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An Empirical Study of Factors Affecting the Internet Banking Adoption among Malaysian Consumers'

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Abstract

This paper examines factors that influence the Internet banking adoption among Malaysian consumers. The study sample consists of 100 respondents. The measurement items were adapted from Taylor and Todd (1995); Tan and Teo (2000) utilizing the seven-point Likert scale ranging from 1 – strongly disagree to 7 – strongly agree. Data were analyzed by employing multiple regression analysis. The results shows that Hedonic oriented Internet banking sites, followed by the perceived Importance of Internet banking to banking needs and Compatibility all significantly affect

the adoption of Internet banking by Malaysian consumers. Trialability has the weakest influence for consumer Internet banking adoption beside Complexity, Risk, and Utilitarian oriented Internet banking sites. The empirical data used for this study was collected in Malaysia market which may have a culturally and technologically different environment from some other countries. This paper makes a contribution to Internet banking literature by providing insights on the factors that affect Internet banking adoption. The results hint that information about Internet banking services and its benefits is a critical factor influencing the adoption. The findings made a contribution in terms of understanding the factors that can contribute to the adoption of Internet banking by Malaysian consumers.

Keywords: **adoption; attitude; consumer behaviour; diffusion of innovation; Internet banking; Malaysia**

INTRODUCTION

Electronic banking (e-banking), also known as Internet banking is defined as the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels (Daniel, 1999; Sathye, 1999). E-banking includes the systems that enable financial institution customers, individuals or businesses, to access accounts, transact business, or obtain information on financial products and services through a public or private network, including the Internet. Customers access e-banking services using an intelligent electronic device, such as a personal computer (PC), personal digital assistant (PDA), automated teller machine (ATM), kiosk, or Touch Tone telephone. Chou and Chou (2000) identified five basic services associated with online banking: view account balances and transaction histories; paying bills; transferring funds between accounts; requesting credit card advances; and ordering checks for more faster services that can be provide by domestic and foreign bank.

Banking and all banking and financial services in Malaysia is regulated by its Central Bank, Bank Negara Malaysia (BNM). Internet banking made was introduced in Malaysia in June 2000 when BNM allowed the local banks to offer Internet banking services in Malaysia. In 2002 the facility was extended to foreign owned banks as well. As of Jan. 2008 there were 23 banks offering Internet banking facilities in addition to their traditional services. According to the report of Bank Negara Malaysia and the Malaysian Communications and Multimedia Commission (see http://www.bnm.gov.my/microsites/payment/statistics/pdf/04_penetrationrate_20091105.pdf), the number of the subscribers to Internet banking in Malaysia had increased more than doubled from 2006 (3.2 mil) to the third quarter of 2009 (7.5 mil).

The statistic shows that there are positive takers or adoption of Internet banking in Malaysia. Hence, this study examines the factors that influence the Internet banking adoption among Malaysian consumers. The remainder of the paper is organized as follows. In section two, we present some background literature regarding factors related to adoption of Internet banking with hypotheses formulation. The third section discusses

research methodology and data collection. The results of the data analysis of study with a discussion of the findings follow in the fourth section. The final section concludes with the conclusion and recommendations of this study.

LITERATURE REVIEW

Attitude toward behaviour refers to the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question. Taylor and Todd (1995) suggested that the different dimensions of attitudinal belief toward an innovation could be measured using the five perceived attributes (relative advantage, compatibility, complexity, trialability and observability) of the innovation. These attributes were originally proposed in the diffusion of innovations theory (Rogers, 1983).

The importance of the Internet to users' banking needs relates to the advantages that accrue to the users of the technology in question. According to Tornaztky and Klein (1982) relative advantage is an important factor in determining adoption of new innovations. In general, perceived relative advantage of an innovation is positively related to its rate of adoption (Rogers, 1983). Agarwal and Prasad (1998) showed that relative advantage of an innovation is positively related to its rate of adoption. Similarly, as Internet banking services allow customers to access their banking accounts from any location and at any time of the day, it gives advantage to customers to be able to manage their finances properly and in a more convenient way. The Internet banking services offer relative advantages when compared to branch banking and other alternative methods in terms of price, convenience and performance. The first hypothesis is therefore constructed as follows:

> H1. There is a significant positive relationship between perceived importance of Internet banking to banking needs and Internet banking adoption.

Cheung, Chang & Lai (2000) defined complexity as the degree to which an innovation is considered relatively difficult to understand and use and found it to negatively influence the adoption of Internet. Complexity is also considered as the exact opposite of ease of use, which has been found to directly impact the adoption of the Internet (Lederer, Maupin, Sena, & Zhuang, 2000). Cooper and Zmud (1990) pointed out that a system that requires less technical skills and operational efforts will be more likely to be adopted and in turn generate better performance. The more complex the product or service is to understand and use, the slower is its adoption rate. It is argued that Internet banking customers have sufficient understanding of the computer and computer-related technology because of their high educational level. Therefore, they do not see Internet banking services as being difficult to use. Thus, we hypothesize that:

> H2. There is a significant negative relationship between complexity and Internet banking adoption.

On the importance of trialability, Rogers (1983) and Agarwal and Prasad (1998) stated that potential adopters of new technology, who are allowed to experiment with it, would feel comfortable with it and thus be more likely to adopt it. According to Tan and Teo (2000) if customers are given the chance to try the innovation, it will minimize certain unknown fears, especially when customers found that mistakes could be rectified and

thus providing a predictable situation. A more rapid diffusion occurs when consumers can have low-cost or low-risk trial of the service. Internet banking services are free. The cost and risk to trial are relatively low especially when Internet access is available from work. The third hypothesis therefore states:

> H3. There is a significant positive relationship between trialability and Internet banking adoption.

Compatibility is another important dimension of the innovation diffusion theory. In Tornatzky and Klein's (1982) meta-analysis of innovation, they found that an innovation was more likely to be adopted when it was compatible with the individual's job responsibilities and value system. Internet banking has been viewed as a delivery channel that is compatible with the profile of modern day banking customer, who is likely to be computer literate and familiar with Internet. The innovation should be compatible with the individual's and group's values or beliefs. Given that larger numbers of US customers are shopping/trading online, Internet banking services are therefore quite compatible for them once they overcome the security and privacy concerns. Thus, we hypothesize that:

> H4. There is a significant positive relationship between compatibility and Internet banking adoption.

Perceived risk is the consumer's subjective expectation of suffering a loss in pursuit of a desired outcome. It is a multi-dimensional construct with overall risk being subdivided into performance, physical, financial, psychological, social loss, and time (Greatorex and Mitchell, 1994). Lockett and Littler (1997) reported that perceived risks of the innovation were inversely related to adoption in telephone based direct banking services. According to Stewart (1999), the failure of the Internet as a retail distribution channel has been attributed to the lack of trust customers have in the electronic channel and in the web merchants. Sathye (1999) confirmed security concerns are a burning issue for financial transactions done over the Internet. Thus, it is expected that only individuals who perceive using Internet banking as low risk undertaking would adopt it. Cooper (1997) identified the level of risk as an important characteristic from a consumer's perspective in the adoption of innovation. It has been known that security risk is one of the major barriers to the adoption of Internet banking. Hence, the hypothesis is proposed as:

> H5. There is a significant negative relationship between perceived risk and Internet banking adoption.

Hassenzahl (2003) distinguishes between the utilitarian (extrinsic) and hedonic (intrinsic) aspects of user experience in human-computer interaction. Utilitarian experience is goal-oriented and emphasizes the functional performance of technology for goal/task-fulfillment. The utilitarian values derived from an economic concept in the information-processing paradigm are the result of useful, economically efficient and productive experiences (Carpenter, Moore & Fairhurst, 2005). In contrast, hedonic experience is not motivated by just what a technology can do, but rather the experiential and emotional value the technology may bring about, such as fun, entertainment, and enjoyment (Hassenzahl, 2003; Carpenter at al., 2005). The importance of hedonic outcome oriented and utilitarian outcome oriented websites as determinants of Internet

technology adoption is borne by the increasing desire of users to achieve work and play duality in the use of computer technologies. However, because of the nature of Internet banking which involves monetary transactions that demand full concentration by the customer, they may not want the hedonic features of the site in order to avoid distraction and possible mistake in their transactions. Thus, it is hypothesized as follows:

> H6. There is a significant positive relationship between utilitarian oriented Internet banking sites and Internet banking adoption.
> H7. There is a significant positive relationship between hedonism oriented Internet banking sites and Internet banking adoption.

METHODOLOGY

100 completed questionnaires were received among Malaysian bank customers located in Labuan Federal Territory state of Malaysia via simple random sampling (SRS) type of sampling technique which allows researchers to collect data in which each element in the population has a known and equal probability of selection. The questionnaire was divided into 2 sections: Part A describes about respondents' demographic and Part B aims to identify level of consumer satisfaction and perception in Internet banking which includes importance to banking needs, complexity, trialability, compatibility, perceived risk, utilitarian orientation and hedonic orientation. The measurement items were adapted from Taylor and Todd (1995); Tan and Teo (2000). The seven-point Likert scale ranging from 1 – strongly disagree to 7 – strongly agree was used for the questions to indicate a degree of agreement or disagreement with each of a series of statements related to the stimulus objects. The data were analyzed by examining the distribution of responses based on frequencies and percentages. Next, multiple regression analyses were conducted via the Statistical Package for Social Sciences (SPSS) version 17 computer program.

DATA ANALYSIS AND FINDINGS

Table 1 describes the demographic profile of the respondents which consists of gender, marital status, age, salary per month, level of education and race. From a total of 100 completed questionnaires received, the dominance of women respondents is clearly visible (68%). Most of the respondents were Malay (84%), single (89%). Majority of them aged less than 25 years old with monthly salary less than RM3000. Respondents' level of education varied relatively with 51% hold Bachelor Degree and 33% hold STPM/Diploma.

Table 1: Respondent's Profile

		Frequency	**Percent**
Gender	Male	32	32
	Female	68	68
Marital Status	Single	89	89
	Married	11	11
Age	Less than 20 Years	7	7

	21-25 Years	80	80
	26-30 Years	9	9
	More than 30 Years	4	4
Monthly salary	Less than RM1000	69	69
	RM1001-RM2000	10	10
	RM2001-RM3000	11	11
	More than RM3001	10	10
Educational Level	SPM	12	12
	STPM/Diploma	33	33
	Bachelor Degree	51	51
	PhD/Master Degree	4	4
Race	Malay	84	84
	Indian	7	7
	Chinese	5	4
	Others	4	4

Test of Reliability

The analysis of reliability is done as to value the level of reliability of the data gained from the research. It aims to help the researchers to assume whether the data collected are reliable or not reliable. Cronbach *α*'s were computed as a measure for construct reliability. According to Nunally (1978), the nearer the value of reliability to 1.00, the more reliable the result would be. The value of reliability which is less than 0.7 is assumed to be weak while for the value of reliability which is in the range of 0.70 is the accepted. Moreover, the value which is more than 0.80 is assumed to be strong. Table 2 infers that the values for all of the variables involved are above 0.5, thus they are accepted as reliable.

Table 2: Values of Reliability

Variable	N of Item	Item Deleted	Alpha
Importance to Banking Needs	6	-	0.743
Complexity	2	-	0.911
Trialability	2	-	0.948
Compatibility	3	-	0.851
Risk	2	-	0.974
Utilitarian	9	-	0.752
Hedonic	3	-	0.862

Correlation Analysis of Variables

Pearson correlations were calculated to identify the correlations between the variables. The average score of the multi-items for a construct was computed since a single construct in the questionnaire was measured by multiple items, and the score was used in further analysis such as correlation analysis and regression analysis (Wang and Benbasat, 2007). As cited in Wong and Hiew (2005) the correlation coefficient value (*r*) range from 0.10 to 0.29 is considered weak, from 0.30 to 0.49 is considered medium and from 0.50 to 1.0 is considered strong. However, according to Field (2005), correlation

coefficient should not go beyond 0.8 to avoid multicollinearity. Since the highest correlation coefficient is 0.629 which is less than 0.8, there is no multicollinearity problem in this research (Table 3).

Table 3: Correlation Matrix and Mean Values

	1	2	3	4	5	6	7
(1) Importance to Banking Needs	1.000						
(2) Complexity	.305(**)	1.000					
(3) Trialability	.338(**)	.338(**)	1.000				
(4) Compatibility	.629(**)	.409(**)	.501(**)	1.000			
(5) Risk	.426(**)	.417(**)	.317(**)	.457(**)	1.000		
(6) Utilitarian	.620(**)	.287(**)	.282(**)	.421(**)	.224(*)	1.000	
(7) Hedonic	.390(**)	.195	.151	.262(**)	.211(*)	.579(**)	1.000
Mean	3.6833	3.1750	3.5150	3.6633	3.4450	3.6211	3.6267
Std. Deviation	.84437	.88869	.94936	.88191	1.03449	.79170	.95261

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Hypotheses Testing

Multiple regression analysis was employed to test the hypotheses. Multiple regression analysis is applied to analyze the relationship between a single dependent variable and several independent variables (Hair, Anderson, Tatham, & Black, 1995). According to Churchill (1995), a regression model is considered to be valid when the following assumptions are fulfilled:

- linearity of the relationship between dependent and independent variables;
- constant variance of the error term, i.e. homoscedasticity assumption;
- independence of the error terms;
- normality of the error term distribution and individual variables; and
- the predictor variables are not correlated among themselves, i.e. multicollinearity.

In this study, all the presented requirements were fulfilled.

Multiple regression analysis was therefore selected as it is viewed as an appropriate method for this study. The summary of results analysis is shown in Table 4 where it can be observed that the R^2 value of 0.499 suggests that 49.9% of the variables can be explained by the seven independent variables while 50.1% cannot be explained. The Durbin Watson value is within the range of 1.50 to 2.50 thus representing no serious autocorrelation problem.

Table 4: Results of Multiple Regressions

	Standardized Beta Coefficients	**T**	**Sig.**
Importance to Banking Needs	.190	2.2150	.029
Complexity	-.044	-.366	.715

Trialability	.018	.199	.843
Compatibility	.626	8.139	.031
Risk	-.109	-.877	.383
Utilitarian	.071	.468	.641
Hedonic	.532	2.223	.024
R Square		0.499	
Adjusted R Square		0.483	
Sig F		0.000	
Durbin-Watson		2.017	

The results shows that a perceived Importance of Internet banking to banking needs (p<0.05), Compatibility (p<0.05), and Hedonic oriented Internet banking sites (p<0.05) all significantly affect the adoption of Internet banking. Based on Table 4, it indicated that the most important adoption factors that affect the consumer Internet banking is Hedonic oriented Internet banking sites, followed by the perceived Importance of Internet banking to banking needs and Compatibility. Further investigation of the study revealed that Complexity, Trialability, Risk, and Utilitarian oriented Internet banking sites however, were found not to be significantly associated with consumer Internet banking adoption. The standardised β coefficient of Trialability which is 0.018 (p>0.05) has the weakest influence for consumer Internet banking adoption. Results conclude that H2, H3, H5, and H6 are rejected while H1, H4 and H7 are accepted.

DISCUSSIONS

Hedonic oriented Internet banking sites was found to be the most important adoption factors that affect consumers' Internet banking in Malaysia. This result is expected and supports prior studies (Hassenzahl, 2003; Carpenter et al., 2005). The experiential and emotional value the technology may bring about, such as fun, entertainment, and enjoyment affect the adoption of Internet banking in Malaysia.

Perceived importance of Internet banking to banking needs significantly affect Internet banking adoption by Malaysia consumer. The finding provides evidence to support prior studies (Black, Lockett, Winklhofer, & Ennew, 2001; Polatoglu and Ekin, 2001), which suggested the importance of Internet banking to influence Internet banking adoption. Internet bank users, at all times, remain in full control of what they are doing through the commands they enter via their PC's keyboard for any banking related transactions such as access accounts, transact business, or obtain information on financial products and services via the Internet.

Next, Compatibility variable emerges as the third predictor of Internet banking adoption in Malaysia. The finding conforms with earlier (Black *et al.*, 2001; Polatoglu and Ekin, 2001). Black *et al.* (2001) conclude that past experiences and the values of consumers in the UK appear to have a significant impact on their willingness to adopt Internet banking. Those who indicated they were comfortable with the Internet were more positive about Internet banking. Conversely, in Turkey, due to low levels of e-mail usage and a preference for using over-the-counter delivery at bank branches, respondents viewed Internet banking as being far less compatible (Polatoglu and Ekin, 2001).

Complexity was found to have a positive effect on Internet banking adoption in Malaysia. The proposed hypothesis of there is a significant negative relationship between complexity and Internet banking adoption is evidently rejected. Internet banking requires a certain minimum level of technical experience and competence, irrespective of whether this relates to the use of a computer or the Internet. This result contradicted the prior studies. Perceived usefulness was found to have positively influenced the consumers' behavioural intention to use a computer system (Ha & Stoel, 2009; Hsu, Wang & Chiu, 2009; Norazah, Ramayah & Norbayah, 2008). Polatoglu and Ekin (2001) imply that a well-educated people, who are familiar with the Internet and e-mail, should not find Internet banking to be complex as it is useful to them. Black *et al.* (2001) found that complexity in conducting financial transactions over the Internet was inversely related to a consumer's experience with computers.

The results show that there is no significant influence between Trialability and Internet banking adoption by Malaysia consumer. Trialability was found to be the weakest influence for consumer Internet banking adoption. When performing Internet banking activities such as buying airline ticket via the Internet, customers are unable to try out Internet services beforehand in the same way they can test out a hi-fi system or a car before purchasing. Some banks in the west have responded to this need by developing Web sites which allow potential users to try out Internet banking (see Hewer and Howcroft (1999), Black *et al.* (2001) who describe the UK position). The ability to conduct a trial may confirm how easy it is to use Internet banking or, for those who are apprehensive about the service, it may give them the necessary confidence.

Results reveal that proposition that there is a significant negative relationship between perceived risk and Internet banking adoption is rejected. Hence, risk was a characteristic which does influences the rate of adoption of Internet banking in Malaysia. This result is expected and supports prior studies. Only individuals who perceive using Internet banking as low risk undertaking would adopt it. Cooper (1997) identified the level of risk as an important characteristic from a consumer's perspective in the adoption of innovation. Black *et al.* (2001), while not specifically using the word "risk", suggest that errors and the security afforded might be considered as measures of risk. The term trust, to which Hewer and Howcroft (1999) refer, may also be considered as a measure of risk.

The final hypothesis stated that there is a significant positive relationship between Utilitarian oriented Internet banking sites and Internet banking adoption. This hypothesis is rejected. This indicates that Utilitarian oriented Internet banking sites is also a weak predictor in explaining adoption of Internet banking by Malaysian consumers. They less likely to see that utilitarian experience in Internet banking is goal-oriented and emphasizes the functional performance of technology for goal/task-fulfillment.

CONCLUSION AND RECOMMENDATIONS

In a nutshell, this research bring into being that Hedonic oriented Internet banking sites, perceived Importance of Internet banking to banking needs and Compatibility all affect the adoption of Internet banking by Malaysian consumers. Specifically, the following strategies would assist in consummating greater adoption of Internet banking in Malaysia: enhanced salience of Internet banking to customers' banking needs, greater compatibility of Internet banking to customers banking norms and lifestyle, less complex

and easy to use system that does not require a lot of mental and physical efforts to accomplish banking task, and opportunity for adopters to experiment with the system before making any long-term commitment.

Besides the above attitudinal factors, system's design factors to be considered in developing strategies for enhancing Internet banking adoption in Malaysia, includes easy to read, comprehensive information or instructions on the site, prompt processing of transactions, fast downloading/uploading of materials, interactivity, customization, and website semblance with the actual bank are important. Hedonic features such as background music, animation, cartoon, advertisements, promotional jingles, and so on that could potentially distract the user are also effective strategies for promoting Internet banking adoption.

This study has some limitations that offer future research opportunities. The empirical data used for this study was collected in Malaysia market which may have a culturally and technologically different environment from some other countries. Therefore, such narrow focused data may limit the generalizability of the results. Future research may replicate this study in other countries. Future studies can focus on conducting a multi-country comparison to test the influence of moderating factors such as the national culture from the countries.

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