

## **CORPORATE CUSTOMER PERSPECTIVES ON BUSINESS VALUE OF THAI INTERNET BANKING**

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### **ABSTRACT**

Internet banking has become the new self-service delivery channel that allows banks to provide information and offer services to their customers with more convenience via the web services technology. An understanding of corporate customer acceptance of Internet banking can assist banks to assess the real business value of Internet banking implementation. This study examines four benefits and three barriers that influence corporate customer adoption. The four benefit factors are information quality, information accessibility, information sharing, and transaction benefits. The three major barriers are related to trust, legal support, and organization barriers. Information quality and transaction benefit factors are far more important than other in discriminating Internet banking users from non-users. In addition, information sharing and distrust of the web are two drawbacks of Thai Internet banking adoption. As Thai banks decide to use Internet technology as a new self-service delivery channel, they have to enhance acceptance from corporate customers. This does not seem to be merely a matter of getting corporate customers to recognize benefits, but banks probably need to lower barriers to Internet banking adoption to provide actual benefits to corporate customers.

Keywords: Internet banking, web benefits, web barriers, Thailand

### **1. Introduction**

In recent years it has become increasingly apparent that the Internet will become a critical service delivery channel. Many observers have discussed information benefits that web technology provides to business (e.g., Greaves et al., 1999; Lederer et al., 1997; Ng et al., 1998; Teo and Too, 2000). Web technology can also offer the ability to automate business transactions, which may allow more responsive provision of service to customers.

Many companies in the financial services sector have been quick to implement Internet capabilities, and electronic service is becoming a viable option for interaction between financial service providers and their customers. Many banks have implemented Internet banking to offer their customers a variety of online services with more convenience for accessing information and making transactions. From the banks' viewpoint, implementation of Internet banking will lead to cost reductions, improve customer service, and create long-term profit. Evans and Wurster (1997) argued businesses investment in web technology is driven by expectations that Internet technology should provide better opportunities to establish a distinctive strategic position compared to the previous generation of information technology.

However, customer adoption of Internet banking has not been as strong as most banks might have wished. Some research shows that most retail banking customers rank Internet banking as less important than other technology-based delivery channels, such as ATMs (Aladwani, 2001; Suganthi et al., 2001). In Thailand, retail customers show attitudes consistent with this, and are uncertain about adopting Internet banking (Ongkasuwan and Tantichattanon, 2002; Rotchanakitumnuai et al., 2003). It is becoming clear that the potential value of web-based service adoption for customers depends not only on the benefits, but also on overcoming a number of barriers.

Web barriers can be derived from many factors such as distrust of the web system, and lack of legal support issues. Electronic markets create new transaction risk for electronic market participants, and security is one of the crucial factors that discourage the successful implementation of electronic services (Ratnasingham, 1998). These issues are serious concerns among corporate customers in Thailand (Rotchanakitumnuai and Speece, 2003).

Prior research on Internet banking has mainly focused on the perspective of personal account bank customers, frequently addressing issues such as benefits (Polatoglu and Ekin, 2001; Suganthi et al., 2001), trust (Suh and Han, 2002), and innovations (Gerrard and Cunningham, 2003). Normally, corporate customers provide the greatest profit opportunities to the bank (Tyler and Stanley, 1999; Zineldin, 1995), but they need a greater level of business interactions with their banks (Athanasopoulos and Labroukos, 1999). Relatively little research has studied adoption of web-based service by assessing both benefits and barriers of Internet banking from the viewpoint of business-to-business or corporate customers. This is the focus of the study here. Success of Internet banking in Thailand, as in many other countries, will rely at least partly on corporate customer acceptance of its value.

Moreover, implementation of Internet banking in Thailand is taking place in a somewhat different environment than in the West because Asian cultures place much more value on strong interpersonal relationships in business. Even in the West, Howcroft and Durkin (2000) noted that technology might not be able to fully substitute for people in bank-customer relationships – technology may be even less of a viable substitute in Asia. For instance, key account managers of banks operating in Hong Kong view social relationships with their customers as quite important in facilitating information exchange for developing and maintaining customer relationships (So and Speece, 2000). Srijumpa et al. (2002) suggested that integrating Internet services into interpersonal services would be more attractive and contribute to stronger customer satisfaction in Thailand than relying on self-service options over the Internet. Larpsiri and Speece (2004) show that integrating the technology, rather than stand-alone, such as self-service over the Internet, is likely to be more attractive to Thai insurance customers. As Asia has become a major player in the global economy, and a primary area where the international banking industry sees opportunity for strong growth, understanding views toward Internet banking in some detail seems to be critical.

We examine the perceived benefits and barriers of the Internet in Thailand among corporate banking customers to see how they affect adoption of Internet banking. Thailand is a good example of a middle-income country where Internet banking is in early stages of development. In general, information technology (IT) resources in much of Asia are somewhat less well developed than in the West, so it is useful to investigate how much and what kind of benefits and barriers corporate customers perceive in such conditions, which are more representative of much of the world outside the West.

## **2. Thai Internet Banking**

A brief overview of Thai Internet banking will help readers to visualize the Internet banking context in which Thai corporate customers perceive the benefits and barriers. About late 2000, some Thai banks started implementing Internet banking as a new online service channel. As elsewhere, these Thai banks expect that Internet banking can offer their corporate customers a variety of online services with more convenient access to information and transactions. However, some banks are uncertain of customer acceptance and hesitate to invest intensively in Internet banking infrastructure, which requires large capital outlays. Moreover, this is the early stage of Internet banking implementation, and many Thai banks do not recognize that Internet banking can provide real strategic benefits to them.

Thai Internet banking presently provides quite the same services across the several banks that have implemented Internet banking systems, such as the ability to check account balances, request statements, transfer money, pay loans / bills / taxes, foreign exchange and remittance, trade, international/global fund transfer, and stop cheque. Some services are usually 24-hour (e.g., bill payment, international fund transfer), while some transaction services are available at some bank websites only from 6 a.m. to 11 p.m. (e.g., account balance inquiry, stop cheque, statement request, fund transfer between bank account and third party account).

However, the level of customer adoption of Internet banking from Thai banks is quite low. Few retail customers use it much (Rotchanakitumnuai et al., 2003), and among the corporate customers who do, many have not yet shifted much volume to the Internet channel (Rotchanakitumnuai and Speece, 2003). Therefore, current bank implementation of Internet banking has brought up the question whether Internet-based service delivery really provides actual benefits to bank customers, or whether the barriers are at present still too strong to overcome.

## **3. Literature Review**

Any implementation of Internet banking requires information technology investment by Internet banking service providers. To succeed in such investments, bank customers must see value in the technology, or they are unlikely to use it much. In this section we discuss theoretical bases for evaluating the business value of information technology (IT), and review from the customer viewpoint benefits of using the web for commercial purposes. Things have not moved as quickly as some anticipated in turning these benefits into reality in the banking sector, and many bank customers still hesitate in switching to web-based service transactions. Thus, issues about web barriers are also discussed, looking first at what the literature says about them.

### 3.1 Business value of IT

An important question about business investment in IT today is whether the expected financial benefits can be realized. Many studies attempt to evaluate the impacts of IT investments. Barua et al. (1995) proposed that impacts should be observed at each strategic business unit level. They use two-stage analysis to determine the value of information technology investment: intermediate and high level output variables for measuring the IT contribution. They analyze intermediate-level variables based on factors such as capacity utilization, inventory turnover, quality, price, and new products, while high level variables or final performance variables are measured by market share and return on assets. They also suggest that IT value should be measured at the process level at which IT is implemented. Chircu and Kauffman (2000) explored both market and process-level factors, to evaluate barriers to electronic commerce investment. IT creates value flows that occur internally such as cost savings, product quality, and innovative service or product (Bakos, 1991).

Recently, Stamoulis et al. (2002) proposed a model for assessing the business value of e-banking distribution channels which applies five perspectives: customer, marketing, finance, technology, and strategy perspectives. These perspectives can be used to evaluate business value along two viewpoints, internal and external. The internal view means that the e-banking distribution channel is considered as a resource providing efficiency, effectiveness, market expansion, and competitive advantages to the financial service provider. Business value from the external view derives from the customer viewpoint, and is measured by the extent to which the e-banking channel supports the relationship between the bank and its customer. We will primarily be looking at this external, customer viewpoint in most of the discussion below, as we focus on customer adoption of the Internet services, not service supplier adoption.

Much of the discussion of value actually focuses on benefits and off-setting barriers. For example, Weill (1992) defined the informational level of IT value as information technology infrastructures that assist effective operations for the firm in terms of communication, reporting, analyzing, planning, controlling, and decision-making. Web technology provides the ability to transfer information not only within the firm, but also between firms and their collaborating partners in the network, e.g., to customers or suppliers. Teo et al. (1997-1998), on the other hand, found internal organizational and technological factors are more important than external factors about relationships with suppliers / customers. Four factors influencing adoption of the Internet are aggressive technology policy, compatibility of the Internet with organization culture and infrastructure, top management support, and potential advantage. Accordingly, we examine both web-based service benefits and barriers in more detail.

### 3.2 Web benefits

Prior studies about business use of web technology showed that web technology provides a number of information benefits, as businesses use the Internet channel to provide information about product specifications, price, and service delivery methods. Specific informational benefits include quality information, easier access to information, and capabilities for information sharing (Lederer et al., 2001). There are also transaction benefits, which can provide the firm with the ability to automate business functions via the web and provide service to customers with lower costs, more responsiveness, and greater potential for customization (Greaves et al., 1999).

#### 3.2.1 Information quality

Quality information should be relevant, related to customer needs and interests so that it adds value for customers (Edmunds and Morris, 2000). Businesses have to focus on relevant information which responds to customer needs and attracts them to keep accessing the firm website as a quality information source (Huang, 2000). The informational benefit is also more valuable to customers if website owners provide accurate information (Daugherty et al., 1995; Freiden et al., 1998). Accuracy refers to "how well the information represents the phenomenon it purports to describe" (Freiden et al., 1998, p. 216). Finally, quality information has to be timely, which means that up-to-date or current information must be provided.

#### 3.2.2 Information accessibility

One of the major attractions in commercial use of the web is the ability to access information more easily. Daugherty et al. (1995) pointed out that accessibility to service provider / supplier sites can create better levels of responsiveness to customers. Furthermore, if the firm website is easily accessible, customers can access information faster, encouraging them to continue connecting back to the firm website, so they can frequently check firm information. In addition, to make websites most accessible, firms have to pay particular attention to creating flexible ways to disseminate information resources to their customers (Lederer et al., 2001).

#### 3.2.3 Information sharing

Online information sharing has been conceptualized in different ways. One of the popular issues mentioned by researchers is information sharing via a virtual community. Firms can create a virtual community to serve the needs for communication and information sharing among customers who have common interests or experience, e.g., via the bulletin board. Virtual communities can be used to attract customers and enhance their involvement with the

firm (Cothrel, 2000; Kodama, 1999; Weill and Vitale, 2002). Firms can now interact with customers on a global scale, in real-time, and using two-way interaction (Kiani, 1998). Information sharing among customers can help enhance customer service by increasing convenience, through collection of service performance information to support management decisions, and by making possible the offering of more customized products or extra services according to customer needs (Harrison-walker, 2001; Karimi et al., 2001).

Moreover, information sharing should provide a selection of appropriate links or connections to other websites that give more detailed information about related topics that are interesting for customers. The objective of the connectivity is to provide customers with all the information they want. Several recent studies on electronic commerce have noted that these issues are critical. For instance, Lin and Arnett (2000) suggested that a major factor for the success of a website is the design of information interfaces and navigation that enable users to link to other websites.

#### 3.2.4 Transaction benefits

**Lower transaction costs:** In doing business, both buyers and sellers try to minimize transaction costs. Customers perceive cost advantage if their service providers set prices lower than others without any substantial sacrifice of service quality. Cost advantage leads to superior performance if service providers can provide an acceptable level of value with lower costs to their customers. According to many observers, one of the major contributions of Internet-based service is the reduction in transaction costs as buyers and sellers can contact each other directly. Service providers can gain operational benefits by reducing time, overhead costs in operation, and also eliminate costly service participants such as company service personnel (Ghosh, 1998; Ng et al., 1998).

In the financial services industry, the web is used as a means of payment or money transfer. Many observers claim that this new channel reduces time and cost to both customers and banks. The web-based payment process may be perceived as more convenient, and can create saving dimensions for customers. Prior empirical research about Internet banking reveals that time and cost are key factors affecting Internet banking adoption of the bank. There may be some economies of scale involved; e.g., Polatoglu and Ekin (2001) found that cost and time saving dimensions are perceived as a larger benefit when customers use Internet banking services more often and for larger transactions.

**Responsiveness of customer service:** Offering the Internet for commercial purposes also requires that the level of service provided to customers remain much the same as is provided from a sales force in traditional marketing (Gurau et al., 2001; McIvor et al., 2000). Communications aspects of service can certainly be enhanced by the web, which is often used as a channel to communicate and provide support to customers in order to improve customer relations (Emiliani, 2000; Klein and Quelch, 1997; McIvor et al., 2000).

Firms have to communicate to their customers in order to provide them with more information on related products or services which they offer. Parasuraman et al. (1991) found that information technology provides powerful tools to communicate with customers. In research on electronic services, Rust and Lemon (2001) found that web technology provides situation-specific or personalized communication. For instance, customers can complain about a product or service in order to get their problem solved or request their specific needs and wants via multiple means (e.g. email, live chat, FAQ page), whereas the supplier or service provider can respond to customers more rapidly.

Customer service can improve by using web applications to identify and report problems more quickly, and allow more accurate diagnosis and faster responses to firm customers. Web applications such as customer relationship management (CRM) can gather data and analyze a customer database for specific customer needs and wants so that customers can have immediate feedback on services or products available as requested. Kardaras and Papathanassiou (2001) found that when banks provide service via the web for its corporate customers, customers demand many types of support from banks, such as after sales service support for customer training in using the Internet banking system.

**Service customization:** Many companies have succeeded in using web-based business to implement innovative new services for their customers (Lederer et al., 2001). The new radical changes of services have led to superior offerings and provided significant economic benefits to their customers (McIvor et al. 2000; Yen and Chou, 2001). As discussed above, the most commonly cited benefit of the web is its value as an information source, offering accessibility, and sharing capabilities (Greaves et al., 1999; Klein and Quelch, 1997; Kodama, 1999). The power of the web to enhance information flow provides the firm an effective channel to respond to customer needs (Daugherty et al., 1995). This contribution allows service providers to gather customer information more quickly, conduct faster analysis, respond in shorter time, and customize services or products according to customer needs (Greaves et al., 1999; Klein and Quelch, 1997).

In addition, web technology empowers employee collaboration, information sharing, and knowledge integration which can create innovation faster. Rapid innovation offers even more opportunities to customize a specific service

or product according to customer needs (Henderson, 1994; Johannessen et al., 1999). In the financial services sector, service innovation has become very important for service providers to keep ahead of the competition. Currently, corporate customer adoption of web-based service delivery indicates that the web creates new opportunities for corporate customers and the bank to improve collaboration in product design and customization.

In the context of Thai Internet banking, it is argued that corporate customers who perceive a higher level of web benefits would be more likely to adopt Internet banking. Therefore, the first hypothesis for this study is:

**H<sub>1</sub>:** The three web-based services informational benefits and the set of transaction benefits discussed above should positively influence Internet banking adoption for bank corporate customers.

### 3.3 Web barriers

While web-based services provide benefits, banks also face a number of barriers to adoption of web-based service delivery. Customers do not accept web-based service for many reasons. One set of issues is related to trust, another to legal infrastructure, and a third set of issues is about internal capabilities to use the systems.

#### 3.3.1 Trust

Security of the system: Strong concern about security is one crucial factor related to unwillingness to adopt service via the Internet (Gerrard and Cunningham, 2003; Sathye, 1999). Evidence from research about Internet banking also reveals that security is one of the most important future challenges for banks because of customer fears of higher risk in using the web as a channel for financial transactions (Aladwani, 2001; Sathye, 1999).

Reputation of the service provider: Service providers must have experience in business functions, policy promises, and consistent support to customers in order to build reputations among their customers. Online customers are more likely to perceive problems related to loss of privacy, as the Internet channel is an open system that other people can access for information easily (Jones et al., 2000). Reputation of the bank, especially in technology applications, is one of the major factors that affect customer adoption of new technology-based service delivery (Aladwani, 2001).

Reliability of online transaction: Customers perceive that risk is related to reliability and likelihood of system failure (Walker et al., 2002). Perceived risk can cause customers to reject new technology-based service delivery. Safety and documentation in making financial transactions are the major factors about which corporate customers are concerned. Customers are also worried that technology-based service delivery systems will not work as expected, and lack confidence that problems can be solved quickly (Walker et al., 2002). Westland (2002) found that transaction risk occurs when online markets fail to assure that service will be delivered with adequate quality. Frequently, slow response time after the Internet interaction leads to a delay of service delivery and causes customers to be unsure that the transaction was completed.

Negative attitudes among some managers are also a major hindrance (Farhoomand et al., 2000; Teo et al., 1997-1998). Negative attitudes cause resistance to change and lack of management commitment, reducing the company's resource allocation and motivation to use the technology (Basu et al., 2002).

#### 3.3.2 Legal support issues

Customer protection is a major legal issue associated with using the Internet (Zugelder et al., 2000). This issue can cover unfair and deceptive trade practices by service providers or suppliers, unauthorized access and usage by others (e.g., hackers). Customer protection is important for building customer confidence over the Internet because there is no personal contact, and there is a great likelihood for having problems via the web. In addition, fair liability is a key legal issue. Thomas et al. (1998) mentioned that responsibility must be set when financial losses occur in Internet transactions. In practice, banks normally issue Internet banking contracts with limitations of their liability (Attaran, 2000; Giannakoudi, 1999).

Many businesses are still wary of making extensive transactions over the web because of the lack of supporting law about electronic documents as legal evidence (Farhoomand et al., 2000). Frequently it is unclear whether electronic documents and records are acceptable as sufficient evidence of transactions (Giannakoudi, 1999). Some customers will not accept online transaction records due to the difficulties in providing authentication of electronic transmissions. These sorts of issues cause customers to question the legal basis for using the Internet in commercial transactions in terms of the jurisdiction of the courts and dispute resolution procedures.

#### 3.3.3 Organizational barrier

Implementing web technology as a business channel requires organizational ability and resources to utilize web technology more efficiently resources, such as hardware and software. The shortage of information technology infrastructure can be a critical barrier to adoption. So can the shortage of knowledgeable personnel, even if the technology is there. The lack of experience and knowledge in using online business can inhibit adoption (Chircu and Kauffman, 2000; Noh and Fitzsimmons, 1999). Customer knowledge barrier may come from a lack of diffusion capability, and the lack of investment in training for internal employees.

Thus, adoption of web-based services can be inhibited by trust issues, lack of legal support, and internal organizational factors. If web barriers can be solved and lowered, corporate customers may be more likely to adopt Internet banking. Hence, the second hypothesis for this study is:

**H<sub>2</sub>:** The three sets of barriers to web-based services discussed above should negatively influence Internet banking adoption for bank corporate customers.

These hypotheses are schematically represented in Figure 1. Past discussion of these issues has not been entirely consistent. Some research has found positive impacts of information technology on firm business value whilst some have suggested negative impacts. Specific to Internet banking services, it seems that the Internet banking service channel does provide business value to bank customers in terms of saving time and cost, and convenience (Gerrard and Cunningham, 2003; Suganthi et al., 2001), but the number of studies examining this in detail is limited. In the Thai context, qualitative research indicates that barriers do inhibit adoption of Internet banking (Rotchanakitumnuai and Speece, 2003), but this needs confirmation, also. Research on the impact of barriers is even less common than empirical research on the benefits.

In order to search for suitable benefit and barrier characteristics in the Thai context, this paper firstly explores Thai Internet banking service providers in order to identify what benefits corporate customers might obtain from Internet banking implementation, and what barriers they might see. This is important because the orientation toward personal relationships and preference for traditional over-the-counter service are quite strong in Thai business culture.

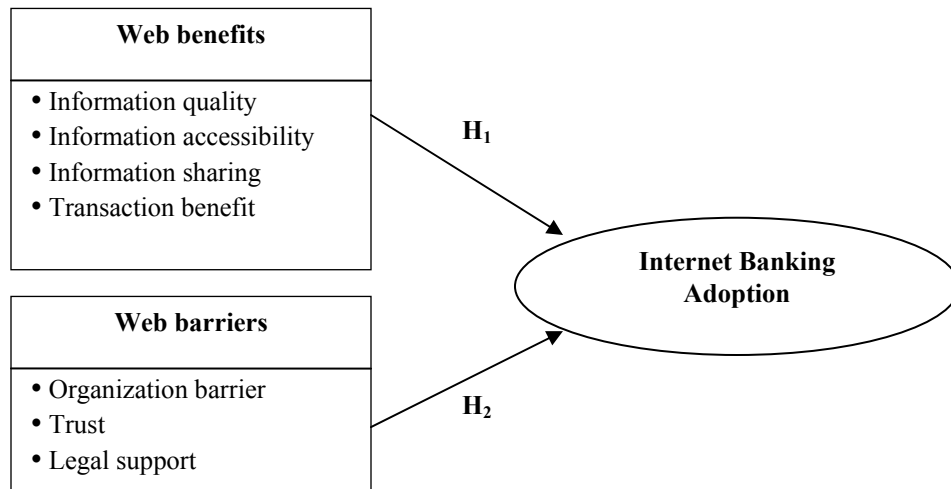


Figure 1: Web benefits, web barriers and Internet banking adoption

**4. Pilot work: a search for primary benefits and barriers**

The objective of the pilot work was to confirm the benefits and barriers from using Internet-based service that have been reported in research published to date, as well as to discover whether any additional benefits or barriers are perceived in the Thai context. Prior studies about information systems and electronic commerce have sometimes used a qualitative approach in order to gain more depth for exploring perspectives in the early stages of research, allowing the researcher to gain a better initial understanding of the problem, to identify facts, attitudes, and influence, and to provide knowledge (e.g., Markus and Lee, 1999; Pare, 2002; Wright, 1996). Many cross-cultural researchers recommend that researchers confirm concepts (and measures) before using them in new cultural contexts, and argue that the detailed understanding for this confirmation must come from qualitative methods (Malhotra et al., 1996).

The pilot work was conducted through a series of face-to-face in-depth interviews with Thai banks that offer Internet banking. The target population was the few Thai local banks that provide Internet banking services. In selecting appropriate respondents from the banks, the following three criteria were used: First, Thai banks that are the leading Internet banking service providers were chosen as the target group. Secondly, banks where the researchers had sufficient connections to gain access were chosen, which is a key issue in getting useful information given the strong tradition of business secrecy in Asia. Finally, the top-level bank managers who play major roles in determining strategic direction in implementing Internet banking for corporate business groups were selected as interviewees.

Five top-level executives from three Thai banks were interviewed in this initial pilot. These included senior vice presidents of e-Commerce and e-Banking from the first two banks. In the third bank, the researcher was able to interview three top managers; vice president of the electronic channel management department, vice president of the corporate business group, and division manager of the corporate business marketing and products department.

#### 4.1 Summary of pilot results

Thai Internet banking service providers believe that Internet banking is a powerful channel for customers to conveniently access information. For instance, customers are able to check their account balance and plan their cash management early in the morning, without waiting until banks open. They can check their real time account balance, fund transfers, and request current and historical statements during the hours of 9 am to 11 pm. Two of the banks provide links to other websites in order to motivate customers to visit the bank websites, e.g., they provide daily highlight news, and links to other financial information sources, such as the Stock Exchange of Thailand and Bank of Thailand. In addition, customers can conduct financial transaction at lower cost than through other service channels. Thai banks also customized the Internet banking service to some customers to enable bank customers to save operating costs, e.g., EBPP systems.

However, the system does not seem able to deliver benefits to the fullest possible extent. The banks recognize that accessibility through of Internet banking is sometimes quite slow because of the low speed of network infrastructure. Banks also realize that this is one of the usage barriers to customer adoption. Unfortunately, the Thai Internet banking system hardly provides virtual space for their customers to share information and experience. One bank executive stated that to provide virtual space for customers would require additional investment in information technology. Currently, Internet banking systems already need intensive investment, while customer adoption of Internet banking is not high enough to cover the investment costs. However, two banks have realized that interactions among customers, or even between the bank and customers, can create increased understanding of customers, allowing adaptation of the service offered to specific customer needs and wants.

Banks also believe that corporate accounts have greater potential for web applications because transaction amounts from corporate customers are bigger volume. Corporate customers are the main target group for Internet banking. They predict that the trend for corporate Internet banking customers will be continuous growth. Bankers did confirm that implementing Internet banking can help reduce operating costs and ease pressure on human resources in the future if this system can provide actual benefits and contribute to long-term relationships with bank customers.

Still, the executives pointed out that Thai customers still prefer human service and personal contact in their interaction with the banks. Many corporate customers have not adopted Internet banking yet, as there is much concern about security and reliability of Internet-based transactions. The banks accept that major barriers to Internet banking adoption by corporate customers are trust in security of the web system and in the reliability of service delivered. Bank respondents mentioned that banks have intensively invested in building security infrastructure to safeguard bank financial information systems via the Internet network systems.

Further, one bank mentioned that customers are not happy with the legal support for web-based service transactions and privacy protection in Internet banking. Thailand is currently in the early stages of developing electronic commerce law. Customers believe Thai courts lack ability to sufficiently protect bank customers in cases of financial loss via Internet banking, to trace evidence, and to fairly resolve cases. Nevertheless, banks have developed a system that allows customers to print out the cyber receipt for the transaction which is sent via Internet banking. Overall, the bank respondents seem to understand their customers fairly well. Other in-depth work among corporate customers in Thailand shows similar thinking about most of these issues (Rotchanakitumnuai and Speece, 2003).

### 5. Survey Methodology

The literature assessing business value of Internet banking from the customer viewpoint was one source upon which questionnaire items were based (e.g., Stamoulis et al., 2002). Data from the in-depth interviews was the other source. The items covered the four issues of web-based service benefits discussed above, information quality, information accessibility, information sharing, and transaction benefits (time saving, cost saving, responsiveness of service, customization, self-service). In addition, the three major barriers of web-based service are included (organization barriers, trust / distrust, lack of legal support issues). The initial list of items was discussed with a number of experts, including bank officers, IT Internet managers, and academics in the field of Internet commerce to verify that each item represented the concept it was supposed to measure well. Items about which the experts did not agree were reworded or eliminated. A small-sample pretest among corporate customers was conducted with 25 financial / accounting managers / officers who oversee financial relations with the bank to check the reliability of the items. After this pre-testing, total of twenty-four items were used in the survey to represent the four benefits and

three barriers concepts. Translation and back-translation by three independent translators was used to make sure the Thai version of the questionnaire was equivalent to the English version.

The questionnaire content was divided into three sections, the first of which investigated the various types of services which Internet users used in Internet banking. This list of services used questions on a simple checklist scale. Respondents were considered to be adopters of Internet banking in this study if they currently used Internet banking for several things on the checklist (e.g., request statement, check balance), but they did not need to have financial transactions via the Internet banking system. In section two, the twenty-four statements were used to measure customer perception of Internet banking benefits. The questions are measured by a Likert's scale ranging from 1=strongly disagree to 5=strongly agree. The last section is general information about respondent demographic data.

#### 5.1 Sampling and data collection

The sampling frame was constructed based on the specific criteria that recipients work in large and medium corporate customers of banks which offered Internet banking. The responding companies could be considered representative of their industries, and capable of using Internet banking if they chose to, but their companies did not actually have to use it extensively to answer the questionnaire. Judgment sampling from the bank customer lists was used, consulting with the bank executives so that judgments were assessed independently by several people familiar with the customer base. The specific respondents are the persons in the customer companies who deal with the banks, such as financial / accounting managers / officers.

Data collection proceeded by calling the targeted respondents in order to inform them about the study and to encourage them to respond. A total of 300 questionnaires was sent by fax or e-mail. Respondents were asked to select one major bank whose financial services they frequently use as the basis for answering the questionnaire. Consequently, 111 questionnaires of Internet banking users and 84 questionnaires of non-Internet banking users were faxed or emailed back, for a total number of respondents at 195 (Table 1).

#### 5.2 Respondent Profiles and Internet Usage

The sample consisted more women than men (Table 1). The respondents were fairly senior, with slightly more than 40 percent in the 40 and up age category, and another one-third 36 to 40 years old. Nearly all had university education, and more than 40 percent held a graduate degree. Overall, this sample represents the targeted population of senior and educated respondents who are likely to have real financial responsibility in their companies. The respondents work in variety of industries as shown in Table 2.

Table 1: Respondent Profile

Characteristics	N	%
<b>Type</b>		
Users	111	56.9
Non-users	84	43.1
<b>Age</b>		
<20-25	2	1.0
26-30	16	8.2
31-35	39	20.1
36-40	59	30.4
41-50	66	34.0
>50	12	6.2
<b>Gender</b>		
Male	64	32.8
Female	131	67.2
<b>Education</b>		
Less than bachelor	6	3.1
Bachelor	101	51.8
Graduate	87	44.6
PhD	1	.5



Table 2: Industry of respondents

Industry	Non-users		Users		Total	
	N	%	N	%	N	%
Real estate	5	2.6	6	3.1	11	5.6
Energy& Cement	13	6.7	15	7.7	28	14.4
Trading	7	3.6	13	6.7	20	10.3
Insurance	3	1.5	6	3.1	9	4.6
Hotel & Tour	4	2.1	6	3.1	10	5.1
Food & Agriculture	11	5.6	16	8.2	27	13.8
Telecom & Computer	10	5.1	16	8.2	26	13.3
Airlines	6	3.1	1	.5	7	3.6
Garment & Textile	6	3.1	2	1.0	8	4.1
Finance & Securities	3	1.5	12	6.2	15	7.7
Chemical & Pharmaceutical	4	2.1	9	4.6	13	6.7
Others	12	6.2	9	4.6	21	10.8
Total	84	43.1	111	56.9	195	100.0

The major service which users of Internet banking use is checking their balance (about seventy-two percent; Table 3). About half of the users sometimes request statements from the bank via Internet banking system. Only one-third transfer money via this web service channel. Some companies use this electronic service to exchange money, pay expenses, check exchange rates, and request reports. Other types of services were used by only a few Internet banking users.

Table 3: Internet banking users usage (N= 111)

Usage	Frequently use (%)	Occasionally use (%)	Never use (%)
Check balance	72.1	20.7	7.2
Request statement	55.9	29.7	14.4
Transfer money	33.3	16.2	50.5
Pay expense	12.6	12.6	74.8
Pay loan	0	6.3	93.7
Apply loan	0	0	100
Trade (e.g open L/C)	4.5	10.8	84.7
Exchange money	14.4	11.7	73.9
Request report	1.8	2.7	95.5
Bank clearing advice	0	0	100
Check exchange rate	1.8	0	98.2
Customer payment	0	1.8	98.2
Cash management	0.9	0	99.1

## 6. Results

Factor analysis was used to confirm the dimensionality of bank corporate customers perceptions. A principal component factor analysis with Varimax rotation was undertaken for the thirteen benefit items, and a four-factor solution was found, which explained about 69 per cent of variation in the items (Table 4).

As seen in Table 4, four dimensions emerged which correspond well with the four elements discussed in the literature and which the questionnaire was developed to measure. These benefit factors were labeled transaction benefit, information sharing, information quality, and information accessibility. The transaction benefit factor includes saving time and cost, responsiveness of service, customization, and self-service. The second factor, the information sharing benefit, deals with sharing information between bank and customer, sharing among customers, and links to other websites. The next factor is information quality of Internet banking, focusing on accuracy of transaction, up-to-date information, and relevant information provided to bank customers. The last factor, the information accessibility benefit, had an eigenvalue slightly under 1.0, but this factor is included because it is very near to 1.0, using it gets the variance accounted for up to slightly over two-thirds, and it is consistent with the key benefits known from the literature and pilot work. These conditions all suggest that the fourth factor should be included (Hair et al., 1995).

Table 4: Dimensions of Internet banking benefits

Items	Loading for factors				Communalities
	F1	F2	F3	F4	
<b>Factor 1: Transaction benefit (<math>\alpha=0.838</math>)</b>					
Internet banking transactions save more time	.841				.772
Internet banking provides more responsive service	.733				.728
Internet banking transactions have lower cost	.698				.572
Internet banking can make me feel enjoyable that I can control processes of financial transactions on my own via the Internet	.669				.652
Internet banking provides customized services according to my company needs and wants	.663				.572
<b>Factor 2: Information sharing (<math>\alpha=0.768</math>)</b>					
Internet banking provides systems to assist me to share my experiences with other customers of my bank more efficiently		.909			.835
Internet banking provides systems to assist me to share my experiences with my bank more efficiently		.831			.743
Internet banking provides link to other websites		.622			.584
<b>Factor 3: Information quality (<math>\alpha=0.753</math>)</b>					
Internet banking provides accurate information			.802		.721
Internet banking provides relevant information			.778		.738
Internet banking provides up-to-date information			.581		.680
<b>Factor 4: Information accessibility (<math>\alpha=0.688</math>)</b>					
Internet banking is easy to access with my convenience				.794	.707
Internet banking has more flexible ways to search for information				.748	.659
<b>Eigenvalues</b>	4.984	1.740	1.285	.955	
<b>% variance</b>	38.335	13.386	9.884	7.346	
<b>Cumulative variance</b>	38.335	51.721	61.605	68.951	

On almost all individual questions, users agreed more strongly than non-users except about information sharing (Table 5). Neither users nor non-users showed much agreement that Internet banking provides an information sharing benefit; and users actually disagreed with two of the questions. Users agreed quite strongly that Internet banking provides up-to-date information and can save time, as did non-users. Agreement with the cost saving benefit was not quite as strong in either case, but nevertheless, respondents felt that Internet banking transactions can have responsive service, again, with somewhat less strength of agreement among non-users. Non-users were not much less in agreement on the service customization aspect.

Table 6 showed that the eleven barrier items could be grouped into three dimensions, which explained about 75 percent of the total variance. According to the items which loaded on each factor, the first factor – labeled as “organization barrier” – consists of the barrier about lack of experience in information technology usage to fully use Internet banking, lack of knowledge to extensively adopt Internet banking, and lack of know how in information technology hardware / software to fully use Internet banking. The second factor, named the legal support barrier, consists of the negative perception that Thai law cannot sufficiently protect bank customers with fair liability in the case of financial loss via Internet banking, Thai law cannot protect customer privacy sufficiently, Thai courts lack the ability to trace for evidence and to resolve fraudulent electronic transaction cases efficiently. The last factor, called distrust, included distrust of business practice of this bank via the Internet regarding privacy policy, distrust of the web security, negative attitudes toward Internet banking adoption, and low reliability for transactions to be transmitted via the web accurately.

Table 5: Means on benefit items by users and non-users

Items	Overall mean	Non-users mean	Users mean	Sig.
<b>Information quality</b>				
Internet banking provides accurate information	3.92	3.60	4.17	.000
Internet banking provides relevant information	3.78	3.35	4.11	.000
Internet banking provides up to date information	4.16	4.00	4.21	.094
<b>Information accessibility</b>				
Internet banking is easy to access with my convenience	3.91	3.69	4.08	.002
Internet banking has more flexible ways to search for information	4.05	3.86	4.20	.006
<b>Information sharing</b>				
Internet banking provides link to other websites	3.45	3.64	3.31	.039
Internet banking provides systems to assist me to share my experiences with other customers of my bank more efficiently	2.58	2.67	2.52	.345
Internet banking provides systems to assist me to share my experiences with my bank more efficiently	2.92	3.11	2.77	.026
<b>Transaction benefit</b>				
Internet banking provides more responsive service	4.11	3.95	4.23	.025
Internet banking transactions save more time	4.29	4.14	4.40	.055
Internet banking transactions have lower cost	3.87	3.68	4.02	.023
Internet banking can make me feel enjoyable that I can control processes of financial transactions on my own via the Internet	3.70	3.49	3.86	.006
Internet banking provides customized services according to my company needs and wants	3.43	3.06	3.71	.000

Table 6: Dimensions of Internet banking barriers

Items	Loading for Factors			Communalities
	F1	F2	F3	
<b>Organization barrier (<math>\alpha=0.883</math>)</b>				
My company lacks experience in information technology Usage to fully use Internet banking.	.885			.795
My company lacks knowledge to extensively adopt Internet banking.	.880			.790
My company lacks know how in information technology hardware /software to fully use Internet banking.	.836			.708
My company lacks human resource to fully use Internet banking.	.810			.677
<b>Legal support barrier (<math>\alpha=0.934</math>)</b>				
Thai law cannot sufficiently protect bank customers with fair liability in the case of financial loss via Internet banking.		.936		.907
Thai law cannot protect customer privacy sufficiently.		.920		.906
Thai courts lack the ability to trace for evidence and to resolve fraudulent electronic transaction cases efficiently.		.913		.842
<b>Distrust (<math>\alpha=0.817</math>)</b>				
My company does not trust business practice of this bank via the Internet regarding privacy policy.			.845	.782
My company does not trust web security.			.831	.782
Our management has negative attitudes toward Internet banking adoption.			.755	.597
Internet transactions cannot be accurately transmitted.			.684	.477
<b>Eigenvalues</b>	4.080	2.573	1.609	
<b>% variance</b>	37.087	23.395	14.630	
<b>Cumulative variance</b>	37.087	60.482	75.112	

Table 7 reports the findings from the 11 barrier questions of the three concepts barriers. Barrier items results varied widely. The respondents overall felt that organization barrier was only minor factors inhibiting them from

having financial services via web-based services. Internet banking users and nonusers both evaluated organization barrier with fairly low mean scores. This result indicates that the respondents of this study, who are large and medium corporate customers of Thai banks do not perceive any serious lack of information technology resources and experience, personnel resources, even knowledge barrier to utilize the web-based service provided by the bank.

User respondents strongly disagree that they lack know-how in information technology hardware / software and knowledge to extensively adopt Internet banking. This implies that they may already intensively use information technology for their business and it may be easy for them to access and adopt new web-based service more rapidly than non-users. However, the two groups showed no significant difference in human resources or experience in information technology barriers to fully use of Internet banking.

These results suggest that beliefs about transaction benefit and information benefit issues, in particular, should be key elements driving adoption of Internet banking. Conversely, distrust of the web system and legal support issues are drawback to adoption. To confirm this, logistic regression analysis was conducted to distinguish Internet banking users from non-users. The logistic regression used the dichotomous user types measure as the dependent variable and the four benefit and three barrier factor scores as the independent variables.

Table 7: Mean on barrier items by users and non-users

Items	Overall mean	Non-users mean	Users mean	Sig.
<b>Organization barrier</b>				
My company lacks human resource to fully use Internet banking.	2.26	2.39	2.16	.164
My company lacks experience in information technology usage to fully use Internet banking.	2.31	2.40	2.15	.098
My company lacks knowledge to extensively adopt Internet banking.	2.15	2.32	2.03	.006
My company lacks know how in information technology hardware /software to fully use Internet banking.	1.87	2.04	1.74	.046
<b>Distrust</b>				
My company does not trust web security.	3.16	3.58	2.84	.000
My company does not trust business practice of this bank via the Internet regarding privacy policy.	3.09	3.44	2.82	.000
Internet transactions cannot be accurately transmitted.	2.31	2.59	2.10	.000
Our management has negative attitudes toward Internet banking adoption.	2.02	2.31	1.80	.001
<b>Legal support barrier</b>				
Thai courts lack the ability to trace for evidence and to resolve fraudulent electronic transaction cases efficiently.	4.01	4.15	3.90	.083
Thai law cannot sufficiently protect bank customers with fair liability in the case of financial loss via Internet banking.	3.90	4.02	3.80	.143
Thai law cannot protect customer privacy sufficiently.	3.85	3.98	3.76	.161

As shown in Table 8, the chi-square test for the full model was significant (at  $p = 0.000$ ). The  $-2LL$  improvement gained by adding the full model terms also suggest that the model is useful. (The pseudo- $R^2$  calculated following Hair et al., 1995 is about 21.48 %.) In addition, Table 9 illustrates the classification performance of the full model. Overall, 73.6 percent of 195 corporate customers were correctly classified, which is a higher level of classification performance for the model than simply prior probability.

The first significant variable in the model was the factor variable information quality. The information quality benefit factor had the largest positive coefficient, which is perhaps the best way to decide relative importance of adoption (Hair et al., 1995). In addition, the transaction benefit is found to be significant as an influential factor for Internet banking adoption. The results also showed that information sharing has a negative impact on adoption; i.e., corporate customers do not seem to view information sharing capabilities as a benefit, but rather as a barrier. This is probably due to the very strong traditions of business secrecy in much of Asia. Further, the trust barrier is also useful in predicting adoption, and it has a negative impact on adoption. Finally, the information accessibility benefit factor and the other two barrier factors (organization and legal support barriers) were not useful in predicting adoption rates.

Table 8: Logistic model for Internet banking adoption

	<b>Chi-square</b>	<b>df</b>	<b>Sig.</b>
Model	56.678	7	.000

<b>Variable</b>	<b>B</b>	<b>S.E.</b>	<b>Wald</b>	<b>Sig.</b>
Transaction benefit	.486	.189	6.639	.010*
Information sharing	-.628	.189	11.030	.001*
Information quality	.784	.210	13.957	.000*
Information accessibility	.145	.186	.613	.434
Organization barrier	-.159	.173	.843	.358
Legal support barrier	-.150	.171	.770	.380
Distrust	-.385	.199	3.758	.053*
Constant	.368	.171	4.598	.032

-2 log likelihood for model with constant only = 263.765  
-2 log likelihood for full model = 207.087

Table 9: Classification table of logistic model

<b>Observed</b>	<b>Predicted Non-user type</b>	<b>Predicted User type</b>	<b>Percentage Correct</b>
Prior probabilities (Constant only)			
- Non-user type	0	83	.0
- User type	0	110	100.0
Classification accuracy			57.0
Post probabilities (include all variables)			
- Non-user type	53	30	63.9
- User type	21	89	80.9
Classification accuracy			73.6

## 7. Discussion and implications

This paper has investigated corporate customers' perceptions of Thai Internet banking service and has discussed the benefits and barriers affecting Internet banking adoption. Aspects of service include some of the commonly cited issues from the literature.

Within the boundaries of what the study has investigated, it shows some of the major factors that influence corporate customers' perceptions of Internet banking in Thailand. At the moment, information quality benefit is the strongest determinant of adoption – customers who perceive better information quality are more likely to use Internet banking. Transaction benefits of Internet banking also stand out as a major factor to corporate bank customers. This finding is consistent with prior work about benefits of Internet banking, in which saving time, responsiveness of service, service customization, cost saving of making financial transaction via the Internet banking are considered components of transaction benefit dimension (Polatoglu and Ekin, 2001; Suganthi et al., 2001). Users realize Internet banking to be significantly more customizable, enjoyable, responsive, and cost saving than non-users. However, one must be careful thinking about this in the Thai context, because use of the Internet for banking transactions is not yet very extensive, as review of Table 3 will show. Using the Internet for transactions is still primarily in the trial stage for users – they conduct some business on it, but have been unwilling to shift much volume to it yet (Rotchanakitumnuai and Speece, 2003).

Other information benefits commonly seen in the West do not seem to play much of a role. Perceptions of accessibility do not influence adoption in this context. The information sharing benefit discussed frequently in the literature is actually a strong barrier here in the perceptions of corporate customers. Links and virtual space to share information among bank customers is probably not very useful at this stage of development of Internet banking in Thailand. Thai Internet banking providers do not currently make much provision for information sharing, and there seems to be no need to rush ahead in providing such service. It is likely that corporate customers are quite different from individual consumers who prefer to share their experiences or chat via the virtual space. In Thai culture, business secrecy is a major obstacle that holds back sharing financial information among bank corporate customers.

The barriers that frequently inhibit adoption in many markets seem to work slightly differently, too. The mid-sized to large companies in this sample do not perceive much problem in utilizing IT if they want to, i.e., they

probably have internal capability to fully utilize Internet banking if they decide to adopt it. Further, while most respondents perceive that the legal system is not ready to deal with Internet transactions, this is not a distinguishing factor in adoption. Possibly it is discounted, because companies are quite used to operating in an environment of somewhat weak legal infrastructure – Thai business, as in much of Asia, depends much more on the strength of interpersonal relationships than on legal structures. However, the trust barrier does seem to distinguish between adopters and non-adopters. Customers who distrust the technology, the security, or the business practices are less likely to adopt Internet banking. This is also consistent with the orientation toward interpersonal relationships in Asian business – the relationships are primarily about trust building.

Therefore, at this stage of development of Internet banking in Thailand, it seems that many corporate customers still hesitate to use Internet banking. To expand the market for Internet banking to the banks' major customers, banks need to reconsider what they have done to date in explaining the real benefits to their corporate customers. They also need to overcome barriers of the system. Banks have to visibly demonstrate concern for security, reliability, and liability with concrete solutions to reduce or eliminate costs to customers in case transactions fail or are processed inaccurately. Frequently, these are not purely technical issues, but rather, are related to customer psychology and beliefs, which may or may not be consistent with the actual technology and system. Although most Thai Internet banking service providers currently use many security features, they need to provide knowledge to their customers about bank intention to protect security of the network in order to generate a higher level of trust of the web system. All customers, even users, believe that problems will occur, so it is about what customers believe the bank will do when the problems do arise. The web-based service channel must be well integrated into other channels so that customers can easily interact with people who are trained to handle problems efficiently, and banks must adopt strong customer orientations.

## **8. Conclusion and future research**

Overall, corporate customers were quite positive about Internet banking benefits, except that they do not really view information sharing as a benefit. Generally, non-adopters are not as strongly positive about the benefits, but they are still fairly favorable, so there is potential to move them over into the user category. However, quite positive perception of benefits has not translated into heavy usage, even users are mainly using Internet banking in trial mode, and primarily for information, not for much volume of transactions. It can be concluded that bank customers and Thai Internet banking service providers perceive the components of business value of this system similarly, but the banks may overestimate the magnitude of the benefits.

Evaluating their corporate Internet banking customers, banks can judge that Internet banking assists them to develop and enhance relationships with their corporate customers in terms of providing service according to customer needs and wants with lower costs and more service responsiveness. The transaction benefits do influence adoption. However, Internet banking was not perceived in general as offering considerable cost-savings, but only the time-saving component of the cost benefit. To adopt Internet banking, firms need some level of information technology investment. Although they seem to believe that they have the capability in-house, they may still need additional investment, e.g., an Internet service provider fee. This may strongly influence some corporate customers to hesitate to adopt Internet banking.

On the other hand, while corporate customers are fairly well aware of benefits, and benefits do contribute toward adoption, Thai banks also face the key barrier of customer trust in web-based service delivery via the Internet channel. Corporate customers are concerned about security and reliability of transactions via the Internet (Rotchanakitumnuai and Speece, 2003). Given the moderately positive views of benefits even among non-adopters, it is likely that non-adopters need more support and communication to reassure them of security and reliability of the Internet banking system in order to relieve negative perceptions about electronic service via the Internet channel. The other barriers do not seem to be key factors inhibiting adoption – most firms feel that they have sufficient IT resources and capabilities. Most think the legal system is weak for handling Internet transactions, but companies seem able to adapt to this – they are probably used to relying on their strong interpersonal relationships rather than legal codes anyway. Getting customers to use the Internet is more about building trust between companies, not about waiting for trust in the legal system to develop.

The strength of positive perceptions about benefits does help determine adoption if barriers of the web system can be solved. Future research may also need to include other issues about Internet banking, such as how best to overcome barriers which inhibit adoption. Trust is a key issue in adoption, but trust comes mainly from the interpersonal relationships in Asia, so one thing that needs attention is how Internet service channels can interact with interpersonal services. Providing corporate customers the widest choices for interaction and transaction channels, such as by adding web-based services via the Internet banking, is essential for service providers to stay competitive in most developed markets. It is likely to be critical in developing Asian markets, also. But it seems

unlikely that the human factor can be taken out of high level financial service interactions completely. The technology must be gradually introduced in ways that allow easy movement between technology-based and human service. Physical branches of Thai banks are not doomed to disappear, but their function might gradually shift away from routine transactions, but toward more support for customers when they face problems doing the routine transaction through technology.

Further research should also investigate the impact of adoption and use of Internet banking on the broader areas of the corporate customer interaction with the bank. Gaining the benefits from use of Internet banking may help create better relationships between bank and corporate customer, or may build in higher switching costs. Through these, the Internet banking channel may be able to indirectly contribute to greater customer loyalty, which is critical in the ever more competitive banking industry. Our results show that, like elsewhere, there seems to be strong potential for Internet banking. The results also demonstrate that it is going to take some work to fully realize the potential. There is still quite a lot of work that needs to be done to understand customer response to Internet service channels well.

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