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Abstract

Research in the adoption of mobile banking (m-banking) has not offered a comprehensive explanation of low demand for the service. This paper proposes a theoretical model to account for the explanations of the consumer's choice whether to adopt m-banking or not. The model underlies the cognitive processes of reasoning, referencing and contextualising, as postulated in the behavioural decision making. The proposed theoretical framework is based on a review of literature from services marketing, behavioural economics and information systems.

Keywords

M-Banking, Choice, Adoption, Reasoning, Referencing

INTRODUCTION

Over the last two decades, advances in information technology have revolutionized the delivery of banking services. Banks have traditionally delivered services through face-to-face interactions with consumers at branch offices (Lee 2002). But traditional delivery channels are being challenged and complemented by new electronic channels (Meuter et al. 2000; Morrison et al. 1998). The most recent addition is m-banking which is now offered by many banks in many countries. M-banking is defined as provision and availment of banking services with the help of mobile telecommunication devices such as mobile phones (Mallat et al. 2004). There is wide agreement that m-banking will have a significant impact on the market (Dahlberg et al. 2008; Nickerson 2008). Rapid proliferation of mobile devices, particularly mobile phones and recent advancement in wireless technology can potentially be a driving force for m-banking. However, a good correspondence between growth in sales of mobile phones and advanced mobile services has not been found (Blechar et al. 2006). Since late 1990s, many attempted mobile commerce (m-commerce) applications, including m-banking have failed to attract consumers (Liang and Wei 2004). As technology has become an indispensable element of banking services delivery, managerial interest to improve understanding of consumer choice process has also increased in an increasingly competitive market (Constantiou et al. 2007; Lyytinen et al. 2002). Hence, there have been calls for more research to understand consumer's choice process of m-banking services (Choudhury et al. 2008; Constantiou et al. 2007; Venkatesh 2006).

LITERATURE REVIEW

This literature review summarises relevant theories important for this study, followed by the rationale for the proposed conceptual framework.

Relevant theories

A number of theories have been adopted for the theoretical development. These are explained in this section.

The **Innovative Mobile Service Choice Framework** was recently introduced by Blechar et al. (2006) for explaining choice in the mobile telecommunications' market. The framework was motivated by insights of prospect theory (Kahneman et al. 1979) and brought together mental accounting (Thaler 1985) and reason-based choice (Shafir et al. 1993) in the analysis of the individual's choice of mobile services (Constantiou 2008; Constantiou 2009).

The **Mental Accounting Theory** was introduced by (Thaler 1980). Referencing draws heavily on the mental accounting (Bettman et al. 1998). It involves a competitive, alternative-based processing when the consumer compares different attributes or characteristics based on quantitative measures (e.g. price) (Bettman et al. 1998). The current services available to the individual form the reference point in the decision process (Constantiou 2008). When consumer assesses a potential option, he or she develops a cognitive account and compares the subjective value in relation to the reference point (Constantiou 2009).

The **Reason-based Choice** was introduced by Shafir et al. (1993). Reasoning includes the lexicographic process of attribute-based processing (Bettman et al. 1998). The consumer focuses on reasons, which are built from the service's dimensions such as attributes or the qualitative characteristics of the service (Shafir et al. 1993). The consumer invokes a salient and simple reason to facilitate or motivate the adoption decision (Kivetz 1999). By linking a salient reason to a particular service attribute, the consumer avoids the cognitively demanding evaluations and focuses on the service attribute that is easy to justify the choice (Constantiou 2009). Consumer may experience difficulties to choose between options because of uncertainty about the service characteristics (e.g. risk) (Constantiou 2008).

The **Technology Adoption theories** are often used to investigate the phenomenon of technology adoption. The most prominent theories employed in technology adoption studies have been the Technology Acceptance Model (TAM) (Davis 1989), the Theory of Reasoned Action (TRA) (Fishbein et al. 1975), the Theory of Planned Behaviour (TPB) (Ajzen 1991) and Diffusion of Innovations Theory (DOI) (Rogers 1983; Rogers 1995). Venkatesh et al. (2003) integrated these and several others (e.g. Social Cognitive Theory (Bandura 1986)) to develop the Unified Theory of Usage and Acceptance of Technology (UTAUT) model. Another relevant model is Goodhue and Thompson's (1995) Task-Technology Fit (TTF) model (Goodhue et al. 1995). The behaviour investigated is typically the attitude, intention or actual usage of a technology, and factors influencing usage behaviour are assessed as to their impact (Venkatesh et al. 2003).

Rationale for the proposed model

Traditional adoption research has been useful in exploring adoption and use of technologies and novel services (Blechar et al. 2006). However, research in the adoption of mobile services has not offered a comprehensive explanation of the low demand for m-banking yet (Constantiou 2009). Researchers identified two reasons for this (ibid.). First, original adoption theories were derived from organizational setting where management paid for the technologies and the individual had to adopt them. Second, market dynamics may have changed since consumers gained competence, they have options to choose from and need to pay for the service themselves. The creators of adoption models acknowledged such limitations of their models (Dabholkar 1994). The rationale for our proposed conceptual model is two-fold. First, much of the existing research explores mobile services in an isolated fashion, paying little attention to the choice process and usage decision of users in light of the multitude of sources available to fulfil a service need (Venkatesh 2006). Second, understanding adoption factors for mobile services cannot be done by focusing on the service alone (Blechar et al. 2006). User experiences with similar services available through other media may form reference points to influence choice (Kivetz 1999).

Rich and deep integration of insights from adoption literature can help deepen our understanding of the services space (Venkatesh 2006). Given that choosing a technology can also be considered a behaviour, it can be reasonably argued that theories of technology adoption can be used as the basis for examining consumer choice of mobile services (e.g. m-banking) (Brown et al. 2008). The few studies that have investigated consumer choice of technology (Chan et al. 2004; Lin et al. 2006; Szajna 1994) have turned to theories of technology adoption. Szajna (1994) first identified the need for adding the dimension of choice in traditional adoption model. Szajna (1994) applied the TAM for predicting the selection of different database technologies. Lin et al. (2006) applied TPB for predicting the choice of one of the two instant messaging technologies. Chan et al. (2004) used the TAM for predicting the usage of different browsers.

Many of the studies employing adoption frameworks have assumed the context of work environment (Brown et al. 2008). In a break from this tradition, recent research has focused attention on the adoption of Internet and mobile device applications by consumers in society (Hong et al. 2006; Pavlou et al. 2006). Most prior adoption studies used to predict a single application usage in which no alternative is observed (Mathieson 1991; Venkatesh et al. 2003). Researchers have long recognized that the accuracy of predicting behaviour with the presence of alternatives is higher than without them (Jaccard 1981; Sheppard et al. 1988; Szajna 1994). If consumers choose to adopt electronic channels, it has the potential to change the structure banking channels (Choudhury et al. 2008).

RESEARCH MODEL

In this section, we describe the theoretical development of the proposed model for explaining the factors that influence consumer's choice (decision to adopt) of m-banking (see Figure 1). We propose three groups of factors - reasoning, referencing and contextual factors affecting choice. While we recognize that independent variables may be interdependent to one another, the purpose of the current conceptual model is an initial attempt to find the immediate antecedents of the dependent variable. Components of the proposed models are explained below.
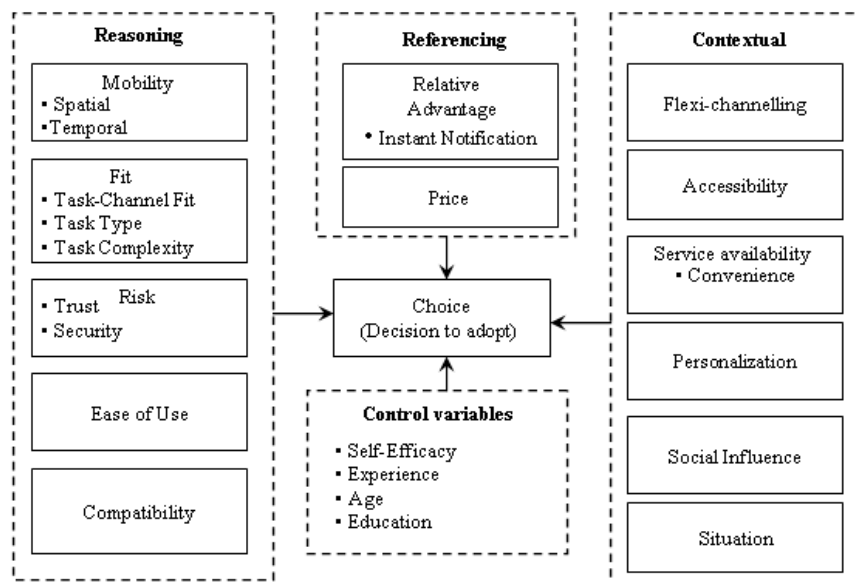

Figure 1: A research model for consumer choice of m-banking

Choice (Decision to adopt)

The decision to adopt m-banking service is a choice based on two cognitive processes of reasoning and referencing (Constantiou 2009; Kivetz 1999). The decision to adopt can be viewed as a process during which the consumer makes a choice of a specific product or service (Constantiou 2008). The consumer's choice has been the research focus of both scholars and practitioners in the field of behavioural decision theory (e.g. (Kahneman et al. 1979)) and marketing (e.g. (Bettman et al. 1998)). Research extending over twenty years in behavioural decision theory has led to the development of two important research streams – mental accounting (**referencing**) (Thaler 1985) and reason-based choice (**reasoning**) (Shafir et al. 1993). Choice among options is **context** dependent and the impact of two cognitive processes in the consumer's decision is influenced by the context in which the choice is made (Bettman et al. 1998).

Reasoning

In reasoning process, evaluations based on the prominent reason, conflict resolution between options, dealing with trade-off contrast and assessing unneeded features of the option take place (Constantiou 2008). We propose mobility, fit, risk, ease of use and compatibility as reasoning factors. These are explained below.

Perceived Mobility (PM)

Mobility refers to the degree of flexibility consumers can achieve by eliminating location and time or schedule restrictions (Yao et al. 2007). Mobile phones provide consumers with ability to bank away from the branches and on the move (Perry et al. 2001). Mobility distinguishes m-banking channel over other channels of banking (Laukkanen 2007). Those consumers who value mobility will more likely choose m-banking (Sarker et al. 2003).

Spatial considerations, and space claiming in particular, are a central issue in the study of mobile services (Tamminen et al. 2004). Space claiming means making a boundary of personal space (ibid.). Space claiming during journeys, for example, can be done in various ways. For example, space claiming on a bus or train can be achieved by reading a newspaper, listening to music on i-pod, watching out of the window, talking on a mobile phone, browsing Internet on a mobile phone, managing financial transactions on mobile phone or with similar actions. Mobile phone can make a boundary of personal space befitting for personal banking and thereby favours choice of m-banking. **Temporal** tensions refer to situations where time becomes problematic in relation to the

action at hand and where, at the same time, the temporal aspect of a situation is actively used to orient action (making temporal tensions in actions visible) (Tamminen et al. 2004). Tamminen et al. (2004) identified and described the two important tensions are hurrying and waiting. When hurrying, people actively orient to the temporal aspects of their actions. They are managing their current doings to fit in a time frame - the planned action is not unfolding as anticipated, and more "doings" must be squeezed into a same amount of time than in a normal situation to keep up with the original plan. When waiting, the relationship between time and action is stretched. The waiting time can then be made use of by various time-killing activities (e.g. by calling somebody or doing m-banking on mobile phone).

Fit

Although traditionally most retail banking services have been delivered via branch offices, technology enables more and more self-services (Mallat et al. 2001). Mallat et al (2001) classified the banking channels into two categories according to the level of automation. Automated channels (e.g. electronic) which execute transaction without human interaction and manual channels (e.g. branch) in which service personnel together with customer formulate unique service need and satisfy the need. Consumers might perceive different **channels** advantageous for different banking **tasks** (Morrison et al. 1998). Researchers stated that the more structured services are, the more automation can be used to deliver them (Apte et al. 1993; Mallat et al. 2001). Different channels can be **fit** for different tasks.

Banking tasks for individual consumers vary from standard transactions to unique services. Standard services are executed according to constant rules and unique services are created for each situation. Standard services could be, for example, view account balances or pay rent if that is based on a fixed price etc. Unique service, in turn, could be, for instance, a loan application or an investment. In practice, of course, many services fall in between these two extremes. Many routine transactions are like standard services, except that some inputs (e.g. amount) vary for each transaction. Withdraw money from an account, transfer money from one account to another or pay a phone bill, are good examples. Tasks done on mobile phones, for example, can be perceived to be risky as opposed to contacting a real person, especially when handling big, critical or unusual transactions.

Relatively simple routine service transactions may fit well for self-service on mobile phones (Fang et al. 2006). Unique service may not fit to deliver on mobile phones. Task **complexity** is important for channel choice and it can be seen as the number of interrelated steps in a task (Pieterson et al. 2007). The more steps or aspects in a single task, the more lengthy or complex the situation gets (ibid.). The perceived complexity affects what channels people use, in most cases people prefer the more personal channels for complex problems or high-value transactions (ibid). For less valued and less complex tasks and routine tasks, like balance check, consumers are likely to prefer mobile channels instead of going to branch.

Perceived Risk (PR)

Webster (1969) introduced risk as an additional dimension in adoption and diffusion (Webster Jr 1969). Technology-enabled services may exhibit pervasive technological, unfamiliar and ambiguous stimuli and may expose consumers to uncertainties (Gan et al. 2006; Sarin et al. 2003). Ho and Ng (1994) found that consumers perceive an existence of risk with the use of electronic banking. Many researchers found **security** (Singh 2004) and **trust** (Kim et al. 2006; Luarn et al. 2005; McKnight et al. 2002) as prime issues for those not banking online. The need for security of personal details and financial information is critical to the choice of m-banking (Brown et al. 2003; Fang et al. 2006). We argue that consumers who perceive using m-banking as a low risk undertaking would be inclined to choose it (Tan et al. 2000).

Perceived Ease of Use (PEOU)

Perceived ease of use recurs in several studies as a significant predictor of adoption behaviour (Venkatesh et al. 2003). PEOU encapsulates the degree to which a consumer views usage of a channel to be relatively free of effort (Davis et al., 1989). Channels that are perceived to be easier to use have a higher likelihood of being chosen by consumers (Pavlou et al. 2006). The size and interface of a mobile phone make m-banking difficult to use and frustrating for some consumers, and so using a mobile phone for banking may be perceived as complex and not easy to use (Brown et al. 2003). However, introduction of iPhone, iPod Touch and other smart phones may cast doubt on this finding, particularly for innovators and technology savvy consumers (Chang et al. 2009).

Perceived Compatibility (PC)

Perceived compatibility is the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters (Rogers 1995). When consumers perceive m-banking services compatible with needs and lifestyle, they are likely to choose m-banking (Lee et al. 2003).

Compatibility may be physical compatibility (for example, whether m-banking software can be run on currently possessed mobile phone) or it may be perceptual compatibility (for example, whether it seems right to do banking on mobile phones) (Morrison et al. 1998). We argue that although m-banking is relatively new, but since most consumers are familiar with mobile phones and the internet, perceived compatibility is likely to influence adoption of m-banking.

Referencing

In referencing process, individual's subjective value is determined by evaluating the perceived gains or losses when compared with the reference point (Kahneman et al. 1979). We propose relative advantage and price as referencing factors. These factors are explained below.

Perceived Relative Advantage (PRA)

Perceived relative advantage is the degree to which an innovation is perceived by (potential) adopter as being better than its precursor (Moore et al. 1991). PRA has been consistently shown to have a significant impact on adoption (Venkatesh et al. 2003). Mallat (2007) suggested that PRA of mobile banking services is different from that specified in adoption theories and include independence of time and place, availability, possibilities for remote payments, and queue avoidance (Mallat 2007). Consumers will choose mobile channel only if they perceive it advantageous over traditional channels (Choudhury et al. 2008). A number of exploratory studies found evidence of the influence of PRA on consumers' decision to adopt cell phone banking (Brown et al. 2003; Lee et al. 2003). We argue that **Instant notification** (Ljungstrand 2001) and delivery via email, SMS, EMS or IM on mobile phones can also be seen as relatively advantageous for banking.

Reference Price (RP)

The reference price is the amount of money that a consumer perceives as 'regular price' (Thaler 1999) based on similar past purchases. High reference prices can increase the transaction utility such that a consumer may buy a redundant product/service because it is considered a 'good deal' (Thaler 1985). Alternatively a consumer may not buy a value-adding product because it is considered too expensive due to a low reference price and thus negative transaction utility (ibid.). Transaction utility is defined as the difference between the amount paid and the reference price for the good (Thaler 1999). Applying the concept of reference price to the m-banking, a reference for a user when deciding to do banking on mobile phone, for example, may be internet banking. The cost for banking on mobile phones is to be borne by consumers, unlike IT usage costs in work settings. Thus, if the price for using m-banking is higher than what the consumer considers as 'normal' for internet banking, then the consumer may decide not to use m-banking because of negative transaction utility.

Contextual

Choice among options depends on contextual factors (Bettman et al. 1998). We propose flexi-channelling, accessibility, service availability, personalization, social influence and situation are contextual factors. These are explained below.

Flexi Channelling (FC)

Milliard (2006) suggested that a multi-channel, rather than a single channel, strategy can successfully reach out to existing consumers in new ways, as well as to previously excluded consumers, both by providing new channels and through better tailored and more appropriate services. Milliard (2007) argued that although face-to-face and increasingly telephone channels remain important to consumers, particularly to disadvantaged groups, the use of electronic channels is rapidly increasing and channel balance is dynamic and evolving (Millard 2007). He added that flexi-channelling is there to stay and will be increasingly important to consumers. It involves informed and skilled users switching between channels according to their personal preferences, to the service being accessed and to the task involved. We argue that such flexi-channelling will be a deliberate choice based on each channel's own strengths and weaknesses for banking, which taken together are highly complementary and beneficial to consumers (Millard 2006).

Perceived Accessibility (PA)

The more accessible a channel is, the less effort is needed to use it (Karahanna et al. 1999). Pieterson and van Dijk (2007) stated that speed is rooted in accessibility and implies two things: contact speed and feedback speed (Pieterson et al. 2007). Firstly, contact speed implies the time needed to get in contact with bank via a channel. Waiting lines on the telephone and the distance towards offices to visit front desks are mentioned as negative aspects of some channels towards contact speed. Secondly, feedback speed is the speed of getting the needed

service when you already have contact. A consumer may have reached the bank branch too quickly, but found a long queue before he or she can talk to a teller or reach the front desk or stuck on pre-recorded telephone messages. If the supporting technological infrastructures are easily and readily available, banking services using that infrastructure will become more feasible (Goh 1995). We argue that high penetration of mobile phones is a facilitator of m-banking adoption due to higher perceived accessibility.

Perceived Service Availability (PSA)

Perceived service availability is defined as the extent to which an information appliance is perceived as being able to provide pervasive and timely connections (Hong et al. 2006). Accessing banking information at anytime and from anywhere provides consumers with increased **convenience** and thereby influence choice of m-banking. Without a guarantee of pervasive and timely connections (Hong et al. 2006), the relative advantage of m-banking would be seriously undermined. We argue that since mobile phone is ubiquitous – always available with mobile phone user anywhere and 'always-on' m-banking service is available round the clock on mobile phone, consumer may view the decision to adopt m-banking favourably.

Perceived Personalization (PP)

Personalization refers to customizing services to an individual customer through the adaptive behaviour of service representatives (Shen et al. 2009). The degree of personalization applies to the possibility to adjust a message or service to the receiver, to increase understanding and to reduce equivocality (van Deursen et al. 2006). Pieterson and Dijk (2007) found this factor important for two reasons. First of all, personal contact is being perceived as important because information is better understood. The importance of this type increases as task complexity and ambiguity increase. Second, people may prefer personal contact because they enjoy the fact of talking to a real person, in stead of a 'dead' machine. Wan et al. (2005) found that those consumers who are less financially and cognitively resourceful but have plenty of time, primarily rely on branch banking and visit bank branches regularly. These consumers tend to use only the basic banking services, such as withdrawing cash, checking account balances, and transferring funds between accounts (Wan et al. 2005). They suggested that those who are wealthier and have higher time cost tend to prefer electronic banking.

Social Influence (SI)

Social influence is driven by social values that define normal behaviour for the group or society to which an individual belongs (Engel et al. 2001). Prior studies defined social influence as the extent to which users believe that "important others" would approve or disapprove of their performing a given behaviour (Ajzen 1991; Hong et al. 2006). The SI from peers, superiors, and family members has been found to affect consumer behaviour (e.g., (Childers et al. 1992)) as well as IT adoption decisions at home (Venkatesh et al. 2001) and mobile devices for mobile data services (Hong et al. 2006). When usage of an innovation is seen as a form of public consumption, such usage is significantly influenced by friends and colleagues (Carroll et al. 2002; Hong et al. 2006).

Situation (Sit)

Certain situations enable people to perform actions that are significant only at that specific moment (Tamminen et al. 2004). These actions do not necessarily replace the "main" or "usual" way of dong things (ibid.). When a consumer evaluates a potential purchase, he assesses the relative benefits and costs of the specified product or service in relation to a reference situation of a similar purchase (Thaler 1985). The reference situation is the reference state (Kahneman et al. 1984) according to which the overall value of a purchase is estimated by the consumer and serves as a cognitive comparison point to facilitate subsequent choices (Blechar et al. 2006). Reference situation can explain why a consumer may be willing to pay more for a certain product or service in specific situations as compared to others (ibid.). In an exploratory study for mobile payments, Mallat (2007) found the adoption of mobile payments to be dynamic, depending on certain situational factors such as a lack of other payment methods or urgency (Mallat 2007). In the case of m-banking services, the reference situation could be the electronic and/or physical source, such as internet and branch, where banking transaction was conducted previously. If the service was taken in the branch, the reference situation is branch when this is available, however, this reference situation may change when branch is not available, for example when travelling abroad and hence increase transaction utility.

Control Variables

We propose to control the self-efficacy, age, education and experience for their possible effects on choice of m-banking. These control variables are explained below.

Self-Efficacy

Agarwal et al. (2000) described self-efficacy as the confidence of an individual in his or her ability to use a technology. Self-efficacy for m-banking is the judgement of one's ability to use m-banking services (Compeau et al. 1995). Luarn and Lin (2005) found empirical evidence of correlation between self-efficacy and mobile services. We argue that a consumer with high confidence of his or her ability to use m-banking will view adopting m-banking services favourably than a consumer with lower self-efficacy.

Experience

Karjaluoto et al. (2002) found experience with computers and technology plays an important role in choice formation towards electronic banking. Tan and Teo (2000) found that the greater the Internet experience of an individual, the more likely that Internet banking would be chosen for use. In contrast, Brown et al. (2003) found no influence of cell phone experience on consumer choice of m-banking. We argue that those with greater mobile phone experience are more likely to choose m-banking channel. Given the simplicity of using a mobile phone for making and receiving calls, however, it is anticipated that the type of experience, particularly more sophisticated uses, such as sending text messages (SMS), performing calculations, and the playing of games etc. is more likely to influence the choice of m-banking.

Age

Rogers (1995) states that earlier adopters are not different from later adopters in age. But the elderly has traditionally been considered resistant to new technology (Oumlil et al. 2000). Suoranta and Mattila (2004) found that potential users of m-banking services are likely to be older than traditional expectations in a Finnish study. This contradicts findings in other studies that mature customers are usually not innovators or early adopters, but rather belong to the late majority or even laggards in terms of technology-based new services adoption (Gilly et al. 1985; Perumal et al. 2004).

Education

Earlier adopters of innovative services are often stated to be better educated and to have higher social status (professional, technical and managerial) occupations (Suoranta and Mattila, 2004). Researchers found that the likelihood to choose electronic banking rises with higher levels education (Kolodinsky et al. 2000; Sharman 2006).

CONCLUSION AND FUTURE RESEARCH

In this research-in-progress paper, we have proposed a model for consumer choice of m-banking underlying the concepts of behavioural decision making. The contribution of this research is twofold. First, it proposes an adoption model of m-banking. It expands the theoretical repertoire of adoption research by introducing a research model based on behavioural decision theory as an alternative research approach. The model focuses on individual consumer's cognitive processes influencing the decision to adopt m-banking in the case of technologically sophisticated individuals. The model incorporates the concepts of choice, mobility and flexi-channelling. Second, it may provide a practical tool, which can generate useful insights for the marketing strategies of the banks and may enable them to increase their market share in a highly competitive consumer banking environment. We intend to validate this model in two phases. In the exploratory phase, we will interview managers of companies who are likely to adopt banking services on their advanced mobile phones. To better determine the structural fit of the proposed model and improve its generalisability a quantitative study using questionnaire will follow the first phase.

REFERENCES

Ajzen, I. "The theory of planned behavior," *Organizational Behavior and Human Decision Processes* (50:2) 1991, pp 179-211.

Apte, U.M., and Vepsäläinen, A.P.J. "High tech or high touch? Efficient channel strategies for delivering financial services," *The Journal of Strategic Information Systems* (2:1) 1993, pp 39-54.

Bandura, A. "Social Foundations of Thought and Action: A Social Cognitive Theory," 1986.

Bettman, J.R., Luce, M.F., and Payne, J.W. "Constructive consumer choice processes," *Journal of Consumer Research* (25:3), Dec 1998, pp 187-217.

Blechar, J., Constantiou, I.D., and Damsgaard, J. "Exploring the influence of reference situations and reference pricing on mobile service user behaviour," *European Journal of IS* (15:3), Jun 2006, pp 285-291.

Brown, I., Cajee, Z., Davies, D., and Stroebel, S. "Cell phone banking: predictors of adoption in South Africa - an exploratory study," *International Journal of Information Management* (23:5), Oct 2003, pp 381-394.

Brown, I., Letsididi, B.N., and Nazeer, M.N. "Internet access in South African homes: Factors influencing consumer choice," *Proceedings of the 14th Americas Conference on Information System*, 2008.

Carroll, J., Howard, S., Vetere, F., Peck, J., and Murphy, J. "Just what do the youth of today want? Technology appropriation by young people," *System Sciences, 2002. HICSS. Proceedings of the 35th Annual Hawaii International Conference on*) 2002, pp 1777-1785.

Chan, H.C., Teo, H.H., Jing, Y., and Yan, L.I. "The Technology Acceptance Model for Competitive Software Products," *Proceedings of the Eighth Pacific Asia Conference on Information Systems*) 2004, pp 1848–1855.

Chang, Y.F., Chen, C.S., and Zhou, H. "Smart phone for mobile commerce," *Computer Standards & Interfaces* (31:4) 2009, pp 740-747.

Childers, T.L., and Rao, A.R. "The Influence of Familial and Peer-Based Reference Groups on Consumer Decisions," *Journal of Consumer Research* (19:2) 1992, p 198.

Choudhury, V., and Karahanna, E. "The relative advantage of electronic channels: a multidimensional view " *MIS Quarterly* (32:1), 03 2008, pp 179-200.

Compeau, D.R., and Higgins, C.A. "Computer self-efficacy: Development of a measure and initial test," *MIS Quarterly* (19:2) 1995, pp 189-211.

Constantiou, I.D. "Consumer behaviour and Advanced Mobile Data Services: opening the 'black box'of the individual's choice process," *Int. J. Social and Humanistic Computing* (1:1) 2008, p 67.

Constantiou, I.D. "Consumer behaviour in the mobile telecommunications' market: The individual's adoption decision of innovative services," *Telematics and Informatics* (26:3) 2009, pp 270-281.

Constantiou, I.D., Damsgaard, J., and Knutsen, L. "The four incremental steps toward advanced mobile service adoption," *Communications of the Acm* (50:6), Jun 2007, pp 51-55.

Dabholkar, P.A. "Incorporating choice into an attitudinal framework: Analyzing models of mental comparison processes," *Journal of Consumer Research* (21:1), 06 1994, p 100.

Dahlberg, T., Mallat, N., Ondrus, J., and Zmijewska, A. "Past, present and future of mobile payments research: A literature review," *Electronic Commerce Research and Applications* (7:2) 2008, pp 165-181.

Davis, F.D. "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly* (13:3) 1989, pp 319-340.

Engel, J.F., Blackwell, R.D., and Miniard, P.W. "Consumer Behavior, 8th," *Chicago: Dryden,* 2001.

Fang, X., Chan, S., Brzezinski, J., and Xu, S. "Moderating Effects of Task Type on Wireless Technology Acceptance," *Journal of Management Information Systems* (22:3) 2006, pp 123-157.

Fishbein, M., and Ajzen, I. *Belief, attitude, intention, and behavior: an introduction to theory and research*, 1975.

Gan, C., Clemes, M., Limsombunchai, V., and Weng, A. "A logit analysis of electronic banking in New Zealand," *International Journal of Bank Marketing* (24:6) 2006, pp 360-383.

Gilly, M.C., and Zeithaml, V.A. "The Elderly Consumer and Adoption of Technologies," *The Journal of Consumer Research* (12:3) 1985, pp 353-357.

Goh, H.P. "The diffusion of Internet in Singapore," *Faculty of Business Administration National University of Singapore*) 1995.

Goodhue, D.L., and Thompson, R.L. "Task-Technology Fit and Individual Performance," *MIS Quarterly* (19:2) 1995, pp 213-236.

Ho, S., and Ng, V. "Customers' Risk Perceptions of Electronic Payment," *International journal of Bank Marketing* (12:8) 1994, pp 26-38.

Hong, S.J., and Tam, K.Y. "Understanding the Adoption of Multipurpose Information Appliances: The Case of Mobile Data Services," *Information Systems Research* (17:2) 2006, pp 162-179.

Jaccard, J. "Attitudes and behavior: Implications of attitudes toward behavioral alternatives," *Journal of Experimental Social Psychology* (17:286-307) 1981.

Kahneman, D., and Tversky, A. "Prospect theory: an analysis of decision under risk," *Econometrica* (47:2) 1979, pp 263-291.

Kahneman, D., and Tversky, A. "Choices, values, and frames," *American Psychologist* (39) 1984, p 341350.

Karahanna, E., and Straub, D.W. "The psychological origins of perceived usefulness and ease-of-use," *Information & Management* (35:4) 1999, pp 237-250.

Kim, D., and Benbasat, I. "The Effects of Trust-Assuring Arguments on Consumer Trust in Internet Stores: Application of Toulmin's Model of Argumentation," *Information Systems Research* (17:3), 09 2006, pp 286-300.

Kivetz, R. "Advances in research on mental accounting and reason-based choice," *Marketing Letters* (10:3) 1999, pp 249-266.

Kolodinsky, J., and Hogarth, J.M. "Bricks or Clicks? Consumers' Adoption of Electronic Banking Technologies," *Consumer Interests Annual* (46) 2000, pp 180-184.

Laukkanen, T. "Bank Customers' Channel Preferences for Requesting Account Balances," *40th Annual Hawaii International Conference on System Sciences*) 2007, pp 148a-148a.

Lee, J. "A key to marketing financial services: the right mix of products, services, channels and customers," *Journal of Services Marketing* (16:3) 2002, pp 238-258.

Lee, M.S.Y., McGoldrick, P.J., Keeling, K.A., and Doherty, J. "ZMET to explore barriers to the adoption of 3G mobile banking," *International Journal of Retail & Distribution Management* (31:6) 2003, pp 340-348.

Lin, J., Chan, H.C., and Wei, K.K. "Competing Application Usage With Theory of Planned Behavior," *Journal of the American Society for Information Science and Technology* (57:10) 2006, pp 1338-1349.

Ljungstrand, P. "Context awareness and mobile phones," *Personal and Ubiquitous Computing* (5:1) 2001, pp 58-61.

Luarn, P., and Lin, H.H. "Toward an understanding of the behavioral intention to use mobile banking," *Computers in Human Behavior* (21:6), Nov 2005, pp 873-891.

Lyytinen, K., and Youngjin, Y. "Research Commentary: The Next Wave of Nomadic Computing," *Information Systems Research* (13:4), 12 2002, pp 377-388.

Mallat, N. "Exploring consumer adoption of mobile payments - A qualitative study," *The Journal of Strategic Information Systems* (16:4) 2007, pp 413-432.

Mallat, N., Dahlberg, T., Saarinen, T., and Tuunainen, V.K. "Efficient Service Production And Consumer Choice Of Delivery Channels," *14th Bled Electronic Commerce Conference, Bled, Slovenia*) 2001.

Mallat, N., Rossi, M., and Tuunainen, V.K. "Mobile banking services," *CACM* (47:5) 2004, pp 42-46.

Mathieson, K. "Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behavior," *Information Systems Research* (2:3) 1991, pp 173-191.

McKnight, D.H., Choudhury, V., and Kacmar, C. "Developing and Validating Trust Measures for e-Commerce: An Integrative Typology," *Information Systems Research* (13:3), 09 2002, pp 334-359.

Meuter, M.L., Ostrom, A.L., Roundtree, R.I., and Bitner, M.J. "Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service," *Journal of Marketing* (64:3) 2000, pp 50-64.

Millard, J. "eGovernment for an Inclusive Society: Flexi-channelling and Social Intermediaries," *eGOV conference 2006*) 2006.

Millard, J. "Chapter IV E-governance and E-participation: Lessons in promoting inclusion and empowerment," *E-Participation and E-Government: Understanding the Present and Creating the Future*) 2007.

Moore, G.C., and Benbasat, I. "Development of an instrument to measure the perceived characteristics of adopting an information technology innovation," *Information Systems Research* (2:3) 1991, pp 192-222.

Morrison, P.D., and Roberts, J.H. "Matching Electronic Distribution Channels to Product Characteristics: Role of Congruence in Consideration Set Formation," *Journal of Business Research* (41:3) 1998, pp 223-229.

Nickerson, R. "Whither Wireless? Future Directions in Mobility," *CACM,* 2008.

Oumlil, A.B., and Williams, A.J. "Consumer education programs for mature consumers," *Journal of Services Marketing* (14:3) 2000, p 232.

Pavlou, P., and Fygenson, M. "Understanding and Predicting Electronic Commerce Adoption: An Extension of the Theory of Planned Behavior," *Management Information Systems Quarterly* (30:1) 2006, p 44.

Perry, M., O'Hara, K., Sellen, A., Brown, B., and Harper, R. "Dealing with mobility: understanding access anytime, anywhere," *ACM Transactions on Computer-Human Interaction (TOCHI)* (8:4) 2001, pp 323-347.

Perumal, V., and Shanmugam, B. "Internet banking: boon or bane?," *Journal of Internet Banking and Commerce* (9:3) 2004.

Pieterson, W., and Dijk, J.V. "Channel choice determinants; an exploration of the factors that determine the choice of a service channel in citizen initiated contacts," *Proceedings of the 8th annual international conference on Digital government research,* 2007, pp 173-182.

Rogers, E.M. *Diffusion of Innovations* Free Press, 1983.

Rogers, E.M. *Diffusion of innovation*, (4 ed.) The Free Press New York, 1995.

Sarin, S., Sego, T., and Chanvarasuth, N. "Strategic use of bundling for reducing consumers' perceived risk associated with the purchase of new high-tech products," *Journal of Marketing Theory and Practice* (11:3) 2003, pp 71-83.

Sarker, S., and Wells, J.D. "Understanding mobile handheld device use," *CACM* (46:12), Dec 2003, pp 35-40.

Shafir, E., Simonson, I., and Tversky, A. "Reason-based choice," *Cognition* (49:1-2) 1993, pp 11-36.

Sharman, W. "Understanding consumer adoption of Internet Banking: An interpretive study in the Australian Banking Context," *Journal of Electronic Commerce Research.* (7:2) 2006, pp 50 - 66.

Shen, A., and Ball, A.D. "Is personalization of services always a good thing? Exploring the role of technology-mediated personalization (TMP) in service relationships," *Journal of Services Marketing* (80) 2009, p 92.

Sheppard, B.H., Hartwick, J., and Warshaw, P.R. "The Theory of Reasoned Action: A Meta-Analysis of Past Research with Recommendations for Modifications," *Journal of Consumer Research* (15:3) 1988, p 325.

Singh, A.M. "Trends in South African internet banking," *Aslib Proceedings: New Information Perspectives* (56:3) 2004, pp 187-196.

Szajna, B. "Software Evaluation and Choice: Predictive Validation of the Technology Acceptance Instrument," *MIS Quarterly* (18:3) 1994, pp 319-324.

Tamminen, S., Oulasvirta, A., Toiskallio, K., and Kankainen, A. "Understanding mobile contexts," *Personal and Ubiquitous Computing* (8:2) 2004, pp 135-143.

Tan, M., and Teo, T.S.H. "Factors influencing the adoption of Internet banking," *Journal of the AIS* (1:1) 2000.

Thaler, R. "Mental accounting and consumer choice," *Marketing science,* 1985, pp 199-214.

Thaler, R.H. "Towards a Positive Theory of Choice," *Journal of Economic Behavior and Organization* (4:3) 1980, pp 199-214.

Thaler, R.H. "Mental accounting matters," *Journal of Behavioral Decision Making* (12:3) 1999, pp 183-206.

van Deursen, A., and Pieterson, W. "The Internet as a service channel in the Public Sector," *ICA Conference, Dresden, Germany,* 2006.

Venkatesh, V. "Where To Go From Here? Thoughts on Future Directions for Research on Individual-Level Technology Adoption with a Focus on Decision Making," *Decision Sciences* (37:4) 2006, pp 497-518.

Venkatesh, V., and Brown, S.A. "A longitudinal investigation of personal computers in homes: adoption determinants and emerging challenges " *MIS Quarterly* (25:1), 03 2001, pp 71-102.

Venkatesh, V., Morris, M.G., Davis, G.B., and Davis, F.D. "User Acceptance of Information Technology: Toward a Unified View," *MIS Quarterly* (27:3) 2003, pp 425-478.

Wan, W.W.N., Luk, C.L., and Chow, C.W.C. "Customers' adoption of banking channels in Hong Kong," *International Journal of Bank Marketing* (23:3) 2005, pp 255-272.

Webster Jr, F.E. "New Product Adoption in Industrial Markets: A Framework for Analysis," *Journal of Marketing* (33:3) 1969, pp 35-39.

Yao, Y., and Murphy, L. "Remote electronic voting systems: an exploration of voters' perceptions and intention to use," *European Journal of Information Systems* (16:2) 2007, pp 106-120.

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