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The Influence of Trust on Internet Banking Acceptance

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Abstract

The theory of diffusion of innovation (IDT) has been widely used to examine factors that influence an individual to adopt an innovation or a new technology. In online environment, trust has been suggested to play an important role in influencing one's acceptance of an innovation. The purpose of this study is to test empirically the influence

of trust together with some of the attributes of IDT on Internet banking acceptance. We surveyed 1164 business students and MBAs in four public universities in Malaysia. A structural equation modeling was employed to analyze the data. The results show that trust, relative advantage, and trialability, have a significant effect on attitude toward using Internet banking. Consequently, attitude significantly affects the intention to use the technology.

Keywords: Technology Acceptance, Innovation Diffusion Theory, Trust, Internet banking

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INTRODUCTION

The theory of diffusion of innovation (IDT) (Rogers, 1983) suggests that innovation adoption is a process of uncertainty reduction. Before individuals adopt a technology, they will gather and synthesize information about the technology. The result of this process is beliefs about using the technology. These beliefs consequently cause individuals to accept or reject the technology.

Rogers (1995) suggested five key beliefs that influence individuals to adopt an innovation. They are relative advantage, compatibility, complexity, trialability, and observability. Relative advantage is defined as “the degree to which an innovation is perceived as being better than the idea it supersedes (p. 212).” According to Rogers, relative advantage requires the adopter to analyze the costs and benefits of using an innovation, which can be expressed economically, socially, or in other ways. Compatibility is defined as “the degree to which an innovation is perceived as consistent with the existing values, past experiences, and the needs of potential (p. 224).” Compatibility is evaluated relative to the adopter’s socio-cultural values and beliefs, previously introduced ideas, and client needs for innovation.

Complexity is defined as “the degree to which an innovation is perceived as relatively difficult to understand and use (p. 242).” Complexity reflects the level of physical or mental efforts necessary to use an innovation. Trialability is defined as “the degree to which an innovation may be experimented with on a limited basis (p. 243).” Trialability allows individuals to “test drive” an innovation before it is being adopted. The final belief is observability, which is defined as “the degree to which the results of an innovation are visible to others (p. 244).”

Trust is a willingness to be vulnerable to the actions of another person or people (Mayer et al., 1995). This is based on expectations that the other person will behave in a responsible manner (Pavlou, 2003) and will not take advantage of a dependence upon him or her (Gefen et al., 2003). Trust is perhaps a critical component in building economic relationships in an online environment such as Internet banking due to a greater perception of risk and uncertainty. This may be due to a higher threat of possible inappropriate behaviors such as security lapses where vital private information can be

stolen by hackers (Suh and Han, 2002). The security lapses may result in financial losses to the users or adopters of the technology. Unless individuals trust the technology, in which this negative possibility will not occur, it is more likely that the technology will not be adopted.

RESEARCH MODEL

The purpose of this study is to test empirically the influence of trust, together with some of the attributes of the theory of diffusion of innovation (IDT) on Internet banking acceptance. We used Internet banking as the targeted technology. With the exception of observability, we have included and tested all other beliefs of IDT in this study. Observability was excluded in this study mainly due to the nature of the targeted technology chosen i.e., Internet banking. We feel individuals typically do banking transactions privately. The acts are not observable and visible to others (Tan and Teo, 2000).

In this study, we hypothesized that trust, relative advantage, compatibility, ease of use (complexity), and trialability positively affect an individual's attitude toward using Internet banking and consequently attitude positively affects the intention to use the technology. The research model for this study is shown in Figure 1.

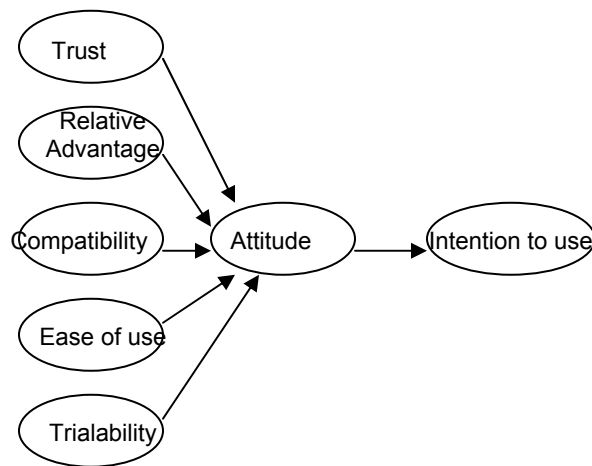


Figure 1: Research Model

There are six hypotheses in this study.

Hypothesis 1: Trust positively affects the attitude toward using Internet banking.

Hypothesis 2: Relative advantage of using Internet banking positively affects the attitude toward using the technology.

Hypothesis 3: Compatibility of Internet banking with one's values positively affects the attitude toward using the technology.

Hypothesis 4: Ease of use of Internet banking positively affects the attitude toward using the technology.

Hypothesis 5: Trialability of Internet banking positively affects the attitude toward using

the technology.

Hypothesis 6: Attitude about Internet banking positively affects the intention to use the technology.

PREVIOUS STUDIES

Review of literature indicates that the applications of IDT were varied. IDT was utilized in instrument development e.g., Moore and Benbasat, (1991); was used as part of research models e.g., Tan and Teo (2000), Taylor and Todd (1995); and was compared to other theories such as TAM e.g., Karahanna et al. (1999), Plouffe et al. (2001). IDT has also been widely used in IT related technologies especially in gauging users' acceptance of the technology under study. It has been tested on operating systems Karahanna et al. (1999), smart card readers Plouffe et al. (2001) and Internet banking Tan and Teo (2000), Gerrard and Cunningham (2003). Some of the relevant studies are shown in Table 1 below.

Table 1. Studies Utilizing IDT

Source	Relevant Findings
Moore and Benbasat (1991)	38-item instrument, comprising eight scales: relative advantage, compatibility, ease of use, result demonstrability, image, visibility, trialability, and voluntariness.
Taylor and Todd (1995)	Relative advantage (perceived usefulness) was significant determinant of attitude. Ease of use and compatibility were not significantly related to attitude.
Parthasarathy and Bhattacharjee (1998)	Perceived usefulness and compatibility were significant predictors of post-adoption behavior (continuing or discontinuing with the service). Ease of use was not significant.
Karahanna et al. [1999]	Ease of use, perceived usefulness, visibility, result demonstrability, and trialability were significantly affected attitude toward adopting the software among the potential adopters. While only image and perceived usefulness were significant among the users.
Tan and Teo (2000)	Relative advantage, compatibility, and trialability significantly affected the intention to use Internet banking services. Complexity was not significantly related to intention.
Plouffe et al. (2001)	Significant antecedents of the intention to adopt were relative advantage, compatibility, image, visibility, trialability, and voluntariness.
Chen et al. (2002)	Compatibility was found positively affected user's attitude toward using the virtual store.
Lau (2002)	Perceived usefulness, perceived ease of use or complexity, relative advantage, compatibility, and observability were significantly correlated with attitude of using the online trading system.
Hardgrave et al. (2003)	Significant determinants of intentions to follow methodologies to improve software development processes were usefulness and compatibility. Complexity was not significant.
Gerrard and Cunningham (2003)	Dimensions that influence the adoption were convenience, compatibility, complexity, PC competent, and innovativeness.

From a literature search, we found studies that provide empirical support indicating the

importance of trust as a direct or indirect influencing factor in an individual's intention to engage in online economic activities. Relevant studies and their findings are shown in Table 2 below.

Table 2. Studies on Trust in Online Environment

Source	Relevant Findings
Jarvenpaa et al. (2000)	Willingness to buy in an Internet store was affected by attitude and perception of risk. Attitude and perception of risk were affected by trust, which in turn was affected by consumer's perception of size and reputation of the store.
Suh and Han (2002)	Trust had a significant effect on intention to use and attitudes toward using Internet banking.
George (2002)	Privacy and Internet trustworthiness were significant determinants of attitude toward Internet purchasing. In turn, attitude had a significant effect on intent to purchase.
Gefen (2002)	Purchase intention was influenced by trust, which in turn, was affected by integrity and benevolence.
Bhattacharjee (2002)	Consumers' willingness to transact online was influenced by trust, which in turn was affected by familiarity. Familiarity was significant on consumers' willingness to transact.
Gefen et al. (2003)	Trust was a significant predictor of purchase intention for both potential and repeat customers. Familiarity and disposition to trust were significant on trust for both customers.
Sohail and Shanmugham (2003)	Trust in one's bank had a significant influence on him or her to use Internet banking. Other factors were Internet accessibility, attitude towards change, computer and Internet access costs, security concerns, ease of use, and convenience.
Pavlou (2003)	Trust was a significant predictor of intention to transact in both samples. Trust had a significant effect on perceived risk, perceived usefulness, and perceived ease of use.

METHODOLOGY

Subjects for this study were business school students and MBAs at four public universities in West Malaysia. All items intended to measure the variables in this study were adopted from previously validated instruments. Structural equation modeling (SEM) was used to analyze the data. A confirmatory factor analysis was performed to assess the reliability and validity of the measurement model before the structural model was tested.

ANALYSIS

One thousand three hundred fifty questionnaires were distributed to respondents. One thousand one hundred and sixty four questionnaires were returned (86.2 percent rate of return). Out of 1164 returned questionnaires, 326 responses were from current users of Internet banking. We believe factors that influence an individual's intention to adopt an innovation might be different among users and non-user. By grouping both users and non-users together, the validity of the findings might be affected. Therefore, we excluded responses from the users in the final analysis. Missing data analysis resulted in another 21 cases being dropped. The final count for this study was 817 cases.

Table 3 provides the respondents' demographic profile. About 21% of the respondents were male and 79% were female. Their age ranged from 20 to 50 with mean age of about 22. Most of them were undergraduates representing 92% of the total sample. With respect to their racial identity, about 50% were Malay, 42% were Chinese, 5% were Indian, and 3% were others.

Table 3. Demographic Profile (n = 817)

Variable	Category	Frequency	Percent
Gender	Male	174	21.3
	Female	643	78.7
Age	20-21	433	53.0
	22-23	280	34.3
	23+	104	12.7
Class standing	Undergraduate	752	92.0
	Masters	65	8.0
Race	Malay	404	49.5
	Chinese	341	41.7
	Indian	45	5.5
	Others	27	3.3

A confirmatory factor analysis was conducted to assess the reliability and validity of the measurement model. We first assessed the measurement model in terms of its overall fit to the data. We examined factor loadings for each items. Following Hair et al. [22] suggested guidelines, we dropped two items with indicator reliability below 0.5. We ran a confirmatory factor analysis using the retained items. Table 4 shows the overall fit of the measurement model. The χ^2 was 1517.46. The NFI, NNFI, CFI and RMSEA values indicate an acceptable fit and exceed the common acceptance levels as suggested by Hair et al. (1998).

Table 4. Fit Indices for the Measurement Model

χ^2	d.f.	NFI	NNFI	CFI	RMSEA
1517.46	474	0.93	0.95	0.95	0.052

The composite reliability was calculated to assess the internal consistency of the construct indicators. All constructs had composite reliability greater than 0.70, which was higher than the benchmark of 0.70 as recommended by Hair et al. (1998) (Table 5). In addition to the composite reliability measures, the average variance extracted was also computed. All constructs values were above 0.5, the guideline suggested by Hair et al. (1998) (Table 5).

Table 5. Composite Reliability and Average Variance Extracted

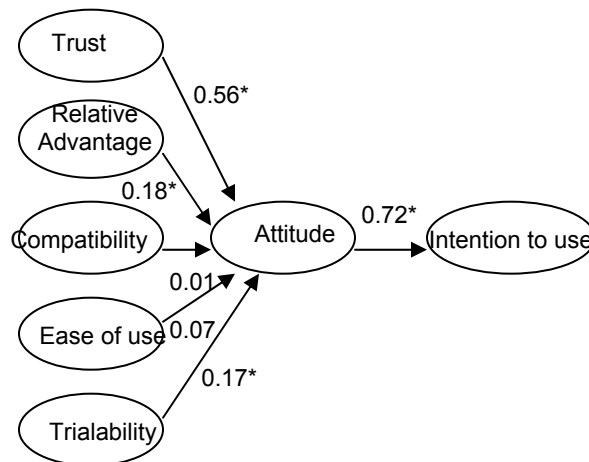
Latent variables	Composite reliability	Average variance extracted
Trust	0.93	0.73
Relative advantage	0.90	0.65
Ease of use	0.87	0.60
Compatibility	0.87	0.64
Trialability	0.91	0.67
Attitude	0.94	0.76
Intentions	0.95	0.79

We tested the structural model. We freed two parameters namely compatibility, ease of use and ease of use, relative advantage. The final structural model is shown in Table 6.

Table 6. Fit Indices for the Structural Model

Model	χ^2	d.f.	NFI	NNFI	CFI	RMSEA
Base	2768	489	0.88	0.89	0.90	0.076
Final	2381	487	0.90	0.91	0.91	0.069

A graphic representation of the final structural model, which includes the standardized path coefficients, is displayed in Figure 2.



Note: * significant at $p < 0.05$

Figure 2. Final Model

FINDINGS AND PRACTICAL IMPLICATIONS

As hypothesized (H1), trust was found to have a significant positive effect on attitude toward using Internet banking. A large standardized coefficient as compared to other factors suggests its larger contribution in influencing the attitude toward using Internet banking. Practical implication of this finding is that to form a positive attitude and

consequently Internet banking acceptance, banks need to develop strategies that could improve the customer's trust in the underlying technology. Strategies may include development of security technology, embracing encryption and firewall technology and working closely with online security firms. These may reduce the perception of Internet banking as uncertain and unsafe.

Relative advantage was found to have a significant positive effect on attitude toward using Internet banking. The finding suggests that a positive attitude towards Internet banking could be formed if customers feel Internet banking is useful. Banks could highlight the benefits of Internet banking such as faster and convenient execution of financial transactions, lower economic cost and convenient online access to financial information.

However, results of this study did not support Hypothesis 3. This finding suggests that compatibility of the technology with individual existing values and needs does not influence him or her to form a positive attitude toward Internet banking. This may indicate a higher receptiveness level of the respondents toward the Internet banking.

Hypothesis 4 was also not supported in this study. We believe the unsupported hypothesis might be due to the selection of the subjects in this study. We feel the subjects (undergraduates and MBAs) are computer literate and very comfortable with the technology. The issue of ease of use might not arise.

This study found that trialability has a significant positive effect on the attitude toward using Internet banking. This finding suggests that a positive attitude towards Internet banking can be formed if potential users have the opportunity to test-drive the technology. To encourage the acceptance, banks should allow potential customers to try Internet banking by providing step-by-step demonstration on how to use Internet banking on their website.

Finally, attitude was found to have a significant positive effect on the intention to use Internet banking. The results suggest that a positive evaluation of Internet banking by individuals will lead to their intention to use the technology. This suggests that prior to the acceptance of Internet banking, the formation of positive attitude about the technology should first take place.

As found in this study, trust, relative advantage, and trialability significantly affect attitude. Banks can exploit these factors to create a positive attitude towards Internet banking among their customer. Awareness of these factors should facilitate the formation of positive attitudes about the technology, consequently leading to intention to use the technology.

CONCLUSION

This study has found that trust significantly affect attitude toward Internet banking acceptance. Researchers e.g., (Gefen et al. (2003), Jarvenpaa et al. (2000) have long advocated the importance of trust in uncertain and risky environment such as online activities. Internet banking uses a new platform in delivering the services. The activities

are performed online and processes virtually. Personal data are transmitted online that hacker might steal. This concern requires a high level of trust before individuals will start using Internet banking. To encourage Internet banking adoption, banks need to develop strategies that improve the customer's trust in the underlying technology. In addition, to build positive attitude towards Internet banking, banks may need to publicize the benefits associated with the technology and provide opportunity for their customers to "test-drive" the technology.

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