found to have positive effects on customer satisfaction with the electronic service quality of Internet banking (Ariff, Zavareh, et al. 2013). Anxiety demonstrates risk as an additional dimension in adoption and use of Internet banking. Only customers who perceive using Internet banking as a low risk undertaking would be inclined to adopt it (Tan and Teo, 2000). According to TAM3, computer anxiety is a direct determinant of perceived ease of use (Effort Expectancy) and perceived usefulness (Performance Expectancy). It is an anchoring construct that plays a critical role in shaping perceived ease of use about a new system, particularly in the early stages of user experience with a system (Venkatesh and Bala, 2008). We believe that Facilitating Conditions is an antecedent of Anxiety and that Anxiety, in turn, affects Effort Expectancy.

Effort Expectancy (EE)

Adopting and using a new technology depends on its efficiency and effectiveness (Pikkarainen et al. 2004). Ease of use has been cited as another factor that determines whether consumers will adopt Internet banking (Bruno, 2006; Singh, et al. 2015; Alwan and Abdelhalim, 2016). Thus, a technology that is easier to use is more likely to influence behavioral intention. A bank website that is easy to read, easy to navigate, easy to find,

consistent in layout, and with detailed instructions and information would more likely attract customers to adopt and use Internet banking (Bruno, 2006; Singh, et al. 2015; Jaruwachirathanakul and Fink, 2005). According to Technology Acceptance Model (TAM), perceived ease of use is a major factor that affects the acceptance of information system (Davis et al. 1989). Perceived ease of use is defined as the degree to which a person believes that using a system would be free of effort (Davis, 1989). Moon and Kim (2001) stated that information technologies that are easier to use will be less threatening to individuals and therefore influence adoption. According to Davis (1989), people will tend to use the system if they believe that it is free of effort; thus, it affects behavioral intention. Davis, et al. (1989) also noted that perceived ease of use determined the perceived usefulness (Performance Expectancy) of a system such that users believe that the system is useful; if it is free of effort or easy to use—Malhotra et al. (2014) found the same. Further, Ariff, Min, et al. (2013) found perceived ease of use to affect behavioral intention to use Internet banking system, while Ariff, Zavareh, et al. (2013) found ease of use of Internet banking to influence consumer satisfaction with the electronic service quality of Internet banking. In the UTAUT model this construct is known as Effort Expectancy (EE) and is defined as the degree of ease associated with the consumer's use of the system (Venkatesh, et al. 2003). Similar constructs within other existing models that capture the concept of EE include perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT). We believe that Price Value and Anxiety are antecedents of Effort Expectancy, which in turn affects Performance expectancy and Behavioral Intention.

Performance Expectancy (PE)

In the TAM model Perceived Usefulness is defined as the degree to which a person believes that using a system enhances his or her job performance (Davis, 1989). There is support for perceived usefulness having a direct effect on the adoption of Internet banking (Jaruwachirathanakul and Fink, 2005; Eriksson et al, 2004; Pahlila, 2004; Malhotra et al. 2014). Perceived usefulness is evidenced in Internet banking through the advantages that Internet banking offers: convenience, quick service, and accessibility (Karjoluoto et al. 2002; Polatoglu and Ekin, 2001; Gerrad and Cunningham, 2003). Davis (1989) concludes that people will tend to use the system if they believe it will help them perform their job better. The UTAUT model includes Performance Expectancy (PE) which is defined as the degree to which an individual believes that using the system will help him or her attain gains in job performance (Venkatesh, Morris, Davis and Davis, 2003). Similar constructs from other existing models that capture the concept of PE include perceived usefulness (TAM/TAM2 and C-TAM-TPB), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectations (SCT). Swanson (1982) provided evidence that perceived ease of use and perceived usefulness are both important behavioral determinants of behavioral intention. Ariff, Min, et al. (2013) find both perceived ease of use and perceived usefulness to have significant effect on the intention to use Internet banking systems. Venkatesh and Bala (2008) concluded that people will tend to use the system if they believe it will help them perform their job better (Performance Expectancy) and further that the beliefs of the efforts required to use a system (Effort Expectancy) can directly affect system usage behavior (i.e., Behavioral Intention). We believe that Social Influence, Price Value, and Effort Expectancy are all antecedents of Performance Expectancy which, in turn, affects Behavioral Intention.

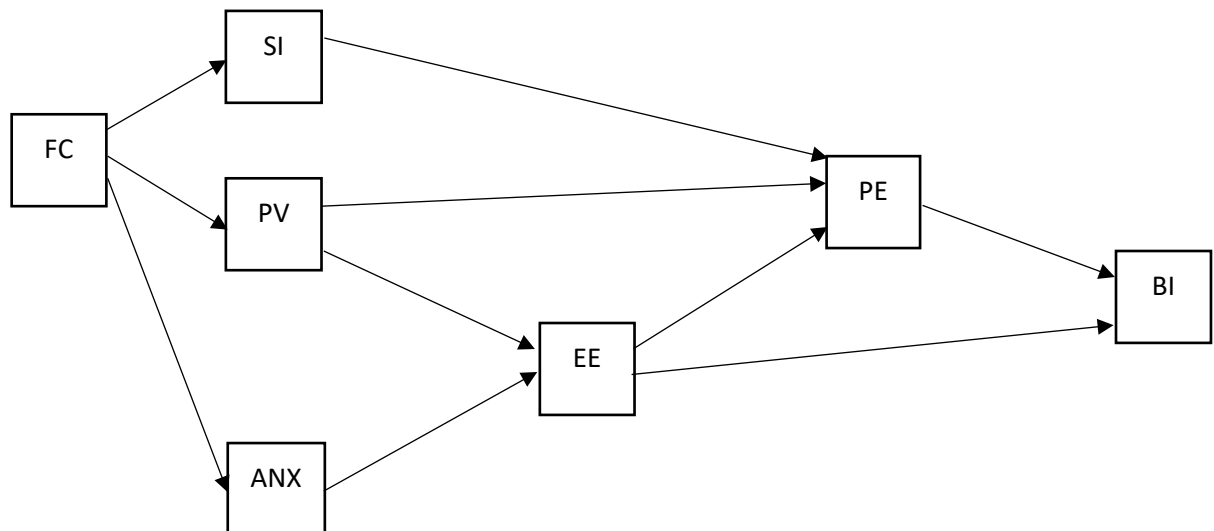
Behavioral Intention (BI)

According to TAM, one's actual use of a technology system is influenced directly or indirectly by the user's behavioral intentions. TAM also proposes that external factors affect behavioral intention and actual use through mediated effects on perceived usefulness (PE) and perceived ease of use (EE) (Davis, 1989; Venkatesh and Bala, 2008). Subsequently studies have shown that PE and EE affect the intention to use Internet banking (Alsmadi, 2012; Chuwa, 2015; Juwaheer et al. 2012). According to TPB, behavioral intention is the direct antecedent of the actual behavior. We believe that Effort Expectancy and Performance Expectancy affect Behavioral Intention.

2.3 Proposed Model

The resulting model based on the literature review, is illustrated in Figure 1. This model will be tested and discussed in the remainder of this manuscript, as we explore the relationships across the various constructs.

Figure1. Proposed Model



3. METHODOLOGY

We sought to explore the acceptance and use of Internet banking by small and medium enterprises, to gain insight into the what drives the innovation. In this regard we sought to explore relationships between the various variables discussed in the literature review. We also appreciate that we may discover new information which may lead us to explore new relationships between the variables in our proposed model. To do this we will carry out Exploratory Factor Analysis followed by Confirmatory Factor Analysis, and Regression Analysis.

3.1 Instrument and Sampling

A Likert scaled survey instrument was employed to collect data for this study. The items selected for the constructs were borrowed from prior studies. Items for Facilitating Conditions (FC), Social Influence (SI), Performance Expectancy (PE), Effort Expectancy (EE), Price Value (PV), and Behavioral Intention (BI) were sourced from UTAUT2

model with appropriate modification. Items for the Anxiety construct were adapted from the UTAUT model.

The selected sample was based on convenience as is common and acceptable for exploratory research studies (Zikmund and Babin, 2007; Hair et al, 2003; Malhotra, 2007; Zikmund and Babin, 2007). In determining the sample size, we employed a 3:1 ratio of observations to survey items, which is supported by the literature (see, for example, Hair et al. 2003; Malhotra, 2007; Zikmund and Babin, 2007; Tande et al. 2013).

The sample was taken from Small and Medium Enterprises operating in various industry sectors in a mid-western state in the United States. An electronic version of the survey instrument was deployed, and the recipients were asked to forward it on to others (a form of snowball sampling).

4. DATA ANALYSIS AND RESULTS

The survey provided 82 responses; 63 of these were from businesses that used Internet banking (“users”) and 19 were from “non-users.” Data analysis for this article was based on users only. The respondents were “person who handles the accounts for the business.” The average age of 97% of the respondents was 40 (3% of the respondents were in the “over 65” category). Most of the respondents (57.3%) were female; 40.2% were male, while 2.4% did not disclose their sex. The businesses had been in operation for an average of 24 years and had an average of 19 employees. Most of the businesses were in three industries: retail (22.2%), finance (17.5%) and, services (12.7%); the remaining (47.6%) were in an array of other industries.

Our data analysis plan was developed after a review of the collective literature and included four major steps: Demographic Analysis, Exploratory Factor Analysis, Confirmatory Factor Analysis, and Regression Analysis.

4.1 Exploratory Factor Analysis

In this research, we followed Bertsch and Pham (2012) regarding Exploratory Factor Analysis. There are seven steps in Exploratory Factor Analysis, including: Step 1: Partial Correlations, Step 2: Bartlett’s test of sphericity, Step 3: Measure of Sampling Adequacy (MSA), Step 4: Principle Components Analysis (PCA), Step 5: Factor Loadings, Step 6: Communalities, and Step 7: Rotation Method. These steps were followed for each of the proposed constructs (Facilitating Conditions, Social Influence, Price Value, Anxiety, Effort Expectancy, Performance Expectancy, and Behavioral Intention).

Step 1: Partial Correlations

Partial correlations are represented by the off-diagonal values in the anti-image correlation matrix (in SPSS), with values outside the ± 0.7 interval being considered unsuitable for factor analysis (Bertsch and Pham, 2012). The off-diagonal partial correlations are illustrated within Table 1 for each of the respective constructs. All the survey items in each of the seven constructs passed the test of partial correlations.

Table 1 Anti-image correlation matrix

Construct /Item (Variable)		Item 1	Item 2	Item 3	Item 4	Item 5
Performance Expectancy	PE1	0.921	-0.166	-0.226	-0.174	-0.148
	PE2	-0.166	0.893	-0.150	-0.351	-0.165
	PE3	-0.226	-0.150	0.856	0.062	-0.429
	PE4	-0.174	-0.351	0.062	0.838	-0.428
	PE5	-0.148	-0.165	-0.429	-0.428	0.825
Facilitating Conditions	FC1	0.802	-0.496	-0.286	-0.130	NA
	FC2	-0.496	0.778	-0.386	-0.148	NA
	FC3	-0.286	-0.386	0.833	-0.206	NA
	FC4	-0.130	-0.148	-0.206	0.916	NA
Price value	PV1	0.815	-0.317	-0.390	-0.018	NA
	PV2	-0.317	0.812	-0.135	-0.409	NA
	PV3	-0.390	-0.135	0.789	-0.419	NA
	PV4	-0.018	-0.409	-0.419	0.782	NA
Anxiety	ANX1	0.632	-0.313	-0.007	-0.607	NA
	ANX2	-0.313	0.626	-0.461	0.150	NA
	ANX3	-0.007	-0.461	0.691	-0.272	NA
	ANX4	-0.607	0.150	-0.272	0.602	NA
Effort Expectancy	EE1	0.833	-0.015	-0.344	-0.546	NA
	EE2	-0.015	0.920	-0.184	-0.338	NA
	EE3	-0.344	-0.184	0.880	-0.36	NA
	EE4	-0.546	-0.338	-0.360	0.801	NA
Social Influence	SI1	0.602	-0.371	-0.424	NA	NA
	SI2	-0.371	0.685	-0.122	NA	NA
	SI3	-0.424	-0.122	0.655	NA	NA
Behavioral Intention	BI1	0.741	-0.222	-0.578	NA	NA
	BI2	-0.222	0.793	-0.469	NA	NA
	BI3	-0.578	-0.469	0.683	NA	NA

Note: Item 1 – Item 5 are corresponding variables for each construct; e.g. for Performance Expectancy, Item 1 = PE1, Item 2= PE2, Item 3 = PE3, Item 4 = PE4, Item 5 = PE5.

Step 2: Bartlett's Test of Sphericity

To determine the appropriateness of the collective items within each construct in this test, Bartlett's χ^2 and significance values were used (Field, 2009; Hair et al. 2006). Table 2 contains the result of this step. All the seven constructs passed Bartlett's test of sphericity.

Step 3: Measure of Sampling Adequacy (MSA)

To measure sampling adequacy, the Kaiser-Meyer-Olkin (KMO) values of the anti-image correlation matrix in SPSS were used. The diagonals of the anti-image correlation matrix represent the MSA values for individual variables (Field, 2009; Hair et al. 2006). The possible values of both KMO and MSA range from zero (0) to one (1). They also have the same threshold criteria (above 0.5 and below 0.7 = "acceptable"; above 0.7 = "good"; above 0.8 = "great"; and over 0.9 = "superb") (Bertsch and Pham,

2012). Reviewing each of the entries in Table 2, we find that all the variables in each construct pass the test for sampling adequacy.

All the items in each of the seven constructs both individually and collectively passed the measure of sampling adequacy. After performing steps 1, 2, and 3, it was concluded that all the variables (i.e., survey items) qualify for the remaining steps in exploratory factor analysis.

Step 4: Principle Components Analysis (PCA)

Principle Components Analysis was chosen for extraction as the literature supports the method. Field (2009) suggests using Eigenvalues greater than one (1) to evaluate the number of factors extracted. As illustrated in Table 3, exactly one factor was extracted for each of the seven constructs which is what was expected.

Table 2 KMO and Bartlett's test

Facilitating Conditions		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.821
	Approx. χ^2	136.537
Bartlett's Test of Sphericity	Df	6.000
	Sig.	0.000
Social Influence		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.640
	Approx. χ^2	33.924
Bartlett's Test of Sphericity	Df	3.000
	Sig.	0.000
Price Value		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.799
	Approx. χ^2	122.716
Bartlett's Test of Sphericity	Df	6.000
	Sig.	0.000
Anxiety		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.636
	Approx. χ^2	76.435
Bartlett's Test of Sphericity	Df	6.000
	Sig.	0.000
Effort Expectancy		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.853
	Approx. χ^2	252.095
Bartlett's Test of Sphericity	Df	6.000
	Sig.	0.000
Performance Expectancy		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.863
	Approx. χ^2	184.898
Bartlett's Test of Sphericity	Df	10.000
	Sig.	0.000

Behavioral Intention		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.733
Bartlett's Test of Sphericity	Approx. χ^2	112.691
	Df	3.000

Step 5: Factor Loadings

Given the sample size used for this study, factor loadings of 0.7 were used to determine the retention of each survey item (variable) (Bertsch and Pham, 2012). This threshold was selected as the minimum required to ensure statistical significance given that our sample of 63 observations exceeded 60 but was less than 70 (Hair et al. 2006). The factor loading threshold was therefore set at 0.7. Table 4 illustrates the factor loadings for this step. All the items in each of the seven constructs had sufficient factor loadings as determined by the sample size.

Step 6: Communalities

Communality is a measure of the amount of common variance in an individual variable (Bertsch and Pham, 2012). Communalities and factor loadings are considered together in deciding whether to retain a variable in the factor solution (Field 2009; Hair et al. 2006). As Table 5 demonstrates, all communalities are above 0.50.

Step 7: Rotation Method

Factor rotation was limited to the cases with more than one independent construct in relationship to a single dependent construct. In our model (Figure 1), this results in three separate and distinct constructs (Social Influence, Price Value, and Anxiety) to be analysed. These three constructs are the only ones to be tested in this step. As mentioned in literature review, we assume Social Influence, Price Value, and Anxiety are separate and distinct independent constructs. This step applied Equamax rotation method in SPSS. Table 6 illustrates the rotated factor structure for the three constructs. The final rotated factor structure is very clear and supports the presence of three separate and distinct independent factors: Social Influence, Price Value, and Anxiety.

Next, we analyzed the Eigenvalues to verify the presence of the three factors. As demonstrated in Table 7, three factors were extracted (i.e., there are three factors with Eigenvalues above 1.0) for the three constructs: Social Influence, Price Value, and Anxiety constructs. Note that 68.29% of the total variance is explained which is respectably high (Bertsch and Pham, 2012).

4.2 Exploratory Factor Analysis Summary

There are several steps to follow when clarifying the factors in exploratory factor analysis. Step 1, 2, and 3 were used to specify the appropriateness of factor analysis and to determine the strength of correlation between relevant variables in each construct. Following Bertsch and Pham (2012), steps 4, 5, and 6 were applied in determining whether to remove variables/items within a given construct. Step 7 was completed as a last stage of exploratory factor analysis, which specified the rotated factor structure for the dataset. The above exploration of the underlying factor structure of the data, strongly illustrates the presence of three separate and distinct factors within the quantitative items (SI1 through SI3; PV1 through PV4; ANX1 through ANX4) on the proposed new instrument.

Table 3 Total variance explained

Construct/ Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Facilitating Conditions						
1	2.944	73.609	73.609	2.944	73.609	73.609
2	0.547	13.676	87.285			
3	0.29	7.254	94.539			
4	0.218	5.461	100			
Social Influence						
1	1.877	62.582	62.582	1.877	62.582	62.582
2	0.671	22.352	84.934			
3	0.452	15.066	100			
Price Value						
1	2.908	72.701	72.701	2.908	72.701	72.701
2	0.462	11.557	84.258			
3	0.374	9.341	93.599			
4	0.256	6.401	100			
Anxiety						
1	2.382	59.546	59.546	2.382	59.546	59.546
2	0.842	21.041	80.587			
3	0.496	12.41	92.997			
4	0.28	7.003	100			
Effort Expectancy						
1	3.451	86.284	86.284	3.451	86.284	86.284
2	0.308	7.689	93.973			
3	0.145	3.621	97.594			
4	0.096	2.406	100			
Performance Expectancy						
1	3.599	71.976	71.976	3.599	71.976	71.976
2	0.47	9.399	81.375			
3	0.411	8.219	89.594			
4	0.318	6.361	95.954			
5	0.202	4.046	100			
Behavioral Intention						
1	2.487	82.907	82.907	2.487	82.907	82.907
2	0.319	10.644	93.551			
3	0.193	6.449	100			

*Extraction Method: Principle Component Analysis

Table 4 Component matrices^a

Construct	Factor Loadings
Facilitating Conditions	
FC1	0.889
FC2	0.903
FC3	0.883
FC4	0.747
Social Influence	
SI1	0.849
SI2	0.747
SI3	0.774
Price Value	
PV1	0.823
PV2	0.858
PV3	0.873
PV4	0.856
Anxiety	
ANX1	0.826
ANX2	0.714
ANX3	0.765
ANX4	0.777
Effort Expectancy	
EE1	0.940
EE2	0.875
EE3	0.939
EE4	0.960
Performance Expectancy	
PE1	0.812
PE2	0.847
PE3	0.819
PE4	0.861
PE5	0.900
Behavioral Intention	
BI1	0.908
BI2	0.890
BI3	0.934

*Extraction Method: Principal Component Analysis.

a. 1 component extracted for each construct

4.3 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) allows the researcher to test the hypothesis that a relationship exists between two or more constructs in line with the proposed theory and analysis. We will limit our analysis of Confirmatory Factor Analysis to Convergent Validity as described in Bertsch and Pham (2012). The steps followed herein to assess

internal convergent validity include, (i) factor loadings, (ii) variance extracted, and (iii) reliability (Bertsch and Pham, 2012).

Table 5 Communalities for the seven constructs

Construct (Item)	Initial	Extraction
FC1	1.000	0.790
FC2	1.000	0.816
FC3	1.000	0.780
FC4	1.000	0.558
SI1	1.000	0.720
SI2	1.000	0.558
SI3	1.000	0.600
PV1	1.000	0.677
PV2	1.000	0.736
PV3	1.000	0.763
PV4	1.000	0.732
ANX1	1.000	0.683
ANX2	1.000	0.510
ANX3	1.000	0.585
ANX4	1.000	0.604
EE1	1.000	0.884
EE2	1.000	0.765
EE3	1.000	0.881
EE4	1.000	0.921
PE1	1.000	0.660
PE2	1.000	0.717
PE3	1.000	0.671
PE4	1.000	0.741
PE5	1.000	0.811
BI1	1.000	0.824
BI2	1.000	0.792
BI3	1.000	0.872

*Extraction Method: Principal Component Analysis

Table 6 Rotated *component matrix*^a

	Component		
	1	2	3
SI1			0.805
SI2			0.738
SI3			0.762
PV1	0.852		
PV2	0.807		
PV3	0.860		
PV4	0.727		
ANX1		0.797	
ANX2		0.721	
ANX3		0.725	

ANX4	0.741
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Extraction Method: Principal Component Analysis.

Rotation Method: Equamax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Table 7 Social influence, price value, and anxiety: total variance explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.146	37.694	37.694	4.146	37.694	37.694	2.900	26.368	26.368
2	1.980	18.002	55.696	1.980	18.002	55.696	2.591	23.552	49.920
3	1.385	12.594	68.290	1.385	12.594	68.290	2.021	18.370	68.290
4	.856	7.779	76.068						
5	.686	6.238	82.306						
6	.508	4.615	86.921						
7	.446	4.057	90.978						
8	.367	3.333	94.311						
9	.303	2.750	97.062						
10	.200	1.816	98.878						
11	.123	1.122	100.000						

*Extraction Method: Principal Component Analysis.

Factor Loadings

Hair et al. (2006) suggest that factor loadings should be 0.50 or higher but ideally 0.7 or higher when analyzing convergent validity. As illustrated in Tables 4 in Step 5 of the Exploratory Factor Analysis, each of the factor loadings for all seven constructs was above the 0.7 threshold. Therefore, all items in this case have ideal factor loadings.

Variance Extracted

The requirement of the test is that the total variance extracted exceeds 0.5; this indicates that more than 50% of the variance is explained by the observed variables. Specifically, this means less than 50% of the variance is caused by error. Table 3 in Step 4 of the Exploratory Factor Analysis demonstrated that all seven factors had more than 50% of the total variance extracted in a single factor.

Reliability

Cronbach's alpha coefficients will be included and the threshold of 0.6 will be used to assess reliability (Hair et al. 2006). All seven scales indicate strong alpha coefficients and can be deemed reliable (Table 8).

Factor analysis summary

There is clear factor structure; both data-driven as tested by exploratory factor analysis and theory-driven as tested by confirmatory factor analysis. The proposed instrument measuring each construct is deemed sound, reliable, and valid.

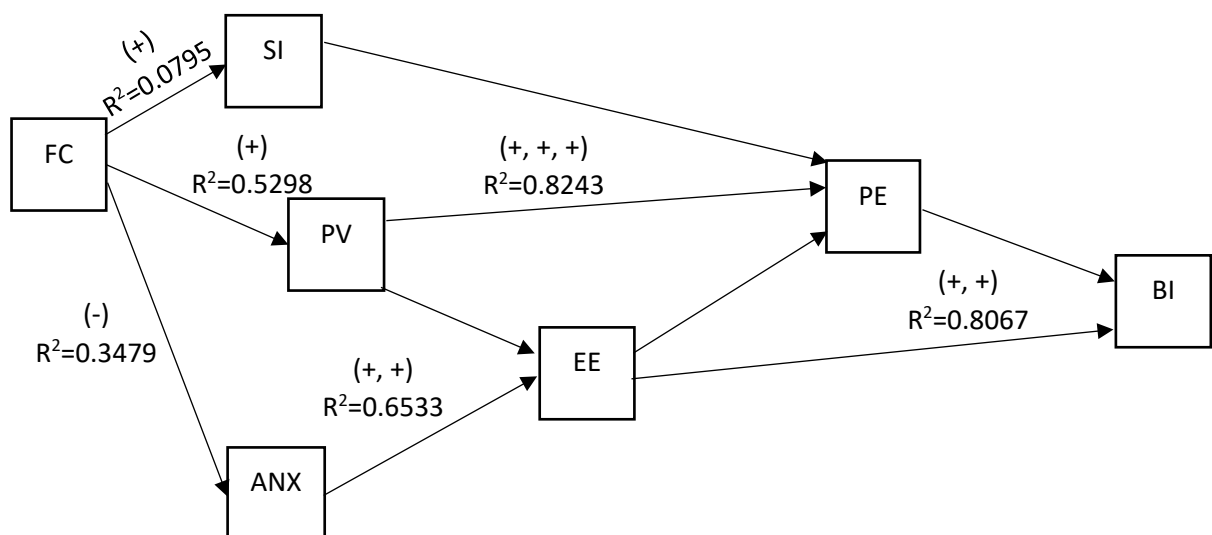
Table 8 Cronbach's alpha coefficients of seven constructs

Constructs	Alpha
Facilitating Conditions	0.879
Social Influence	0.690
Price Value	0.874
Anxiety	0.769
Effort Expectancy	0.941
Performance Expectancy	0.901
Behavioral Intention	0.892

4.4 Regression Analysis

The regression analysis was conducted to test the relationships between the various constructs in the proposed model. The results of regression analysis are illustrated in Figure 2 and show that each relationship in the proposed model was significant.

Figure 2. Tested Model



We acknowledge that the R^2 value between FC and SI is rather weak and is likely due to error or other unmeasured variables that determine SI. The relationship between Facilitating Conditions (FC) and Anxiety (ANX) is negatively correlated which is what we would expect. As the level of FC increases, the level of ANX experienced by the customer decreases; this is supported in the literature. The R^2 value is low and likely indicates that there are other variables that influence Anxiety in addition to Facilitating Conditions. When testing the PV and ANX as independent variables and EE as the dependent variable, we found a statically significant relationship with Effort Expectancy ($p < 0.001$, R Square = 65.33%) as proposed in our original model. When treating Social Influence (SI), Price Value (PV), and Effort Expectancy (EE) as independent variables and Performance Expectancy (PE) as the dependent variable, we found a significantly positive relationship for all three independent variables and an R^2 value of 82.43%. Finally, Effort Expectancy (EE) and Performance Expectancy (PE) are variables that account for 80.67% of the variance in Behavior Intention (BI).

5. CONCLUSION AND RECOMMENDATIONS

We set out to explore the acceptance and use of Internet banking among small and medium enterprises. To carry out our study we adapted, from prior models, various concepts that influenced the acceptance and use of Internet banking. The model we developed proposed that Internet banking is influenced by seven constructs: Facilitating Conditions (FC), Social Influence (SI), Anxiety (ANX), Price Value (PV), Effort Expectancy (EE), Performance Expectancy (PE) and Behavioral Intention (BI). The results of our examination indicate that the seven constructs in the model are significant factors that directly or indirectly, positively or negatively influence the acceptance and use of Internet banking.

The results of this study have implications for bank marketing and service delivery as well as banking policy. They should provide banks and policy makers an insight into the most influential factors that determine customers' intention to use Internet banking. For example, Facilitating Conditions was found to be one of the important factors in determining the customers' perception of Internet banking services as it influences customers' perception on anxiety, price value and social influence. For this reason, banks should provide information about Internet banking to customers, make sure customers are aware of the various Internet banking services, and provide the necessary resources to help customers transition from banking in the brick and mortar world to the virtual world. Issues of security and privacy should also be addressed to reduce anxiety and encourage customers to trust Internet banking. Regarding Price Value, banks should sensitize SMEs on the lower cost associated with Internet banking compared to traditional channels. Effort Expectancy is an important and significant factor that seems to determine the behavioral intention to adopt Internet banking. Therefore, banks should design their websites to be friendly, clear, easy to navigate, and with detailed instructions. Relative to Performance Expectancy, banks should educate their customers on the benefits and advantages associated with Internet banking and how it should improve their businesses.

This study has a few limitations. Our sample size was relatively small even though it did meet the requirements for this analysis. For future studies a larger sample size is recommended. Another limitation may be the list of variables that affect Internet banking acceptance and use. It is possible, for example, that acceptance and use of Internet banking varies across industries; this was not tested in the study. Additionally, there could be other variables that have not yet been discovered, particularly in the relationship between Facilitating Conditions and Social Influence. It is recommended that future studies examine industry effects and such other variables. It is also recommended that future analyses include structural equation modeling which may be more robust.

APPENDIX

Questionnaire

Section A: Basic demographic questions

1. What is your age?
2. What is your sex?
3. Have you ever used Internet Banking for your individuals needs or for the business?
4. If your answer to question 3 was YES, for approximately how many years have you been using Internet Banking?
5. Select from the list what best describes the industry your business is in?
6. How many people are employed at your business? (Please include part-time and full-time employees)

7. In which year was the business established?
8. Does the business you work for use Internet Banking?

Section B: Items used in the model

Performance Expectancy

- PE1. I find Internet Banking useful in my work.
- PE2. Using Internet Banking helps me accomplish things more quickly.
- PE3. Using Internet Banking increases my productivity.
- PE4. Using Internet Banking saves, me the hassle of traditional banking
- PE5. With Internet Banking I can access the business bank account any time

Effort Expectancy

- EE1. Learning how to Internet Banking is easy for me.
- EE2. My interaction with Internet Banking is clear and understandable.
- EE3. I find Internet Banking easy to use.
- EE4. It is easy for me to become skillful at using Internet Banking

Social Influence

- SI1. People who are important to me think that I should use Internet Banking Internet.
- SI2. People who influence my behavior think that I should use Internet Banking
- SI3. People whose opinion I value prefer that I use Internet Banking

Facilitating Conditions

- FC1. I have the resources necessary to use Internet Banking
- FC2. I have the knowledge necessary to use Internet Banking
- FC3. Internet Banking is compatible with other technologies I use.
- FC4. I can get help from others when I have difficulties using Internet Banking

Anxiety

- ANX1: I feel apprehensive about using Internet Banking
- ANX2. It scares me to think that I could lose a lot of money/information using Internet Banking if I press the wrong button
- ANX3. I hesitate to use the Internet Banking for fear of making mistakes I cannot correct
- ANX4. Internet Banking is somewhat intimidating to me

Price Value

- PV1. Internet Banking services (money transfer, etc.) are cheaper than Traditional Banking
- PV2. Internet Banking is reasonably priced.
- PV3. Internet Banking is a good value for the money.
- PV4. At the current price, Internet Banking provides a good value.

Behavioral Intention

- BI1. I intend to use Internet Banking in the future.
- BI2. I will try to use Internet Banking in my work in the future
- BI3. I plan to use Internet Banking frequently in the future

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