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ARTICLE INFO	Sirion Chaipoopirutana, Howard Combs, Yuttapong Chatchawanwan and Vikrant Vij (2009). Diffusion of innovation in Asia: a study of Internet banking in Thailand and India. <i>Innovative Marketing</i> , 5(4)
RELEASED ON	Wednesday, 27 January 2010
JOURNAL	"Innovative Marketing "
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

0



NUMBER OF FIGURES

0



NUMBER OF TABLES

0

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## Diffusion of innovation in Asia: a study of Internet banking in Thailand and India

### Abstract

This study examined the possible attributes of innovation that contribute to the adoption of innovative Internet banking services in India and Thailand. Diffusion of Innovation theory was utilized to study Indian and Thai banking customers living in several regions of the two countries. The attributes of innovation, used for this investigation, were complexity, compatibility, relative advantage and trialability. The results reveal that only complexity had a negative relationship with intention to adopt innovative Internet banking both in India and Thailand, while other attributes of innovation show a positive relationship. Several marketing related recommendations are offered for improving the success rate for the adoption of Internet banking in both India and Thailand.

**Keywords:** Internet banking services, Innovation theory, innovation, Thailand, India.

### Introduction

Over the past several years, the utilization of service delivery channels has been increasingly conducted via the Internet. The emergence of Internet banking has stimulated many banks to emphasize information technology strategies in order to stay competitive. Internet banking has created value for banks in terms of reducing cost, enhancing customer service, and increasing long-term profit. With the intense competition, banks have also started to provide non-banking services over the Internet (such as paying electricity bills, mobile top up, and more recently electronic banking) as ways to keep customers coming back to their websites (Dixon and Nixon, 2000). With the rapid diffusion of the Internet, banking in cyberspace is fast becoming an alternative channel to provide banking services and products (Tan and Teo, 2000). Unfortunately, the customer adoption level of Internet banking has not been very high for most banks in India and Thailand.

Prior research on Internet banking has mainly emphasized its impact on the overall banking industry (e.g., Booz-Allen and Hamilton, 1997), the bank client's perspective, mostly on the issues of benefits (Suganthi et al., 2001), trust (Suh and Han, 2002), and innovations (Gerrard and Cunningham, 2003). It has been reported that a bank's greatest profit opportunities in utilizing innovative services lie with corporate customers (Tyler and Stanley, 1999).

It is not surprising that some researchers have found that the success of Internet banking is not based purely on the banks' strategies in using it but rather on customer's willingness to adopt it (Mols, 1998; Pikkarainen et al., 2004). Unfortunately, many of

these studies have mainly focused on innovation adoption in the context of consumers in North America and in Europe (Mols, 2000; Pikkarainen et al., 2004). Very little research on Internet banking has focused on consumers in Asian countries such as India and Thailand.

This study will provide banks in India and Thailand with a deep understanding of the key factors that influence the Indian and Thai customers' intention to adopt the innovative Internet banking service. This study will also help the banks in India and Thailand to rethink their marketing strategies with respect to the attributes of innovation.

### 1. Literature review

This study was grounded in the diffusion of innovations theory and the attributes of innovation. This focuses on variables that influence the intention to adopt innovative Internet banking for customers in India and Thailand. The attributes of innovation in this study consisted of trialability, relative advantage, complexity, and compatibility (Rogers, 1995). These attributes were originally proposed in the Diffusion of Innovations theory (Rogers, 1983). Observability was added as another innovation attribute that has positive impact on the rate of adoption. Rogers (2003) defines each of these five attributes in his 5<sup>th</sup> edition.

Relative advantage is "the degree to which an innovation is perceived as being better than the idea it supersedes". Compatibility is "the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters". Complexity is "the degree to which an innovation is perceived as relatively difficult to understand and use". Trialability is "the degree to which an innovation may be experimented with on a limited basis". Observability is "the degree to which the results of an innovation are visible to others".

According to Rogers' (1983) Diffusion of Innovations theory, innovation attributes, innovation decision, medium of communication, social system nature and promotion efforts from change agent are the variables, used to determine the rate of adoption. Innovators, early adopters, early majority, late majority and laggards are the various adopter categories. Rogers (2003) contends that when the innovative product or service is used and appreciated by the early adopters, then early adopters' wide network of opinion seekers starts exploring and using the innovative product or service. The attributes of innovation have the highest influence, compared to other variables, on the rate of adoption. The various stages of diffusion, according to Rogers (2003), are knowledge, persuasion, decision, implementation and confirmation.

Taylor and Todd (1995) suggested that the different dimensions of attitudinal belief towards an innovation could be measured using the five perceived attributes (relative advantage, compatibility, complexity, trialability and observability) of the innovation. Tornatzky and Klein (1982) found that compatibility, relative advantage, and complexity had the most significant relationships with adoption across a broad range of innovation types. Polatoglu and Ekin (2001) considered performance as being a measure of relative advantage, while Black et al. (2001) identify the elimination of the need to rely on others. The relative advantage is an important factor to determine adoption of new innovations (Tornatzky and Klein, 1982). Agarwal and Prasad (1998) showed that relative advantage of an innovation is positively related to its rate of adoption. Lederer et al. (2000) defined complexity as the degree of an innovation that is considered relatively difficult to understand and use. Polatoglu and Ekin (2001) implied that a well-educated people, who are familiar with the Internet and e-mail, should not find Internet banking to be complex. Howcroft and Durking (2000) revealed that e-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.

Therefore, based on the Diffusion of Innovations theory and the attributes of innovations, this study investigated the factors influencing Indian and Thai customers' intention to adopt Internet banking service. The factors in the context of the framework are the attributes of innovation: relative advantage, compatibility, complexity, and trialability. Complexity has negative correlation with intention to adopt Internet banking whereas compatibility, relative advantage and trialability

have positive correlation with the intention to adopt internet banking service.

## 2. Research hypotheses

Based on the research objective, the following eight hypotheses were tested:

*H1o: There is no relationship between complexity and intention to adopt Internet banking services by Indian consumers.*

*H2o: There is no relationship between complexity and intention to adopt Internet banking services by Thai consumers.*

*H3o: There is no relationship between compatibility and intention to adopt Internet banking services by Indian consumers.*

*H4o: There is no relationship between compatibility and intention to adopt Internet banking services by Thai consumers.*

*H5o: There is no relationship between trialability and intention to adopt Internet banking services by Indian consumers.*

*H6o: There is no relationship between trialability and intention to adopt internet banking services by Thai consumers.*

*H7o: There is no relationship between relative advantage and intention to adopt Internet banking services by Indian consumers.*

*H8o: There is no relationship between relative advantage and intention to adopt Internet banking services by Thai consumers.*

## 3. Research methodology

Descriptive research and survey research technique were applied in India and Thailand separately for this study. In India, the data was collected by distributing the questionnaires to Internet banking customers of a leading private commercial bank in India. Three different sampling procedures were used to select the branch, number of customers and the actual customers. The data was collected from ten different branches in Bangalore with 40 customers being selected from each branch (400 total respondents). This represented a diverse sample of the population of Bangalore.

In Thailand, the data was collected from 400 Thai customers who are using banking services in each of four regions of the country (central Thailand, northeast Thailand, northern Thailand, and southern Thailand). Likewise, the sample, selected from Thailand, represented a diverse group of banking customers from various geographic and demographic backgrounds.

The questionnaire for this study consisted of six parts. The first part contained screening questions which confirmed that the right target population was chosen. In the second part, respondents were

asked to rate their perceptions about the complexity. In the third part, respondents were asked to rate their perceptions about the compatibility. In the fourth part, respondents were asked to rate their perceptions about the relative advantage. In the fifth part, respondents were asked to rate their perceptions about the trialability. The method of a 5- point Likert scale was implemented, ranging from strongly disagree (1) to strongly agree (5) for second, third, fourth, and fifth part of the questionnaire. The last

part consisted of close-end-questions for demographic factors.

#### 4. Results

The results indicate that all null hypotheses are rejected. Thus, there is a relationship between the attributes of innovation: complexity, compatibility, trialability, and relative advantage and the intention to adopt Internet banking service in India and Thailand. The summary of the hypothesis tests is shown in Table 1.

Table 1. Summary of hypothesis testing

Null hypothesis statements	Significant value	Results	Correlation coefficient @
H <sub>10</sub> : There is no relationship between complexity and intention to adopt Internet banking services by Indian consumers.	0.000	Reject H <sub>0</sub>	(-) 0.360
H <sub>20</sub> : There is no relationship between complexity and intention to adopt Internet banking services by Thai consumers.	0.000	Reject H <sub>0</sub>	(-) 0.329
H <sub>30</sub> : There is no relationship between compatibility and intention to adopt Internet banking services by Indian consumers.	0.000	Reject H <sub>0</sub>	0.460
H <sub>40</sub> : There is no relationship between compatibility and intention to adopt Internet banking services by Thai consumers.	0.000	Reject H <sub>0</sub>	0.720
H <sub>50</sub> : There is no relationship between trialability and intention to adopt Internet banking services by Indian consumers.	0.000	Reject H <sub>0</sub>	0.461
H <sub>60</sub> : There is no relationship between trialability and intention to adopt Internet banking services by Thai consumers.	0.000	Reject H <sub>0</sub>	0.567
H <sub>70</sub> : There is no relationship between relative advantage and intention to adopt Internet banking services by Indian consumers.	0.000	Reject H <sub>0</sub>	0.599
H <sub>80</sub> : There is no relationship between relative advantage and intention to adopt Internet banking services by Thai consumers.	0.000	Reject H <sub>0</sub>	0.610

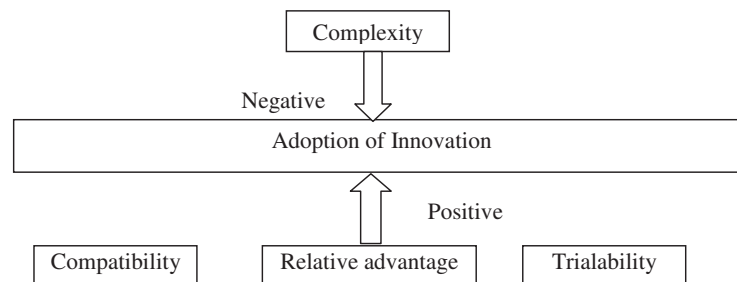


Fig. 1. Conceptual framework

The findings reveal that complexity is the only factor, which has negative relationship with Indian and Thai customers' intention to adopt the Internet banking. On the other hand, compatibility, relative advantage and trialability have positive relationship with customers' intention to adopt Internet banking. Compatibility has high positive correlation only among Thai customers. Trialability, relative advantage and compatibility have moderate positive correlation among the Indian customers, whereas trialability and relative advantage have moderate positive correlation among Thai customers. Complexity has low negative correlation among both Indian and Thai customers.

#### Conclusion and recommendations

Based on the research findings, the perceived complexity of Internet banking services should be

reduced as much as possible, so that the willingness to try and then adopt Internet banking will increase. The designers should pay attention to creating an easy-to-use system. It is essential to provide a well-designed web site to attract customers. The more complex that Internet banking is to understand and use, the slower will be its adoption rate. So banks must reduce the complexity so that it can draw more customers to Internet banking service.

From the research findings, compatibility has a positive relationship with the intention to adopt Internet banking. Therefore, banks should start advertising their Internet banking service to their existing customers who have Internet access.

It would be wise for banks to promote the message that Internet banking is a safe and secure way to do transactions and that many types of financial



transactions can be done through securely via the Internet. During the study many consumers reported that they felt that their transactions would be unsafe and vulnerable to misuse if they used Internet banking. Therefore, it is a high priority for banks to address these security concerns and to educate the customers about being secure Internet transactions.

Banks should also promote the advantages of using Internet banking. Some of the advantages of using Internet banking service include: saving time, anytime anywhere banking, tracking and getting accurate account details whenever they are needed. Customers will save time by reducing the trip to the banks. Customers will be able to do transactions even on bank holidays, weekends and night time. Thus, these advantages of the Internet banking service, relative to the traditional service, should be marketed effectively by the banks in order to increase the intention to adopt Internet banking service.

Banks should consider providing Internet banking service for free (especially for high-value customers) and waive any transaction cost for the Internet banking transactions so that more customers will intend to experiment the Internet banking service. One way to enable the customer to experiment with Internet banking is by offering free access at the bank's locations for its customers to access to their Internet banking account.

By maximizing the usage of Internet banking by current customers, the banks will have huge savings compared to traditional service, since the cost, associated with providing services over the Internet,

is much lower than the traditional teller service at bank. Advertising throughout the media, such as brochures, web pages, television, and radio should be taking place in order to inform and remind consumers of the benefits of using Internet banking. In addition, banks should encourage the customers by using e-mail interaction, promising to provide personalized responses to any Internet banking concerns. Bank tellers need to be trained and Internet banking should be the first priority in providing the information to the customers.

Banks should direct their Internet banking services to their current customer base because attracting new customers is more difficult. Both in India and in Thailand, Internet banking is in its early adopter stage of innovation, so the number of Internet banking service customers will increase steadily for next few years. Also, the number of Internet users in India and Thailand are increasing exponentially. Another recommendation is to offer many non-banking services, like utility bill payment along with the Internet banking service that will enable the customers to use the Internet banking more and will help the banks to stay ahead of competition.

The most critical issue for the bank managers is to find out how to survive in the competitive market. The results of this study provide banker marketers in India and Thailand with a strategy for rethinking how to build, maintain, and enhance customer relationships, while promoting Internet banking to the mass market.

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