

Daniel K. Maduku (South Africa)

## Customers' adoption and use of e-banking services: the South African perspective

### Abstract

South African retail banks, like retail banks elsewhere in the world, are investing significant amounts of capital into the provision of e-banking services in the hope that this will translate into higher returns and market penetration. However, the rapid adoption of these e-banking services is still in doubt. Any strategy aimed at achieving widespread adoption and use of these e-banking services rests on solid understanding of factors that influence customers' adoption and use of the services. This study adds trust in the e-banking system, customer awareness of e-banking services and perceived self-efficacy, together with the TAM constructs of perceived usefulness and ease of use to improve the understanding of the predictors of Internet and cellphone banking services adoption in South Africa. For this study, a cross-sectional descriptive survey design was used to obtain data from 394 customers of the four major retail banks in South Africa through self-administered questionnaires. The findings of the study confirm that the factors mentioned above contribute significantly to Internet and cellphone banking adoption and use. In this study, customers' trust in the e-banking system was found to be the strongest predictor of Internet and cellphone banking services adoption, unlike previous studies in different environmental-contexts where perceived usefulness and perceived ease of use were widely held to affect the adoption of Internet and cell phone banking. This paper highlights the managerial implications of the findings on the efforts by retail banks in South Africa aimed at encouraging widespread adoption of e-banking services.

**Keywords:** electronic banking (e-banking), Internet banking, cellphone banking, retail banking customers, South Africa.

**JEL Classification:** G21.

### Introduction

In recent times, many banking customers are developing an unwillingness to visit traditional branches and are becoming less loyal to a specific bank and savvier in their demand for convenient services (Luo, Li, Zhang & Shim, 2010, p. 222; Coelho & Easingwood, 2003, p. 23). The success of a bank in the current environment rests on its ability to provide innovative products and services that seek to address the evolving needs of customers and to further explore ways of maintaining a competitive advantage that clearly differentiates them from their competitors (Coetzee, van Zyl & Tait, 2013, p. 2). To achieve this, banks have capitalized on the recent developments in Information Technology (IT) brought about by the convergence of the Internet, wireless technology and mobile devices to provide revolutionary delivery channels to their customers through the system of electronic banking (e-banking) (Maduku & Mpinganjira, 2012, p. 172; Luo et al., 2010, p. 222).

E-banking is a broad term used to describe the various banking products and services that require the use of digital, Internet and mobile technology (Kim et al., 2011, p. 76). E-banking technology denotes a variety of different services ranging from automatic teller machines (ATMs), telephone banking, banking using a personal computer, television-based banking, Internet banking and, more recently, mobile banking (Parker & Parker, 2008, p. 20). These technologies are increasingly prevalent in the banking sector and are used to provide better services to

convenience seeking and technology savvy customers and to reduce the operational costs of banks (Nasri, 2011, p. 143). Internet and mobile banking have become the leading retail channels that banks employ to serve their customers in keeping with customer preference and higher returns and market share (Moutinho & Curry, 1994, p. 191).

South African retail banks are investing substantially in the provision of e-banking services for their customers. The same trend is seen internationally. The ready adoption of e-banking services by customers will enable banks to realize returns on their investment while providing them with a competitive advantage. However, the rapid adoption of e-banking services is still in question. Available South Africa studies emphasize that retail banks are facing significant challenges in migrating customers from over-the-counter services to e-banking services (Singh, 2004, p. 188; Brown & Molla, 2005). In spite of this, little research has been done to investigate the determinants of e-banking adoption and use in South Africa. An understanding of the factors that foster the adoption and use of e-banking services from the customers' viewpoint is necessary to promote rapid acceptance of these services.

The remainder of this paper is structured as follows. First, the literature review section briefly reviews the concept of e-banking and factors that influence its adoption among retail banking customers. The subsequent sections present the purpose and objectives of the study as well the research methodology followed. Following the description of the research methodology, the findings are presented and discussed. The paper concludes with the implications

of the findings on managerial decisions and highlights the limitations of the study and proposes directions for future research.

## 1. Literature review

**1.1. E-banking.** Developments in IT have introduced new business dimensions and are playing a significant role in changing the face of the banking industry. Consequently, the nature of buying and selling financial services and products and conducting other banking transactions has experienced rapid changes in response to technological development (Laukkanen & Pasanen, 2008, p. 86; Sharma, 2008, p. 45). In the past, banks exploited IT to manage their internal business activities and to promote their products and services, however, the use of IT to serve customers has become popular in recent years (Martins, Oliveira & Popovič, 2013, p. 13).

The retail banking delivery channel is one aspect of the banking sector that has witnessed several innovative changes hinging on effective application of IT solutions (Yu & Guo, 2008, p. 7). The widespread use of ATMs, telephone banking, electronic payments and Internet and mobile banking are testimony to the changes in retail banking brought about by IT. The numerous banking services and products provided via technologies including computers, telephones, television, Internet and mobile phone are termed e-banking.

The benefits that accrue to retail banks offering e-banking services cannot be overstated. For example, e-banking provides substantial opportunities to decrease operational costs (Hosein, 2010, p. 4). Users are able to access banking services on their own, cutting back the need for frontline staff (Compaq, 2001). With e-banking, banks are able to reduce the size of branches and offices as well as consumable costs. Moreover, Hosein (2010, p. 4) states that the provision of e-banking affords banks the opportunity to acquire new customers. For example, Compaq (2001) notes that existing customers can be persuaded to patronize products and services which they do not presently have in their portfolio such as additional credit cards, home loans and life insurance through the provision of Internet banking. This is substantiated by Littler and Malanthiou (2006, p. 436) who emphasize that banks can succeed in market expansion and promote cross-selling of alternative financial services and products through online and mobile banking. Yang and Fang (2004, p. 304) indicate that the comprehensive databases created through e-banking allow for customized financial services and products to be presented directly to customers. Yu and Guo (2008, p. 9) suggest that through mobile banking, banks capitalize on the inherent characteristics of portable technology to

facilitate instantaneous and reciprocal communication with customers.

**2.1. Factors influencing e-banking adoption.** Previous studies have identified several factors affecting the adoption of e-banking. The majority of these studies emphasize the perceived characteristics of e-banking technology as prominent factors that determine potential users' adoption and continuous use of e-banking services. Of these technology factors, the perceived usefulness and the perceived ease of use constructs in the Technology Acceptance Model (TAM) (Davis, 1989) appear to be the most ubiquitous. The TAM constructs have been tested in several empirical studies and its ability to predict behavioral intention towards e-banking adoption and use has been found superior to other models (Pikkarainen et al., 2004, p. 226). Therefore, literature is replete with studies that make use of the TAM to gain insight into the acceptance and usability of e-banking services (Yousafzai, Foxall & Pallister, 2010; Amin, 2009; Yaghoubi 2010; Lai & Li, 2005; Pikkarainen et al., 2004).

Despite the overwhelming support for the use of the TAM in understanding technology acceptance and usage behavior, the study by Moon and Kim (2001, p. 217) shows that the TAM does not precisely capture the influences of technological and usage-context factors that influence user acceptance of IT systems. Consequently, various studies have included additional factors such as subjective norms, trust, security and privacy, perceived self-efficacy and enjoyment, demographic variables and information available regarding online banking to provide a fuller understanding of the topic (Maduku & Mpinganjira, 2012; Yaghoubi, 2010; Pikkarainen et al., 2004). In line with previous studies, this study adds trust in the e-banking system, customer awareness of e-banking services and perceived self-efficacy, together with the TAM constructs of perceived usefulness and ease of use to improve the understanding of the predictors of e-banking services in South Africa.

With regard to perceived usefulness, Frangos (2009, p. 157) notes that this is the overriding motive behind customers' use of e-banking. A study in China indicates that many customers migrate from traditional over-the-counter services to e-banking because of their aversion to the former (Laforet & Li, 2005, p. 67). Numerous studies underscore the central role that perceived usefulness plays in e-banking acceptance and usage (Jeong & Yoon, 2013; Maduku, 2013, Akturan & Tezcan, 2012; Viehland & Leong, 2007). Perceived ease of use in e-banking entails the physical or mental effort that customers exert or are likely to exert during e-banking (Maduku & Mpinganjira, 2012, p. 174).

Empirical evidence shows that a system that is perceived as easier to use provides motivation for its adoption and use (Maduku, 2013; Jeong & Yoon, 2013; Venkatesh, Speier & Morris, 2002).

Recent literature positively correlates e-banking adoption and usage with trust (Delafrooz, Paim & Khatibi, 2011, p. 2839; Yousafzai et al., 2010, p. 1181). Customers' lack of trust in the attributes of a bank and the overall e-banking system remain a significant deterrent to its adoption and use. Hong et al. (2013, p. 29), for instance, indicate that both actual and potential users of Internet banking are wary of fraud in transactions and of a lack of privacy regarding their information and data. Customer trust is therefore a major challenge for future adoption and use of e-banking (Yousafzai et al., 2010, p. 1181).

The concept of self-efficacy, which signifies an individual's perception of their abilities, affects actual performance. Torkzadeh and Van Dyke (2002, p. 494) identify self-efficacy as a key concept that facilitates the understanding of technology and its implementation and use. Chau and Ngai (2010, p. 49) note that self-efficacy plays a significant role in shaping potential users' feelings about e-banking services. Tan and Teo (2000, p. 27) established that customers who have self-confidence in their ability to use the Internet are more likely to adopt Internet banking services.

E-banking presents a radical change in the banking sector as it is known to have improved banking services for customers in a significant manner (Ashby, 2005). However, of the obstacles that have been cited to negatively impact on the widespread acceptance of electronic banking, a lack of awareness is another factor commonly reported. Customers do not seem to be aware of the opportunities and benefits offered by e-banking. Elements required for technology adoption and use are the creation of awareness and delivery of information. In line with this, several studies indicate that e-banking is a fairly new experience to many banking customers and thus a lack of awareness is an important factor contributing to customers' disinterest in adopting and using e-banking (Al-Somali, Gholami & Clegg, 2009, p. 137; Pikkarainen et al., 2004, p. 225; Sathye, 1999, p. 325).

## 2. Purpose and objectives

The aim of this study is to gain insight into the factors affecting the adoption and use of e-banking services with specific focus on Internet and cellphone banking by customers in the retail banking market segment in South Africa. In order to achieve this aim, the following objectives have been set:

- ◆ To determine the demographic profile of the respondents.
- ◆ To determine the trends in Internet and cellphone banking adoption and usage.

- ◆ To ascertain customer perceptions of Internet and cellphone banking in terms of perceived usefulness, ease of use, trust in the Internet and cellphone banking systems, perceived self-efficacy and customer awareness of Internet and cellphone banking services.

## 3. Research methodology

**3.1. Research design.** This study followed a cross-sectional descriptive design that is quantitative in nature. The researcher used a survey questionnaire to obtain primary data. This method was employed to enable the measurement of the relevant constructs in a quantitative manner through the use of statistical techniques. The researcher analyzed the respondents' level of agreement or disagreement with the constructs employed in the study and the results are presented in Table 5 below.

**3.2. Sampling procedure.** The population of the study consists of retail banking customers of the four major banks in South Africa who are users and non-users of cellphone and Internet banking services. The banks include ABSA, First National Bank, Nedbank and Standard Bank. These banks were chosen because they offer cellphone and Internet banking services to customers and have vigorous promotion campaigns for their services. The study took place in the Gauteng Province of South Africa. The Gauteng Province is the most cosmopolitan province of South Africa, often considered the financial hub of Africa. This province is the most populous in the country and contributes over one-third of the nation's GDP (Williams, Witkowski & Balkwill, 2007, p. 586). There is no readily available sampling list (frame) for the target population therefore; a non-probability sampling method in the form of convenience sampling was used to select respondents from the population.

**3.3. Measurement.** The study uses a self-administered paper-based questionnaire which is designed according to the aims of the research. The questionnaire has two parts. The first part of the questionnaire is used to screen prospective respondents to determine whether they are a customer of one of the four major banks in South Africa. This section also asks the respondents for their demographic information (gender, age, level of education and income) and about their current use or non-use of cellphone and Internet banking services, the specific cellphone and Internet banking services they use and the frequency of use. The responses from this section are measured using nominal and ordinal scales.

The second part of the questionnaire measures the relevant constructs of interest to this study. These are perceived usefulness and ease of use, trust in the cellphone and Internet banking systems, perceived self-efficacy and the level of awareness regarding e-

banking. The constructs are measured on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scales measuring perceived usefulness and trust in the e-banking system are adapted from the study conducted by Nor (2005). Those measuring the perceived ease of use were found in the studies of Nor (2005) and Pikkarainen et al. (2004) and modified for use in this research. The perceived self-efficacy dimension is measured using scales adapted from the work of Torkezadeh and Van Dyke (2006). The statements used to measure the customers' level of awareness were found in an empirical study conducted by Al-Somali et al. (2009) and revised to suit this study.

**3.4. Data collection.** Trained fieldworkers and assistants in three cities in the province approached prospective respondents using a mall intercept technique during working hours (09h00-17h00) of the week days (Mondays-Fridays). The screening question ensured that only customers of the four major banks participated in the study. A total of 700 paper-based questionnaires were administered to customers of the relevant banks who were willing to take part in the study. Only 394 usable responses were obtained representing an effective response rate of 56%. However, this sample size is considered adequate according to statistical methods and requirements used in this study as well as comparable studies conducted by Jawaheer, Pudaruth and Ramdin (2012, p. 215) where 384 responses were recorded and Lin (2011, p. 255) where 368 responses were obtained.

**3.5. Data analysis.** Data analysis was carried out using the Statistical Package for Social Science (SPSS) version 15. The methods of statistical analysis include descriptive statistics, factor analysis and reliability analysis and multiple regression analysis.

**4. Results and discussion**

**4.1. Demographic profile.** Table 1 below shows that the survey includes a slightly higher percentage of male participants (51.8%) than female participants (48.2%). Most of the respondents are in the age bracket from 18 to 29 years old (38.8%), followed by those of 30 to 39 years of age (30.7%). This means that more than two-thirds (69.5%) of the sample group are under 40 years old. The respondents are fairly well educated with 29.9% having completed Matric (Grade

12), 29.2% being a university or college undergraduate and 22.8% having completed their tertiary education. In terms of income, the majority of respondents earn a gross monthly income of between R7, 501 and R10, 000 (19.8%).

Table 1. Demographic profile of respondents

Respondent characteristics	Number of respondents <i>n</i> = 394	Percentage %
Gender		
Male	204	51.8
Female	190	48.2
Age		
18-29	153	38.8
30-39	121	30.7
40-49	75	19.0
50-59	27	6.9
60-69	15	3.8
70+	3	0.3
Race		
African	180	45.7
Colored	63	16.0
Indian	52	13.2
White	99	25.1
Gross monthly income (in ZAR)		
0-2500	67	17.0
2501-5000	68	17.3
5001-7500	78	19.8
7501-10000	53	13.5
10001-12500	39	9.9
12501-15000	21	5.3
15001-17500	16	4.1
17501-20000	17	4.3
20001-22500	10	2.5
22501+	25	6.3

Source: Author's own compilation.

**4.2. Descriptive statistics of Internet and cellphone banking usage.** *4.2.1. Access to Internet/cellphone that enables cellphone banking.* The majority of survey respondents indicate that they have access to the Internet as well as to a cellphone to perform Internet and cellphone banking. With regard to Internet access, 323 respondents (82%) have such access, while 71 (18%) do not. With regard to cellphones, 343 respondents (87%) have access to a cellphone that can perform cellphone banking and 34 (9%) indicated that their cellphones cannot perform the function. A further 17 individuals (4%) are unsure whether or not their cellphones accommodate cellphone banking.

Table 2. Accesses to the Internet and to cellphones that enable cellphone banking

	Access to the Internet		Access to cellphone that enables cell phone banking	
	Frequency	Percentage	Frequency	Percentage
Yes	323	82	343	87
No	71	18	34	9
Not sure	0	0	17	4
Total	394	100.0	394	100.0

Source: Author's own compilation.

According to the results, the percentage of respondents who have access to cellphones that enable them to conduct cellphone banking (87%) is higher than that of respondents who have access to the Internet (82%) by 5%. It is interesting to note that while all the respondents have a cellphone, 18% indicate that they do not have access to the Internet.

4.2.2. *Internet and cellphone banking usage.* Since this research aims to examine factors that influence the adoption and use of e-banking, both users and non-users of Internet and cellphone banking are included in

the sample. According to Table 3, 170 (52.7%) of the respondents stated that they use Internet banking while 153 (47.3%) indicated that they do not. With regard to cellphone banking usage, 198 (57.7%) of the respondents who have cellphone banking (enabled by their cellphones) indicated that they use cellphone banking, while 145 (42.3%) indicated that they do not. As such, the percentage of cellphone banking users among the respondents is fairly higher (15.4%) than of non-users. Cellphone banking use among the respondents is thus higher than Internet banking use by 5%.

Table 3. Use of Internet and cellphone banking

Internet/cellphone banking usage	Yes		No	
	Frequency	Percent	Frequency	Percent
Internet	170	52.7	153	47.3
Cellphone banking	198	57.7	145	42.3

Source: Author’s own compilation.

This finding is in contrast to similar research by Laukkanen (2007, p. 789) and Laforet and Li (2005, p. 363) who found Internet banking to be the leading e-banking channel in the USA and most European countries. However, this finding is consistent with the observation of researchers (Arnaboldi & Claeys, 2008; Hernández-Murillo, Llobert & Fuentes, 2012; Abdullah & Date, 2010) who predicted that the rapid adoption and use of cellphone technology in Africa will provide impetus for cellphone banking adoption in African countries.

4.2.3. *Reasons for non-use of Internet and cellphone banking.* The questionnaire included one open-ended question which sought to establish from non-users of Internet and cellphone banking services the reasons for this. Many respondents ignored this question, possibly because it was an open-ended question requiring an individually thought-out answer. Table 4 below summarizes the reasons given for the non-use of Internet and cellphone banking services by those who responded. As can be seen in the table, trust issues and the security of e-banking are the most common reasons given for non-use of Internet and cellphone banking services. This supports the findings by Al-Somali et al. (2009), Singh (2004), and Zhao et al. (2010). In these studies, trust and security concerns are shown to be significant deterrents to broad e-banking acceptance.

Twenty respondents cited a lack of interest and/or apathy towards e-banking as the most significant reason for non-use. A lack of information on e-banking services was found to be the third most common reason, as cited by 10 respondents. The three least common reasons for not adopting e-banking are that respondents are “not technologically inclined” (5), that they “do not see the need for it” (5) and that they “perceived high charges and/or hidden costs” (2).

Table 4. Reasons for non-use of Internet and cellphone banking

Reason for non-use of Internet / or cellphone banking services	Frequency	Percentage
Trust and security issues	21	22.58
Lack of interest / customer apathy	20	21.50
Lack of information on Internet and / or cellphone banking	10	10.75
Preference for traditional modes of banking	9	9.68
Lack of access to computer / Internet / cell phone that can perform e-banking	8	8.60
I don't know why / I am not sure	7	7.53
Perceived difficulty / complexity of using e-banking	6	6.45
Not technologically inclined	5	5.38
Do not see the need for it	5	5.38
Perceived high charges / hidden costs	2	2.15

Source: Author’s own compilation.

4.3. **Reliability and validity analysis.** All the scales that are used to measure the dimensions in this study were tested for reliability prior to their use in the main research analysis. Cronbach’s alpha coefficient ( $\alpha$ ) is applied in this regard. This is a widely used method which specifies how well a set of items measure a single, unidimensional latent construct (Sijtsma, 2009, p. 109). The Cronbach alpha values range from 0 to 1 with values above 0.7 generally considered a good indicator of an internally consistent (reliable) scale (Nunnally, 1978, p. 245). The results presented in Table 5 below indicate that the Cronbach alpha values calculated for the data in the study range from .932 to .958 for both Internet and cellphone banking. Thus it was established that the scales used in this study are highly reliable.

An exploratory factor analysis using the Principal Component Analysis (PCA) was carried out to as-

certain whether the scale items are correctly loaded for the dimensions used in this study. The PCA was also conducted to prevent multicollinearity, which leads to misrepresentative results (Akturan & Tezcan, 2012, p. 450). To achieve construct validity, factor loadings must be statistically significant. This is tested by obtaining a loading of 0.50 or higher with a bottom cut-off point of 0.70 (Hair et al.,

2011, p. 444). It is widely agreed that factor loading values that exceed .50 are significant indicators of convergent validity. The results shown in Table 5 indicate that the factor loadings for the scale items used to measure the dimensions range from .822 to .965 and .836 to .950 for Internet and cellphone banking respectively. Therefore, all the items used have achieved convergent validity.

Table 5. Exploratory factor analysis and the Cronbach's  $\alpha$  coefficient

Measurement items of the constructs	Internet banking		Cellphone banking	
	Factor loadings	Cronbach's alpha ( $\alpha$ )	Factor loadings	Cronbach's alpha ( $\alpha$ )
Perceived usefulness		.951		.944
Internet / cellphone banking makes it easier to do banking activities	.934		.887	
Internet / cellphone banking enables one to do banking activities more quickly	.938		.931	
I think Internet / cellphone banking enables one to complete banking activities more conveniently	.934		.920	
I think Internet / cellphone banking allows one to manage banking activities more efficiently	.876		.889	
I think Internet / cellphone banking is useful in conducting banking activities	.891		.891	
Perceived ease of use		.953		.954
I think it is easy to learn how to use Internet / cellphone banking	.943		.934	
I think it is easy to get Internet / cellphone banking to do what I want it to do	.942		.942	
I think it is easy to become skilful at using Internet / cellphone banking	.965		.965	
Overall, I think Internet / cellphone banking is easy to use	.897		.925	
Trust in the e-banking system		.932		.936
I think Internet / cellphone banking has enough safeguards to make me feel comfortable using it	.822		.855	
I feel assured that legal structures adequately protect me from problems associated with using Internet / cellphone banking services	.869		.876	
I feel confident that technological advances (such as encryption) for the Internet / cellphone makes it safe for me to use Internet/cellphone banking	.871		.836	
In general, the Internet / cellphone is a safe environment in which to transact banking activities	.839		.839	
Perceived self-efficacy		.958		.958
I feel confident using the Internet / cellphone	.922			
I feel confident using the user's guide/help menu when help is needed	.910		.911	
I feel confident making selections from an on-screen menu	.958		.922	
I feel confident moving the cursor around the monitor screen	.946		.936	
I feel confident understanding the three stages of data processing namely: input, processing and output	.886		.913	
Awareness of e-banking services		.933		.940
I receive enough information about electronic banking services	.903		.913	
I receive enough information about the benefits of electronic banking	.938		.940	
I receive enough information on using electronic banking services	.942		.944	
I receive information about electronic banking services from my bank	.942		.885	

Source: Author's own compilation.

#### 4.4. Descriptive statistics of the research constructs.

The researcher used descriptive statistics to determine the respondents' perception of Internet and cellphone banking services with regard to its perceived useful-

ness and ease of use, trust in the Internet and cellphone banking system, perceived self-efficacy and level of awareness of e-banking services. The results for each factor are shown in Table 6 and discussed below.

Table 6. Descriptive statistics of research constructs

Measurement items of the constructs	Internet banking		Cellphone banking	
	Mean	Standard deviation	Mean	Standard deviation
Perceived usefulness	3.94	0.950	3.94	0.932
Internet / cellphone banking makes it easier to do banking activities	3.91	1.073	3.91	1.086
Internet / cellphone banking enables one to do banking activities more quickly	3.93	1.065	3.95	1.047
I think Internet / cellphone banking enables one to complete banking activities more conveniently	3.90	1.046	3.92	1.014
I think Internet / cellphone banking allows one to manage banking activities more efficiently	3.92	1.000	3.91	0.997
I think Internet / cellphone banking is useful in conducting banking activities	4.04	1.004	4.01	1.014
Perceived ease of use	3.70	1.104	3.92	1.004
I think it is easy to learn how to use Internet / cellphone banking	3.61	1.221	3.88	1.101
I think it is easy to get Internet / cellphone banking to do what I want it to do	3.63	1.169	3.88	1.065
I think it is easy to become skilful at using Internet/cellphone banking	3.73	1.133	3.91	1.061
Overall, I think Internet / cellphone banking is easy to use	3.82	1.186	3.99	1.057
Trust in the e-banking system	3.31	1.027	3.46	1.028
I think Internet / cellphone banking has enough safeguards to make me feel comfortable using it	3.28	1.130	3.44	1.144
I feel assured that legal structures adequately protect me from problems associated with using Internet / cellphone banking services	3.18	1.119	3.39	1.119
I feel confident that technological advances (such as encryption) for the Internet / cellphone makes it safe for me to use Internet/cellphone banking	3.33	1.088	3.48	1.060
In general the Internet/cellphone is a safe environment in which to transact banking activities	3.45	1.150	3.54	1.147
Perceived self-efficacy	3.78	1.139	3.55	1.044
I feel confident using Internet / cellphone	3.71	1.162	3.53	1.101
I feel confident using the user's guide / help menu when help is needed	3.70	1.157	3.59	1.118
I feel confident making selections from an on-screen menu	3.78	1.152	3.52	1.151
I feel confident moving the cursor around the monitor screen	3.50	1.159	3.56	1.101
I feel confident understanding the three stages of data processing namely: input, processing and output	3.50	1.158	3.53	1.101
Awareness of e-banking services	3.55	1.052	3.38	1.040
I receive enough information about electronic banking services	3.47	1.179	3.66	1.139
I receive enough information about the benefits of electronic banking	3.52	1.104	3.63	1.118
I receive enough information on using electronic banking services	3.52	1.152	3.67	1.118
I receive information about electronic banking services from my bank	3.67	1.178	3.75	1.145

Source: Author's own compilation.

*4.4.1. Perceived usefulness.* As shown in the table above, the results suggest that the respondents generally perceive both Internet and cellphone banking

to be useful with the scores for Internet banking (mean = 3.94; SD = 0.950) and for cellphone banking (mean = 3.94; SD = 0.932). Furthermore, all the

mean values are above 3.90. Taking into account that all the mean scores are above the midpoint of 2.50 on the five-point scale used in this study, it is deduced that the respondents generally have a positive view regarding the usefulness of both Internet and cellphone banking. This finding is substantiated by Frangos (2009, p. 157) who notes that the ultimate reason why consumers use e-banking services is because they perceive them as useful in conducting banking transactions. To encourage e-banking acceptance by customers, Jeong and Yoon (2013, p. 37) recommend that banks take advantage of the perceived usefulness and value-adding characteristics of e-banking in their promotional efforts.

*4.4.2. Perceived ease of use.* Similarly, the analysis points to a positive perception among respondents regarding the perceived ease of use of both Internet (mean = 3.70; SD = 1.104) and cellphone banking (mean = 3.92; SD = 1.004). However, considering that the mean value for cellphone banking is higher than for Internet banking, it can be said that respondents perceive cellphone banking to be easier to use than Internet banking. For instance, respondents do not only believe that it is easier for them to learn how to use cellphone banking than Internet banking, they also perceive themselves to be more skillful at using cellphone banking than Internet banking. This finding provides a useful insight into why cellphone banking adoption is higher among respondents than Internet banking. This is supported by evidence in extant literature which establishes that a system perceived as easier use by customers provides a stimulus for rapid adoption (Maduku, 2013; Jeong & Yoon, 2013; Venkatesh, Speier & Morris, 2002).

*4.4.3. Trust in the e-banking system.* The result of the analysis portrays respondents' lower level of trust in the e-banking system with the highest item-by-item scores being (mean = 3.45, SD = 1.150) for Internet banking and (mean = 3.54, SD = 1.147) for cellphone banking. With regard to trust in the Internet banking system, the mean is 3.31 with a standard deviation of 1.027. For cellphone banking, the mean is 3.46 with a standard deviation of 1.028. Few respondents agree that existing legal structures sufficiently shield them from harms associated with Internet banking (mean = 3.18) and cellphone banking (mean = 3.39). Few also agree that the Internet and cellphone are safe environments in which to transact banking activities. For this aspect, the mean is 3.45 and 3.54 for Internet and cellphone banking respectively. Even though respondents generally have a low level of trust in both Internet and cellphone banking, their overall trust in cellphone banking is slightly higher than for Internet banking. This finding validates existing observations in literature which identify a lack of trust as a leading obstacle

to the widespread adoption of e-banking services among retail customers (Hong et al., 2013, p. 29; Delafrooz et al., 2011, p. 75; Yousafzai et al., 2010, p. 1181).

*4.4.4. Perceived self-efficacy.* The results of the analysis reveal that respondents are generally confident in their ability to use the Internet and cellphones. With regard to Internet use, the study realised a mean of 3.78 with a standard deviation of 1.139. A mean of 3.87 and a standard deviation of 1.111 were obtained for respondents' perceived self-efficacy in cellphone usage. Additionally, the mean values on individual items were all between 3.70 and 3.89. It is important to note that the analysis revealed higher mean values for perceived self-efficacy with regard to cellphone use than those obtained for Internet use. This suggests that respondents are more confident in their ability to use cellphones than the Internet.

*4.4.5. Awareness of e-banking services.* With regard to respondents' level of awareness of e-banking services, the results presented in Table 6 show the overall scores for Internet banking as (mean = 3.55; SD = 1.052). The scores for cellphone banking are (mean = 3.68; SD = 1.040). On an item-by-item basis, it is noted that the mean values range from 3.47 to 3.75 with 3.0 as a neutral point. These mean values are not high which suggests that awareness efforts may not be very effective in reaching customers. This observation is in line with the studies by Al-Somali et al. (2009, p. 137) and Sathye (1999, p. 325) who argue that a high level of e-banking adoption cannot be expected if customers do not realise the opportunities that e-banking offers. It is also important to note that the overall mean value of customer awareness for cellphone banking is higher than that obtained for Internet banking although cellphone banking is a more recent development compared to Internet banking.

**4.5. Multiple regression analysis.** Multiple regression analysis was performed in order to examine the degree to which the factors of perceived usefulness and ease of use, trust in the e-banking system, perceived self-efficacy and the level of customer awareness could help explain the adoption of Internet and cellphone banking services. The results of this analysis, shown in Table 7, indicate that the dependent variables account for 69.8% and 72.4% for variability in Internet and cellphone banking respectively. The results point to a positive linear relationship between e-banking adoption and the variables employed in the study. From the analysis, it is further noted that customers' trust in the e-banking system is the most significant determinant of adoption for both Internet and cellphone banking services. This is evident from the fact that trust in the Internet and cellphone banking systems have the highest beta coefficient values of .373 and .361 respectively compared to all the other variables.



Table 7. Results of the multiple regression analysis

Dependent variable: E-banking adoption	Internet banking			Cellphone banking		
	$R^2 = .698$			$R^2 = .724$		
Independent variables	Beta	t-value	Sig.	Beta	t-value	Sig.
Perceived usefulness	.289	7.249	.000	.289	7.249	.000
Perceived ease of use	.269	5.790	.001	.269	5.790	.000
Trust in the e-banking system	.373	10.552	.000	.361	10.101	.000
Perceived self-efficacy	.211	4.052	.002	.211	4.052	.010
Awareness of e-banking services	.188	2.089	.003	.188	2.089	.002

Source: Author's own compilation.

## 5. Managerial implications

The result of this study indicates that trust in the e-banking system remains a significant concern among Internet and cellphone banking users and non-users. Customers' low level of trust in the e-banking system is therefore a major setback to the widespread adoption and use of Internet and cellphone banking services in South Africa. Banks therefore need to ensure that e-banking platforms are technically sound with state-of-the-art security systems in place to minimize potential risks that end-users may be exposed to. To improve customers' perception of trust in e-banking systems, banks will also need to lobby government to develop suitable legal structures that will assist in apprehending and prosecuting people suspected of e-banking fraud. These security improvements should be part of a communication strategy aimed at instilling trust in customers regarding the services.

This study has found that apathy towards e-banking is another significant reason cited for non-use of the services. Banks need to recognize that a lack of effective communication to create awareness and demonstrate the benefits of Internet and cellphone banking leads to customer indifference. It is thus imperative for banks to devise communication strategies and increase their efforts to promote Internet and cellphone banking among their customers. In doing so, banks must endeavour to promote the long-term benefits including cost-saving and convenience to customers. However, the most important element in encouraging the use of e-banking is the trustworthiness of the system. This study has shown that the trust factor in particular should be reinforced in order to realize a wider acceptance of Internet and cellphone banking systems.

## Conclusion

In order for banks to increase returns on their investment in e-banking for their retail customers, it is im-

perative that they understand the factors that influence the adoption of Internet and cellphone banking services within their environmental context. For instance, perceived usefulness and ease of use are variables generally believed to influence the adoption of IT, including Internet and cellphone banking technologies. In this study however, trust in the e-banking system emerged as the most significant factor that impacts on the adoption of Internet and cellphone banking services in South Africa. Hence this study recommends that retail banks devise and implement strategies that will increase customers' trust in the Internet and cellphone banking systems. It is expected that this will lead to the rapid and widespread adoption of Internet and cellphone banking services in South Africa.

## Limitations and directions for future research

The study has several limitations that offer scope for future studies. Firstly, this study identified five factors that influence retail banking customers' adoption of e-banking services. The literature contains many additional factors that influence customer adoption of e-banking services that are not considered in this study. Future empirical research is therefore needed to examine how other factors such as perceived enjoyment, perceived playfulness, culture and Internet or cellphone connection speed impact on the adoption of e-banking services. The sampling method used in this study could be seen as a limitation given that the study used a convenience sample. Moreover, the study took place in only one of the nine provinces in South African and is cross-sectional in nature; this limits the implications of this research for other e-banking retail customers throughout the country. Future studies can explore the possibility of probability sampling methods using a larger sample drawn from different parts of the country to make the results generalizable to a wider population.

## References

1. Akturan, U. and Tezcan, N. (2012). Mobile banking adoption of the youth market: perceptions and intentions, *Marketing Intelligence & Planning*, 30 (4), pp. 444-459.
2. Al-Somali, S., Gholami, A.R. and Clegg, B. (2009). An investigation into the acceptance of online banking in Saudi Arabia, *Technovation*, 29, pp. 130-141.
3. Amin, H. (2009). An analysis of online banking usage intentions: an extension of the technology acceptance model, *International Journal of Business and Society*, 10 (1), pp. 27-40.

4. Arnaboldi, F. and Claeys, P. (2008). Internet Banking in Europe: a Comparative Analysis, *Research Institute of Applied Economics Working Papers*, 11, pp. 1-28.
5. Ashby, Q. (2005). Trading Places – where now for Internet Banking? Viewed 30 July 2013. Available at [http://www.esomar.org/web/research\\_papers/ProjectiveTechniques\\_1025\\_Trading-places.php](http://www.esomar.org/web/research_papers/ProjectiveTechniques_1025_Trading-places.php).
6. Brown, I. and Molla, A. (2005). Determinants of Internet and cellphone banking adoption in South Africa, *Journal of Internet Banking and Commerce*, 10 (1), viewed 25 October 2013. Available at <http://www.arraydev.com/commerce/jibc/2005-02/brown.HTM>.
7. Chau, V.S. and Ngai, W.L.C. (2010). The youth market for Internet banking services: perceptions, attitude and behaviour, *Journal of Services Marketing*, 24 (1), pp. 42-60.
8. Coelho, F. and Easingwood, C. (2003). Multiple channel structures in financial services: a framework, *Journal of Financial Services Marketing*, 8 (1), pp. 22-34.
9. Coetzee, J., van Zyl, H. and Tait, M. (2013). Perceptions of service quality by clients and contact-personnel in the South African retail banking sector, *Southern African Business Review*, Vol. 17, No. 1, pp. 1-22.
10. Compaq. (2001). *Next-generation retail banking*, viewed 1 September 2013. Available at: <http://nonstop.compaq.com/view.asp?IO=5985>.
11. Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology, *MIS Quarterly*, 13 (3), pp. 319-340.
12. Delafrooz, N., Paim L.H. and Khatibi, A. (2011). Understanding consumer's Internet purchase intention in Malaysia, *African Journal of Business Management*, 5 (3), pp. 2837-2846.
13. Frangos, C.C. (2009). *Qualitative and quantitative methodologies in the economic and administrative sciences*, Technological Educational Institute of Athens, Athens.
14. Hair, J.F., Celsi, M.W., Money, A.H., Samouel, P. and Page, M.D. (2011). *Essentials of Business Research Methods*, ME Sharpe, New York.
15. Hernández-Murillo, R., Llobert, G. and Fuentes, R. (2012). *Strategic online-banking adoption*, viewed 1 September 2013. Available at: <http://research.stlouisfed.org/wp/2006/2006-058.pdf>.
16. Hong, H.Y., Teh, B.H., Vinayan, G., Soh, C.H., Khan, N. and Ong, T.S. (2013). Investigating the factors that influence the adoption of Internet banking in Malaysia: adopters' perspective, *International Journal of Business and Management*, 8 (9), pp. 24-31.
17. Hosein, N.Z. (2010). Internet banking: understanding consumer adoption rates among community banks, viewed 20 September 2013. Available at: [www.aabri.com/LV2010Manuscripts/LV10038.pdf](http://www.aabri.com/LV2010Manuscripts/LV10038.pdf).
18. Jawaheer, T.D., Pudaruth, S. and Ramdin, P. (2012). Factors influencing the adoption of Internet banking: a case study of commercial banks in Mauritius, *World Journal of Science, Technology and Sustainable Development*, 9 (3), pp. 204-234.
19. Jeong, B. and Yoon, T.E. (2013). An empirical investigation on consumer acceptance of mobile banking services, *Business and Management Research*, 2 (1), pp. 31-40.
20. Kim, T.H., Adeli, H., Fang, W.C., Villalba, J.G., Arnett, K.P. and Khan, M.K. (2011). Security technology in Kim, T.H., Villalba, J.G. & Arnett, K.P (eds.), *International Conference, SecTech 2011 proceedings*, Jeju Island, Korea, December 8-10, 2011, pp. 106-123.
21. Laforet, S. and Li, X. (2005). Consumers' attitudes towards online and mobile banking in China, *International Journal of Bank Marketing*, 23 (5), pp. 362-380.
22. Lai, V. S. and Li, H. (2005). Technology acceptance model for Internet banking: an invariance analysis, *Information & Management*, 42 (2), pp. 373-386.
23. Laukkanen, T. and Pasanen, M. (2008). Mobile banking innovators and early adopters: how they differ from other online users, *Journal of Financial Services Marketing*, 13 (2), pp. 86-94.
24. Laukkanen, T. (2007). Internet vs. mobile banking: comparing customer value perceptions, *Business Process Management*, 13 (6), pp. 788-797.
25. Lin, H. (2011). An empirical investigation of mobile banking adoption: the effect of innovation attributes and knowledge-based trust, *International Journal of Information Management*, 31, pp. 252-260.
26. Littler, D. and Melanthiou, D. (2006). Consumer perceptions of risk and uncertainty and the implications for behaviour towards innovative retail services: the case of Internet banking, *Journal of Retailing and Consumer Services*, 13, pp. 431-443.
27. Luo, X., Li, H., Zhang, J. and Shim, J.P. (2010). Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: an empirical study of mobile banking services, *Decision Support Systems*, 49, (2), pp. 222-234.
28. Maduku, D.K. (2013). Predicting retail banking customers' attitude towards Internet banking in South Africa, *Southern Africa Business Review*, 17 (3), pp. 96-100.
29. Maduku, D.K. and Mpinganjira, M. (2012). Empirical investigation into customers' attitude towards usage of cellphone banking in Gauteng, South Africa, *Journal of Contemporary Management*, 9, pp. 172-189.
30. Martins, C., Oliveira, T. and Popovič, A. (2013). Understanding the Internet banking adoption: a unified acceptance and use of technology and perceived risk application, *International Journal of Information Management*, viewed 19 August 2013. Available at: [http://ac.els-cdn.com/S0268401213000844/1-s2.0-S0268401213000844-main.pdf?\\_tid=f32bfee0-502b-11e3-0000aab0f27&acdnat=1384763724\\_6b3f839482ea35707c50f4b8f31f5913](http://ac.els-cdn.com/S0268401213000844/1-s2.0-S0268401213000844-main.pdf?_tid=f32bfee0-502b-11e3-0000aab0f27&acdnat=1384763724_6b3f839482ea35707c50f4b8f31f5913).

31. Moon, J.M. and Kim, Y.G. (2001). Extending the TAM for a World-Wide-Web context, *Information and Management*, 28, pp. 217-230.
32. Moutinho, L. and Curry, B. (1994). Consumer perception of ATMs: an application of neural networks, *Journal of Marketing Management*, 10 (1/3), pp. 191-206.
33. Nasri, W. (2011). Factors influencing the adoption of Internet banking in Tunisia, *International Journal of Business and Management*, 6, pp. 143-160.
34. Nor, K.M. (2005). *An empirical study of Internet banking acceptance in Malaysia: an extended decomposed theory of planned behaviour*, Ph.D. thesis, Department of Information Systems, Southern Illinois University.
35. Nunnally, J.C. (1978). *Psychometric Theory*, 2nd edition, McGraw-Hill, New York.
36. Parker, T. and Parker, M. (2008). Electronic banking in Finland and the effect on money velocity, *Journal of Money, Investment and Banking*, 4, pp. 20-25.
37. Pikkarainen, T., Pikkarainen, K., Karjaluoto, H. and Pahnla, S. (2004). Consumer acceptance of online banking: an extension of the Technology Acceptance Model, *Internet Research*, 14 (3), pp. 224-235.
38. Safeena, R., Abdullah, K.M. and Date, H. (2010). Perspectives of e-banking value: case study on Internet banking, *Journal of Internet Banking & Commerce*, 15 (1), pp. 1-13.
39. Sathye, M. (1999). Adoption of Internet banking by Australian consumers: an empirical investigation, *International Journal of Bank Marketing*, 17 (7), pp. 324-334. Sharma, D. (2008). India's leapfrogging steps from brick-and-mortar to virtual banking: prospects and perils, *The Icfai Journal of Management Research*, 8 (3), pp. 45-61.
40. Sijtsma, K. (2009). On the use, the misuse, and the very limited usefulness of Cronbach's alpha, *Psychometrika*, 74 (1), pp. 107-120.
41. Singh, A.M. (2004). Trends in South African Internet banking adoption, *New Information Perspective*, Vol. 56 (3), pp. 187-196.
42. Tan, M. & Teo, T.S. (2000). Factors influencing the adoption of Internet banking, *Journal of the Association of Information Systems*, 1, pp. 1-42.
43. Torkzadeh, G. and Van Dyke, T.P. (2002). Effects of training on Internet self-efficacy and computer attitudes, *Information and Management*, 18, pp. 479-494.
44. Venkatesh, V., Speier, C. and Morris, M.G. (2002). User acceptance enablers in individual decision making about technology: toward an integrated model, *Decision Sciences*, 33, pp. 297-316.
45. Viehland, D. and Leong, R.S.Y. (2007). Acceptance and use of mobile payments, *18th Australasian Conference on Information Systems, VISUAL 2010 proceedings*, Toowoomba, Australia, pp. 655-671.
46. Williams, V.L., Witkowski, E.T & Balkwill, K. (2007). Volume and financial value of species traded in the medicinal plant markets of Gauteng, South Africa, *International Journal of Sustainable Development & World Ecology*, 14 (6), pp. 584-603.
47. Yaghoubi, N.M. (2010). Factors affecting the adoption of online banking-an integration of Technology Acceptance Model and Theory of Planned Behavior, *International Journal of Business and Management*, 5 (9), pp. 159-165.
48. Yang, Z. and Fang, X. (2004). Online service quality dimensions and their relationships with satisfaction: a content analysis of customer reviews of securities brokerage services, *International Journal of Service Industry Management*, 15 (3), pp. 302-326.
49. Yousafzai, S.Y., Pallister, J.G. and Foxall, G.R. (2010). A proposed model of e-trust for electronic banking, *Technovation*, 23, pp. 847-860.
50. Yu, J. and Guo, C. (2008). An exploratory study of ubiquitous technology in retail banking, *Academy of Commercial Banking and Finance*, 8 (1), pp. 7-12.
51. Zhao, A.L., Koenig-Lewis, N., Hanmer-Lloyd, S. and Ward, P. (2010). Adoption of Internet banking services in China: is it all about trust? *International Journal of Bank Marketing*, 28 (1), pp. 7-26.