

# **UNDERSTANDING ATTITUDES TOWARDS AND USAGE OF TECHNOLOGY-BASED BANKING SERVICES IN GAUTENG, SOUTH AFRICA**

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## 1. INTRODUCTION AND BACKGROUND

Information technology (IT) is a tool to achieve competitive advantage and, because of this, the usage of information technology, which broadly refers to computers and peripheral equipment, has seen a tremendous growth in recent years (Ho and Ling, 2010). Fung (2008:76) points out that the financial services industry has historically been among the largest investors in information technology because of the digital nature of its products and services. To date, the banking industry is investing heavily in information technologies, and these technologies are extensively utilized in their daily operations (Nor and Peason, 2008). The delivery channel for retail banking services is one aspect of the banking sector that has since gone through several innovative phases hinging on effective IT solutions (Yu and Guo, 2008: 7). The proliferation of Automated Teller Machines (ATMs), Telephone Banking, Internet Banking, Electronic Payments, Security Investments, Information Exchanges and more recently Mobile Banking are a testament to the changes in retail banking distribution brought about by IT.

Due to increasing costs, demanding customers and growing competition, the trend in the financial industry has been to initiate a gradual replacement of over the counter banking with these new technological delivery channels (Thornton and White, 2002:59; Yu *et al.* 2008:8). Bell and Hogart (2009:104) argue that online banking has been the fastest growing e-banking technology over the past decade in the United States of America. They observed that fewer than 5 percent of consumers were banking online in 1995, compared with 53 percent in 2007. Europe and parts of Asia have also witnessed significant growth in e-banking services. For example Hosein (2010: 4) points out that 74 percent of the private banking customers in Finland are regular users of internet banking services. Similarly, a study commissioned by Citibank, showed that the incidence of e-banking usage among Singapore's general internet users of bankable age is at 80 percent, while Korea and Australia have 90 percent and 86 percent incidence rates respectively (Tong and Lim, 2003).

The benefits that accrue to retail banks using technology-based services cannot be overemphasized. Internet banking for instance provides banks with significant room of mitigating transactional costs. Hosein (2010:4) notes that electronic banking provides savings

from reduced transactional costs. On the internet, customers serve themselves, negating the need for frontline staff. Savings are gained from reductions in staff, reduction in branch sizes, and reduction in consumable costs: such as paper, ink cartridges, and other stationery. He further argues that internet banking provides opportunities for acquiring new customers. Existing customers can be sold products that they do not have in their portfolio such as a second credit card, life insurance, and home loans among others. This argument is corroborated by Wu and Guo (2008:7) who also note that financial institutions succeed in market expansion and manage to facilitate cross-selling of other financial products through the use of internet banking. They also contend that mobile technology enables banks to realize instant and reciprocal customer communication using applications installed in mobile devices. Yang and Fang (2004) observe that the large and detailed databases created using e-banking allows for more customized offers to be made to customers.

The customer also stands to benefit tremendously from adopting electronic banking. For example, Karkaluoto (2005:361) states that, with the help of the internet, customers can access their accounts 24 hours per day, seven days a week. He further observed that customers also enjoy more privacy while interacting with banks as the internet allows them to do so in their own homes or offices. Furthermore, by adopting electronic banking, customers do not only enjoy banking services that are accessible regardless of time and location but also enjoy better business terms like lower commission rates, reliable service quality, and time saving benefits (Yu and Guo 2008:8).

Establishing electronic banking services, however, involves significant deployment of resources by banks. Alvarez (2010) reports that the global IT spending by financial services in 2010 will be at \$357.4 billion with Europe (36.1%) and North America (33.1%) accounting for more than two thirds of the spending, followed by Asia and the Pacific markets at 25.2%. Latin America and Africa together account for 5.7%. Campbell and Frei (2010:18) found out that although retention of profitable customers improves when the customers switch to online self-services, companies' costs actually rise as a result. Considerable customer acceptance of e-banking services is therefore a very important factor that influences the banks' ability to recoup their investment into banking information technologies. It is important therefore for banks to put in place measures

aimed at ensuring that more of their customers make use of the technology-based banking services made available to them. The ability to do this requires a good understanding of customer attitudes towards such services and the factors impacting on their usage of these services. This study aims at understanding retail banking customers' attitudes towards and usage of technology-based banking services in Gauteng, South Africa. The focus of this study is on internet and cell phone retail banking technologies.

## **2. PROBLEM STATEMENT**

Retail banks in South Africa are fast following a similar path to that of the international banking community with respect to the use of technology to provide services to their customers. With the introduction of Automated Teller Machines (ATMs), Internet Banking, Cell-phone banking and banking by telephone, retail bank customers are now spoilt for choice when it comes to accessing banking services. However, the usage and adoption rate of these technologies in South Africa leaves a lot to be desired. Mobility 2009, a research project conducted by World Wide Worx in 2009 with backing from the First National Bank (FNB) and which investigated cell phone and PC banking in South Africa, revealed that 16% of banking customers in South Africa use the internet for banking while 28% use their cell phones (Goldstuck, 2010). A total of 34% of banking customers were reported to use one or both of these channels for banking purposes. It is further noted that outside of the branch and ATMs, only 6% of the customers rely exclusively on the internet, while 18% rely only on cell phone banking. Thus, the adoption of electronic banking services in South Africa is limited when compared to the fact that 53% of US consumers bank online (Bell *et al.* 2009:104), or that 74% of private banking customers in Finland regularly use internet banking services (Hosein, 2010:4), or that 90% of Korean banking customers regularly engage in online banking (Tong and Lim, 2003).

According to Singh (2004), South African banks have a major challenge facing them in terms of encouraging their customers to bank online. A review of the literature on e-Banking services shows that most of the studies done in the field are based on samples drawn from developed countries, mainly the United States of America, Europe and Australia (Alsajjan and Dennis, 2009; Babiarz and DeVaney, 2007; Giles, 2010; Heinonen, 2007; Katuri and Lam, 2009; Parker

and Parker, 2009, Pikkarainen *et al.*, 2004; Sathye, 1999). Very little research in this field has been conducted in South Africa. Review of the available South African studies shows that these studies were often not comprehensive in that they did not consider a wide range of possible factors as well as the impact these factors may have on customers' decision to adopt and use various technology-based services. Thus many gaps still exist in our understanding of the factors that influence the decision to use such services as well as how various factors interact to affect usage.

Therefore, the research question for this study is:

*What are the factors that impact on customers' attitudes towards and usage of technology-based banking services (internet and cell phone banking) in Gauteng, South Africa?*

### **3 RESEARCH OBJECTIVES**

#### **3.1 PRIMARY OBJECTIVE**

The primary objective of this study is to investigate the factors that impact on customers' attitudes towards and usage of internet and cell phone banking in Gauteng South Africa.

#### **3.2 SECONDARY OBJECTIVES**

To achieve the objective mentioned above, the following specific objectives are set:

- To determine customers' value perception of internet and cell phone banking services
- To examine customers' perception on 'ease of use' regarding internet and cell phone banking
- To investigate customers' perception on perceived risk associated with the use of internet and cell phone banking services
- To determine how customers' demographics (age, gender, level of education and income) will influence their attitudes towards adoption and usage of internet and cell phone banking
- To explore how various factors interact to affect intention to use and actual use of internet and cell phone banking

#### **4. SIGNIFICANCE OF THE STUDY**

The introduction of electronic banking was one of the major actions taken to cut costs in the retail banking industry within the last twenty years, and efforts by banks to shift customers from brick-and-mortar banking structures to e-banking continue unabated (Berger and Gensler, 2007:9). Despite the convenience and other benefits that these services offer, many customers do not use e-banking (Cai, Yang and Cude, 2008:151). The need to understand why and how retail banking technology is adopted or not will provide a sound understanding of customers, which will eventually lead to the development of a customer-centric strategy to encourage acceptance of e-banking technologies.

Technology-based retail banking services like internet and cell phone banking are fairly new in South Africa. Therefore, retail banks in the country are actively promoting these services to their customers. Understanding customers' attitudes towards and usage of these e-banking services is therefore worthy of study in order to ascertain ways in which the banking sector can improve the quality of e-banking services offered to their customers.

Casilir and Gumussoy (2008:3) argue that, as a result of the boom of new technologies such as the internet and mobile phones, e-banking has generated immense curiosity among researchers in western countries and, subsequently, has become the focus of many research papers. However, little similar attention has been paid to this issue in Africa. Undertaking this study, therefore, will contribute significantly to understanding the factors that combine to influence customers' decision to adopt (or not adopt) e-banking services in South Africa and will further provide a good foundation for future studies on issues of e-banking acceptance in the country.

Furthermore, South Africa has the largest chunk of internet and cell phone users in Africa. Understanding the factors that influence attitudes towards the adoption of e-banking technologies in South Africa will subsequently culminate in increasing the use of these e-banking services among banking customers. The findings may also prove helpful in understanding e-banking adoption issues in other African countries. This will further provide opportunities for tremendous growth in the banking industry that may consolidate Africa's, and in particular South Africa's, banking industry as a formidable global force.

## **5 LITERATURE REVIEW AND RESEARCH HYPOTHESIS**

Information Technology (IT) has introduced new business standards and is increasingly playing a significant role in changing the face of the banking industry. As a result, the nature of selling and buying financial service products and other banking activities have undergone rapid technological changes and developments (Laukkanen and Pasanen, 2008:86; Shama 2008:45). ‘Electronic banking services’ is an umbrella term used to describe various types of retail banking technologies. Parker and Parker (2008:20) note that E-banking can be divided into five major categories: (1) Internet banking, (2) Telephone banking, (3) TV-based banking, (4) Mobile phone banking, and (5) PC banking. This study aims at investigating the factors that influence customers’ attitudes towards and use of technology-based banking services in South Africa. The main focus is on internet and mobile banking.

### **5.1 INTERNET BANKING**

Global competition requires that customers should be able to access banking services at any time; this is made possible through electronic commerce and the Internet. The Internet is growing at an exponential rate. The internet creates a universal channel of communication between all companies, organizations and individuals and in this way, great opportunities for marketing activities emerge. According to Laio and Cheung (2008:248), the Internet is exploited as a channel to build, maintain, and develop long-term client relationships through ready access to a broad and increasing array of products and services. The internet further allows for low-cost financial shopping, rapid response to customer inquiries, and personalized product-service innovation. Furthermore, the Internet facilitates better communication with customers and provides potential for reaching more customers; it also facilitates introducing new products and services in a fast manner.

As a consequence of the popularity of the Internet, many Internet users are adopting electronic banking. Sharma (2008:45) notes that the Internet, wireless technology and global straight-through processing have created a paradigm shift in the banking industry—from brick-and-mortar banks to virtual banking. The terms ‘multimedia banking’, ‘Internet banking’, ‘e-banking’ and ‘online banking’ are often used interchangeably in the literature to refer to the same



technology form (Vijayan, Perumal and Shanmugam, 2008). According to Hosein (2010:2) online banking is defined as an internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments. Hosein, however, points out that a bank's website, which offers only information without the ability to undertake any transactions, does not qualify as an online banking service. In addition, Miranda-Petronella (2010:1093) notes that electronic banking users who do not have their own personal computer and internet access have found Internet-Cafés useful for such services.

Hosein (2010:2) argues that online banking assists banks to reduce the need for physical branch offices; this results in the reduction of overhead expenses. Banks can then use the resulting savings to reduce their loan interest rates or increase their deposit interest rates, attracting new customers without sacrificing earnings. The web-based distribution focus allows banks to enter new geographic markets without the costs of acquiring existing banks or of starting up new branches, further increasing growth potential. A study conducted by ABA Bank Marketing (2010:5) into online banking access indicated that online banking has enabled consumers to pay more attention to their finances now than before. It further revealed that online banking has become essential in helping consumers to manage their finances, with 91% of respondents saying that an online banking service was “critical” to their banking success.

Internet banking allows customers to perform a variety of transactions including the ability to:

- view balances and access statements online (coupled with the ability to print, fax or e-mail these),
- make online payments to beneficiaries, either on a regular basis or once-off, with simple ‘add’ and ‘maintenance’ functions,
- send notifications of payments made to themselves or to a beneficiary via SMS, e-mail or fax,
- set reminders for payment due in future so as to escape the penalty of defaulting payments, as well as to
- stop either a cheque or a debit order online without having to go to a branch.

## 5.2 MOBILE BANKING

Mobile banking (or m-banking) is one of the newest approaches to the provision of financial services through wireless networks; it has been made possible by the widespread adoption of mobile phones (Karaunanayake, Zoysa and Muftic, 2008:25). Chung and Kwon (2009:539) observed that mobile banking became possible as a result of the convergence of mobile technology and financial services which emerged after the advent of wireless internet and smart-chip-embedded handsets. The term mobile banking is defined by Barnes and Corbitt (2003:271) as a subset of e-banking which serves as a channel that provides customers with the opportunity to interact with a bank via mobile devices, such as a mobile phone or personal digital assistant (PDA). They further argue that mobile banking is an extension of internet banking. Reedy (2008:12) note that although it cannot dispense money like the ATM, the mobile handset is rapidly becoming the next most viable platform for banking.

Mobile banking services enable customers to perform a variety of transactions including checking balances and transactions on their account/s, paying invoices (also abroad), transferring funds between accounts, monitoring credit card use, checking when invoices fall due, buying and selling orders for the stock exchange and receiving portfolio and price information. The mobile phone especially supports the provision of time-critical information (Laukkanen and Pasanen, 2008:86).

Prospects for m-banking in developing countries are bright. The GSM Association (2007) noted that the mobile phone became the first communications technology to have more users in developing countries than in developed ones. It further notes that more than 800 million mobile phones were sold in developing countries in the past three years. Karaunanayake, Zoysa and Muftic (2008:25) argue that this widespread adoption of mobile services in developing countries has provided new approaches to the provision of financial services through wireless networks.

Understanding IT acceptance is important because the expected benefits of IT usage, such as gains in efficiency, effectiveness, or productivity, cannot be realized if individual users do not accept these systems for task performance in the first place (Bhattacharjee and Sanford, 2006:805).

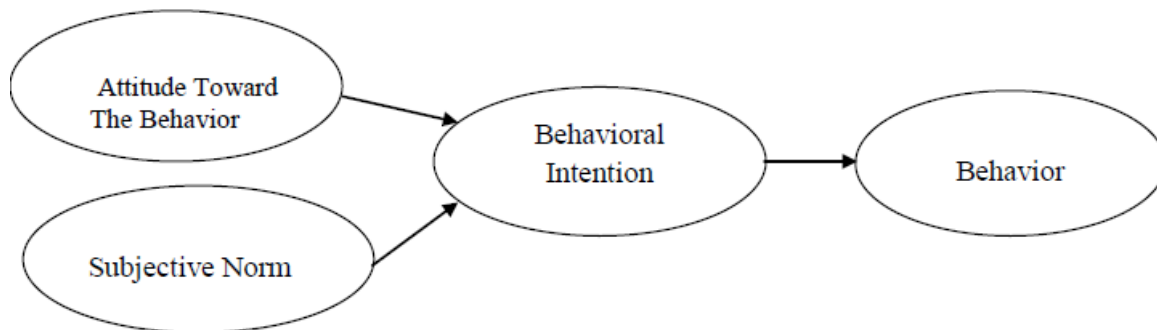
### 5.3 PROMINENT THEORETICAL MODELS EXPLAINING TECHNOLOGY ADOPTION AND USAGE

Guinea and Markus (2009:9) contend that IT use is fundamentally intentional behaviour—that is, driven by conscious decisions to act. A number of intention-based models including the Theory of Reasoned Action (TRA), Theory of Planned Behaviour, the Decomposed Theory of Planned Behaviour, and the Technology Acceptance Model have been extensively used to study the acceptance of new technologies in the literature. Intention-based models focus on the behavioural intentions of individuals so as to predict adoption and use of technology (Kukfka, *et al.* 2004:220)

Another commonly used theory in literature to understand technology adoption is the Diffusion of Innovations Theory. This theory focuses more on perceived characteristics of the technology rather than on the individual adopting the technology to explain diffusion of innovations.

#### 5.3.1 THE THEORY OF REASONED ACTION

The Theory of Reasoned Action (TRA) is a broadly studied and well-established model from social psychology which considers and interprets the determinants of consciously intended behaviors (Gbobakhloo, Zulkifli and Aziz, 2010:10). TRA assumes that human beings are usually quite rational and make use of systematic evaluation of information made available to them. The theory is founded on the proposition that an individual’s behaviour is driven by his or her behavioural intention (BI) to perform that behaviour; behavioural intention, here, is seen as a function of “attitude toward the behaviour” and the “subjective norm”.



Theory of Reasoned Action (Fishbein and Ajzen, 1975)

Attitude toward the behaviour is defined as “a person’s general feeling of the favourableness or unfavourableness of that behaviour”. Attitude toward behaviour is a product of one’s salient belief (B) that performing the behaviour will lead to certain outcomes, and an evaluation of the outcomes (E), that is, a rating of the desirability of the outcome ( Ajzen, 1975). Attitude thus is defined as:

$$A_o = BiEi$$

Where  $A_o$  is the attitude towards the object

$B_i$  is the belief about “o”

$E_i$  is the evaluation of the attribute related to the belief about the object

The theory is founded on the premise that the intention to perform behaviour will be higher when the individual has a positive evaluation of performing the behaviour (Ajzen, 1991).

Subjective norm underscores the influence of the social environment on behaviour. It is defined as a person’s perception that most people who are important to him/her think that he/she should or should not perform the behaviour in question. Subjective Norm is a function of the product of one’s normative belief (NB) which is a “person’s belief that the salient referent thinks he should (or should not) perform the behaviour” and his/her motivation to comply (MC) to that referent (Ajzen and Fishbein, 1980).

Subjective Norm is thus defined as:

$$SN = NBiMCi$$

Where  $NB_1$  is the normative belief

$MC_1$  is the motivation to comply with referent

This subjective norm construct suggests people often act based on their perception of what others think they should do, and their intentions to adopt a behaviour is potentially influenced by people close to them.

The Theory of Reasoned Action has been successfully applied to a large number of situations in predicting the performance of behaviour and intentions. Khanna *et al.* (2009), for example, applied the theory in studying the factors that influence physicians' use of a recommended child obesity tool and concluded that attitude and subjective norm significantly predicted physicians' intention to measure Body Mass Index (BMI) in children and adolescents. Tsai, Chin and Chen (2010) looked into the effect of trust, belief and salesperson's expertise on consumers' intention to purchase nutraceuticals by applying the Theory of Reasoned Action; they found that the most important factor in forming an attitude is the view of people who are important to the consumer. This underscores the importance of the relationship between attitude and subjective norm in the TRA. In terms of IT, Davis (1989) observes that one relevant element of the TRA is its assertion that other factors that influence behaviour (for example, system design variables, user characteristics, task characteristics, political influences and organisational structure) do so only by directly influencing attitude towards behaviour, subjective norm and their relative weight.

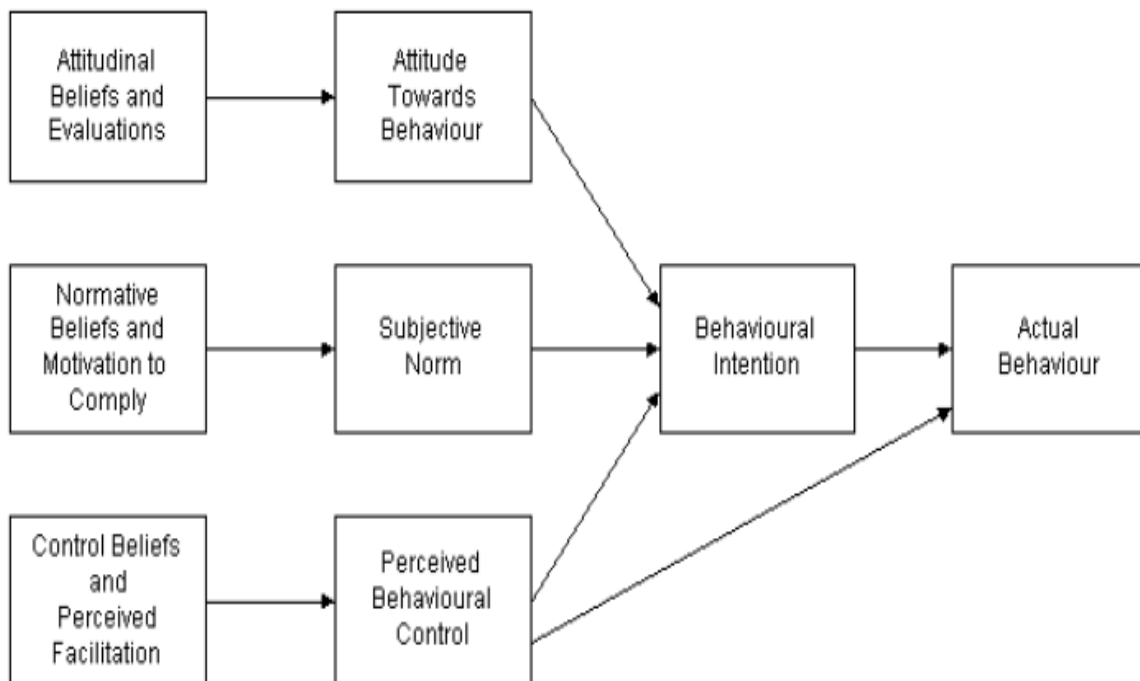
Regardless of the tremendous contributions that the Theory of Reasoned Action has made to predicting, explaining and influencing human behaviour, its greatest limitation stems from the assumption that behaviour is under volitional control. That is, the theory applies to behaviour that is consciously thought out beforehand. Irrational decisions, habitual actions or any behaviour that is not consciously considered cannot be explained by this theory.

### 5.3.2 THE THEORY OF PLANNED BEHAVIOUR

The Theory of Planned Behaviour (TPB) was proposed by Ajzen (1985) to shore up the limitations of the Theory of Reasoned Action by addressing the issue of behaviours that occur without a person's volitional control due for example to current abilities, or to currently available financial resources. For example, a consumer may be prevented from adopting electronic banking if the consumer perceives electronic banking as too complex or if the consumer does not possess the resources necessary to perform the considered behavior. The Theory of Planned Behaviour differs from the Theory of Reasoned Action in its addition of perceived behavioural control (PBC) which caters for situations where an individual has less than complete control over the behaviour. A central factor in the Theory of Planned Behaviour is the individual's intention

to perform a given behaviour. In order to explain and predict behaviour, TPB deals with the antecedents of attitude, subjective norms and perceived behavioural control. The Theory of Planned Behaviour postulates that behaviour is a function of salient beliefs relevant to that behaviour. These salient beliefs are considered as the prevailing determinants of a person's intentions and actions (Ajzen, 1991: 181).

The illustration in figure 2 below captures this analogy.



**Figure 2:** The Theory of Planned Behaviour (TPB) (Source: Aizen (1991)).

The antecedents of TPB are briefly defined by Ajzen (1991) as follows:

- Behavioural beliefs: A behavioural belief is the subjective probability that a given behaviour will produce a given outcome. Although a person may hold behavioural beliefs in respect to certain behaviour, only a relatively small number are accessible at a given moment. Behavioural beliefs are assumed to influence attitude towards the behaviour.

- Normative beliefs: These refer to the perceived behavioural expectations of important influential referent individuals or groups. It is assumed that normative beliefs, in combination with the person's motivation to comply with different referents, determine the prevailing subjective norm. In other words, the motivation to comply with each referent contributes to the subjective norm in direct proportion to the person's subjective probability that the referent thinks the person should or should not perform the behaviour in question.
- Control beliefs: These are concerned with the perceived presence of factors that may facilitate or impede performance of behaviour; each control factor enjoys a certain power. This perceived power contributes to the perceived behavioural control in proportion to the factors present in a given situation calling for the performance of the behaviour. In other words, perceived behavioural control is the aggregation of the set of belief control factors, present at the situation, weighted by the factors' strength or power.

According to the Theory of Planned Behaviour, perceived behavioural control (PBC), together with behavioural intention, can be used directly to predict behavioural achievement. Ajzen (1991) notes that holding intention constant, the effort expended to bring a course of behaviour to a successful conclusion is likely to increase with perceived behavioural control. Perceived behavioural control refers to people's perception of the ease or difficulty of performing the behaviour of interest (Ajzen 1991). PBC reflects belief regarding access to the resources and opportunities needed to effect a behaviour. PBC appears to encompass two components. The first is "facilitating conditions" (Triandis, 1979), which reflect the availability of resources needed to perform a particular behaviour. This might include access to the time, money and other specialized resources. The second component of PBC is perceived self efficacy which emanates from the systematic research programme of Bandura (1977) and associates. This theory shows that people's behaviour is strongly influenced by their confidence in their ability to perform the behaviour in question. For instance, Ajzen (1991) argues that if two individuals have equally strong intentions to learn to ski, and both try to do so, the person who is confident that he can master this activity is more likely to persevere than the person who doubts his ability. Therefore, a consumer with the self-assured skill to do e-banking is more likely to adopt it.

The Theory of Planned Behaviour has been extensively applied in various disciplines. For example, George (2004) used the theory to study internet purchasing and noted that beliefs about self-efficacy of using the Internet for consumer purchases directly affected perceived behavioural control, and PCB in turn directly affected online purchasing behaviour. He further identified a strong relationship between normative structure and subjective norms. In short, he concluded that respondents who believed in the trustworthiness of the internet and in their own abilities to successfully engage in online buying behaviour actually engaged in Internet purchasing. Bailey (2006) employed the TPB to study retail employee theft and identified that there is a direct link between perceived behavioural control and intentions to engage in retail theft. In particular, he noted that the extent to which employees perceive that they can engage in retail theft with ease will have a positive impact on intentions. Furthermore, in their studies of TPB and binge drinking, Norman, Armitage and Quigley (2007) noted that all of the TPB constructs, with the exception of perceived control, were found to have significant positive correlations with binge drinking intentions. Additionally, they noted that intention had a significant positive correlation with binge drinking behaviour as did attitude and self-efficacy. Their results showed that perceived control and subjective norm had marginally significant correlations with binge drinking behaviour.

Taylor and Todd (1995) point out shortfalls in the TPB arguing that the relationship between belief structures and determinants of intention are not particularly well understood due to two reasons. First, they argue that the TPB combines belief structures into unidimensional constructs which may not be consistently related to attitude, subjective norm or perceived behavioural control. Secondly, they argue that belief sets described in TPB, especially those relating to attitude are idiosyncratic to the empirical setting, making it difficult to operationalize the TPB.

Based on the aforementioned limitations of the TPB, Taylor and Todd (1995) proposed the Decomposed Theory of Planned Behaviour (DTPB), which seeks to decompose the belief structures of the TPB in order to gain a better comprehension of consumer behaviour.



### 5.3.3 THE DECOMPOSED THEORY OF PLANNED BEHAVIOR (DTPB)

The Decomposed Theory of Planned Behaviour draws upon constructs from innovation characteristics literature, and more completely explores the dimensions of subjective norm (social influence) and perceived behavioural control by decomposing them into specific belief dimensions (Taylor and Todd, 1995).

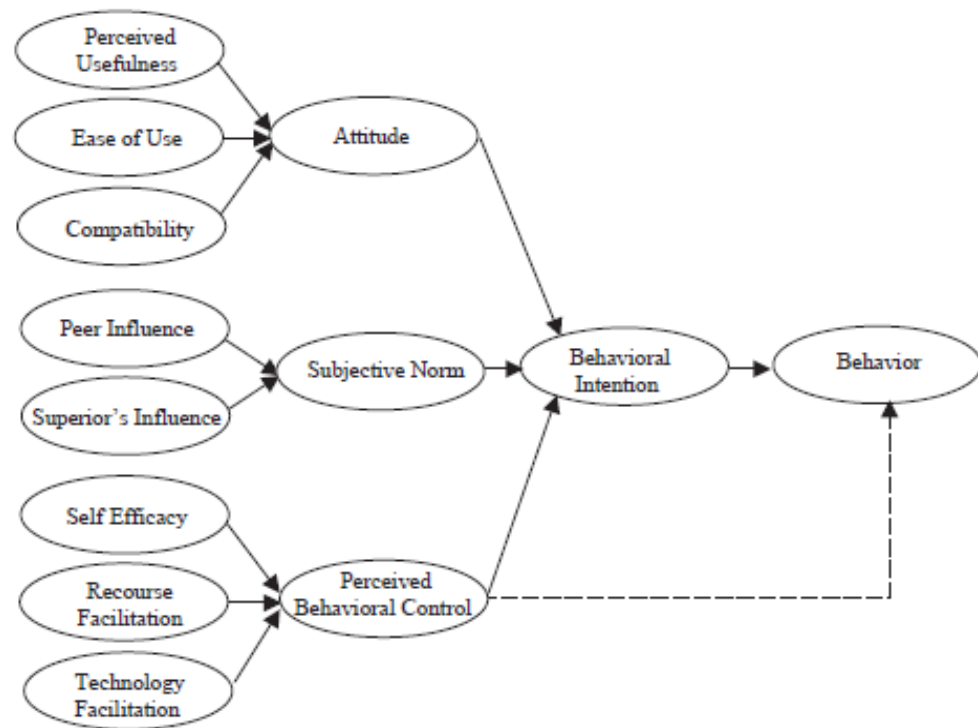


Fig. 3 Decomposed Theory Planned Behaviour (DTPB) Source: Taylor and Todd (1995)

- Decomposing attitude belief structures: Rogers (1989) identified a number of determinants of how an innovation is perceived by individuals that help to explain its adoption; these are: relative advantage, compatibility, complexity, observability and triability. However, Taylor and Todd argue that a Meta-analysis by Tornatzky and Klein (1982) demonstrated that relative advantage, complexity and compatibility are the three

factors that are consistently related to technology adoption. They note that “perceived usefulness” and “ease of use” which are proposed by Davis (1989) in his Technology Acceptance Model (TAM) found their inspiration in the five constructs of technology characteristics by Rogers. They contend that relative advantage is analogous to “perceived usefulness” in the TAM whilst complexity is related to perceived “ease of use” which underscores attitude formation towards IT systems. Furthermore, they conclude that as the perceived relative advantages and compatibility of information technology usage increase and as complexity decreases, attitude towards information system usage should be more positive.

- **Decomposing Normative Belief Structure:** Taylor and Todd (1995) note that decomposing normative belief structure is imperative because of the divergent opinions that may be held by different referent groups. They state, for example, that important referent groups that may be identified in an organization are peers, superiors and subordinates. They argue that in situation where one’s peers may be discouraging the adoption of a particular IT system because it requires too many changes in work processes, superiors at the same time may be encouraging its adoption because the system provides productivity trade-offs. They further state that a monolithic normative structure in the scenario above may show no influence on subjective norm or intention because the effects of the referent groups cancel each other. Hence, it is important to decompose the different referent groups because their expectations are likely to differ.
- **Decomposing control belief structure:** Taylor and Todd (1995) reiterate that higher levels of self efficacy will lead to higher levels of behavioural intention and IT usage. Moreover, the absence of facilitating resources may represent barriers to IT usage and may inhibit the formation of intention and usage.

According to Taylor and Todd (1995), this decomposition approach provides several advantages. They state that it is unlikely that monolithic belief structures, representing a variety of dimensions will be consistently relevant to the antecedents of innovation. Therefore, by decomposing beliefs, those relationships become clearer and readily understandable. Additionally, they point out that decomposition provides a common stable set of beliefs which can be applied across a variety of settings. Finally, the model focuses on specific beliefs pointing

to specific factors that may influence adoption and usage. Therefore, it is more managerially relevant.

### 5.3.4 TECHNOLOGY ACCEPTANCE MODEL (TAM)

Of the various models that information systems (IS) researchers have used to explain or predict the motivational factors underlying user acceptance of technology, the Technology Acceptance Model (TAM) of Davis (1989) is perhaps the most widely applied (Polancic, Hericko and Rozman, 2010:154; Theo, 2008:1139; Yi, Jackson, Park and Probst, 2006:350). The Technology Acceptance Model is an adaptation of the Theory of Reasoned Action and was proposed specifically for modelling user acceptance of IT systems. This adaptation provides a parsimonious explanation of the determinants of computer acceptance that is general, explaining user behaviour across a broad range of end-user computing technologies and user populations (Theo, 2008:1140). According to the TAM, behavioural intention to use information technology is influenced by two key determinants: “perceived usefulness” and “perceived ease of use”. The TAM explains that there is a causal link between these two determinants and users' attitudes, intentions and actual computer adoption behaviour" (Davis, 1989: 983).

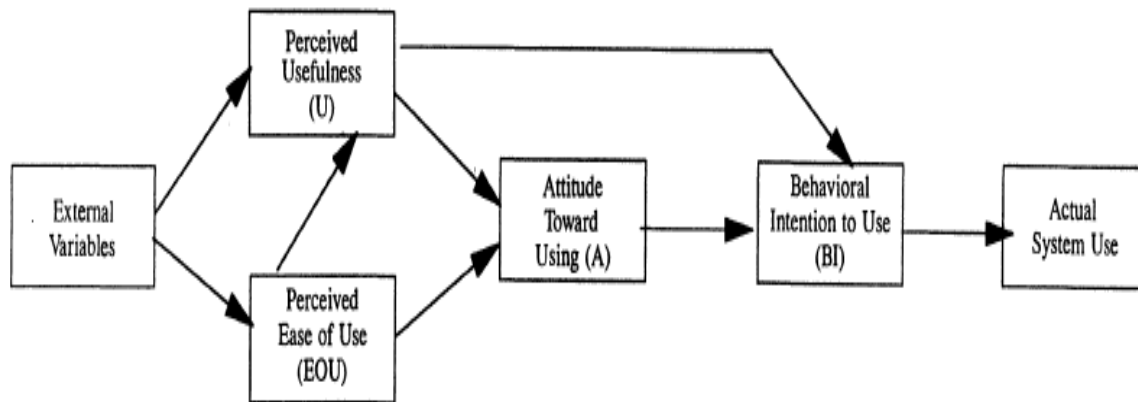


Figure 3. The Technology Acceptance Model, (Davis, 1989)

Ease of use (EOU) is "the degree to which the . . . user expects the target system to be free of effort" (Davis, 1989: 985). Usefulness (U) is the user's "subjective probability that using a specific application system will increase his or her job performance within an organizational context" (985). According to this theory, U is influenced by EOU. Both EOU and U predict

attitude (A), which is defined as the user's evaluation of the desirability of him or her using the system. A and U influence the individual's intention to use the system (BI). Actual use of the system is predicted by BI.

Four different dependent constructs are common in studies that use the TAM. They include: (a) intention to use, (b) actual use, (c) acceptance, and (d) continued usage intention. Pikkarainen *et al.* (2004:226) stress that the TAM has been tested in many studies and that it has been found that its ability to explain attitude towards using information technology is better than other models. Sharp (2007) attributes the success of the TAM and its prolific usage by IS researchers to the fact that: (1) TAM provides specific focus on information technology; (2) it has demonstrated validity and reliability; and (3) the TAM has accumulated a research tradition. Polancic *et al.* (2010:156) adds that the TAM's ability to be used in both adoption and post-adoption behaviour as the fourth attribute has accounted for its wide employment in studying user adoption of IT.

### 5.3.5 EXTENDED TECHNOLOGY ACCEPTANCE MODEL

Although the TAM has received tremendous support by researchers in understanding IT adoption and usage, Moon and Kim (2001) note that the constructs of the TAM do not fully reflect the specific influences of technological and usage-context factors that may alter users' acceptance. Davis (1989:985) proposed further research into external variables that enhance the ability of the TAM to predict acceptance of future technology. In other words, the constructs of the TAM need to be extended by incorporating additional factors. In response to addressing this short-fall in the TAM, Vankatesh and Davis (2001) postulate what has come to be known as TAM2 which reflects the impacts of three interrelated social forces impinging on an individual facing the opportunity to adopt or reject a new system: subjective norm, voluntariness, and image.

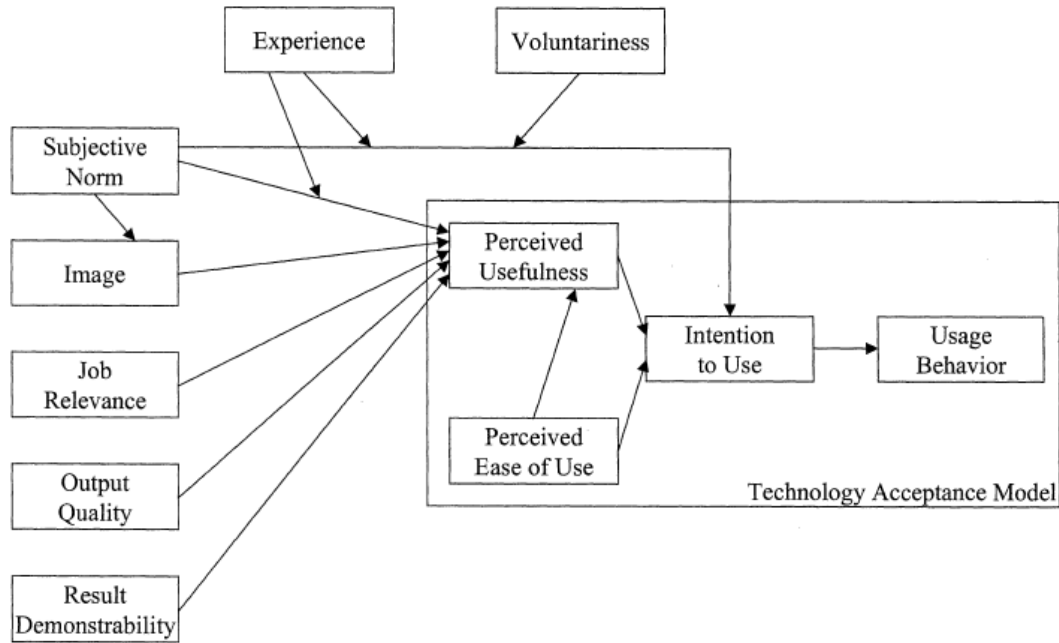


Fig 4. Extended TAM; Vankatesh and Davis 2000

TAM2 explains perceived usefulness and usage intentions in terms of social influences, processes (subjective norm, voluntariness and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use).

According to Vankatesh and Davis (2000:189) subjective norm can influence intention indirectly through perceived usefulness in two ways: internalization and identification. Internalization refers to the process by which, when one perceives that an important referent thinks one should use a system, one incorporates the referent's belief into one's own belief structure. In the present context, if a superior or co-worker suggests that a particular system might be useful, a person may come to believe that it actually is useful, and in turn form an intention to use it. In the case of internalization, subjective norm has an indirect effect on intention through perceived usefulness, as opposed to a direct compliance effect on intention. TAM2 theorizes that internalization, unlike compliance, will occur whether the context of system use is voluntary or mandatory. That is, even when system use is organizationally mandated, users' perceptions about usefulness may still increase in response to persuasive social information. They also note that subjective norm will positively influence image because, if important members of a person's social group at work believe that he or she should perform a behaviour (for example, using a

system), then performing it will tend to elevate his or her standing within the group. This is referred to as identification.

In addition to the social influence processes affecting perceived usefulness and usage intention, Vankatesh and Davis (2000:190) theorize four cognitive instrumental determinants of perceived usefulness: job relevance, output quality, result demonstrability, and perceived ease. They define job relevance as an individual's perception regarding the degree to which the target system is applicable to his or her job. In other words, job relevance is a function of the importance within one's job of the set of tasks the system is capable of supporting. They regard job relevance as a cognitive judgment that exerts a direct effect on perceived usefulness, distinct from social influence processes. TAM2 posits that, over and above considerations of what tasks a system is capable of performing and the degree to which those tasks match their job goals (job relevance), people will take into consideration how well the system performs those tasks which are referred to as perceptions of output quality. Furthermore, they contend that result demonstrability, defined as "tangibility of the results of using the innovation", will directly influence perceived usefulness. This implies that individuals can be expected to form more positive perceptions of the usefulness of a system if the co-variation between usage and positive results is readily discernable.

The results of investigation into the above-named constructs in TAM2 indicates that subjective norm significantly influences perceived usefulness via both internalization, in which people incorporate social influences into their own usefulness perceptions, and identification, in which people use a system to gain status and influence within the work group and thereby improve their job performance. Beyond these two indirect determinants of perceived usefulness, subjective norm had a direct effect on intentions within mandatory, but not voluntary, usage contexts. With regard to cognitive instrumental processes, an important and interesting finding that emerged was the interactive effect between job relevance and output quality in determining perceived usefulness. This implies that judgments about a system's usefulness are affected by an individual's cognitive matching of their job goals with the consequences of system use (job relevance), and that output quality takes on greater importance in proportion to a system's job relevance.

### 5.3.6 INNOVATION DIFFUSION THEORY (IDT)

The second prominent line of behavioural research useful to understanding IT use is Innovation Diffusion Theory (IDT) (Kakafka *et al*, 2004). In the innovation studies literature, Rogers (1995) uses well-established theories in sociology, psychology, and communications to develop an approach to study the diffusion of innovations. An innovation is an idea, practice, or object that is perceived to be new by a person or adopting entity (Rogers, 1995). Rogers first defines Innovation Diffusion Theory (IDT) as “the process by which innovation is communicated through certain channels over time among the members of a social system” (Rogers, 1983). When an innovation emerges, diffusion unfolds, which entails communicating or spreading news of the innovation to the group for which it is intended. According to Rogers, this technological innovation creates a kind of uncertainty because of its newness to the individual and motivates him or her to seek information by means of which the new idea is evaluated. Rogers argues further that this innovation-evaluation information leads to a reduction in uncertainty about the innovation’s expected consequences.

After an extensive study of how an innovation is diffused among members of a particular social system, Rogers (1995) indentified five characteristics of an innovation that moulds an individual’s perception about the innovation and that consequently affects its adoption. These five characteristics are listed and succinctly defined as follows:

- **Relative advantage** – “the degree to which an innovation is perceived to be a better idea than the idea it supersedes” The idea of relative advantage of innovation is measured in economic terms, social prestige, convenience and the satisfaction it offers. Rogers (1995) argues that the greater an individual’s perception of the relative advantage of an innovation, the more rapid will be its rate of adoption.
- **Compatibility** – “the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters”. Compatibility relates to the adopter’s socio-cultural values and beliefs, already existing ideas and need for the innovation.

- **Complexity** – “the degree to which an innovation is perceived as relatively difficult to understand and use”. Complexity here is tied to the level of mental or physical effort that one exerts in an attempt to use the innovation.
- **Trialability** - “the degree to which an innovation may be experimented with on a limited basis”. An innovation that is trialable carries less uncertainty to the individual who is considering it for adoption.
- **Observability** – “the degree to which the results of an innovation are visible to others”. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it.

Rogers concluded that innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, observability, and that are less complex are more likely to be adopted more rapidly than other innovations.

There is a complementary relationship between Innovation Diffusion Theory and the Technology Acceptance Model. Moore and Benbasat (1991:199) found that the relative advantage construct in Innovation Diffusion Theory is similar to perceived usefulness in the TAM construct, and the complexity construct in Innovation Diffusion Theory is similar to perceived ease of use. Wu and Wang (2005:723) integrated Innovation Diffusion Theory, perceived risk and cost into the Technology Acceptance Model so as to investigate the determinants of mobile commerce acceptance. They found that compatibility has a direct effect on perceived usefulness and behavioural intention to use.

Many studies on IT acceptance and usage have been founded on the Innovation Diffusion Theory. Eastin (2002:265) used the IDT to study the adoption of four e-commerce activities: online shopping, banking, investing, and internet services. Six commonly used diffusion attributes salient to internet-based e-commerce were used to predict adoption. Multiple regression analysis demonstrated how each innovation illustrates a hierarchy of importance in the adoption process, which suggests that adopters consider each activity unique, and thus, make the decision to adopt for different reasons. In the study, Eastin notes that the adoption of online shopping is best predicted by self-efficacy, followed by perceived financial benefits, previous



adoption of telephone shopping, and perceived convenience. For investing, perceived financial benefit was the strongest predictor, followed by previous adoption of a similar technology, perceived convenience, and perceived risk. Online banking was best predicted by perceived convenience rather than perceived risk and internet use.

Hung, Ku and Chang (2003) combined the Innovation Diffusion Theory and the Theory of Planned Behaviour to investigate the level of acceptance of Wireless Application Protocol (WAP) services among users and to predict WAP service adoption behaviour. They identified connection speed, service costs, user satisfaction and ease of use as perceived user characteristics of WAP services that significantly influenced its adoption. Additionally, they noted that individual intention towards WAP adoption can be explained by attitude and subjective norm. Perceived behavioural control doesn't significantly influence intention; however, it significantly suppressed WAP adoption.

#### 5.4 TECHNOLOGY ACCEPTANCE MODEL AND E-BANKING

According to the TAM, the two key determinants of intention to use and actual usage of technology are “perceived usefulness” and “perceived ease of use”.

##### 5.4.1 Perceived Usefulness

Lee (2008) categorized the perceived benefits of electronic banking into direct and indirect benefits. Direct advantages refer to immediate and tangible benefits that customers would enjoy by using online banking. For example, customers can benefit from a wider range of financial benefits, faster transaction speed, and increased information transparency. The wider range of financial benefits includes, the lower transaction handling fees, higher deposit rates, opportunities to win prizes and extra credit card bonus points. E-banking provides faster transaction speed which obviously means that time can be saved. Also, online banking does not need paper documents the processing of which can give rise to errors and delays, and which also requires more personnel. Online banking automates this process by mediating transactions through websites and electronic data interchange, and can also reduce the need for customers to communicate with bank staff regarding transaction details because they can be obtained at a

website. During the transaction, online banking allows customers to monitor contractual performance at any time, or to confirm delivery automatically. In other words, more relevant information is immediately available and transparent to customers.

According to Lee (2008), indirect advantages are those benefits that are less tangible and difficult to measure. For example, online banking allows customer to perform banking transactions anywhere in the world and enjoy 24-hour service, as well as offering customers more investment opportunities and services, such as stock quotations and news updates.

Pikkarainen *et al.* (2004:224) note that customers are satisfied with a system that meets their needs and hence a system's success can be measured by how well it satisfies customers' needs.

#### 5.4.2 Perceived Ease of Use

Perceived ease of use in e-banking may be described as the physical or mental effort that customers exert or are likely to exert during e-banking. Customers' perception of "ease of use" regarding e-banking is predicted by a number of factors. For example, studies by Al-somali *et al.* (2009), Pikkarainen *et al.* (2004) and Sathye (1999) have all found significant positive relationships between the quality of internet connectivity and customers' perception of "ease of use" regarding e-banking. Additionally, perceived ease of use in e-banking is also more likely to be influenced by computer self-efficacy. Self-efficacy "refers to belief in one's capabilities to organize and execute the course of action required to produce given attainments" (Bandura, 1997). It is thought to result from past accomplishments, vicarious experience, verbal persuasion, and emotional arousal (Bandura, 1977). The term computer self-efficacy has been applied to studies involving IT systems. It was derived from the social-psychological concept of self-efficacy which postulates that an individuals' perception of his/her abilities affects his/her actual performance. Computer self-efficacy (CSE) is defined by Scott and Walczak (2009:221) as a person's judgment of his or her ability to use a computer system. Torkzadeh and Dyke (2002:494) note that computer self-efficacy is a pivotal concept that aids our understanding of technology acceptance, implementation, and use. Compeau and Higgins (1995) note that self-efficacy has a significant influence on user's anxiety towards using computers and their actual

computer use. Hsu, Wang and Chiu (2008) conducted a survey on 207 MBA students from an AACSB accredited University in the Midwest of the United States of America. Their analysis revealed a significant and positive relationship between self-efficacy and perceived usefulness of computer software.

## 5.5 OTHER FACTORS AFFECTING ADOPTION AND USAGE OF E-BANKING

### 5.5.1 Trust

Recent research reveals that the perceived trust or credibility of users, in relation to Web systems, has a striking influence on their willingness to engage in online shopping, banking and the exchange of money and sensitive personal information (Friedman, Kahn, & Howe, 2000 Lin, & Tang, 2003). Customers have a tendency to be reluctant to provide sensitive personal information to websites. They are generally comfortable with providing information such as preferences, but are, however, very uncomfortable when asked to provide more sensitive information such as credit card numbers, personal account details and personal identification numbers (PIN).

Luarn (2005:74), for example, notes that the lack of perceived credibility is manifested in people's concerns that the mobile banking system (and/or the hackers or system intruders) will transfer their personal information or money to third parties, without their knowledge or permission. Sun and Han (2002:248) assert that this feeling of uneasiness may not only be due to the defects of the internet and electronic commerce security but also customers' distrust of them. Customers are concerned about online payment security, reliability and lack of privacy policies. Trust can therefore be posited to have a significant impact on e-banking acceptance and usage.

### 5.5.2 Security

The convenience of online banking and electronic money transaction systems does not come without concomitant threats to the system. According to Giles (2010), banking websites and payment systems are relentlessly targeted by criminals. Electronic transactions over the internet are frequently fraught with risk of breach, intrusion, or theft. Glaessner *et al.* (2002), for example, argue that although technology opens up new dimensions of scope and timing, it also

creates the possibility for crimes to be committed more quickly. They further note that, today, one online criminal using a tool available on the web can hack into a database and steal about 50000 credit card numbers and other identities in seconds. Ashby (2005) investigated the factors that influence the adoption of online banking in the UK and revealed that the biggest reason for not banking online is concern about security, with 53% of respondents identifying this as a reason. Furthermore, 76% of non-internet bankers (with access to the internet) agreed that security on the internet was a real concern, and only 27% said they would be happy to transfer money over the internet. In other separate studies, Hague (2009) and Sathyne (1999) both found security and privacy to be significant obstacles in the adoption of electronic banking in Malaysia and Australia respectively. From the foregoing, it can therefore be argued that security of online banking can have a significant impact on adoption of the system.

### 5.5.3 Consumers' awareness of e-banking services

Electronic banking is a revolutionary change in the banking sector as it is noted to have significantly improved the service provided to customers (Ashby 2005). However, several barriers and factors have slowed down broad acceptance of electronic banking by customers. Papazafeiropoulou, Pouloudi and Doukidis (2002) identified lack of awareness as one of the most frequently reported barriers in the adoption of electronic commerce, as people/firms do not seem to realize the opportunities offered by electronic commerce. They base their argument on the premise that all stages of the innovation diffusion process (that is, knowledge, persuasion, decision, implementation, and confirmation) are related to an information-need that users of the innovation have in order to move from one stage to another. Thus, awareness creation and information provision are considered to be very important elements for the adoption of an innovation. Sathye (1999:325) agrees with the afore-stated argument by stating that the use of online banking services is a fairly new experience to many people. Therefore, low awareness is a major factor preventing people from adopting online banking.

Ashby (2005) conducted a study into electronic banking services in the UK and noted that over half of all non-internet bankers (52%) said they did not bank online because they were happy with the way they currently bank. Furthermore, only 28% agreed that Internet banking was the easiest way to bank (compared with 92% of Internet bankers). These findings suggest two

possible scenarios. Firstly, it may suggest that the benefits that Internet banking customers identify and experience do not apply to those who do not bank online, that is, that their circumstances are different. Secondly, it may suggest that many non-internet bankers are not aware of or do not appreciate the benefits of online banking. Additionally, in an empirical study of Australian consumers, Sathye (1999) found that consumers were unaware of the possibilities, advantages or disadvantage involved with online banking.

#### 5.5.5 Consumer demographics

The impact of demographic variables such as age, gender, level of education, income and race on the adoption of IT cannot be overemphasized. A review of literature concerning the demographic variables of a typical internet user suggests that older, less educated, minority and lower income individuals have lower internet usage rates than those of younger, highly educated, white and wealthier individuals (Porter and Donthu, 2006). This description seemingly holds for online banking which is regarded as the application of the internet technology to banking. For instance, Karjaluoto *et al.*, (2002) and Sathye (1999), in separate studies, found a typical online banker as highly educated, relatively young and wealthy with a good knowledge of computers and especially the internet. Porter and Donthu (2006) further detected that age, education, income and race are associated differentially with certain beliefs about the internet, and that these beliefs mediate consumer attitudes towards and, ultimately, use of the internet.

### 5.6 PROPOSED RESEARCH MODEL AND HYPOTHESES

Drawing upon the discussions so far, fig 5 depicts the proposed model for this study. According to the model, attitude is a critical variable that affects both the intention to adopt as well as actual usage of electronic banking. Attitude towards electronic banking is influenced by a potential user's assessment of the perceived usefulness, perceived ease of use, trust, security and demographic characteristics of the potential user.

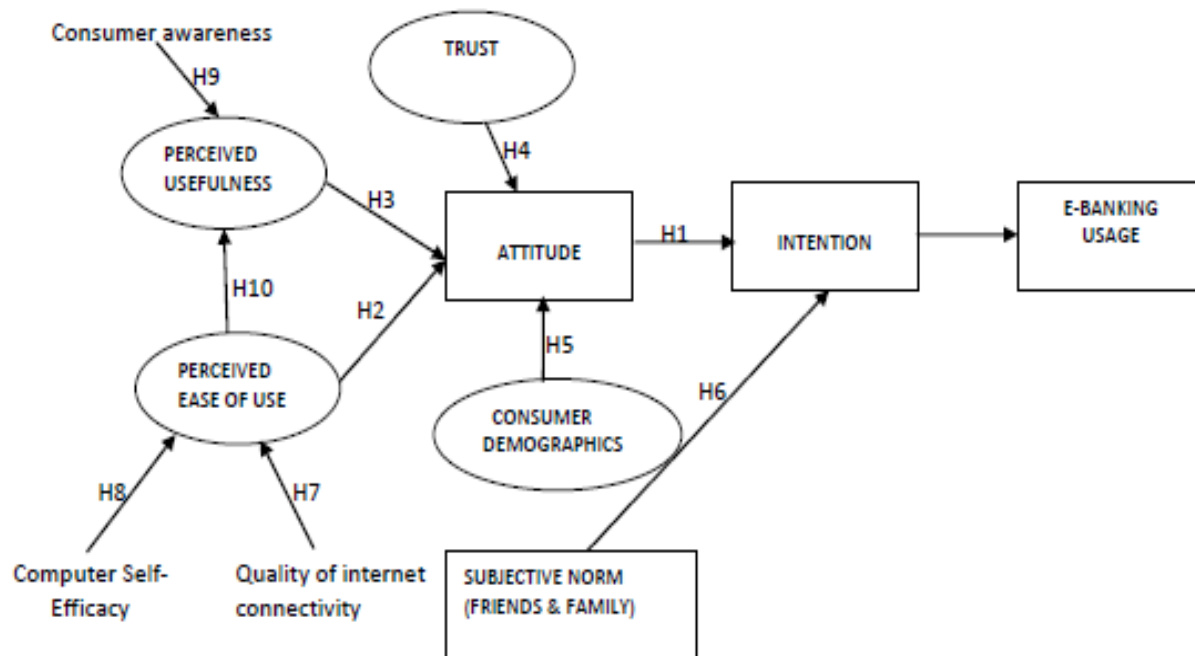


Fig. 5 Model for electronic banking adoption based on Technology Acceptance Model

The hypotheses proposed for this study, therefore, are as follows:

- H1 There is a significant positive relationship between customer attitude and intention to adopt/continue using electronic banking.
- H2 There is a significant positive relationship between perceived ease of use and attitude towards e-banking.
- H3 There is a significant positive relationship between perceived usefulness and attitude towards e-banking.
- H4 Customers' level of trust has a significant positive impact on attitude towards e-banking.
- H5 Customers' demographic characteristics (age, gender, level of education and level of income) have a significant impact on their attitude towards e-banking.
  - H5a Younger customers are more likely to have a positive attitude towards e-banking.
  - H5b Males are more likely to have positive attitude towards e-banking.

- H5c Level of education has a positive relationship with attitude towards e-banking.
- H5d Level of income has a significant relationship with attitude towards e-banking.
- H6 There is a significant positive relationship between subjective norms and behavioural intention to adopt e-banking.
- H7 There is a significant positive relationship between the quality of internet connectivity and “perceived ease of use”.
- H8 Computer self-efficacy will have a significant positive effect on perceived ease of use.
- H9 There is a significant relationship between customers’ awareness of e-banking services and perceived usefulness of the system.
- H10 “Perceived ease of use” will significantly affect the “perceived usefulness” of an e-banking system.

## **6. RESEARCH METHODOLOGY**

Research methodology refers to the strategic decisions made with regard to the selection of data collection methods, and also more tactical decisions about scaling procedures and measurement, samples and data analysis (Zikmund, 2010). The paragraphs below outline the methodology that would be employed for this study.

### **6.1 RESEARCH APPROACH**

Quantitative and Qualitative research methods are two broad approaches to research design that are often used in social science research. Qualitative research involves non-numerical examination and interpretation of observations for the purpose of discovering underlying meaning and patterns of relationships. It emphasises processes and meanings that are not generally examined or measured, in terms of quality, intensity or frequency (Zikmund, 2010). According to Aaker (2010), qualitative data collection uncovers information from the perspective of the interviewee about a phenomenon, such as behaviours and attitudes that are not directly observable, that is, ‘in someone else’s mind’. The findings of qualitative research are not used to test a theory and make generalisations about a population, but rather, to build a theory for further testing through quantitative methods.

Conversely, quantitative research involves numerical representation and manipulation of observation for the purpose of describing and explaining phenomena that those observations reflect. Quantitative research emphasises the measurement and analysis of causal relationships between variables (Zikmund, 2010). Neuman (2007) explains that, in quantitative research, variables and relationships are the central idea. Neuman further argues that quantitative research is useful in providing detailed planning prior to data collection and analysis, because it provides tools for measuring concepts, planning design stages and for dealing with population or sampling issues. In addition, Neuman points out that quantitative research utilizes a deductive model in testing the relationship between variables and in providing evidence for or against initially specified hypotheses.

Neuman (2007) emphasizes that qualitative and quantitative research approaches are often used in a complimentary fashion. Zikmund (2010) argues that integration of both quantitative and qualitative methods is imperative because it provides deeper insight into research findings. This study will make use of both qualitative and quantitative methods. During the qualitative stage, an in-depth interview will be conducted with 10 users and 10 non-users of e-banking services in Tshwane by means of convenience sampling. This is in order to understand their underlying motivations for using or not using e-banking services. The findings from this interaction will be used to refine the constructs to be used during the quantitative phase. In the quantitative phase, a structured questionnaire using mostly closed-ended questions will be distributed to a large number of respondents for self completion.

## 6.2 RESEARCH DESIGN

Marshall & Stuart (2006) contend that the research design should precisely state the type of information the researcher will collect and the type of study the researcher will be conducting. This study will follow a cross-sectional descriptive research design. This design employs mechanisms that utilise systematic techniques and actions to gather raw data and generate data construction that depicts the existing features of a defined target population (Hair *et al.* 2010). Descriptive studies usually accommodate large sample sizes and make use of survey and questionnaire techniques to gather the necessary data required by a specific study (Solomon *et al.*



2006:113). Neuman (2007) argues that surveys are beneficial in providing information that is inherently statistical in nature. Cross-sectional study is the most frequently used descriptive research design in marketing research. It involve the collection of information from any given sample of population elements (Malhotra, 2007).

## 6.2 POPULATION

This study will be based on a cross-sectional survey of individual customers of the four major retail banks (ABSA, Standard bank, First National Bank and Nedbank) in South Africa. These banks have been chosen for this study because they provide e-banking services to their customers and currently represent 87.4 percent of the banking sector (Mboweni, 2005). The study will be undertaken in the Province of Gauteng. Gauteng is chosen for this study because it is known as the country's economic powerhouse, responsible for over a third of South Africa's GDP. It also ranks among the main centres in the world hierarchy of urban areas; it's the most urbanised province in South Africa. The province represents a microcosm of South Africa because of its cosmopolitan nature. The Gauteng city-region includes the metropolises of Johannesburg, Ekurhuleni and Tshwane, along with Mogale City (Krugersdorp) to the west and Emfuleni (Vereeniging-Vanderbijlpark) to the south. Data collection will take place in the three metropolises of Johannesburg, Ekurhuleni and Tshwane. The majority of Gauteng's population - 83% - lives in these three metropolitan municipalities (Shilowa, 2005).

## 6.3 SAMPLE

Traditional sampling methods can be divided into probability and non-probability sampling methods. In probability sampling, units are selected randomly. If done properly, probability sampling ensures that the sample is representative of the entire population (Hair *et al.*, 2010). On the other hand, non-probability sampling involves the selection of a sample that is not necessarily done with the aim of being statistically representative of the population. Rather, the researcher uses methods such as personal experience, convenience, expert judgment, and so on to select the sample. Examples of non-probability sampling techniques include convenience sampling, judgment sampling, quota sampling and snowball sampling (Malhotra, 2007).

Due to the lack of a sampling frame, this study will use non-probability sampling methods to select the respondents. The aim is to collect 600 usable responses. A number of factors were taken into consideration in deciding on the sample size. These included the data analysis methods to be used as well as sample sizes used by other researcher in the past. Hair at al (2010) recommends a variable to sample ratio of at least 1:5 for factor analysis. The minimum sample size for quantitative research is expected to be not less than 30 (Speziale and Carpenter 2007). A review of literature in e-banking shows that most studies used a sample size ranging from 200 to 600 respondents (Hague, 2009; Karjaluoto, 2004; Katuri, 2007; Sivanand,2004; Zhao, 2010). The sample for this study will comprise 200 customers of the four-retail banks per metropolis of Johannesburg, Ekurhuleni and Tshwane.

Multiple sampling techniques will be used to select the respondents. Firstly, quota sampling will be employed to select sample members in order to reflect the national population demographics of South Africa on the basis of age, gender and race to ensure all groups are represented. Convenience sampling will then be employed to select respondents from the quotas defined above. This sampling technique is used because it will enable the researcher to have access to respondents who are readily available to participate in the study (Hair, *et al.*, 2010). A mall intercept will be used to obtain respondents from the major malls in each metropolis during the administration of the questionnaire as it will give ready access to the respondents.

#### 6.4 QUESTIONNAIRE DESIGN AND ADMINISTRATION

A questionnaire, mainly using a five-point Likert scale, will be used to collect data. The Likert scale is a widely used rating scale that requires respondents to indicate their degree of agreement or disagreement with each of a series of statements about the stimulus objects; responses range from “strongly agree” to “strongly disagree” (Malhotra, 2007: 274). All items used to measure variables will be adopted from previously validated scales. Where necessary, modifications will be made to the scale to fit the purpose of this study. The questionnaire will begin with a question that establishes the use or non-use of internet and/or cell phone banking. Where a respondent uses both, he/she will be asked to answer questions in relation to either internet or cell-phone banking only. Adequate measures will be taken by the researcher to ensure that the number of respondents in each category of users of internet banking, cell-phone banking and non-users are

comparable. The first section of the questionnaire will consist of questions aimed at measuring attitude towards e-banking, perceived usefulness, perceived ease of use, trust, impact of referent groups, quality of internet connectivity, computer self-efficacy, consumer awareness and use of common e-banking services. This will be followed by a second part which will comprise of questions on respondent's background characteristics including access to internet and cell phones, and demographic characteristics like age, gender, income level, race and educational level.

The final questionnaire for the study will have a cover letter that explains what the research is about. It will also give respondents specific instructions on how to answer the questions and guarantee their anonymity. Ethical considerations shall be observed by the researcher in obtaining data for this study. Some ethical considerations to be observed during this process will involve safeguarding the anonymity of research subjects or respondents. Data collected by the researcher shall only be used for statistical compilation and will be treated as strictly confidential; it will also not be handed over to a third party. The data will be collected over a period of three weeks with nine research assistants, three in each metropolis. Three research supervisors will be assigned to each metropolis during this process so as to supervise the research. The surveys will commence simultaneously in all participating metropolises within Gauteng.

## 6.5 DATA ANALYSIS

Data collected in this study will be analysed using the latest version of the Statistical Package for Social Sciences (SPSS). All scales will be tested for reliability using Cronbach's Alpha coefficient ( $\alpha$ ).

A number of statistical techniques will be used to analyse the data, including descriptive statistics, the Mann-Whitney test, the Kruskal-Wallis test, correlation analysis and chi-square tests. The Mann-Whitney test and Kruskal-Wallis test will be used in cases where there are different sets of scores to compare derived from different groups of customers. Correlation analysis will be used to measure relationships between variables.

The strength of association between customers' attitudes towards technology-based banking and their underlying demographics will be submitted to cross-tabulation so as to enable the researcher to understand how consumers' attitudes relate to their demographics. The *chi-square statistic* will then be used to test the statistical significance of this association in the cross-tabulation. The *phi coefficient* and *cramer's V* will be used to measure strength of association.

The Statistical Consultation Service of the University of Johannesburg will be used to help in the statistical analysis of the data.

## **7. DELIMITATIONS OF THE STUDY**

The study will focus only on internet and cell phone banking services which are subsets of the broader E-banking services that retail banks offer to their customers. This decision was taken because these two e-banking services appear to be the most widely used by customers. In addition, as a result of time constraints the researcher may not be able to investigate all the e-banking services in this study. Additionally, this study will be restricted to the customers of ABSA, Standard Bank, First National Bank and Nedbank only because they are the largest banks in South Africa and they are vigorously promoting e-banking services to their customers. Finally, this study will be limited to the Gauteng Province of South Africa due to time and financial constraints.

## **8. DEFINITION OF KEY TERMS**

**Attitude** - The term attitude refers to positive or negative feelings directed at some object, issue or behaviour (Kassarjian & Robertson, 1991: 317).

**E-commerce** - focuses on the electronic exchange of information using information and telecommunication infrastructure particularly the World Wide Web and the Internet (Hutchinson & Matthew, 2003: 64).

**Electronic banking** is the use of a computer to retrieve and process banking data (statements, transaction details, etc.) and to initiate transactions (payments, transfers, requests for services, etc.) directly with a bank or other financial services provider remotely via a telecommunications network (Hosein, 2010).

**Mobile banking** is defined as a subset of e-banking which serves as a channel that provides customers with the opportunity to interact with a bank via mobile devices, such as a mobile phone or personal digital assistant (PDA) (Barnes and Corbitt 2003:271).

**Subjective Norm** is defined as a person's perception that most people who are important to him/her think that he/she should or should not perform the behaviour in question (Ajzen and Fishbein, 1980).

**Ease of use (EOU)** is "the degree to which the . . . user expects the target system to be free of effort" (Davis, 1989: 985).

**Perceived Usefulness** is the user's subjective probability that using a specific application system will increase his or her job performance within an organizational context (Davis 1985:985).

**Self efficacy** refers to beliefs in one's capabilities to organize and execute the course of action required to produce given attainments (Bandura, 1997).

**Trust** refers to the belief that the promise of another can be relied upon and that in unforeseen circumstances, the other will act in a spirit of goodwill and in a benign fashion towards the trustor (Mayer *et al.*, 1995).

## **9. OUTLINE OF THE RESEARCH**

The dissertation will be divided into five chapters as shown in figure 7 below. These are: introduction and background; literature review, research model and research hypotheses; research design and methodology; data analysis and conclusions and recommendation of the study. Chapter one will give an introduction and background to the research topic, indicate the problem statement of the research and state the significance of the study. The second chapter will present the literature review, logically followed by the research model and the research hypotheses. The third chapter will address the issues of research design and methodology, population, sampling and questionnaire design and administration. This will be followed by

chapter four which will analyse the data collected against the research model and the hypotheses, and finally, chapter five will present a conclusion based on the research and, furthermore, make recommendations based on the findings.

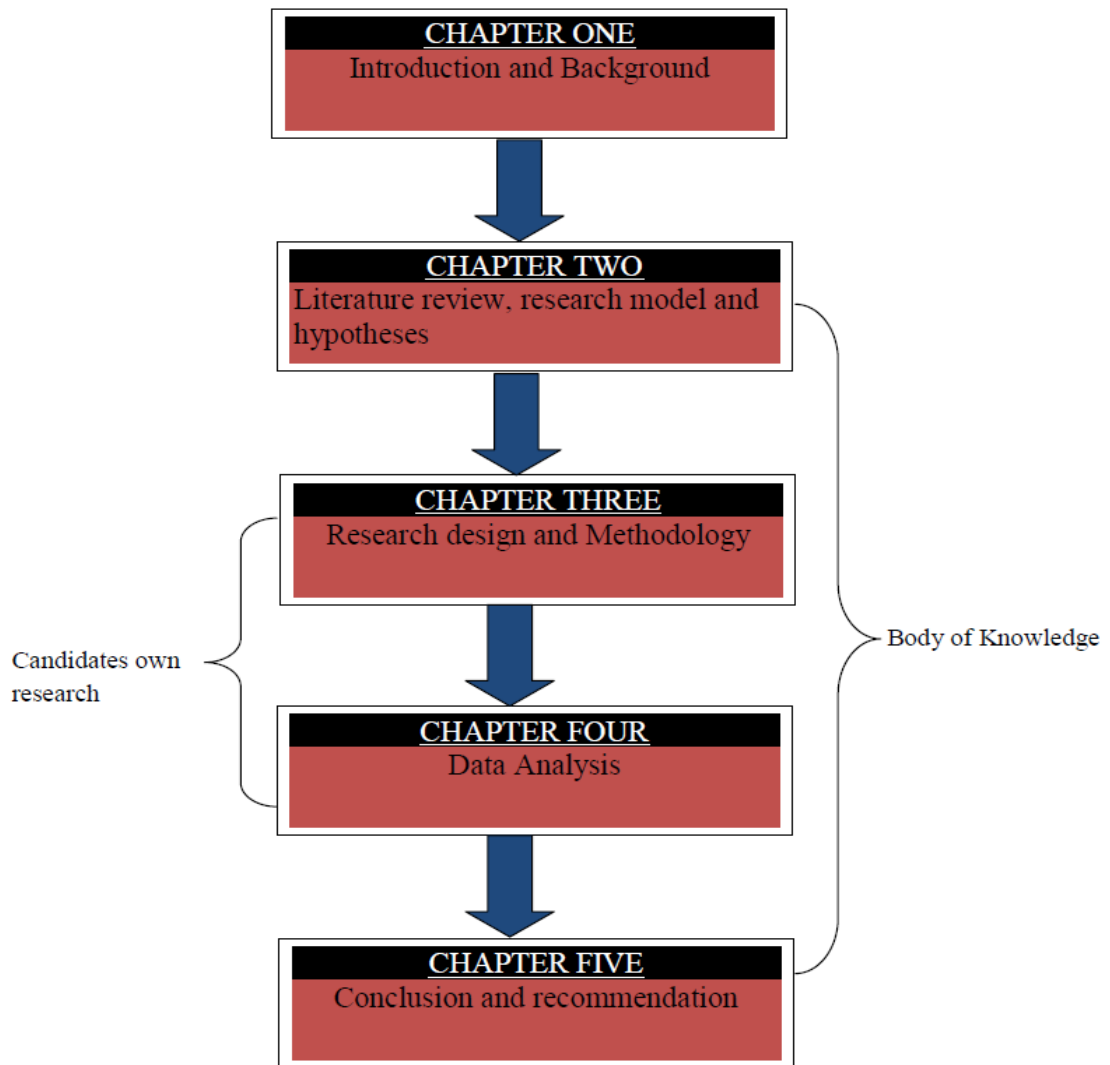


Fig. 6 Research outline adapted from Perry, 2002.

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