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Internet banking adoption strategies for a developing country: the case of Thailand

Internet banking
adoption
strategies

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Abstract

Purpose – The objective of the paper is to identify the factors that encourage consumers to adopt internet banking services in Thailand and to use the study's findings to develop strategies for banks on how to maximize the rate of adoption.

Design/methodology/approach – Quantitative research with a sample size of 600 achieved by sending questionnaires to 15 people in each of 40 large companies in Bangkok. The study is based on the Decomposed Planned Behaviour.

Findings – The attitudinal factors that appear to encourage the adoption of internet banking in Thailand most are "Features of the web site" and "Perceived usefulness", while the most significant impediment to adoption is a perceived behavioural control, namely "External environment". The significant moderating factors are gender, educational level, income, internet experience and internet banking experience, but not age.

Research limitations/implications – In this study, encouragement factors are those that are able to be controlled by banks, while impediment factors are those that are not able to be controlled.

Practical implications – It is essential for banks to facilitate encouragement and restrict impediment factors. In addition to the direct "push" from internet banks (in respect of the encouragement factors), indirect persuasion should be carried out as a "pull" mechanism (in respect of the impediment factors).

Originality/value – The study identified a number of specific strategies that Thai banks could follow to maximize the adoption of internet banking.

Keywords Banking, Thailand, Internet, Developing countries, Consumer behaviour

Paper type Research paper

Introduction

Results from previous research revealed that the success of internet banking is determined not only by banks or government support but also by customers' acceptance of it. The latter has had a great influence on the adoption of internet banking (Sathye, 1999; Mols, 2000; Pikkarainen *et al.*, 2004). Previous research into internet banking has mainly focused on innovation adoption in the context of North America and Europe (Daniel, 1999; Mols, 2000; Pikkarainen *et al.*, 2004) and to a lesser extent in other regions containing a mix of developed and developing countries. Among the former are Singapore (Tan and Teo, 2000) and Taiwan (Shih and Fang, 2004) while among the latter are Malaysia (Suganthi and Suganthi, 2001) and Turkey (Polatoglu and Ekin, 2001). This study focuses on information technology (IT) adoption in a developing country, namely Thailand, where internet banking is still emerging but offers potential benefits to consumers in that country.



The study's findings on potential factors influencing internet banking adoption in Thailand may provide useful insights for other developing countries in this part of the world. In the Asian region, the big three in terms of the number of internet users are China, South Korea and Taiwan (Shih and Fang, 2004, quoting ACNielsen, 2001) while Hong Kong and Singapore are regarded as the leaders in the adoption of internet banking (Shih and Fang, 2004). Studies tend to focus on these countries, for example, the Shih and Fang's (2004) study of Taiwan and Tan and Teo's (2000) study of Singapore, but few studies appear to have been carried out in lesser developed countries such as Thailand. The objective of the paper is to identify the factors that encourage consumers to adopt internet banking services in Thailand and to use the study's findings to develop strategies for banks on how to maximize the rate of adoption.

The paper proceeds as follows. The banking and internet developments of Thailand are reviewed followed by a discussion of the research model used in the study, namely the decomposed Theory of Planned Behaviour (TPB) (Taylor and Todd, 1995). The approach of decomposition enabled the researchers to develop a set of research variables. The paper then outlines the research methodology and data analysis that was undertaken. From the findings, recommendations are presented that should assist banks to develop strategies to maximize the uptake of internet banking. Finally, conclusions, study limitations and the potential for future research are provided.

The case of Thailand

The internet was first adopted in Thailand in 1987 by academia and was introduced commercially in 1995 with the formation of the nation's first Internet Service Provider (NECTEC, 2002). The penetration rate of internet users in Thailand as of January 2001 was 5.64 per cent. This penetration rate is lower than the world average penetration rate which is 8.46 per cent (Tangkitvanich, 2002). Compared to those of neighboring countries, the penetration rates are: Singapore 49.3 per cent (as of August 2001), Malaysia 16.98 per cent (as of December 2000), Laos 0.11 per cent (as of December 2000), and Cambodia 0.05 per cent (as of December 2000) (Malaiwong, 2002). To increase the penetration rate, the Thai Ministry of ICT recently launched a special offer to the public of cheap personal computers (50 per cent cheaper than market price), associated with low interest loans. Another project is a very competitively priced, Baht one per hour, of internet dial-up access.

Internet banking in Thailand was first introduced in 1999 by the Siam Commercial Bank Plc (SCB), the first commercial Bank of Thailand (BOT). The BOT, as the central bank, plays an important regulatory role in the banking sector. The BOT provides the financial infrastructure to serve the needs of business and financial sectors. With regard to internet banking, the BOT has revised the notification requirements for commercial banks on their use of the internet for commercial banking business and has expanded the areas of permissible use of the internet for banking. Being aware of the importance of electronic transactions in the future economic development of the country, commercial banks in Thailand have been allowed, since November 2000, to provide the same kinds of transactions online as they do in branches.

Before the early 1990s, Thai financial markets were strictly regulated and dominated by some of the country's most prominent families and locally incorporated financial institutions which were strongly protected from local and foreign

competition. Dramatic events occurred with the Asian recession of 1997 and the Thai Baht's fall causing many businesses to be unable to service their debts. In mid-1997, BOT intervened by suspending a number of finance companies and forcing several Thai banks to merge with other banks or finance companies. In addition, foreign ownership rules were relaxed resulting in the entry of major international banking groups into the market. As a consequence, the number of commercial banks reduced from 15 to 13 for Thai banks, and increased from one to four for foreign incorporated banks from 1997 to May 2003 (BOT, 2003).

The increased capital and technology introduced by foreign banks encouraged Thai banks to focus on the automated processing of transactions in order to increase efficiency and reduce costs. This led to aggressive competition in the banking market. Hence, nearly every bank has implemented early staff retirement programs as well as branch closures or downsizing in an effort to refocus on profitability. This is reflected in statistics which show that there were 3,632 bank branches as of July 2002 compared to 3,837 at the end of the first quarter of 1999 (BOT, 2003).

In today's banking environment, Thai banks are continuously looking to better use technology by attempting to move low-value transactions away from the branch counter to ATM networks and to the internet and telephone banking (Chudasri, 2002). As a consequence, most commercial banks in Thailand have launched web sites to offer online services to bank customers. They are beginning to use the internet as a new distribution channel in the belief that the future of service lies in electronic banking. This is facilitated by the Thai government's support for the economy by moving it towards electronic commerce as laid out in the Ninth National Economic and Social Development Plan (Boonruang, 2000).

Factors influencing the adoption of internet banking

As stated by Pikkarainen *et al.* (2004), "online banking acceptance has gained special attention in academic studies during the past five years" (p. 225). Studies have observed banks moving to an online mode for a number of reasons. The two key reasons, according to Pikkarainen *et al.* (2004), are cost savings flowing to banks that provide online rather than physical services and the move to a more self-service mode because branch banking took too much time and effort. These causes can be magnified in particular countries, for example, in Thailand the entry of foreign banks has resulted in a reduction in bank branches in order to become more cost effective.

The adoption of IT, such as internet banking, has been studied through the use of various models. Recently, Pikkarainen *et al.* (2004) applied the traditional Technology Acceptance Model (TAM) in Finland and found that perceived usefulness of, and information on, online banking were the main factors influencing customer acceptance. With the model, it is argued that system use (i.e. actual behaviour) is determined by perceived usefulness and perceived ease of use which are related to attitude and thereby to actual use. Also recently, Shih and Fang (2004) tested the usefulness of a number of IT adoption models to internet banking adoption in Taiwan. These models were the TPB, both in pure and decomposed form, and the Theory of Reasoned Action (TRA). They concluded that both TPB and TRA produce a good fit to the data although "The decomposed TPB model has better explanatory power for behavioural intention, attitude and subjective norm than the TRA and pure TPB models" (p. 220).

Our study was based on the decomposed TPB, developed by Taylor and Todd (1995), which in turn is based on the traditional TPB of Ajzen and Fishbein (1980). The decomposed TPB is a well-accepted intention model that has been successful in predicting and explaining human behaviour across various domains (see comment above) by decomposing it into a specific dimensions. Compared to the TAM, introduced by Davis (1986) for predicting IT usage, and the traditional TPB model, it was found to have better predictive power, as Taylor and Todd (1995, p. 169) noted:

In comparing the two versions of TPB, we believe that there is value added as a result of the decomposition, in terms of increased explanatory power and a better, more precise, understanding of the antecedents of behaviour. Thus, in our view, the decomposed TPB is preferable to the pure form of the model.

Furthermore, Taylor and Todd (1995, p. 170) compared their model to TAM, and claimed that, if:

[T]he sole goal is the prediction of usage, then TAM might be preferable. However, the decomposed TPB provides fuller understanding of usage behaviour and intention and may provide more effective guidance to IT managers and researchers interested in the study of system implementation.

This decomposed TPB addresses the innovation literature (e.g. relative advantages, compatibility) as well as subjective norms and perceived behavioural control in relation to IT adoption more completely than the traditional TPB. The fundamental concepts of this theory are also based on the assumption that human beings are usually rational and make systematic use of information available to them in their actions. Hence, identifying and measuring the factors determining an individual's behaviour leads to the understanding and prediction of such behaviour.

According to the decomposed TPB model, there are three main factors influencing human behaviour. They are: attitude, perceived behavioural control and subjective norms. Attitude describes an individual's positive or negative behaviour towards innovation adoption. In this study, attitude refers to perceptions on the usefulness of internet banking, adoption features, bank online features, risk and privacy, and personal preferences. The second factor, perceived behavioural control, describes beliefs about having necessary resources and opportunities for an individual's intention to perform. These are facilitating conditions which refers to the availability of resources, i.e. the technological resources and infrastructure needed to engage in the behaviour (Triandis, 1979). In this study, the external environment was as defined as perceived behavioural control. The last factor, subjective norms, describes the social pressure that may affect an individual's intention to perform. In this study, the subject norm in the adoption of the internet banking in Thailand is referred to as the characteristics of Thai culture. An overview of the research dimensions is shown in Figure 1.

Unlike previous studies, we extended the research by categorizing the above research variables into two groups based on the ability or inability of banks to facilitate adoption. This was done to meet a key research objective, namely to identify strategies that banks could adopt to maximize the adoption of internet banking. These groupings are the following:

- (1) *Bank factors*. They influence the perceptions of customers towards internet banking and include items under the control of the bank, namely perceived usefulness, adoption features, bank online features, and risk and privacy.

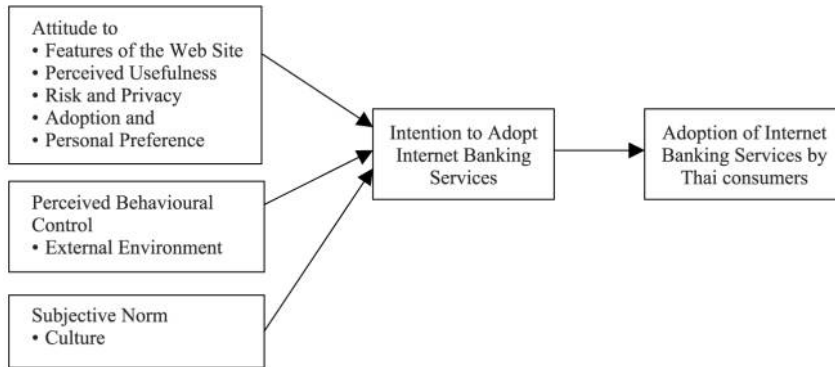


Figure 1.
Theory of decomposed
planned behaviour and
internet banking adoption
in Thailand

- (2) *Other factors.* They are not under the control of banks and reflect compatibility with the consumer's personal preferences, the external environment and Thai culture.

Only bank factors are able to be controlled by banks when they attempt to gain more online customers. The other factors are dependent on the customers themselves and the Thai environment. For this reason, bank factors are potential facilitators of internet banking adoption from the perspective of the bank and the bank is able to influence the perceptions of customer towards online banking benefits and services, for example, by offering attractive web site features. Conversely, other factors not under the control of banks are viewed as potential barriers to internet banking adoption. The identification of facilitators will enable banks to develop strategies that would directly influence the adoption of internet banking, while knowledge about potential barriers will provide banks with a way to influence internet banking in an indirect way such as persuading government to improve the current infrastructure.

Facilitating factors

Tornatzky and Klein (1982) and Tan and Teo (2000) suggest that relative advantage is an important factor in determining adoption of innovations. This is supported by Rogers' study of Innovation Diffusion Theory that found that the perceived usefulness of an innovation is positively related to its rate of adoption (Rogers, 1983). Likewise, as internet banking service allows users to control their accounts from anywhere at their own convenient time at lower cost, it provides numerous advantages to the user in terms of price and convenience (Polatoglu and Ekin, 2001). As a consequence, the greater the perceived usefulness of using internet banking services, the more likely that internet banking will be adopted.

Before engaging with the new service, several issues in relation to the adoption need to be considered by bank customers. An example of this is terms and conditions applied to the service. Only reasonable bank terms and conditions would be accepted. Ability to try is another one of the issues preceding adoption. This is because it will lessen uncertainty for the adopter (Rogers, 1983). To be even more assured, a provision of documentary evidence would be essential for all banking transactions in Thailand. Accessibility to internet itself is a fundamental requirement to an adopter. The lack of internet accessibility will cause a potential adopter to ignore internet banking services

and maintain his/her attachment to the traditional branch bank or other channels. Therefore, the lesser the uncertainty of adoption, the more likely that internet banking will be adopted.

Features of the bank's web site are important for intention to adopt internet banking since they define the media that service delivery. Reliability of accessibility to the web site is essential regardless of banking hours so that users can perform their bank transactions at their own convenience. The reliability to access the bank's web site, thus, would encourage the adoption of the online service. It would be essential for banks to provide user friendly features to assure the users (Suganthi and Suganthi, 2001). In parallel, effective response times from bank's web site is another determinant to facilitate the adoption. As well, security evidence presented on bank's web site can help ease customer concerns and increase confidence to make use of the service. The more the user gets comfortable with the features of web, the more s/he is likely to adopt internet banking services.

Risk and privacy are potentially major barriers to the adoption of internet banking. The introduction of internet banking services is facilitated by the bank's reputation in terms of size, awareness and trust (Polatoglu and Ekin, 2001). Associated with the perception of good security is the presence on the web site of a third party guaranteeing security and an appearance of privacy statement that promises the minimization of risk and privacy breaches to potential internet banking users. The more the user's aversion to the risk and privacy concerns are lowered, the more s/he is likely to adopt internet banking services.

Inhibiting factors

Compatibility with personal characteristics is positively related to innovation adoption since the more compatible the less the uncertainty to the potential adopter (Rogers, 1983; Tornatzky and Klein, 1982). Compatibility, which based on attitude, includes, for instance, the preference for self-service, technology, lifestyle as well as current branch bank service. According to the study by Tan and Teo (2000), internet users who feel that using internet banking is compatible with their values about living and working are more inclined to adopt such services. In terms of technology, the degree of fear of new technology, from general to a phobia, becomes a factor affecting the consumer's reluctance to opt for internet banking. Preference of being served at the current branch is a possible discouragement for adopting internet banking services. Hence, the less internet banking is compatible with the customer's personal characteristics, the less s/he is likely to adopt this service.

With regard to the external environment, government and industrial support seem to be major driving forces in internet banking adoption (Tornatzky and Klein, 1982). This is because they can give potential participants assurances that internet banking takes place in an orderly and well managed environment. This can take the form of government support for conducting online business as reflected in the Thai government's intention to encourage electronic commerce. Other environmental factors include a suitable technological infrastructure and adequate internet bandwidth without which internet banking could not function. Once in place, banks are likely to form alliances and enter into co-operative arrangements such as being able to transfer funds electronically between banks. The absence of these developments are likely to impede the adoption of internet banking.

Thai culture, as a subjective norm, can be a barrier to the adoption of innovation. Personal relationships when conducting bank transactions can add value to a customer dealing with banks. Reference groups also impact on consumer behaviour because people try to surround themselves with people and things that are consistent with their own identities (Tornatzky and Klein, 1982; Karjaluoto *et al.*, 2002). This is a collectivism characteristic of Thai culture (Pornpitakpan, 2000). Face-to-face conversation is important in the Thai context. Since internet banking tends to reduce face-to-face conversation, it is therefore seen as one of the potential barriers to the adoption of internet banking in Thailand. Adequate existing alternative modes of transacting banking business, such as ATM and telephone banking may currently fulfil a customer's need, which may make them reluctant to change and face uncertainty. In Thai culture, personal relationships, collectivism and socialization are important; uncertainty avoidance is moderately high (Hofstede, 1991), but nevertheless can discourage the move towards the digital era for banking service.

Moderating factors

This study also investigated the impact of moderating factors on adoption factors. They were age, gender, educational levels, income, internet experience and internet banking experience. These factors have been predominated as specific characteristics in previous research on internet banking (Daniel, 1999; Sathye, 1999; Jayawardhena and Foley, 2000; Karjaluoto *et al.*, 2002). For example, a survey of internet banking users in the United States found that internet banking was likely to be used by males (55 per cent), with an average aged at 37 years who had completed a college degree (NUA, 2001). Although it is found that males have dominated in the internet business (Burstein and Kline, 1995), recent research has discovered that females are increasing in this arena (Karjaluoto *et al.*, 2002; NECTEC, 2003). Previous literature (Gattiker, 1992; Harrison and Rainer, 1992) suggest a strong relationship between age and the acceptance of innovation. That is, older consumers are found to have negative attitudes with new technologies. Prior experience with technologies also has an impact upon consumer beliefs and attitude and increases the likelihood to adopt the new technologies (Hirschman, 1980; Karjaluoto *et al.*, 2002). Examination of these factors should enable banks to focus on their market groups more effectively.

Research methodology

Quantitative research in the form of a questionnaire survey was conducted to meet the research objectives. The survey was restricted to internet users in large companies since it is a general practice that they provide internet accessibility to their employees. Large companies in this study were defined according to the Office of Small and Medium Enterprise Promotion of Thailand (SME, 2002) as companies that have total fixed assets over Baht 200 million and have more than 200 employees. Participants in the study were office-workers in these large organizations because this group is more likely to do online transactions. They usually have internet access and possess computer literacy which are essential to adopting online services.

The total sample size was fixed at 600 and achieved by sending questionnaires to 15 people in each of 40 large companies in Bangkok. The decision was made to restrict the survey to Bangkok because the greatest pool of internet users (52 per cent) is located in Bangkok (NECTEC, 2002). The companies were stratified in order to gain wide

differences and variability among them. Subgroups were based on the proportion of businesses established in Bangkok as at 31 December 2001. Of the 40 large firms selected, five were from manufacturing, four from construction, 19 from retail, wholesale, restaurant and hotel, two from transportation, storage and telecommunication, eight from finance, insurance and real estate, and two from services. In each company 15 people who indicate that they had access to internet formed the sample population by convenient sampling.

A questionnaire was developed in which it was stated the purposes of this study was "to identify the key factors that facilitate and inhibit the adoption of internet banking in Thailand". Seven key variables were included in our study (see earlier discussion). To maintain symmetry, and not to make each variable too lengthy, each variable consisted of four items. Respondents were asked to indicate on a seven-point scale, the extent to which 28 items (seven factors) facilitated or inhibited the adoption of internet banking services. On the rating scale, 1 indicated the item would offer "no encouragement" and 7 indicated the item would offer "maximum encouragement"; and for inhibiting factors, 1 indicated the item would be "no discouragement" and 7 indicated the item would be "maximum discouragement".

A return of 528 from 600 responses received represented a response rate of 88 per cent. Among the returns received, 22 responses were discarded as they were either blank or answered the demographic questions only. The remaining 506 questionnaires were used for data analysis representing a response rate of 84 per cent.

Data analysis

Content validity of the questionnaire was established by reviewing existing literature. This ensured that the major aspects of the topic were adequately covered by the items included in the survey. Although validity is a necessary condition for quality measurement of research variables, it is not sufficient alone (Dane, 1990). Reliability concerns the degree to which the questionnaire supplies consistent results and requires examination of the consistency of respondents' answers to all the items in a measure. Cronbach alpha values were computed to establish the internal reliability of the questionnaire responses, i.e. to examine the degree to which independent measures of the same concept correlated with one another (Cavana *et al.*, 2001). Alpha coefficients for the seven factors influencing the adoption of internet banking in this study ranged from 0.77 to 0.90. This means, internal reliability of the measures used in this study can be considered to be good.

The survey questionnaire captured background data for study participants. Among 506 respondents, 325 or 64 per cent were female. The respondents in this study were relatively young, adolescents or young adults, with 45.7 per cent under 29 years of age and 46.6 per cent between 30 and 39 years of age. This is also consistent with the survey by NECTEC (2002) that the majority of internet users (80.1 per cent) are young adults (under 39 years of age). In terms of education, about 8.5 per cent of respondents had attained a vocation or lower, 67.2 per cent had attained a bachelor's degree, 24.3 per cent had attained a master's degree, and 0.2 per cent had attained a doctorate's degree. This is also consistent with previous research (Karjaluoto *et al.*, 2002), which found that internet users are highly educated because it required computer awareness and internet skill.

For monthly income, 24.7 per cent of respondents earned less than Baht 15,000, 37.5 per cent earned between Baht 15,001 and Baht 30,000, 22.1 per cent earned between Baht 30,001 and 50,000, 10.5 per cent earned between Baht 50,001 and 70,000, 2.4 per cent earned between Baht 70,001 and 90,000 and 2.8 per cent earned more than Baht 90,000. Regarding internet experience, 249 respondents or 49.2 per cent had more than three years of internet experience, 92 respondents or 18.2 per cent had two to three years, 106 respondents or 20.9 per cent had one to two years and only 59 respondents or 11.7 per cent had less than one year of experience in the internet. In relation to internet banking experience, 336 respondents or about two-third had no experience of internet banking, while 17.6 per cent had experience of less than one year, 11.3 per cent had experience of one to two years and only 4.7 per cent had experience of more than three years.

Table I shows how the 506 respondents rated the encouragement factors on average. The four factors and items within each factor are ranked by mean score.

A *t*-test found that there was no statistically significant difference (at $p < 0.05$) between the two factors rated the highest, Features of the web site and Perceived Usefulness. A statistically significant difference did occur between the two factors above and the third factor, Risk and Privacy and also between the third, Risk and Privacy and the fourth factor, Adoption. Therefore, the following factors can be regarded as the most significant encouragement factors of internet banking adoption in Thailand:

- features of the web site; and
- perceived usefulness.

Encouragement factors	Mean	SD
<i>Features of the web site</i>	5.29	1.30
The bank's web site can be accessed when needed – 24 hours/day, 7 days/week	5.50	1.64
The bank's web design and navigation makes it comfortable to conduct a transaction	5.32	1.58
The bank's web site executes transactions quickly and efficiently	5.24	1.68
There is evidence that current security provided by bank web site is sufficient	5.12	1.86
<i>Perceived usefulness</i>	5.25	1.33
Increasing the effective use of time, for example, by not having to wait in line	5.68	1.54
Reducing banking costs, such as reduced bank charges and transportation cost	5.40	1.60
Convenient access to banking services through the computing at any time	5.23	1.67
Availability of a wide range of information is only "one click" away	4.71	1.75
<i>Risk and privacy</i>	4.96	1.44
The reputation and size of bank provides assurance of internet banking integrity	5.11	1.61
There is absence of problems during performing an online banking transaction	5.05	1.77
A privacy statement on bank's web page guarantees privacy of personal data	4.94	1.70
The bank's web site displays the logo of an independent security guaranteeing party	4.74	1.71
<i>Adoption</i>	4.85	1.30
The ability to access the internet at any time at work and at home	5.34	1.65
Documentary evidence is provided for all transactions performed online	5.05	1.85
The banks providing acceptable conditions and terms of service	4.54	1.59
Being able to trial doing banking transaction online before registering for the service	4.47	1.65

Note: "1" = no encouragement; and "7" = maximum encouragement

Table I.
Encouragement factors
ranked by mean score

The mean scores for impediment factors are presented in Table II. They represent three factors, and items within factors, ranked by mean score.

A *t*-test shows that all factors are statistically different (at $p < 0.05$) from each other. This means that the External Environment was significantly higher than Personal Preference and Culture. Therefore, the factor that is regarded as providing the most significant discouragement is external environment

Moderating factors

Moderating factors were investigated to see how they affected the relationship between encouragement and impediment factors (the independent variables) and the adoption of internet banking (the dependent variable). In this study, moderators refer to the respondent's gender, age, educational level, income level, internet experience and internet banking experience. To examine the impact of moderating factors, respondents were classified into various groups based on gender, age, education, income, internet experience and internet banking experience. The significance of differences due to moderating factors was examined by the analysis of variance (ANOVA) test.

With the exception of the respondents' age, all moderators had a statistically significant impact on the factors influencing the adoption of internet banking in Thailand. While income impacted on all encouragement and impediment factors except "Personal Preference", gender influenced only "Personal Preference" and "Risk and Privacy". Furthermore, while the internet experience of the respondents related to all encouragement factors, it had an impact on only one impediment, namely "External Environment". Internet banking experience had no relation to any encouragement factor, but was linked to two impediments namely "External Environment" and

Impediment factors	Mean	SD
<i>External Environment</i>	4.52	1.41
Lack of collaborators or alliances in internet banking to co-operate and expand services	4.67	1.63
Deficiency in internet infrastructure and facilities such as bandwidth	4.59	1.60
Absence of clear government support for conducting online business transactions	4.40	1.63
Absence of an industry regulator, such as the BOT, for internet banking	4.40	1.59
<i>Personal Preference</i>	3.85	1.39
Being no longer able to be satisfied by the quality of the current bank branch service	4.19	1.67
Being required to try out and use a new technology-based product	3.80	1.78
Being required to perform self-service internet banking independent of a bank teller	3.78	1.89
Being required to integrate internet banking with lifestyle and the working environment	3.65	1.74
<i>Culture</i>	3.14	1.40
Changing the way in which to establish contact with banks	3.29	1.80
Lessening of face-to-face contact with banks	3.17	1.62
Having few friends or colleagues that conduct internet banking	3.06	1.63
Giving up personal relationships when dealing with banks	3.02	1.61

Table II.
Impediment factors
ranked by mean score

Note: "1" = no discouragement; and "7" = maximum discouragement

“Personal Preference”. Level of education influenced “Features of the web site”, “Risk and Privacy” and “Personal Preference”.

Development of a Thai internet banking adoption model

As indicated earlier, the study is based on the decomposed planned behaviour (Taylor and Todd, 1995). The study found that the intention and thereby the adoption of internet banking by Thai consumers is encouraged by attitudinal factors and impeded by a perceived behavioural control factor, but not by subjective norms (i.e. the “Culture” factor). The attitudinal factors that appear to encourage the adoption of internet banking in Thailand most are “Features of the web site” and “Perceived Usefulness”, while the most significant impediment to adoption is a perceived behavioural control, namely “External Environment”. The application of Taylor and Todd’s (1995) theory for the potential adoption of internet banking in Thailand is shown in Figure 2.

It is interesting to compare the study’s findings with those that took place in other developing countries. Suganthi and Suganthi (2001) carried out research in Malaysia when internet banking in that country was only six months old. They found internet accessibility and ease of use and convenience significant adoption factors. This agrees with our study where accessibility is part of “Features of web site” and the latter part of “Perceived Usefulness”. Polatoglu and Ekin (2001) carried out their research in Turkey which they termed an “emerging economy” (p. 156). Their “access dimensions” consisting of instant feedback, quick transactions and access from anywhere were also found to be significant as well as “savings dimensions” consisting of time and cost savings of self-service internet banking. This aligns with the factor of “Perceived Usefulness” shown in Figure 2.

The significant moderating factors influencing the adoption of internet banking by Thai consumers are gender, educational level, income, internet experience and internet banking experience, but not age. However, it was found that the stand out moderators are income and internet experience as they each affect each of the most significant encouragement and impediment factors. For example, they affect both “Features of the web site” and “Perceived Usefulness” while education only impacts on “Features of the web site”. With regard to the key impediment factor, “External Environment”, it was found that there are three significant moderators: income, internet experience and internet banking experience. Overall, therefore, income and internet experience are the most significant moderating factors for the adoption of internet banking in Thailand. The theoretical model for the adoption of internet banking by Thai consumers showing the significant research variables is shown in Figure 3.

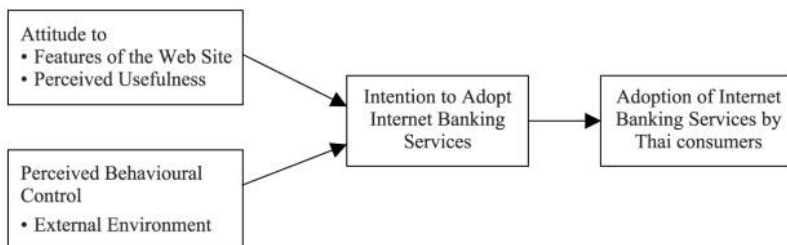


Figure 2.
Application of
decomposed planned
behaviour theory to
internet banking adoption
in Thailand

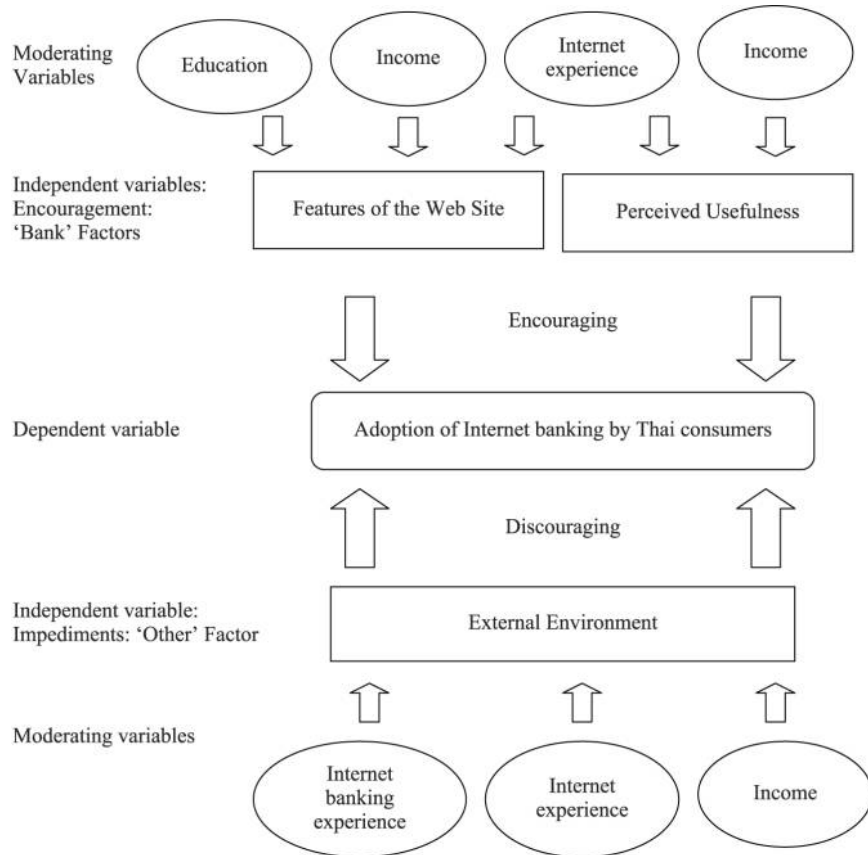


Figure 3.
Theoretical model for the adoption of internet banking in Thailand

Recommendations for banks

As previously discussed, in this study encouragement factors are those that are able to be controlled by banks while impediment factors are those that are not able to be controlled. The study revealed that "Features of the web site" and "Perceived Usefulness" were the most significant factors in encouraging internet banking adoption, and "External Environment" was the most significant factor to impede internet banking adoption in Thailand. It is essential for banks to facilitate encouragement and restrict impediment factors. Therefore, in addition to the direct "push" from internet banks (in respect of the encouragement factors), indirect persuasion should be carried out as a "pull" mechanism (in respect of the impediment factors).

"Push" strategies for encouragement factors

Awareness of internet banking services is essential in the early adoption stages. As internet banking services are still new in Thailand, effective presentations using all forms of media advertising such as leaflets, brochures, web pages, etc., will be useful to introduce the services to a wider audience and educate potential customers about the benefits of internet banking. To access more potential adopters, information about

internet banking should be provided by bank tellers and bank assistants at branches. The information should include references to “time saving”, “convenience” at anywhere any time, “low costs”, and “information availability”. In addition, banks should design their web sites as effective delivery channels and offer information beyond banking services.

It is essential to provide a well-designed and user-friendly web site to attract potential adopters’ attention. The customer should not be required to expend a lot of effort or time, or undergo too great a change in behaviour, to adopt internet banking services. Information and instructions on the web should be provided in both Thai and English in order to make the adopter comfortable. Wide publicity underscoring the benefits and ease of use by demonstrating internet banking services should be provided. This could be implemented by providing personal computers at bank branches accompanied by good documentation and bank assistance. Regular surveying of customers’ responses and opinions of the services should be conducted to ensure continuous improvement.

Reliability of access when needed is one of the key encouragement factors. Although this “reliability” partly depends on customers’ networks, which were excluded from the study, internet banks can enhance accessibility by co-operating with ISPs to provide good quality internet access. Bank should also separate internal and external uses and give priority to external uses. While reliability is a key element from a customer’s perspective, so is the security system. It must be enhanced continuously to guarantee integrity of online transactions as this will build customer confidence. Security provisions should be posted on banks’ web sites clearly and understandably to create customer confidence and improve the trustworthiness reputation of banks. Security information should be provided in non-technical terms, and be accompanied by standard security statements.

A perception of quality service will increase the bank’s image for good services, accuracy and effectiveness. Failure of execution not only causes dissatisfaction and uncertainty to the customer but also makes the whole internet banking process more complex and less comprehensible. Offering incentives is another effective strategy to encourage internet banking adoption by Thai consumers so is the provision of access to internet banking in public places such as shopping centres and bank branches. Most Thai people spend much of their free time in shopping centres on the weekend and bank branches can now be found on almost every single street.

In summary, recommendations for “supplier push” strategies are as follows:

(1) *Build customers’ recognition of internet banking:*

- emphasise the advantages of internet banking services, i.e. time saving, low cost services, convenience and information availability; and
- provide various types of information both financial and non-financial.

(2) *Attract customers to the web site:*

- provide a well-designed and user-friendly web site;
- provide information in both Thai and English languages;
- provide demonstrations in public places, e.g. bank branches, department stores, etc.;
- provide both electronic and documentary demonstrations of online services; and
- regularly survey customers’ responses to internet banking procedures and further develop the web site.

- (3) *Attract customers by ease of access:*
 - regularly monitor customers' access;
 - implement traffic management systems for internal and external users;
 - co-ordinate services with internet service providers.
- (4) *Build customers' confidence:*
 - present the security used in both technical and non-technical terms;
 - outline the procedure and information on how to cope with problems if they occur; and
 - provide instructions on how to use internet banking services safely.
- (5) *Other strategies:*
 - offer incentives such as free internet access dial-up, frequent user benefits, member rewards, etc.; and
 - provide free access to banks' networks in bank branches or public places, e.g. shopping centres, etc.

"Pull" strategies for impediment factor

Banks should develop internet diffusion strategies by adopting "pull" strategies. Increased diffusion will increase the number of internet banking adopters since they are likely to come from the internet population. Furthermore, support from the government and the industry regulator will positively affect internet banking services by increasing the confidence of the adopters.

Effective co-operation among banks has to be developed. The value of internet banking is increased by linking one activity with another both within banks and with outside suppliers, channels and customers (Porter, 2001). Furthermore, internet banks should collaborate with internet service providers because it will enable banks to better control quality of services as well as enhance adopters' accessibility. In addition, a high quality internet infrastructure should be provided since it is one of the primary requirements for internet usage.

Support from the government and industry regulator should be effective to increase the growth of internet banking services. The Thai government should be encouraged to initiate suitable steps to remove legal and regulatory barriers to e-commerce in general and internet banking in particular. In addition to lobbying the Thai government and the BOT, banks should also proactively participate in improving internet services in order to increase online banking. For example, electronic laws should be promoted by the banks in order to reduce customers' perceptions of risks. Current co-operation has been for commercial purposes, rather than for mutual benefit of the industry. This may need the industry regulator, i.e. the BOT, to act as the central authority to improve the external environment.

In summary, recommendations for "market pull" strategies are as follows:

- (1) *Increase service value by collaboration:*
 - collaborate with internet service providers;
 - offer free internet access;
 - expand banking service across banks; and
 - increase linkages to suppliers and merchants.

(2) *Be proactive:*

- support the government to enact electronic commerce laws;
- work with the industrial regulator; and
- provide education on the uses of the internet and internet banking.

Customer-targeting strategies

Internet banks should focus on people with high purchasing power as the first priority and attempt to shift them online. This requires extensive analyses of customers' needs and the provision of customised services that are of value to them. In summary, recommendations for moderating factors are as follows:

(1) *Target right customers:*

- persuade people in good positions and appropriate income to adopt the services.

(2) *Provide value to customers:*

- monitor the historical bank usage of customers to know their needs; and
- provide customised services to customers.

Limitations and future research

There are some limitations to our findings that should be disclosed. The study focused on office-workers in Bangkok who have internet access; the results therefore, cannot be generalized to non-internet users. Second, as with previous adoption studies, the factors selected may not cover all the factors that could influence the adoption of the internet banking in Thailand. Third, although IT is developing continuously to address negative responses to electronic commerce, the time frame of the study did not allow longitudinal data to be gathered. This means that information was collected at one point of time only. Further research could expand the survey to Thai people in other provinces, rather than being specific to Bangkok only, and should be repeated at regular intervals to observe the impact of changes.

We conclude that Thai people will more likely shift to internet banking when they become aware of its "Perceived Usefulness", as well as the "Features of bank's web site", and "External Environment" are well supported. Since there are a great number of people who have no internet banking account at present, the potential for internet banking in Thailand is high. To achieve these outcomes, the study identified a number of specific strategies that banks could follow.

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