

University of South Australia

Practices to Improve Customer Adoption of Internet banking in Thailand

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DOCTOR OF BUSINESS ADMINISTRATION

RESEARCH PORTFOLIO

International Graduate School of Management
Faculty of Business and Management
University of South Australia

Submitted on this 30th of November, 2004 for the partial requirements of the Degree of Doctoral of Business Administration

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FROM : Supervisor/s: Dr. Margaret Patrickson and Dr. Brian Sheehan

RE : **Minor Amendments required in response to Examiners' reports**

Candidate's Name: Eakachai Poungklin UniSA ID Number: 0020622R

PORTFOLIO SUBMISSION DECLARATION

I confirm that the candidate has addressed the specified amendments of the examiners. To the best of my knowledge, the revisions have been made and are satisfactory for the award of the degree.

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CHAIR, IGSM DOCTORAL BOARD OF EXAMINERS STATEMENT

On the basis of the Principal Supervisor's statement and Associate Supervisor's statement (where applicable) above, I recommend the award of the degree of Doctor of Business Administration to this candidate.

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DECLARATION

I declare that this portfolio does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university and that to the best of my knowledge it does not contain any materials previously published or written by another person, except where the reference is made in the text.

Signed:

Eakachai Poungklin

30th November 2004

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ABSTRACT

The paper is entitled, "Practices to Improve Customer Adoption of Internet banking in Thailand".

Paper 1 is a literature review. It examines the development of Internet banking, world-wide rationale for the use of Internet banking, Internet banking in Thailand and the driving factors which influence banks to adopt Internet banking. The results of this study are beneficial to understand why many banks in the world start to use Internet banking as a marketing tool for increasing competitive advantage over their rivals.

Paper 2 represents a survey of Thai banking customers and their interest or non-interest in using Internet banking. A number of hypotheses are developed and tested in this survey. The survey encompassed 485 persons, of whom 400 responded, throughout Thailand, and attempted to assess and measure their attitudes towards Internet banking. Findings indicate that Internet banking is currently the least popular form of banking in Thailand (after ATM and branch banking). However, the younger group of customers, those aged between 18-30, ranked Internet banking first on their list of choices as the most desirable form of banking services. The results of this study are beneficial to the Thai banking sector in terms of providing a detailed understanding of customers' preferences for Internet banking. In addition, banks can apply this information to develop strategic plans focusing primarily on identified target groups, thereby providing better products and services.

Paper 3 develops a conceptual framework utilizing the results discussed in paper 2, to recommend to Thai banks, appropriate promotional and servicing activities to encourage the development of Internet banking in Thailand. It includes a range of recommendations, over three specific time periods-short term, identified as up to 1.5 years, medium term specified as 1.5-3 years, and long term, identified as more than 3 years. Essentially, the recommended approach to Internet banking in Thailand concentrates on a developmental approach over these three periods. As defined by the results obtained in the survey discussed in paper 2, it is clear that Thai banks should consider younger, higher education level and higher income level customers as potential customers. In addition, this paper also recommends how to use strategies for developing Internet banking but this should not be done to the exclusion of older, lower education level and lower income level customers.

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In addition, many other people made these studies possible. A special thank you to my friend, Burim Otakanon for assisting in proofreading my papers. Without him, some mistakes may have occurred.

Last but not least, I am indeed grateful to my parents and my family members for their understanding and encouragement during the whole program.

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Portfolio Overview

Paper I: Factors Influencing the Adoption of Internet banking in Thailand

Paper II: Customer Survey: Factors Influencing the Adoption of Internet banking in Thailand

Paper III: Strategies to Improve the Adoption of Internet banking in Thailand

CONTRIBUTION TO KNOWLEDGE

My overall thesis is concerned with the implementation and development of Internet banking in Thailand.

The comprehensive literature review of Internet banking, reviewed in paper 1, shows that is very important to the banking sector to be competitive. Towards the end of paper 1 and at the beginning of paper 2 (the research study), a conceptual framework is developed for my study of the development and implementation of Internet banking in Thailand. There are many rational which have accepted Internet banking as the banking channel of the future for a multitude of reasons: cost savings, increased customer base, mass customization, marketing and communication, innovation and development of non-core business.

Paper 2 then proceeds to describe the extensive and practical survey of Thai banking customers' attitudes to Internet banking as undertaken in this data collection.

The study is based on questionnaire data, widely distributed throughout Thailand, to 485 bank customers, of which 400 were usable. The results indicate that of the current three forms of banking; branch banking, ATM banking, and Internet banking, Internet banking is currently the least preferred method. However, amongst the younger banking clients in the age group of 18-35 years, with an education of a bachelor's degree or higher, and an income level of over 20,000 Baht/month, Internet banking emerged as the preferred choice in banking. This is no doubt largely due to this customer group's greater awareness of and access to computers, the use of the Internet and the web and their subsequent skill and familiarity with forms of e-business. In addition, the results indicated that 24 hour service, self service and reliability are the factors which most influence those interested in using Internet banking. Lack of awareness and lack of security are the factors which act as deterents for those not interested in using Internet banking. These results of this study are beneficial to the Thai banking sector, so they can construct strategies such as:

-Understanding of customers' preferences for Internet banking. Thai banks can apply this information to develop strategic plans focusing primarily on identified target groups, thereby providing better products and services.

-Penetration of target group customers such as young people, high education people and higher income people.

-Use of marketing tools precisely to the point of motivation of interest in using Internet banking. For example, using integration marketing communication (IMC) to increase awareness of benefits of Internet banking, such as 24 hours service, self-service, reliability and security.

-Thai banks should promote Internet banking through their branches as the results from paper 2 identify that the branch is the most important channel through which the customers receive information about Internet banking.

-They can use models of discriminant analysis, developed in paper 2, to analyse their customers. These two models indicate the important variables with respect to accepting or not accepting Internet banking, including speed of usage, the wide range of services or reduction of cost (positive factors), and personal service (requirement of), security and lack of understanding (negative factors). Depending on its budgeting and/or other resource requirement, the bank can then, at least, initialy, concentrate on developing the most important identified positive factor, or overcoming the most important negative factor, for the further development of Internet banking in Thailand.

The recommendations made in paper 3 are derived from the research results obtained in paper 2. These recommendations are made for greater implementation and developmental strategies for Internet banking in Thailand. It is suggested that further development of the Thai Internet banking take place in three specific timeframes: up to 1.5 years (short term), 1.5-3 years (medium term), and more than 3 years (longer term). Over the three periods, Thai banks may develop their Internet banking functions, concentrating on younger clients and potential clients, but not ignoring the older age groups. Suggestions are made on how Thai banks can be persuaded to follow these recommendations. As indicated, very few studies on this topic

have concentrated on Asian countries, and, in particular, on Thailand. This study endeavors to overcome this deficiency. As such, it represents a major contribution to the development of this significant business activity in Thailand.

This thesis also represents both a contribution to theoretical academic knowledge as well as a contribution to practical banking management and policy development in Thailand.

The three papers, while each is a separate and complete paper in its own right, are conveniently and appropriately drawn together as one total work/portfolio.



University of South Australia

Factors Influencing the Adoption of Internet banking in Thailand

(Research Paper 1)

EAKACHAI POUNGKLIN

International Graduate School of Management
Faculty of Business and Management
University of South Australia

Submitted on this 30th of November, 2004 for the

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Doctoral of Business Administration

RESEARCH PAPER 1

Factors influencing the adoption of Internet banking in Thailand

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Abstract: Factors influencing the adoption of Internet banking in Thailand

This paper aims to provide a literature review on Internet banking. Many previous studies have indicated that Internet banking is one strategy used by banks to move away from branch-dominated banking into multi-channeled banking where the majority of transactions can be handled by non-branch channels, thus transforming branches into dedicated marketing units offering integrated financial services to customers. Employment of this type of strategy allows for a reduction in the workload of branch offices and has a positive reciprocal effect whereby the performance of banks can be directly focused on the improvement of customer services in such areas as customer retention and the enhancement of other banking services. However, successful implementation of this type of strategy can only be achieved if the users are computer literate and are comfortable with computers. Unfortunately, many studies (Strieter *et al.*, (1997), Kimball *et al.*, (1997) and Avery *et al.*, (1997) have indicated that the prior experience which computer users have had and continue to have has an effect upon their attitude towards Internet banking.

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Factors influencing the adoption of Internet banking in Thailand

1. Introduction

In every year since the 1997 economic crisis in Thailand, the performance of the Thai banking system has shown an increasing yearly net loss until 2001. It was difficult for Thai banks to obtain net interest income in the long term as many. Thai banks had a large number of NPLs (Non Performing Loans). Because of this, there is now strong pressure to accumulate reserves and make provisions for this doubtful debt. Rising NPL ratios lead to cause an increase in a bank's capital funds. This in turn results in lower interest earnings and revenues. Provisioning pulls bank revenues towards the negative and dilutes capital. NPL problems may persist with this conservative approach As a result, Thai banks are forced into maintaining minimum loan volumes. Unfortunately, this has a negative effect upon their interest income because as the volume of loans is reduced, less interest income is generated.

Additionally, foreign banks, new entrants to the Thai market, are bringing with them new technologies that they use in the local banks they have taken over. This has created an increasingly competitive environment in the Thai banking sector and has resulted in intense market pressure as the financial institutions fight for their survival. Facing pressure from within, the banking sector and most particularly the non-banking financial service sectors, are moving towards multi-channeled banking services, whereby they are can provide innovative products and offer wider choices at lower costs to customers.

One of the strategies that the Thai banking sector may use to solve these problems is Internet banking. Internet banking is very attractive to banks and to those consumers who have a higher acceptance of new technology and increasingly understand more complex products. Banks also use their strong brand names, large customer bases, and high market share of certain financial products to keep existing customers as well as to win new ones (Hagel and Hewlin, 1997). Similarly, because of the intense competition, a number of Thai banks have been implementing programs and systems to provide better quality services and innovative products (including the offering of multi-channeled banking services) to their customers, in order to increase efficiency and improve customer satisfaction. Keeping in line with online banking services abroad, a number of Thai banks began in 2000 to offer full-service online banking. Other banks are now expected to follow suit.

This paper seeks to further develop an understanding of Internet banking in the Thai banking context through an investigation of the factors that influence Thai banks to select Internet banking as a means to gain a competitive advantage over rivals. This paper is divided into five parts. The first part emphasizes the importance of Internet banking. The second part investigates Internet banking in Thailand. The third part is the literature review which was conducted to explore the driving factors which affect the banks to adopt Internet banking as a new communication/transaction channel. The fourth part is a comparison of Internet banking versus Traditional banking. The final section is the conclusion. The results of this study are beneficial to the Thai banking sector in terms of providing a detailed understanding of customers' preferences for Internet banking. In addition, banks can apply this information to develop strategic plans focusing primarily on identified target groups, thereby providing better products and services.

2. Internet banking

As more and more advanced technologies enter the household domain, it becomes increasingly important to understand consumer responses to these new technologies. This is particularly so as these technologies continue to evolve rapidly over time in terms of the features that are available. The Internet is one of the latest rapidly evolving technologies to become available to households. The Internet is a relatively recent innovation available to consumers for household use. As a technological service, household use of the Internet has grown rapidly during the past several years (Strauss and Frost, 1999). Nielsen Media Research and Net Ratings (1998, cited in Sultan and Henrichs, 2000) reported that 35 million US households had Internet access as of April 1999, a 43 percent increase from the 24.5 million households having access during the first quarter of 1998. They also note that as of mid-1998, US Internet users accounted for 62 percent of users worldwide (equivalent to 18.5 percent of all US adults 18 or older). According to the Gartner Group's 1999 (Barto, 1999; cited in Polatoglu and Ekin, 2001), reported that just over ten million consumers in the USA use on-line PC banking and that the number was expected to grow to 35 million by the end of 2003. Gandy (1999) reported that some 7 per cent of UK customers use PC based Internet banking and this is expected to rise to 28 per cent by 2004, these figures being similar to those of Sweden, Norway and Germany

The Internet has created the information revolution and is exercising enormous influence in the commercial, educational and social sectors of every economy of the world. In education, the Internet has become the preferred technology to improve instruction,

increase access and raise productivity. College and university instructors can now post their syllabi and course readings on the World Wide Web. Library holdings can be digitized and made available both on and off campus. Administrative processes can be speeded up and simplified. In commerce and industry, Internet connectivity is facilitating business transactions all over the world without physical contact with the buyer or the need for a business intermediary. Electronic commerce is changing the role of traditional marketing channels in moving goods and services from the provider or producer to the ultimate consumer. In manufacturing, the Internet provides voluminous information from different fields of interest. Suppliers are now using the Internet to identify and select reliable as well as cheaper sources of raw materials. The Internet enables users to access web sites of universities, libraries, governments, research centers and other organizations to avail themselves of a wide range of information, research materials, conference proceedings, job opportunities and tourist sources of information, while in finance the Internet has brought a tremendous change in the way the sector operates. Internet banking for example enables a customer to check his or her bank statements, and remit and transfer funds from home. One of the service sectors that seems to be most affected by the Internet is retail banking (Dannenberg and Kellner, 1998). It seems to hold all the opportunities and threats connected with the Internet for business use.

Many retail banks have a dense branch network and close relationship with their customers, who are mostly local businesses operating in one country or in one part of a country. However, their core services are perfectly suited for digitization and with the use of new technology, have the potential to transfer all business to Internet banking. Internet banking involves consumers using the Internet to access their bank accounts to undertake banking transactions. At the basic level, Internet banking can mean the setting up of a web page by a bank to give information about its products and services. At an advanced level, it involves provision of facilities such as accessing accounts, fund transfers, and buying financial products or services online. By use of the Internet it is possible for banks to offer a number of Internet banking services, such as a variety of banking, bill payment, and money management services 24 hours a day. For example, customers can get up-to-date balance information on deposit and loan accounts, transfer funds between accounts, and communicate with the bank by e-mail.

3. Internet banking in Thailand

After the 1997economic crisis in Thailand, bank performance saw considerably net losses (after tax) from 1997 until 2001. For instance, bank performance in the first quarter of 2001 showed net losses (after tax) of Bt38.6 billion, down 14.7 percent from the corresponding period in 2000. While total restructured debt for local commercial banks was at a level of Bt300 and 500 billion in 2001 (www.tfrc.co.th), losses as a result of the debt restructuring process grew to 20 and 30 percent of the restructured debts. Therefore, it was difficult for Thai banks to obtain net interest income in the long term. It is therefore, feasible to assume that the income base of most commercial banks in Thailand would gradually rely on non-interest bearing income. Fiercer competition in the market would make it more difficult to gain from the interest spread compared with the higher possibility of increasing the non-interest one. Therefore, bank competition is projected to concentrate on the non-interest business. Service fees would represent a higher proportion to total income, as already evidenced by its higher proportion from 5 percent in 1998 to 8 percent in 2001 (www.tfrc.co.th).

The main attributes for an increase in non-interest bearing income in the coming period are national economic growth, import-export expansion, possible growth in the electronic banking segment and credit card business, expansion in the customer base in the fund management segment, as well as opportunities for expansion in commercial banking operations, as facilitated by the new financial institution law. There are, however, some limitations upon this expansion of non-interest bearing base income. First, the current market competition is likely to intensify as a result of foreign commercial banks increasing their shares in the credit card business, as well as from new card issuances. Secondly, because the expansion of electronic banking services requires high investment capital for modern technology and equipment as well as an intense public relations campaign to boost public awareness and interest in new banking services, bankers will have to bear higher burdens for location and equipment during the introductory period. Lastly, because non-interest bearing income fluctuates at economic levels that are quite often tied to global economics, there is increased risk at the local level due to an absence of a sustainable economy and unsolved problems amid financial institutions.

The ratio between non-interest bearing income and total expenses also rose in the 3 years spanning 1998 to 2001. Although total income reached Bt26.5 billion, expenses increased from 26 to 35 percent. This could be attributed to higher spending for organizational restructuring and new product launches. Bankers have to bear higher burdens for

downsizing, PR, equipment procurement and branch modernization. As a result, non-interest expenses are likely to go up in the following period, while operating expenses most likely will drop. Another factor that explains this change in expenses is as modern technological applications and the introduction of electronic banking services become more of an industry standard, the need for in-house banking staff decreases. As a result, personnel expenses are likely to drop. During the initial period, banks have to bear higher costs for technological applications and for the introduction of e-banking services. They have to spend more money to launch new products onto the market, including the organization of corporate promotions to create a good image for the bank. These promotions then prompt most banks to augment service fees to better reflect higher operational costs. In the long run, consumers gain more benefits from a wider variety of banking services.

It is quite common for most banking activities in Thailand to be conducted in branch offices. Despite this, Kasikorn Bank, a large private bank, broke with tradition and laid the foundation for electronic banking in Thailand by introducing e-banking. Alternative banking channels using telephones and PC/terminals as well as telephone banking services have now become popular among Thai customers since they allow customers to complete all transactions, other than cash withdrawals, anywhere, even though they do not provide visual verification to customers.

In the third quarter of 2000, Kasikorn Bank became the first bank in Thailand to launch Internet banking services via the World Wide Web (WWW). Asia Bank quickly followed suit in the same year, and other Thai banks, such as Bangkok Bank, Siam Commercial Bank soon joined the ranks of banks offering Internet banking services. These banks set up their web sites, and offered services to their customers over the Internet, which had been emerging as a key competitive tool among banks in Thailand. These larger banks with their strength in brand name, size, and technological infrastructure were well placed to be the first movers. With their Internet banking services, they tended to offer convenience, flexibility in completing banking transactions at any time, customized services, privacy, and free transactions to their customers. The increase in the adoption of Internet banking services and the subsequent increase in the number of banks offering Internet banking services in Thailand can be generally attributed to the fact that Thai consumers are becoming increasingly more computer literate and more and more people have access to the Internet. Internet banking is one of the strategies currently being used by the financial sectors to move away from branch-dominated banking into multi-channeled banking with the majority of transactions handled by non-branch channels, thus transforming branches into dedicated marketing units offering

integrated financial services to customers. This method of banking allows for a reduced workload in branch offices; therefore translating into an improvement of services and in the banks' overall performance while at the same time significantly reducing the cost of transactions. This also leads to an improvement in customer retention and loyalty by offering further convenience, enhanced features and easy access to banking services.

4. Literature Review: The driving factors which affect the banks to adopt Internet banking

Banks use the Internet as a new marketing channel to offer customers a variety of services, 24 hours a day. This Internet banking as compared to traditional banking relies heavily upon non-human interactions between customers and online bank information systems. Therefore, the selected literature, reviews service quality and customer satisfaction towards Internet banking. It should also be noted that previous studies have indicated specific factors which are drivers for the banks and consumers to adopt of Internet banking. These factors are discussed below.

4.1 Savings from reduced transactional costs

Daniel and Storey (1997), Sheshunoff (2000), Mols (2000), Johannessen *et al.*, (1999) have identified the main specific driving factors that encourage diffusion of Internet banking are protection of reputation, competition, cost savings, mass customisation, enhancement of marketing and communication activities, and retention and attraction of consumers. These include achievement of competitive advantage, reducing costs, and protecting the bank's strategic position. Reiser (1997), Daniel (1999), Mols (1999) identified that Internet banking represents an electronic and remote distribution channel for the delivery of financial services on a virtual level. It has presented the industry with a radical innovation and supposed means of attaining competitive advantage, through cost reduction and better satisfaction of customer needs. It is notable that early predictions that Internet banking would completely transform banking have been more tempered in recent times (Cuevas, 1998). In addition, lack of user-friendly technology and consumer demand, high initial set-up costs, redundancy of existing high cost legacy systems and lack of suitable skills have acted as inhibiting factors to many banks' adoption of Internet banking (Mols *et al.*, 1999; Esser, 1999). Suganthi *et al.* (2001), Dannenberg and Kellner (1998), Zineldin (1995) identified that many banks in the world use Internet banking in their business because they expected this to lead to cost reductions and improved competitiveness. This service delivery channel is seen as powerful because it can retain current Web-based customers who continue using banking services from any location.

Moreover, Internet banking provides opportunities for the bank to develop its market by attracting a new customer base from existing Internet users. Gerrard and Cunningham (2003) identified that in attempting to become more efficient and competitive, especially after the economic crisis of some countries in the world, most banks in those countries have invested heavily in information technology especially Internet banking to provide better services to their customers. They hope to reduce operating costs and generate higher long-term profits, similar to expectations by banks in many other countries. Yakhelef (2001) identified that the potential competitive advantage of the Internet for banks lies in the areas of cost reduction and satisfaction of consumer needs. In relation to costs, electronic transactions are a fraction of those conducted through the branch or even by telephone. His report showed that a traditional payment costs 1.08 US dollars, whereas on the Internet the cost is 13 cent or less.

The Internet also offers banks the opportunity to better meet customer needs through enhanced interaction, data mining and customisation. Put together, the reduction of costs and increased customer satisfaction makes the logic of the Internet compelling. Gallouj (1998) has identified the main factors that impact on the rate of diffusion of Internet banking. These include achievement of competitive advantage, reducing costs, and protecting an organisation's strategic position. Both supply and demand side factors impact on the decision to adopt. From the demand perspective, there is some consumer demand for this facility. On the supply side, protection of reputation, competition, cost savings, mass customisation, enhancement of marketing and communication activities, and retention and attraction of consumers have been cited as influential factors on the diffusion of Internet banking. Furthermore, the introduction and consumer acceptance of Internet-based home banking may bring a dramatic change in the way retail banks build and maintain close relationships with their customers. Peters (1998) notes that the Internet reduces the costs of searching, negotiating and concluding deals and hence may make it easier for the consumers to compare products.

Coyne and Dye (1998) identified that in previous times retail banks gained competitive advantage by adding new branches. These branches were expensive and no bank could afford to establish branches in every town. This resulted in huge differences in coverage and usually those banks which were the first to provide a large branch network in an area gained a strong and lasting lead. As computer literacy and the availability of computers increase and the costs decrease, the segment of consumers preferring Internet banking is growing considerably.

Singh (2004) identified that on the Internet, customers serve themselves, negating the need for frontline staff. Savings are gained from reductions in staff, reduction in branch sizes, reduction in consumable costs such as paper, ink cartridges, and other stationery.

Jayawardhena and Foley (2000) identified the rationale of banks using Internet banking because Internet delivery is cheaper than physical channels. A simple transaction cost for a non-cash payment at a branch is likely to cost the bank as much as 11 times more than over the Internet. As with all forecasts and estimates related to the Internet, different authors provide disparate accounts of the magnitude of savings. The cost savings come about through the combined effects of reduction and better utilisation of the workforce, equipment, more economic usage of space and operational savings.

Gurau (2002) said that the banks can provide low cost, low priced, standardised services to a large number of clients. The Internet represents ideal channels for the transmission of these services, because of the specific characteristics of speed, flexibility and low cost.

4.2 Environment of competitive in banking sector changing

Strieter *et al.*, (1997), Kimball *et al.*, (1997) and Avery *et al.*, (1997) identified that there are many factors which have affected the banking sector changing, First, rapidly changing electronic technology has reshaped how consumers interact with their financial institutions. Second, deregulation has made competition border-less, allowing not only intrastate branching, which has encouraged consolidation, but also entry of foreign financial institutions into the market. Most recently, financial liberalization intensifies competition not only within banking institutions (i.e. commercial banks, savings and loans, and credit unions) but also with other non-banking financial firms, such as securities and insurance. The changing marketplace has forced financial institutions to be adaptive to remain competitive. In an effort to cut costs, many financial institutions have eliminated branch offices, since the largest expenses for financial institutions include labor costs and real estate. This phenomenon has prevailed in the marketplace during the past decade, reducing the number of branch offices by 6 percent from 1985 to 1995 (Avery *et al.*, 1997).

The Internet is believed to change the way firms interact with their customers and thus the way they initiate, develop and terminate relationships with them. The more the banks have information of their customers, they can offer the services their customers want. Some see it as a means of tying the customers to the company through the development of detailed customer databases and the use of direct and relationship marketing (Kara and Kaynak, 1997). Peters (1998) identified that Internet banking can well move close to personal selling and

build direct relationship with customers and Dannenberg and Kellner (1998) argue that the available technology will make the differences between person-to-person counseling at an office and by the Internet of negligible difference except for the costs and the convenience. Most consumers are likely to be tied to virtual communities, which will offer great potential for developing loyal customers and increased market share for some firms (Barnatt, 1998).

Birch and Young (1997) and Evans and Wurster (1997) identified that the Internet may also make it easier for the consumers to search service charges quickly and compare the offerings of different firms. This means that the market will become more transparent, leading to increased price competition in businesses which offer comparable services and which are unable to build significant switching barriers or close relationships with the customers. This will increase competition, which will become fierce and profits will drop. So, Internet banking is one choice for a bank's channel which provides for the customers in the 21 century who want to receive all services of the banks quickly.

4.3 Improved ability to retain customers

Jayawardhena and Foley (2000) identified that the banks can use Internet banking to enable mass customisation. Internet delivery has the capability to customise information to suit the needs and the likes of each user (Dannesnberg and Kellner, 1998). Mass customisation refers to the notion that each individual user perceives that the service they receive is personalised or customised to their needs and uses. Such features are becoming more and more important in a world saturated with mass automation and homogenised products and services. Singh (2004) identified that the banks can use Internet banking for customer relationship management (CRM), because it can be facilitated by the data acquired and captured on the corporate database. Products and services can be customised to suit the needs of the customer or groups of customers, thus breeding customer loyalty.

Srirojanant and Thirkell (1998), Zineldin (2000) and Day (1994) identified that Internet technology also makes it possible to track actual individual usage patterns, making it easy to capture details about the customers. If all the information is gathered in an integrated database, it will be possible to understand the customers and what parts of the Internet bank they value the most and what their unique needs and wants are. This knowledge may be used for different kinds of direct marketing, e.g. generating, qualifying and tracking leads, and contacting customers and sending them relevant information by e-mail. Especially when customers' preferences are unstable and constantly changing, it is useful to be able to instantaneously update a consumer profile and thus closely monitor individual customers' preferences. So, technological advancements and communication tools may provide great

opportunities for creating long-term and close relationships. This process demands focusing on customers who are more loyal or easier to retain, and seeking ways to maintain continuity with these customers through customized services

Berger Strategy Consultants cited in Gurau (2002) identified that the manager of the bank is focused on bank-customer relationship management, in order to develop and secure a long-term profitable relationship. The main target customer segment has a significant financial power, and the bank attempts to become the exclusive provider of services for these clients. This approach implies the development and offer of an extensive portfolio of financial and banking services, backed up by a large range of assistance and consulting services. These services are mainly transmitted through Internet and/or telephone and are available 24 hours a day, seven days a week.

4.4 Internet banking is a market tool and communication

Allen and Fjermestad (2001) identified that the Internet has major implications for the whole marketing mix, having an effect on advertising, research, sales, promotions, coupon distribution and customer support. Singh (2004) identified that banking services would fit perfectly on the Internet. There is no physical product to be delivered, there are no queues, customers can bank at their leisure, they can obtain detailed information about products and services. In addition, he identified that Internet banking remains a growth area which the banks can offer in order to gain and retain new customers. The business benefit of the Internet, accordingly, is to generate additional revenue, improve customer service, extend marketing, and increase cost saving. Banks enjoy these benefits as well. The business drivers for Internet banking exist because banks can derive revenues over and above their offline revenues by charging for online services and value-added services, such as providing a portal for financial services linked to short- and long-term insurers, links to stockbrokers, and links to foreign banks. In addition, the banks have more opportunities for acquiring new customers. Customers looking for the flexibility and convenience offered by Internet banking will be attracted to banks providing the best services. Existing customers can be sold products that they do not have in their portfolios such as a second credit card, life insurance, and home loans, among others.

There seems to be a general agreement that Internet banking offers advantages for both consumers and banks. As described by Jeon and Rice (1997), Internet banking makes it possible for banks to offer consumers a variety of services 24 hours a day. For example, an Internet bank can offer general and customer-specific information, the ability to conduct transactions, access to a variety of interactive financial calculators and worksheets,

customization of the content of the Internet bank and the messages sent from the bank, and finally it is possible to interact with a bank adviser, usually via e-mail. The potential customers for PC and thus also Internet banking are attractive, because they are more satisfied with their bank, are less price sensitive, have the highest intentions to repurchase, and provide more positive word-of-mouth information than other bank customers (Mols, 1998).

The banks may try to find other uses for their branches and their employees or they may start reducing the number of branches. Furthermore, the protection they were given earlier by the huge entry barriers of the branch network may disappear (Birch and Young, 1997). Heinen (1996) and Evans and Wurster (1997) identified that the geographic protection of their customer base may disappear with the increase in Internet usage. The entry into new markets, especially geographically remote markets, may become easier, and the less differentiated the products are, the more competition will increase, putting pressure on margins, and reduce profits (Heinen, 1996). The customers will only need a few Internet-based companies for each product category and that they will prefer the convenience of using only one or a few of these Internet companies (Ghosh, 1998). Therefore it has been predicted that the retail banks' competitive advantage is determined by their ability to be among the first to master the Internet-based distribution and communication channel (Ghorab, 1997).

Kara and Kaynak (1997) and Srirojanant and Thirkell (1998) identified that a number of marketing concepts like niche marketing, database marketing, micro marketing, interactive marketing, relationship marketing and mass customization are all approaches for reaching and satisfying individual consumers' needs and wants more effectively and efficiently than traditional segment marketing. Therefore they provide an understanding of how to exploit the opportunities and counteract the threats of Internet business. Dannenberg and Kellner (1998) describe the possibility to offer individual advice through Internet picture and argue that person-to-person counselling through the Internet will be almost similar to face-to-face counselling at a branch office except that the Internet is cheaper, faster and more convenient. Also, Heinen (1996) and Ghosh (1998) emphasize the possibilities for firms to use the Internet to personalize interactions with their customers in order to build customer loyalty and describe how the Internet combined with a customer database may be used for identifying and recommending new items to complement what the customers have previously purchased or to offer price discounts to customers that have shown an interest in particular services or products but have not yet bought. In this way Internet banking can be used for strengthening cross-selling and price differentiation.

Mols (1998) identified that diffusion of Internet banking is determined by the technological development, the customers and the managers in the banks. If the technology becomes cheaper and more user friendly, more customers are likely to be attracted to and develop a preference for Internet banking. The interrelationship between the technological development and the customer behaviour is likely to promote Internet banking. Equally important are the managers' perceptions of and expectations towards Internet banking. If they primarily regard Internet banking as a self-service channel, fewer resources will be allocated to its development than if it is viewed as an important media for communication between the banks and their customers and a possibility for building close relationships and practicing one-to-one marketing. Zineldin (2000) identified that the Internet is a way of marketing in which both transaction and relationship considerations are important. It is technologicalship marketing.

Jayawardhena and Foley (2000) identified that Internet banking is a marketing tool. The world wide web has the capability to host advertisements and other marketing campaigns without facing incremental charges for prolonged exposure like those found in the traditional media. Once a Web page is designed and hosted on a server it serves its purpose 24 hours a day as long as it is active on the server. Costs are limited to initial development costs and maintenance costs that are less in comparison to traditional media. Additionally, the interactive nature of the Internet facilitates a system whereby a customer can be guided through a catalogue of products and services that is most suited for them depending on their socio-economic profile. It is cheaper than traditional mails and far more effective since it is customised. Further, the Internet can be used very effectively to collect customer data with minimum effort. Achieving more operational usage from customer databases is also made easier.

4.5 Raise market penetration and Niche market leader

Gurau (2002) identified that Internet banking can penetrate the market by concentrating on solving specific needs of its clients. Because of their specialised and highly professional services these banks are able to charge higher fees to their clients. Within this particular model, there are three main areas of possible specialisation: investments, the management of funds, and bank loans. The area of investment will be the most promising in the future, because it implies a closer and more complex relationship between bank and client, and therefore the personalisation of the service to specific clients' needs. Finlay (2000, cited in Murphy and Bruce, 2003) suggests that market penetration fits strategically for a firm when its present customers can be induced to buy more and typically, when a company wants to

attack the market share of their competitors, they will undertake market penetration as a way of increasing their own share in the market. Given that generally the market for consumer banks is mature, then penetrating these markets by targeting consumers who are looking for convenient ways to use a bank's service via a web site would seem to be a viable growth strategy. Typically for these multi-channel retailers, it is not important to them where the customer is finding a channel which has the most convenience for them.

However, perhaps the most significant development of a growth opportunity via product or service development can be seen in Internet banking services. Indeed the UK banking industry has made great strides to provide this, for example Barclays Bank, Abbey National and the Royal Bank of Scotland all have a number of initiatives to deliver new services to existing customers. Internet banking provides an opportunity for growth as it can facilitate the offering of further new services for customers. For instance an Internet bank customer is likely to access their account from home on a regular basis, more so than, for example, a customer who buys their car insurance on-line. This subsequently provides the bank with an opportunity to offer the existing customer new services available from their portfolio. Alternatively, the bank may act as a broker for an insurance company, promoting their services on the bank's web site. A further rationale for this type of service development in the banking industry is in the cost savings made via administrative tasks. For instance funds can be transferred between accounts and responses made to queries without any bank staff needing to intervene.

A survey by consulting firm CapGemini Ernst & Young found that currently just 4 per cent of all bank transactions in Europe are done on-line, this is expected to rise to 25 per cent by 2003 (Bachelor, 2001; cited in Murphy and Bruce, 2003). However the current opportunities for fully exploiting this type of service development, to date, is limited. For example, current UK Internet based accounts are restricted to banking within the UK, neither can UK customers trade in the currency of their choice nor dabble in overseas stock exchanges.

A number of current consumer benefits from Internet banking can be identified, such as access to banking services 24 hours a day, the facility to check current account balances and pay bills from home, all contributing to raising customer service standards by giving consumers new and more convenient ways of handling their money. However evidence suggests that consumers would rather prefer personal attention rather than use the new services offered via the Internet. For instance Bachelor (2001, cited in Murphy and Bruce (2003) suggests that a vast majority of bank customers think that an Internet banking service is not important in their relationship with a bank nor are many of them even aware that their

bank provides on-line services. Therefore, at present, there is a major divide between what consumers want and the kind of new service development, which the high street banks are keen to push. In terms of strategic fit, Finlay (2000, cited in Murphy and Bruce 2003) suggests growth through product or service development is appropriate when a firm's brand reputation is high, the competitive arena is characterised by rapid technological developments, the business has especially strong research capabilities and economies of scope are significant. All of these apply to the UK banking industry.

4.6 Increased customer base

Jayawardhena and Foley (2000) identified that a bank uses Internet banking for an increased customer base. One of the primary objectives of developing new products and services is to attract new consumers and to retain existing customers. Present Internet demographics suggest that a highly educated, young and relatively wealthy market appears to be ready for Internet banking. Such a segment represents a highly profitable and less risky customer base for several reasons. First, their relative wealth means that they are more likely to deal with larger sums of money, both in borrowing and savings. The aggregate cash flow from such a group should lead to economies of scale with a large turnover and a lower administrative workload for the banks, since the number of high net worth accounts is low. Second, because the group is relatively young, they represent banking relationships that could be sustained for a long time. Third, this group is likely to be highly mobile, both within the geographical limits of the country and outside it. The Internet particularly provides the most reliable method for maintaining these banking relationships irrespective of geographical boundaries. Educated customers are seeking methods or sources that can carry out complex transactions at minimal cost and without expensive paid advice. Banks unable to respond to requests for new services risk losing existing customers to competitors. The use of multiple distribution channels can increase effective market coverage by enabling different products to be targeted at different demographic segments. Additionally, customers are likely to place their trust in proven innovators. Therefore it is important to build a reputation for innovation. This may make it easier to sell financial services, attract more customers, and retain existing customers.

Gerrard and, Cunningha (2003) identified that compatibility and complexity are the factors which have affect to the banks to use Internet for their business. Compatibility is defined as "the degree to which an innovation is perceived as being consistent with the existing values, past experiences and the needs of potential adopters". The banks in Singapore found that many people had past experiences using Internet and the values of consumers in Singapore appear to have a significant impact on their willingness to adopt Internet banking. Those who

indicated they were comfortable with the Internet were more positive about Internet banking. Complexity is "the degree to which an innovation is perceived as difficult to understand and use". Complexity has been measured in relation to perceptions about the purpose of the respective innovation, its intended use and the ease with which it can be used. They imply that well-educated Singapore people, who are familiar with the Internet and e-mail, should not find Internet banking to be complex.

4.7 Environment of competitive of banking sector changing

Jayawardhena and Foley (2000) identified the external factors which seem to be the key drivers, while factors internal to the retail banks inhibit further diffusion of Internet banking in UK.

1) ***External forces*** The world-wide expansion in technologies for connection has supported increased globalization of capital flows and financial organizations. Technology has also facilitated the proliferation of new products and services supporting new consumer demands. Changes in demographic and social trends have, to a large extent, driven the regulatory and economic shifts that have taken place. The banking sector lies at the forefront of change in terms of society's needs. At the same time, working patterns will change, with more part-time, temporary and home-based workers. This will have further implications for the banking sector.

2) ***Internal forces***. Many banks seek new sources of revenues and profits outside traditional banking disciplines, so they will demand different skills and aptitudes from their staff. This demand, coupled with cost cutting and the impact of new technology, has already led to a significant reduction in overall staffing levels within the banking industry. Further changes can be expected with the implementation of Internet-enabled delivery mechanisms. The Internet will bring about changes in the working environment, living conditions and patterns services. Switching between financial institutions and products will continue to grow as customers' traditional inertia declines. For instance, Internet-enabled consumers will be able to change banks at the press of a button, in the comfort of their homes. They will have access to on-line intelligent agents that will give them the ability to compare products and services for the best terms and conditions. In addition to, the bank using Internet banking for development of non-core business, recent changes in Thailand in the regulatory framework have enabled many banks to expand their services into non-traditional banking areas. Many banks have already moved into, or are in the process of moving into, insurance and stock brokerage. Many banks have the physical and computing infrastructure in place to develop

with these products and services and an Internet site can serve as an ideal shop front for these services

4.8 Self-service technologies become increasingly popular in the 21st century

According to McCormick and Rose (1994), the percentage of all transactions occurring at branch offices in USA through face-to-face interaction declined from 71 percent in 1980 to 50 percent in 1993. Porter (2001) suggested that companies have no choice but to deploy Internet technology if they want to remain competitive. Baker *et al.* (1998) claimed that technology is changing the emphasis of marketing, enabling more interaction than ever before and the building of relationships. Brynjolfsson (1996) identified that self-service technologies have achieved notable popularity. This is partly attributable to the advantages conferred on both parties: efficiency and effectiveness for banks, convenience, and even cost reduction for customers.

Moreover, it would be unrealistic to claim that the use of technology in the financial world is solely advantageous. It remains uncertain whether self-service technologies can keep customers "close" to the bank. These technologies may well lead to a standardization of products and services and a gradual robotization that may be poorly received by the customers. This process may even engender a "multibank scenario". Fojt (1996) identified that better communications technology will alter dynamics of purchase decisions. Several authors (e.g. Birch and Young, (1997); Gandy and Brierley, (1997)) have carried out research on customer requirements. Time, privacy, control and economy are among the important aspects that customers are concerned with. People are becoming busier and hence are seeking to carry out transactions at a time of their convenience. Jayawardhena and Foley (2000) identified that bank use of Internet banking enables innovation.

Internet technologies have paved the way for a multitude of different banking products to be innovated. It can also facilitate the delivery of products and services in an innovative manner to customers. Gerrard and, Cunningha (2003) identified the characteristics of innovations which have affected banks using innovation such as Internet banking, because Internet banking has relative advantage in terms of the economic benefits which accrue and improvements that are afforded to the banks status. Convenience has also been found to be a measure of relative advantage. Many banks in Singapore are aware about the benefit of Internet banking both for them and their customers. So many banks use Internet banking in Singapore. Bednar *et al.* (1995) identified with the possible exception of regulatory reform, technological change is likely to have the greatest impact on the banking sector. Technology is frequently touted as a, if not the, key element in the formulae for productivity and

profitability since 1990 and beyond. It is likely to be the key factor driving change within the banking sector for the foreseeable future. Hagel *et al.* (1997) identified that the Internet will bring about changes in the working environment, living conditions and patterns of banking use.

5. A comparison of Internet banking versus Traditional Banking

Because competition in the financial services industry has dramatically increased in recent years, many researchers have attempted to directly assess satisfaction and dissatisfaction between traditional banking and Internet banking. A study by Johnston (1997, p. 111) of "brick and mortar" bank customers in the UK found that certain actions result in satisfying, or as he states, "delighting" customers, while other activities only serve to lessen dissatisfaction rather than "delight" customers. Speed of processing was a major factor in delighting customers, while improving equipment reliability only lessened dissatisfaction. His research also identified two areas where banks achieved a distinct advantage: genuine commitment to the customer and attentiveness by front-line staff. This perceived advantage is reinforced by a study of Italian bank customers who indicated that human contact attributes are most important when customer satisfaction is observed. Mols (2000) compared Internet bank customers with traditional bank customers in Denmark. He found users of Internet banking to be more satisfied, less price sensitive, have higher intentions to repurchase and have more positive word-of-mouth communications than non-users.

Increasingly, the growth of Internet banking and deregulation in the banking industry has had a heavy impact on traditional bank branch networks as well as on bank personnel. During the past few years particularly, the number of bank personnel and branches has continued to decrease. For example, at the end of 1999, Finnish bank groups had a total of 28,245 employees in this industry, which represented a decrease of approximately 1,000 from the previous year. Similarly, domestic banks had 1,524 branches in 1999, but by the end of the following year this number had fallen by approximately 3.2%. Compared to 1985, the number of branches had more than halved. At the same time, the number of electronic banking agreements grew from zero to over 2 million (one-third of the Finns are now using electronic banking services on a regular basis). The reduction in the traditional bank branch network has also been an ongoing trend outside Finland. However, things have changed at a rapid pace since, and at least in the developed countries, electronic delivery is replacing traditional bank branch networks in delivering banking services. In general, older consumers are considered as typical branch customers, whereas younger consumers with higher education and a

professional occupation are considered as typical users of electronic banking services (Sathye, (1999); Jayawardhena and Foley, (2000)).

6. Conclusion

After the 1997 economic crisis in Thailand, bank performance showed considerable net losses for approximately five consecutive years. Because of this, it is still difficult for Thai banks to obtain net interest income in the long term. It is feasible that the income base of most commercial banks in Thailand would gradually rely on non-interest income. As Thai banks attempt to seek new sources of revenues and profits outside traditional banking disciplines, they will demand different skills and aptitudes from their staff. This demand, coupled with cost cutting and the impact of new technology, has already led to a significant reduction in overall staffing levels within the banking industry. Modern technological applications and the introduction of electronic banking services will increasingly replace bank officials, so personnel expenses are likely to drop. During the initial period, banks would have to bear higher costs for technology applications and for the introduction of E-banking services such as ATM, balance update, Telephone banking and Internet banking. World-wide banking rational has accepted Internet banking as the banking channel of the future for a multitude of reasons: cost savings, increased customer base, mass customization, marketing and communication, innovation and development of non-core business. As such, branch office workloads can be reduced, their services and performances can be improved while the cost of transactions can be significantly reduced. This also, leads to improvements in customer retention and loyalty by offering further convenience, enhanced features and easy access to banking services. Because there are many factors influencing bank customers' interest or non-interest in using Internet banking, it is therefore, necessary that a survey of Internet banking customers in Thailand be conducted and the results used as the foundation of future research, in order to determine customer's preferences to Internet banking.



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Customer Survey: Factors Influencing the Adoption of Internet banking in Thailand

(Research Paper 2)

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RESEARCH PAPER 2

Customer Survey: Factors Influencing the Adoption of Internet banking in Thailand

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Abstract: Customer survey: Factors influencing the adoption of Internet banking in Thailand

The main objectives of this survey are to explore the relationship between bank customers and Internet banking performance in Thailand and also to determine customers' interest in using Internet banking as well as to gather customer opinions on the attributes of Internet banking. Complex probability sampling using multistage cluster sampling is used in this study. The sample consists of persons whose ages are over the age of 18, had prior experience and/or knowledge of the Internet and were customers of commercial banks only, and were selected from a sample population of 400 individuals from each of the districts in Bangkok. The data for this study was gathered through questionnaires. Frequency analysis, cross-tabulations, chi-square and Discriminant analysis were used to identify factors having an impact upon bank customers' interest in using Internet banking. Survey results indicated a number of potentially interesting age-related differences. For example, younger consumers appear to value the convenience or time-saving potential of Telephone banking and Internet banking more than older consumers. Similarly, younger consumers regard the lack of face-to-face contact as less

important than older consumers. With Internet banking, younger consumers are attracted more than older respondents by the possibility of improved levels of service, the ability to bank whenever they choose (24 hour service), the enhanced convenience and the possibility of lower fees. The income levels of respondents seem particularly important. It is possible that consumers with lower incomes have less opportunity to access the computer and the Internet at work. These results are consistent with previous research revealing that Internet banking users can be classified as highly educated, relatively young with higher incomes and a good knowledge of computers and, especially, the Internet. It has been widely recognized that demographic factors have a great impact on consumer attitudes and behavior regarding Internet banking. Moreover, a typical Internet banking user has been identified as a high involvement person belonging to the upper middle class or as a member of the career-orientated upper middle class. Accepted literature also supports the results which suggest a strong relationship between age and the acceptance of new technologies. Older consumers are found to have problems with new technologies and, hence, are more likely to have negative attitudes towards innovations. Unawareness and lack of security are the most important factors which affect Thai customers and their decision to use or not use Internet banking.

Customer survey: Factors influencing the adoption of Internet banking in Thailand

1. Introduction

After the economic crisis in Thailand 1997, Thai banks needed to face up to increased competition from within the sector and from new entrants coming into the financial services market. Finally, they needed to continually invent new products and services in the light of these changes. Internet banking was presented as an answer to many of the inherent disadvantages of a traditional branch. Internet banks can act as a facilitator in Internet payment systems or act as a provider of other services and a shopping opportunity and thus assist the growth of electronic commerce in Thailand. Other advantages of using Internet banking are a reduction in costs, such as lower advertising costs (e.g. providing brochures, catalogues, corporate information on a web site is considerably cheaper than traditional advertising and printing), lower transaction costs (e.g. the consumer fills in an order and/or transaction forms and the payment is automatic), improvements in productivity by allowing using computers to answer information requests and search for information. Internet banking can be of great help to improving the aspects of convenience, as it allows Thai bank customers to do their transactions from home, allows for 24 hour, seven days per week, and is well suited to be the point of customer contact for a wide range of self-service applications. This means that Thai bank customers can contact banks anywhere, at anytime, and always have the same level of service.

In spite of these advantages, but there are some Thai bank customers non-interest to use Internet banking. So, the main objective of this survey is to explore the factors which have an impact upon bank customers' interest or non-interest in using Internet banking. In addition, the results from the customers' survey can develop a predictive model incorporating the unique characteristics of services, while at the same time demonstrating an effective ability to distinguish between those users of Internet banking and those who are not.

2. Methodology

2.1 Research Design

The purpose of the study was to identify what factors influenced Thai banking customers' interest or non-interest to use Internet banking facilities. The survey instrument aimed to determine customer preference channel usage as well as obtaining customers' opinions in the use of Internet banking. This goal was accomplished by presenting an analysis of a number of variables that may have an impact upon bank customers' interest in using Internet banking. This analysis then led to the development of a predictive model that incorporates the unique characteristics of bank customers' opinions and effectively portrays a clear distinction between those customers interested in using Internet banking and those who are not.

2.2 Sampling

The complex probability sampling selected in this study used multistage cluster sampling. The first stage, used a stratified sampling method by dividing the 50 districts of Bangkok into 6 groups. The second stage, using quota sampling method, further divided each of 6 districts groups into 2 groups. The third stage, used simple random sampling to sample each of the two sub-district groups into 21 distinctive districts for each of the groups. The fourth stage, used quota sampling to select 400 samples from all districts in each group. In the fourth stage, 400 random samples from shopping centers were collected. The author chose the samples as follows: 1) Every fifth sample (sample) to pass the author will choose one sample. When a previous sample was completed or returned, the author waited for a fifth sample to pass. 2) After the fifth sample passed, the author chose the next sample. The population in Bangkok is approximate 5,647,799 (www.dola.go.th). This study used the formula of Yamane (1967) to determine sample size (see Appendix 1).

2.3 Sample

This study is an anonymous survey, which means that individual respondents are not identified in the survey questionnaire or in any other way. All information received was kept confidential and only the aggregated findings are reported. Research participation was purely voluntary and respondents were under no obligation whatsoever to complete the survey questionnaire. Attributes of the sample were that all persons were over the age of 18, had prior experience and/or knowledge of the Internet and were customers of commercial banks

only. Bank customers in Bangkok were chosen by selecting a representative sample. The city of Bangkok was used in this study because it has the highest technology of all the cities in Thailand and its citizens are generally more knowledgeable than people in other cities. As such, all subjects had equal opportunity of being chosen for this study (Sekaran, 2000). Therefore, restricted or complex probability sampling was selected for this study by using multistage cluster sampling (see Appendix 1). The majority of the respondents were male (55.5 percent), relatively young 56.5 percent (22.5 percent were between the ages of 18 and 25, 34.0 percent were between the ages of 26 and 35), educated were university graduates (bachelor's degree = 49.3 percent, over bachelor's degree = 16.3 percent) and 30.5 percent had incomes between 10,001-20,000 baht per month. A large proportion of the respondents were government officers (government officer 19.3 percent and state enterprise 19.8 percent) (see Table 3).

2.4 Data Collection Instrument

The data for this study was gathered through questionnaires. The questionnaire was developed based upon published literature on Internet banking. The questionnaire consisted of four parts:

Part I: Demographic characteristics of the sample

Part II: Interest in using Internet banking services

Part III: Satisfaction from Internet banking services

Part IV: In your opinion, why don't you use Internet banking services?

The questionnaire was distributed to the sample population after the questions had been pretested on 15 bank customers to ensure that they included terminology that would be understood. The objective of this initial pilot test was to verify content validity, to identify any ambiguity in the questions, and to identify any difficulties in answering the questions. Pilot test respondents were also asked to report the ease and time of response, as well as the appropriateness of vocabulary. Vocabulary items were then modified as a result of the respondents' comments, and a new questionnaire was piloted with a further 7 bank customers, after which only minor modifications were made.

The questionnaire items in this study were developed after an extensive review of academic literature. The variables were selected from the literature review, as well as from three electronic banking experts. Whenever an organization was willing and able to assemble groups of employees to respond to the questionnaire at the workplace, the survey could be confined to a local area and was personally administered by the researcher. Personally

administering the questionnaires is a good way to collect data as the researcher or a member of the research team is able to collect all completed responses within a short period of time. Any doubts that a respondent may have regarding a question can be clarified on the spot.

The collected data was then secured by means of personally administering the questionnaire. Following the suggestions of Churchill (1989) when developing a questionnaire, existing scales were adopted, modified and extended. The scale measured the level of concern for specific factors relative to opinions on interest in Internet banking. Participants were asked to indicate their level of agreement with each item on a 1-5 Likert Scale (1=strongly disagree to 5=strongly agree). Four hundred and eighty five research participants were surveyed. However, for this study only 400 samples were used (see Appendix 1 for a calculation of sample size). Four hundred purely voluntary participants having attributes equivalent to section 3.3 were used and a response rate of 82.47 percent (400 responses) was recorded in the survey of bank customers.

2.5 Data Analysis

Frequency analysis, cross-tabulations chi-squares and Discriminant analysis were used in this study.

2.5.1 Frequency analysis

Frequency analysis was used in order to identify all sample who are interested or non-interested in using Internet banking.

2.5.2 Crosstabulations and Chi-squares

Crosstabulations and Chi-squares were employed to identify any existing relationship between demographic variables and interesting/non-interesting in using Internet banking. In addition these tools tested relationship between demographic variables and bank delivery channels. This study has tested relationship between variables as follow:

H_o: Age and interested/non-interested in using Internet banking are independent of one another.

H_1: Age and interested/non-interested in using Internet banking are associated with one another.

H_o: Education and interested/non-interested in using Internet banking are independent of one another.

H_1: Education and interested/non-interested in using Internet banking are associated with one another.

H_o: Income and interested/non-interested in using Internet banking are independent of one another.

H_1: Income and interested/non-interested in using Internet banking are associated with one another.

H_o: Occupation and interested/non-interested in using Internet banking are independent of one another.

H_1: Occupation and interested/non-interested in using Internet banking are associated with one another.

H_o: Gender of respondents and bank delivery channels are independent of one another.

H_1: Gender of respondents and bank delivery channels are associated with one another.

H_o: Age of respondents and bank delivery channels are independent of one another.

H_1: Age of respondents and bank delivery channels are associated with one another.

H_o: Education of respondents and bank delivery channels are independent of one another.

H_1: Education of respondents and bank delivery channels are associated with one another.

H_o: Income of respondents and bank delivery channels are independent of one another.

H_1: Income of respondents and bank delivery channels are associated with one another.

This study determined a significant difference if the value of the tested variable was equal to 0.05. Tested values less than 0.05 would therefore indicate that the variable had a significant relationship between one another. That is one variable was seen as influencing the other, such as in the analysis of existing relationships between the variable age and the variable Internet usage. The result of this analysis showed a significant value equal to 0.02. This means that the age of the respondents has a direct influence upon Internet usage.

2.5.3 Discriminant analysis

2.5.3.1 The factors that affect the customers' interest to use of Internet banking:

Literature has identified driving bank customers' interest to use Internet banking. Key factors include 24-hour availability, multi access points, time saving, cost saving, ease of use, reliability etc. One key factor that leads customers to use Internet banking is the 24-hour service. Lockett and Littler (1997), for example, analysed consumers' attitudes towards product of banking and found that its 24 hour a day availability was its main advantage. Jeon and Rice (1997) concur with this view and state that, with Internet it is possible for banks to offer a number of home banking services, such as a variety of banking, bill payment, and money management services 24 hours a day. For example, customers can get up-to-date balance information on deposits and loan accounts, transfer funds between accounts, and communicate with the bank by e-mail. Evans and Wurster (1997) find the 24 hour service as one of many reasons customers use Internet banking. Hence, if bank customers' interest to use Internet banking, it may be because they can use the Internet banking service 24 hours a day. This finding leads to the development of hypothesis 1.

H1: Customers interest to use Internet banking service because they can use this service 24 hours a day.

The second factor that leads to customers' interest to use of Internet banking is the fact that service can be obtained anywhere (i.e. in many places). Devlin (1995), (Sheshunoff, 2000) states that customers have less time to spend on activities such as visiting a bank and therefore want a higher degree of convenience and accessibility. Mols (1998) agreed and found that compared to non-users, Internet banking users are generally more satisfied with their bank, have higher intentions of repurchasing, provide more positive word-of-mouth communication and are less likely to switch to another bank. He also found that 17 percent reported convenience in banking as a very important factor determining whether a customer became a user of Internet banking facilities. Hence, if bank customers' interest to use Internet banking, it may be because they can use Internet banking service everywhere. This finding leads to the development of hypothesis 2.

H2: Customers interest to use Internet banking service because they can use this service anywhere.

The third factor influencing customers' interest to use of Internet banking is its time saving component. Dabholkar (1996) found control and waiting time to be important determinants for Internet banking. Consumers are more likely to use Internet banking if it offers them a sense of control, and if they do not have to wait to use it. Barnatt (1998), Birch and Young (1997), Cronin (1997) and Barto (1999) found that Internet banking services have several advantages over branch banking and other alternative methods in terms of price, convenience and performance. From their survey, the savings service dimension of Internet banking (cost, time, and self-service) was ranked the highest. Undoubtedly, this is because of Internet banking's ease of access. Hence, if bank customers' interest to use Internet banking, it may be due to the time its use saves customers. These findings lead to the development of hypothesis 3.

H3: Customers interest to use Internet banking service because it saves the time.

Another factor worth consideration is cost. Mols (1998) stated that, potential customers for both PCs and Internet banking are generally less price sensitive and have the highest intentions to repurchase. However, potential Internet banking customers are also more concerned with their banks and provide more positive word-of-mouth information than other bank customers. Dannenberg and Kellner (1998) found that, the possibility of offering individual advice through the Internet will nearly replicate the face-to-face interactions that take place at branch offices with one major exception; individual counseling will be cheaper, faster and much more convenient. If Internet banking is to become the preferred type of service offered in the future, then the research of Holstius and Kaynak (1995) should be considered as well. Although Internet banking was not part of their study, perhaps due to the fact that during the 1989-90's PC terminal-based Internet banking was not successful because of absorbent costs and lack of public acceptance, their results do indeed play an important role in the bank selection criteria process for consumers. Holstius and Kaynak (1995) found that in the selection process of choosing a bank, consumers go through a series of important criteria of which the highest ranking include convenience, service facilities, reputation and interest rates. Hence, if bank customers' interest to use Internet banking, it may be because Internet banking service has a low price. These findings led to the development of hypothesis 4.

H4: Customers interest to use Internet banking service because of its low cost.

The fifth factor that influences customers' interest to use Internet banking is ease of use. Katz and Aspden (1997) stated that, they assumed banks have only two significant segments which exist, namely an Internet banking segment and a branch banking segment. The Internet banking segment is comprised of computer-literate persons. These persons have access to a

PC at their workplace and/or at home. They connect to the Internet for a variety of reasons, such as e-mail or information search. They typically possess a credit card and very seldom do they need complex and time consuming counseling or advice regarding their banking activities. They do not put a high value on their personal relationship with the local bank, and are relatively price-conscious, affluent and well-educated. This segment is generally small and consists of mostly young customers consisting of more males than females. However, this segment is growing fast and is likely to change its characteristics in the very near future. This segment prefers Internet banking because it is convenient and easy to use. Dabholkar (1996), Tan and Teo (2000), Liao *et al.* (1999) found ease of use and entertainment to be important factors in evaluating technology-based self-service. Hence, if the bank customers' interest to use Internet banking, it may be because the Internet banking service is easy to use. These findings led to the development of hypothesis 5.

H5: Customers interest to use Internet banking services because it is easy to use.

The sixth factor that influences customers' interest to use Internet banking is reliability of use. Holstius and Kaynak (1995) and Shani and Chalasani (1992) stated that new technology makes it possible to target individual customers with greater precision than before and may come close to operating with niches of a single consumer. Bons (1999) stated that, the more easily consumers can observe the positive effects of adoption, the greater its chances of success. Internet banking consumers are immediately able to check the positive effect of the services they receive. For example, consumers can check account activities (information inquiry), pay bills, and make investments anytime and anywhere. Hence, if bank customers' interest to use Internet banking, it may be because the Internet banking service is reliable. These findings led to the development of hypothesis 6.

H6: Customers interest to use Internet banking service because it is reliable.

The seventh factor that influences the customers' interest to use Internet banking is security. Ghosh (1998) stated that customers will only need a few Internet firms in different service categories, such as insurance, banking, news and information. Banks typically ask their customers to supply them with sensitive information and consumers need to believe that this information will be properly guarded. This is a process requiring the customers to trust their Internet banking. This then raises issues of privacy and compatibility of customer and company goals. Once customers have supplied a bank with their personal information, they are not likely to switch to another bank shortly thereafter. This may result in switching barriers that will protect banks from hyper-competition, as predicted by some analysts. Bons'

(1999) survey of customer satisfaction towards Internet banking service found that most bank customers had been using the service for a long time without any security problems and were significantly more satisfied with the security provided. It can thus be concluded that those customers who use Internet banking for long intervals, find Internet banking to be very secure. However, Meuter *et al.* (2000) disagreed with this view and his research found that safety concerns may keep people from using Internet banking. Hence, if the bank customers' interest to use Internet banking, it may be because the Internet banking service is secure. These findings led to the development of hypothesis 7.

H7: Customers interest to use Internet banking service because it is a secure service.

The eighth factor influencing customers' interest to use Internet banking is that it is self service. Barto (1999) stated that Internet banking services offer relative advantages when compared to branch banking and other alternative methods in terms of price, convenience and performance. From his survey, the savings dimension of Internet banking services (cost, time, and self-service) was ranked the highest because customers can access it by themselves and these were the factors influencing their decision to use Internet banking the most. Heinen (1996) and Ghosh (1998) also emphasized the possibilities for firms to use the Internet for personalize interactions with their customers in order to build customer loyalty. Some common applications of technology-based self-service include conducting bank transactions through automated teller machines, shopping through the Internet, making reservations and purchasing tickets through kiosks, checking out of hotel rooms through interactive television, and using self-scanning systems at retail stores. Understanding the reason why these benefits and forces behind customer motivation to use current and potential technology-based self-services is, therefore of high priority (Dabholkar, 2000). Hence, if bank customers' interest to use Internet banking, it may be because the Internet banking service is self service. These findings led to the development of hypothesis 8.

H8: Customers interest to use Internet banking service because it is self service.

2.5.3.2 Factors Detracting Customers away from Internet banking

Literature has identified driving bank customers' non-interest to use Internet banking. Key factors include unaware of the benefits, difficult to use, concern about safety, it is not reasonably priced, do not want to change from current familiar ways, do not have access to computers. One key factor that influences customers' choice not-interest to use Internet banking is lack of awareness of the service. According to Puth *et al.* (1999), the attributes of products or services in the case of business to consumer (B2C) companies, including attributes of web sites, can be used in advertisements to position products in the minds of consumers as they are aware of the service and the benefits of specific products. Low and Mohr (2000) also agreed to this view and claimed that, advertising relative to sales promotions attracts customers because they are keenly aware of services received and tend to have a more favorable attitude. These customers have stronger brand equity as well as an increased rate of use of services. The research of Briggs and Hollis (1997) concurs; advertising banners on the Internet used to raise awareness and attract customers to web sites, have a strong immediate effect on brand. Hence, for the adoption of Internet banking it is necessary that banks offering this service make consumers aware of the availability of such a product and explain how it adds value relative to its other products or that of its competitors. An important characteristic for any usage of innovative services or products is creating an awareness among the consumers about the service. Hence, if the customers' non-interest to use Internet banking, it may be because they are not aware of such a service being available and the added value that it offers. These findings and observations led to the development of hypothesis 9.

> ***H9***: Customers non-interest to use Internet banking service because they are not aware of the service and the benefits it provides.

The second factor that influences customers' non-interest to use Internet banking is its difficulty of use. Daniel (1998) analyzed the adoption of computer banking through in-depth interviews with bank personnel responsible for its implementation and development. He found that the main factors influencing use or non use, including the convenience aspects of the service, was its ease of use and its compatibility with consumers' existing lifestyles. This was confirmed by The Wallis Report (1997, cited in Sathye, 1999) which stated that technological innovations "must be easy to use" in order to ensure customer take-up or acceptance. "The degree to which an innovation is difficult to understand or use" was one of the reasons for early failure of Internet banking in the USA. Daniel (1999, p. 17), Aladwani (2001, p. 215) identified "ease of use" as one of the factors for customer acceptance in her

study of electronic banking in the UK and Ireland. If customers' non-interest to use Internet banking, it could be because the Internet sites are not easy to operate. Hence, the following hypothesis is proposed:

H10: Customers non-interest to use Internet banking service because they do not find that it is easy to use.

Another factor that customers consider before adopting an innovation is the level of risk involved. Hoffman and Novak (1996) and Bons (1999) stated that security risks are one of the major barriers to the adoption of online banking. If customers perceive an increased security risk, they will not use Internet banking. Cooper (1997) also agreed with this view and claimed that the level of risk is an important characteristic and from a consumer's perspective, is vital to the adoption of innovation. The Wallis Report (1997, cited in Sathye, 1999) also stated that if security is improved households will conduct their financial transactions over the Internet. Baig *et al.,* (1999) stated that, customers visiting a web site where information is recorded about their visit regardless of whether they use services, do not use Internet banking because they are concerned about the security of their personal information. Pennathur (2001) found that, security is the main factor having the most influence in discouraging the adoption of Internet banking. These findings and observations led to the development of hypothesis 11.

H11: Customers non-interest to use Internet banking service because they are concerned about safety and security of transactions over the Internet.

A fourth factor that influences customers' non-interest to use Internet banking is the price of the service. DeRuyter *et al.* (1998), Pennathur (2001), Sheshunoff (2000) found that, the most important factor in encouraging and/or discouraging the adoption of Internet banking is lower fees. This same view was taken by Strauss and Frost (1999) who stated that, as is generally true with innovations, consumers either perceive significant benefits from adopting the Internet for household usage and decide to obtain access now, or they decide to delay its adoption. Adoption deferral could happen for many different reasons. This may be because, for some consumers, the cost of adopting the Internet, in terms of financial costs, and time and effort to learn a new technology, may exceed the benefits of obtaining Internet access at home. They may therefore, defer the adoption decision until the future (or decide to forgo adoption entirely). They may also have access to the Internet at work, and therefore do not have a need for additional access at home. Other consumers might not feel a strong need to obtain access to the Internet at home immediately, but might feel that access in the future will become increasingly important with the addition of new, innovative features that are

unavailable today. Thus, consumers could delay adoption until either technology improves to suit their needs, or until the prices are more reasonable than at the present time. Table 1 illustrates Krung Thai bank fees in November 2002 for which customers were charge differing rates for different products.

TABLE 1: ELECTRONIC BANKING FEES: KRUNG THAI BANK

	ATM	**Internet banking**	**Branch**
Money tranfers within the same area	No charge	No charge	No charge
Money tranfers in different area	20,000 baht / 10 baht	10,000 baht / 7 baht	10,000 baht / 30 baht
Amount limit / time	20,000 baht / 1 time	0-500,000 baht/1 time	no limit
Money tranfers between banks	10,000 baht / 35 baht	No service	60,000 baht / 60 baht

Source: Krung Thai Bank

Thus, if Internet banking is not being adopted it could be because it is not reasonably priced. Hence, the following hypothesis is proposed:

> ***H12***: Customers non-interest to use Internet banking service because it is not reasonably priced.

A fifth factor that explains why customers' non-interest to use Internet banking service is the existing mode of service or familiarity with the methods used to complete the transaction. Research focusing on technology in financial services and the adoption of ATMs has revealed that a significant factor for non-use, especially amongst older consumers, was the preference for conducting financial affairs through a human teller (Kwan, 1991). Similarly, Marr and Prendergast (1993) found that the main factors affecting the adoption of self service technology in financial services were those of time and place utility; whereas the main factor discouraging adoption was consumers' preference for dealing with human beings. Daniel (1999, p. 73) found "a high level of customer inertia in changing their established banking arrangements". For customers to change their present ways of operating and take up new technology, a specific need must be fulfilled (The Wallis Report, 1997; cited in Sathye, 1999). Unless such a need is fulfilled, consumers may not be prepared to change from their present

ways of operating. Technology-based self-service applications such as Internet banking allow consumers to perform many activities themselves; however, some consumers prefer not to use technology-based self-service because they prefer interacting with employees (Dabholkar, (1996); Prendergast and Marr, (1994)). Hence, these findings and observations led to the development of hypothesis 13.

H13: Customers non-interest to use Internet banking service because they do not want to change from current familiar ways of completing a transaction.

Finally, the availability of access to computers/Internet is a prerequisite for the adoption of Internet banking. The more widespread the access to computers/Internet, the greater the possibility of use of Internet banking. O'Connell (1996) identified lack of access to computers/Internet as one of the possible reasons for slow adoption of Internet banking. Daniel (1999) found the lack of customer access to suitable PCs as the reason for low usage of electronic banking in the UK and Ireland. Fram and Grady (1997, p. 49) also agreed; "most people indicated that they experienced problems in using the Internet for shopping, such as difficulty in finding products, transaction problems, and technical concerns, and thus gave-up on their use of the Internet". Hence, if the customers' non-interest to use Internet banking service, it may be due to a lack of access to computers/Internet.

H14: Customers non-interest to use Internet banking service because they do not have access to computers/Internet.

To explore the factors having an impact upon bank customers' interesting or non-interesting in using Internet banking, the author used the principal of comparison. The comparison method has been used with good results in a number of studies on new products. In the past, there are many researchers who used the comparison method. For example, Parkinson (1981) used it to compare new product development in British and German machine tool manufacturers. New product screening models have also been developed by comparing successful and unsuccessful new products (de Brentani, 1986). The need to develop products differently, depending on the type of product (old or new), has been examined successfully via a comparative study of US and UK manufacturing firms (Johne and Snelson, 1988). The approach has also been successfully applied as a discriminating function in a number of studies on new product successes and failures. These reasons are consistent with the primary focus of this research, which is to identify the factors that affect customers' preference for Internet banking.

Nowaday, there are many researchers who use the comparison method via the tool which is called that Discriminant analysis to studies on new products. Such as: Oktemgil and Greenley (1997) used Discriminant analysis to test high and low adaptive capability in UK companies and constructed the model, Hansen (1997) used Discriminant analysis for testing and predicting membership in each complaining style in a buyer/seller relationship and Edgett and Parkinson (1997) used Discriminant analysis for testing and predicting success and failure of new financial services.

Thus, the author used a comparative methodology in this study in conjunction with Discriminant analysis. A useful framework was provided by earlier studies of similar research where identified factors effectively discriminated between successful and unsuccessful introduction of new products.

This led to the development of a predictive model that incorporated the unique characteristics of services and effectively demonstrated a distinction between those likely to use Internet banking and these who were not. A Likert scale was used to facilitate measurements and statistical analysis. Normally, the Likert scale is an ordinal scale but in this study the author set the Likert scale as a ratio scale. In addition, Discriminant analysis was selected to test the hypotheses, whereby an exploration of the factors having an impact upon bank customers' interested or non-interested to use Internet banking was explored, as well as to develop a predictive model incorporating the unique characteristics of services and to distinguish and identify those most likely to use or non use Internet banking (Hair et al., 1995).

3. Discriminant Analysis

Researchers have used Discriminant analysis in a wide variety of settings. It was first developed by Fisher (1936), who sought to solve problems in physical anthropology and biology. Discriminant analysis is a statistical technique that allows the researcher to study the differences between two or more groups of objects with respect to several variables simultaneously. The areas in which this technique has been successfully employed include personnel placement testing, roll call analyses of legislatures, psychological testing of children, the effects of medical treatments, economic differences between geographic regions, predicting voting behavior, and many more. The basic prerequisites are that two or more groups must exist and are presumed to differ on several independent variables and that those independent variables can be measured at the interval or ratio scale. The results from this measurement will be dependent variables that can be separated into two or more groups. Those dependent variables are a nominal or ordinal scale. Discriminant analysis then helps us analyze the differences between the group it most closely resembles.

3.1 The Basic Principals of Discriminant Analysis

The basic principals of Discriminant analysis are herein discussed in subsequent paragraphs in this section.

First, all collected data must be members of two or more mutually exclusive groups. The groups must be defined so that each case belongs to one, and only one, group. In this study, the author defines all of the cases in two groups, as classified by equations. These equations, called Discriminant functions, combine group characteristics in such a way that allows one to identify the group that the case most closely resembles. One such group is those who are most interested in using Internet banking and the other group is those who are not. It is possible to write the Discriminant function as an equation as follows:

$$D_m = C + m1f1 + m2f2 + \ldots + m_n fn$$

D_m = The dependent variables in this study were classified into 2 groups:

Group 1 = Those who preferred Internet banking

Group 2 = The sample who did not like to use Internet banking

$f1, f2, \ldots fn$ = The independent variables which have affect to each group of difference separated into 2 groups are all hypothesis and then these independent variables are called discriminate variables.

C = Constant

$m1, m2, \ldots . m_n$ = Coefficients of each variable

The characteristics used to distinguish among the groups are called Discriminant variables. This variable data must be measured at the interval or ratio scale of measurement, so that means and variance can be calculated and so that they can be legitimately employed in mathematical equations. In this study, the design of the questionnaires utilized quantitative data. As such, a ratio scale consistent with the principal of Discriminant analysis was used.

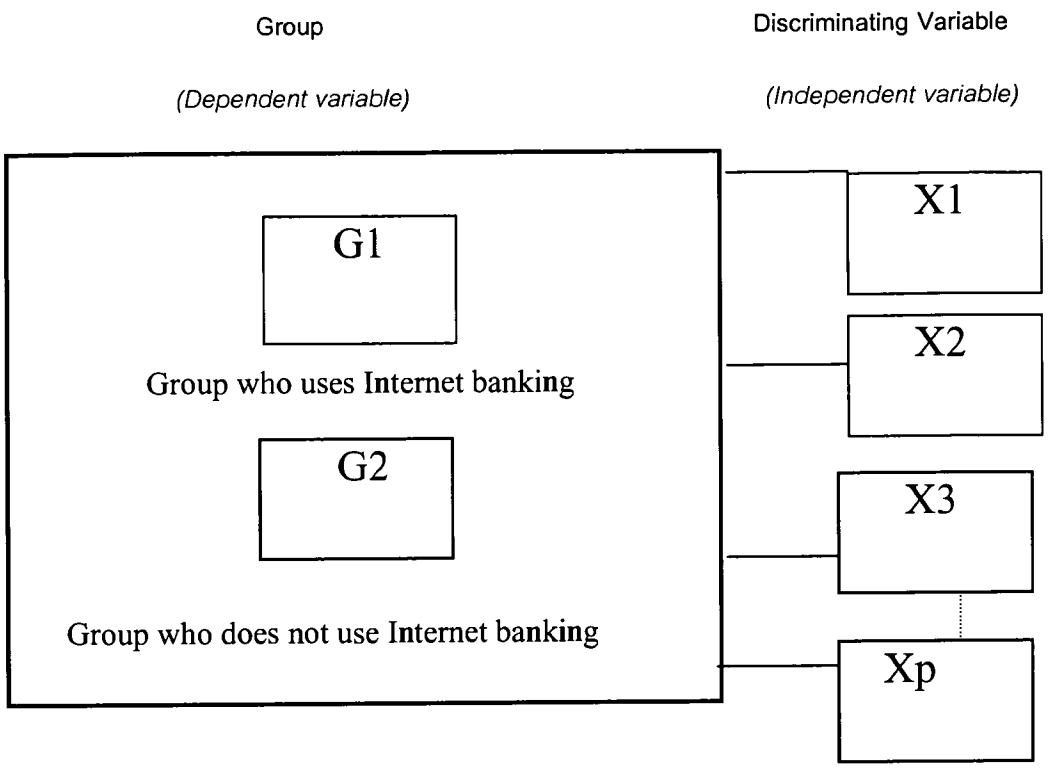
Covariance is the variation in one variable that is shared by another variable. Covariances contain important information about group differences in variability that can be obscured by correlations. In the multivariate context, the variance for all of the dependent variables must be equal across the experimental groups defined by the independent variable. Additionally, multivariate analysis of variance (MANOVA) demands that the covariance, the variance shared between two variables for all unique pairs of dependent measures, be equal for all experimental groups, as was the case in this study where the population covariance matrices were equal for each group. Table 2 shows the covariance matrix for the experimental group in this study with three dependent measures (A, B and C). Observe that each variable's variance is on the diagonal, and the covariance for each pair of variables makes up the remainder of matrix. Therefore, this matrix has nine elements. Note also that this is a covariance matrix for only one experimental group. In order to say the covariance matrices are homogeneous across experimental groups, the covariance matrices for each group were examined and checked to see that each matrix element (e.g., covariance AB, variance A, variance B, etc.) was equal for all groups. There were three dependent measures, and so the covariance matrix for each group forms a 3 x 3 table of variances and covariances.

TABLE 2: 3 X 3 COVARIANCE MATRIX (THREE DEPENDENT VARIABLES) ON ONE EXPERIMENTAL GROUP.

Variable	A	B	C
A	Variance A	Covariance AB	Covariance AC
B	Covariance BA	Variance B	Covariance BC
C	Covariance CA	Covariance CB	Variance C

Source: My data

Figure 1: Relationship Between Groups and Discriminating Variable



Source: Fisher (1936)

P = Number of discriminating variables

G = Dependent variables (use or non use of Internet banking) measured at the norminal scale

X = Independent variables are measured at the interval or ratio scale

Covariance matrices for each group must be (approximately) equal

3.2 The Process of Discriminant Analysis

Discriminant analysis is a five-staged process whereby the variables are tested using various mathematical equations.

In the first stage, all independent variables, which are expected to have an affect upon the sample, are tested and separated into two groups. In this stage, the author used the Wilks' lamda, an F-test and a test of significance on all independent variables. Hypothesis were then set as:

H_o: Average of each independent variables of group 1 = group 2

H_1: Average of each independent variables of group 1 ≠ group 2

The range of the Wilks' lambda is from zero to 1 ($0 \leq$ Wilks' lambda ≤ 1). This means that if the results are lower values of Wilks' lambda, the results will indicate an acceptance of H_1 as this suggests a stronger group separation.

F-test results of higher value will indicate acceptance of H_1. This indicates that the larger mean difference represents stronger group separation.

As previously mentioned, tests of significant in this study are set at 0.05. If the obtained result is lower than 0.05, it will accept H_1. Larger mean differences, indicating stronger group separation, provided the necessary data for the classification and identification of independent variable affecting the sample. Because of this, it was possible to separate the sample into two groups.

Because the Wilks' lamda is multivariate measure of group difference over several variables (Klecka, 1981), each sample can only be classified to one, and only one, group (see details in Table 4, 5, 10 and Table 11).

In stage two, a test to measure that the population variance-covariance matrices were equal for each group was conducted. Box's m statistics were selected to test this principal in this study because this principal of equal group covariance matrices allows for a simplification of the formula used to calculate the Discriminant functions and certain tests of significance (see details in Table 6 and Table 12). This was accomplished by setting the Hypothesis as follows:

H_o: Variance-covariance of independent variables of group 1 = group 2

H_1: Variance-covariance of independent variables of group 1 ≠ group 2

Tested significant differences greater than 0.05 indicated acceptance of H_0 as it is indicates that variance-covariance of the independent variables in group one were equal to those in group two.

In stage three, Classification Function Coefficients calculation of independent variables, (*fn*), as used in stage one to find the Fisher' s linear Discriminant Functions. This method was chosen because it would be possible to write the Discriminant function as ($D_m = c + m1f1 + m2f2 + \ldots + m_nfn$). This could be used for prediction purposes because the D_m value of each group would be different.

Example: Case of exporter Suppose that the equations of the Discriminant function were as follows:

D_m = -2 + 0.2 revenue/day(dollar)

+0.30experience for business(years) .....(Group of interest to export)

D_m = -1 + 0.5 revenue/day(dollar)

+0.4experience for business (years) .....(Group of non-interest to export)

Mr. A is one individual from the comprehensive 400 individual sample. Data obtained from Mr. A revealed: revenue/day = 10.0 $, experience for business = 5 years

Applying his data into the equation, would reveal:

D_m = -2 + 0.2 (10) + 0.30(5) .....(Group of interest in export)

= 1.5

D_m = -1 +0.5(10) + 0.40(5) .....(Group of non-interest in export)

= 6.0

Use D_m value has much more value to identify that group which the sample should be. From example, the results show that D_m value 6.0 (Group of non-interest in export) have much more value than 1.50 value (Group of interest in export). Thus, Mr. A is forecasted to be non-interested in exporting. The marketer does not lose the time and budget for motivating this sample to an interest in exporting if the marketer has a resources limit. But they should motivate the sample who are forecasted as being interested in exporting (see Table 7 and Table13).

In stage four Canonical Discriminant Function Coefficients are selected to test to determine those variables most affecting the group was conducted (see details in Table 8 and Table 14). This was done so that the researcher could identify what independent variables *(fn)* are the cause of the problem. If this was known, the researcher could recommend or find a method to solve the problem. For example, Canonical Discriminant Function Coefficients of revenue/day (dollar) = 0.50 and Canonical Discriminant Function Coefficients of experience for business = 0.10. But in this stage, the Coefficients identified were classified as Unstandardized Coefficients because the value of each of the independent variables *(f1, f1... fn)* differed. Some units were represented in dollars, others in kilograms, minutes, etc. Because of this variation in unit values, it was not possible to determine which variable(s) had the most effect upon D_m. From the example given in this stage, one can see that the Unstandardized Coefficient of revenue/day (dollar) = 0.50. This is much more than the Coefficient Value for business experience (years) = 0.10. These statistics were initially

interpreted to mean that revenue/day (dollar) had more of an affect upon group separation than the other independent variable business experience.

In stage five However, when these Unstandardized Coefficients were changed to Standardized, the results were somewhat different: Canonical Discriminant Function Coefficients of revenue/day (dollar) = 0.20 and Canonical Discriminant Function Coefficients of experience for business = 0.6. Now, the Coefficients of experience of business (years) = 0.6 are much greater than the Coefficients of experience for revenue/day (dollar) = 0.2. Thus, the independent variable experience for business (years) is seen to have more of an affect upon the independent variable than revenue/day (dollar) in group separation (see details in Table 9 and Table 15).

4. Results

4.1 Demography data

The majority results obtained from the frequency analysis presented in Table 3 Demographic characteristics of the sample.

TABLE 3: DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

Variables	All Sample 400	%	The sample who are interested in using Internet banking		The sample who are non-interested in using Internet banking	
			N=160	% within interest group	N=240	% within non-interest group
1)Gender						
Male	222	55.50	79	49.4	143	59.6
Female	178	44.50	81	50.6	97	40.4
2) Age						
18-25	90	22.50	49	30.6	41	17.1
26-35	136	34.00	73	45.6	63	26.3
36-45	94	23.50	22	13.8	72	30.0
over 45	80	20.00	16	10.0	64	26.7
3) Education						
Below high school	62	15.5	16	10.0	46	19.2
Certificate of diploma	76	19.0	19	11.9	57	23.8
Bachelor degree	197	49.3	87	54.4	110	45.8
Over bachelor degree	65	16.3	38	23.8	27	11.3

Variables	All Sample 400	%	The sample who are interested in using Internet banking		The sample who are non-interested in using Internet banking	
			N = 160	% within interest group	N=240	% within non-interest group
4) Occupation						
Government officers	77	19.3	14	8.8	63	26.3
State enterprise officers	79	19.8	21	13.1	58	24.2
Commercials	70	17.5	27	16.9	43	17.9
Business men	73	18.3	40	25.0	33	13.8
Engineering	31	7.8	20	12.5	11	4.6
Teachers	43	10.8	20	12.5	23	9.6
Doctors/nurses	12	3.0	11	6.9	1	0.4
Students	15	3.8	7	4.4	8	3.3
5) Your income (bath per month) about:						
Less than 10,000	87	21.8	29	18.1	58	24.2
10,000 – 20,000	122	30.5	45	28.1	77	32.1
20,001 – 30,000	112	28.0	40	25.0	72	30.0
over 30,001	79	19.8	46	28.8	33	13.8
6) Most of time, where do you use Internet ?						
House	118	40.0	43	32.1	75	46.6
Office	88	29.8	44	32.8	44	27.3
Internet café	21	7.1	9	6.7	12	7.5
School	68	23.1	38	28.4	30	18.6
7) You used Internet : (hours per day)						
Not over 2 hours per day	70	24.0	33	24.8	37	23.3
Over 2-3 Hours per day	114	39.0	50	37.6	64	40.3
Over 3-4 Hours per day	81	27.7	31	23.3	50	31.4
Over 4 hours per day	27	9.2	19	14.3	8	5.0

Variables	All Sample 400	%	The sample who are interested in using Internet banking		The sample who are non-interested in using Internet banking	
			N = 160	% within interest group	N=240	% within non-interest group
8) If you have ever heard Internet banking(IB), sources of information for IB services from:						
Television	12	3.0	9	5.6	3	1.3
Radio	27	6.8	8	5.0	19	7.9
Magazine or newspaper	45	11.3	16	10.0	29	12.1
The branches	201	50.3	66	41.3	135	56.3
Web site of the banks	115	28.8	61	38.1	54	22.5
9) Have someone in your family used Internet banking?						
Yes	81	20.3	34	21.4	47	19.6
No	318	79.7	125	78.6	193	80.4

Frequency analysis

Slightly more than half are non-interested in using Internet banking. There are 240 respondents who are uninterested in using Internet banking and 160 interested.

Those interested in using Internet banking

- Females (50.6%) are marginally more interested to use Internet banking than males (49.4%),

- Younger people (18-26, 27-35 year olds) (30.6%+45.6% = 76.2%) with higher education (bachelor, over bachelor) (54.4%+23.8% = 78.2%).

-Those who work in business (commercial+business man) (16.9%+25.0% = 41.9%).

-Those who have high income levels between over 10,000 Baht per month (81.9%) who are interested to use Internet banking. Most of the sample use Internet at their office (32.8%).

-Those who use Internet over 2-3 hours per day (37.6%) who are interested to use Internet banking.

-Those who are aware about Internet banking at branch (41.3%) and most of their family (78.6%) there is nobody who uses Internet banking.

Not interested in using Internet banking

These consist of these characteristics as follows:

- Males (59.6%) are more non-interested to use Internet banking than females (40.4 %).

- The sample who are older people (over 36 year olds) (56.7%) and have lower education (below master) (88.8%).

-The sample who are government officers and state enterprise officers (26.3%+24.2% = 50.5%) are not interested in using Internet banking.

-The sample who have lower income levels below 20,000 Baht per month (32.1%) and use Internet at house are not interested in using Internet banking.

-Most of the sample who are non-interested to use Internet banking and who are aware about Internet banking at branch (56.3%).

Chi-square

H_o: Age and interested/non-interested in using Internet banking are independent of one another.

H_1: Age and interested/non-interested in using Internet banking are associated with one another.

The age of respondents is related to interest in using Internet banking. Because of this, both respondents ages and interest in using Internet banking were tested by Chi-square and pearson Chi-square where test results equivalent to 0.00 but less than 0.05 were seen as significant (see Table 25 and Table 26). This is consistent with Table 27 and Table 28, which shows that younger persons (18-25 years old and 26-35 years old) prefer to use the Internet for longer intervals and much more frequently than do older individuals.

H_o: Education and interested/non-interested in using Internet banking are independent of one another.

H_1: Education and interested/non-interested in using Internet banking are associated with one another.

The education level of respondents was found to be directly related to both interest in using Internet banking as well as for the amount of time each respondent uses the Internet (see Table 29). In identifying respondents interest in using Internet banking, the variable was tested by Chi-square and pearson Chi-square where test results equivalent to 0.00 but less than 0.05 were seen as significant. (see Table 30). These results were consistent with the results displayed in Table 29 which shows that the higher the education level of a person, (bachelor's degree up) the more interest to use Internet banking than lower education level.

H_o: Income and interested/non-interested in using Internet banking are independent of one another.

H_1: Income and interested/non-interested in using Internet banking are associated with one another.

The income level of respondents was also found to be related to interest in using Internet banking. Because of this, the income level of respondents and their interest in using Internet banking were tested by Chi-square and pearson Chi-square (see Table 34). The results showed consistency with the statistics presented in Table 33 which show that individuals with higher income levels (10,001-up) are more likely to be interested in using Internet banking.

H_o: Occupation and interested/non-interested in using Internet banking are independent of one another.

H_1: Occupation and interested/non-interested in using Internet banking are associated with one another.

The occupation of respondents was also found to non-related to interest in using Internet banking. Because of this, the occupation of respondents and their interest in using Internet banking were tested by Chi-square and pearson Chi-square where test results equivalent to 0.289 but more than 0.05 were seen as non-significant (see Table 31 and 32).

4.2 Customer/channel Preference Analysis

The comprehensive questionnaire, covering a wide range of issues relating to consumer attitudes towards financial services and delivery channels was distributed to all respondents. However, in order to provide this paper with focus, only part of this questionnaire has been used. This was done in order to obtain information about the respondents changing attitudes towards bank delivery channels. This was accomplished by obtaining data on the types of delivery channels, and the respondents' preferred delivery channel by asking them which channels they would use if they had to make the same purchases of financial services again. The research also provided an opportunity to examine whether the choice of delivery channel was influenced by the generic nature of the service being purchased.

The results presented in Table 45 reveal that, the most preferred transaction channel of electronic banking in Thailand was the ATM (46.5 percent), while Tele-banking was the least preferred transaction channel (12.0 percent). Following the ATM, the branch was the second most popular transaction channel (25.3 percent). Following the branch, the Internet banking was the third most popular transaction channel (16.3 percent). These findings are in contrast with Dannesnberg (1998) who found that older people believed ATM's to be unsound from a personal safety viewpoint, and thus limited their use of them. In this study, the ATM channel received the most votes for usage.

H_0: Age of respondents and bank delivery channels are independent of one another.

H_1: Age of respondents and bank delivery channels are associated with one another.

The age of respondents was found to be related to bank delivery channels. Because of this, age of respondents and their interest in using bank delivery channels were tested by Chi-square and pearson Chi-square where test results equivalent to 0.025 but less than 0.05 were seen as significant (see Table 42). The least preferred transaction channel among each age group was Tele-banking and Internet banking; however, the younger group (26-35) provided the least resistance to this channel (see Table 41). This is the most optimistic outcome for the Internet in the survey, as generally there is a widespread dislike of this emerging high-tech banking channel. However, given the relatively low response rates for those over 45-years, it is not surprising that overall, the Internet is unpopular among this group.

H_o: Gender of respondents and bank delivery channels are independent of one another.

H_1: Gender of respondents and bank delivery channels are associated with one another.

The gender of respondents was found to be related to bank delivery channels. Because of this, income of respondents and their interest in using bank delivery channels were tested by Chi-square and pearson Chi-square where test results equivalent to 0.00 but less than 0.05 were seen as significant (see Table 44). Males express a higher preference for accessing current accounts and investment-based services over the Internet than females. With credit-based services, however, the opposite is the case, as females express a higher preference for the telephone and males express a higher preference for branches. These results could indicate that females feel less confident than males when dealing with financial services. Females tend to prefer to use the telephone when negotiating credit because it is perceived as less confrontational. However, females prefer Tele-banking service much more than males by a three-to-one margin (see Table 43).

H_o: Education of respondents and bank delivery channels are independent of one another.

H_1: Education of respondents and bank delivery channels are associated with one another.

The education of respondents were found to be related to bank delivery channels. Because of this, the age of respondents and education of respondents and their interest in using bank delivery channels were tested by Chi-square and pearson Chi-square where test results equivalent to 0.02 but more than 0.05 were seen as non-significant (see Table 37 and Table 38).

H_o: Income of respondents and bank delivery channels are independent of one another.

H_1: Income of respondents and bank delivery channels are associated with one another.

The income of respondents was found to be related to bank delivery channels. Because of this, income of respondents and their interesting in using bank delivery channels were tested by Chi-square and pearson Chi-square of lower 0.05 (see Table 39 and Table 40), it is possible that consumers with lower income levels have less opportunity to access the telephone and the Internet at work.

Clear differences in channel preferences between respondents in different fields of work were also apparent. Those from government and state enterprise fields preferred the ATM, but businessmen preferred Internet banking (see Table 35, 36).

Although some banks have information on Tele-banking available on their websites, there is generally much less information available to the general public in Thailand about this type of service. If customers want to use Tele-banking, they have to access the information from the Internet. This seems to influence customers' preferences in terms of Internet banking rather than Tele-banking. When they use the Internet to search for information on Tele-banking, they do not want to waste their time.

Closer scrutiny of the importance of face-to-face contact reveals some interesting facts. For example, older and wealthier respondents place particular emphasis on face-to-face contact. Similarly, elderly consumers are also less inclined to use the telephone or Internet banking; whereas wealthy consumers prefer to conduct their investment-based business at branch networks. This lack of emphasis on the importance of face-to-face contact with respect to telephone and Internet banking might, therefore, suggest that these delivery channels are more likely to be adopted by younger consumers and that they are perceived as being more conductive to transaction banking, i.e. those banking activities relating to current accounts.

A number of potentially interesting age-related differences were also revealed. For example, younger consumers appear to value the convenience or time-saving potential of telephone banking and Internet banking more than older consumers. Similarly, younger consumers regard the lack of face-to-face contact as less important than older consumers. With Internet banking, younger consumers are attracted more than older respondents by the possibility of improved levels of service, the ability to bank whenever they choose (24 hour service), the enhanced convenience and the possibility of lower fees.

The main reason why customers like the branch as a sales channel is the level of service and the personal nature of the service. In addition, it is easy to check when customers have problems. However, for the Internet banking service, the main reason why people like this channel is because of its accessibility and it is cheaper than other channels (see Table 46).

The Tele-banking channel rated poorly, with many respondents putting it as their least preferred channel, and saying that they prefer this channel because of its accessibility and it offers quick and reliable service.

This study revealed that the most preferred transaction channel for electronic banking in Thailand is the ATM. The main reason why people like this channel is because of its ease of access. This is consistent with previous research, which explained the main reason why people like or do not like this channel (see Table 46).

However, the branch networks' future dominance appears to be less obvious as consumers place proportionately greater emphasis on the telephone and, to some extent, on Internet banking. It also revealed that consumers have a preference for continuing to use a mix of delivery channels when acquiring financial services.

4.3 Factors that have an Impact upon Bank Customers' Interest in Using Internet banking

The purpose of this section is to ascertain the important factors which have an affect upon customers who like to use or do not like to use Internet banking. A number of variables are generated around the concept of new financial service developments and are based upon previous literature. In order to complete this task, the questionnaire focused on the following considerations: the respondents' access to the channels, the comparative costs of Internet banking; the perceived quality of service and closely related to this, the potential for errors and savings in time. Other factors included the respondents security concerns; difficulties associated with using technology; and the convenience of having a 24-hour Internet banking service.

To identify customer's determinants in using Internet banking, 14 hypotheses are developed and tested. The respondents were asked to indicate their level of agreement or disagreement with the way each of the variables in the 8 hypotheses reflecting the events that occurred in their decision to use Internet banking. 8 hypotheses which are the factors that affect the customers' interest to use Internet banking as follows:

H1: Customers use Internet banking service because they can use this service 24 hours a day.

H2: Customers use Internet banking service because they can use this service anywhere.

H3: Customers use Internet banking service because it saves the time.

H4: Customers use Internet banking service because of its low cost.

H5: Customers use Internet banking services because it is easy to use.

H6: Customers use Internet banking service because it is reliable.

H7: Customers use Internet banking service because it is a secure service.

H8: Customers use Internet banking service because it is self service.

4.3.1 Responses received about use of Internet banking

TABLE 4: TEST TO DETERMINE THE INDEPENDENT VARIABLES AFFECTING GROUP SEPARATION

	Wilks' Lambda	F	Sig
24 hour service	0.936	27.358	0.000
Can use everywhere	0.997	1.325	0.250
Save time	0.991	3.787	0.052
Cheapness	0.986	5.739	0.017
Easy to use	0.994	2.229	0.136
Reliability	0.984	6.402	0.012
Security	0.971	12.097	0.001
Self service	0.959	16.816	0.000

Source: My data

Wilks' lambda is a multivariate analysis of variance (MANOVA) whose equivalent, the *F*-test, tests for the presence of effects in the analysis of variance (ANOVA) models and tests for differences between the mean attribute vectors of the groups and for the presence of interactive affects in MANOVA models. The range of Wilks' lambda is from zero to 1 ($0 \leq$ Wilks' lambda ≤ 1). Lower values of Wilks' lambda indicate larger mean differences, thus indicating stronger group separation. In this study the *F*-test and Wilks' Lambda were the statistical methods used to check how much each dependent variable contributed to a multivariate effect. These techniques looked at the decrease in the multivariate effect as a function of removing a particular variable.

The *F*-test was used to determine which variables contributed the most to the multivariate effect and which did not. Higher values of *F*-test indicated larger mean differences, thus indicating stronger group separation or they could mean that the independent variable had a considerable influence upon the dependent variable.

Wilks' Lambda was used, like the *F*-test statistic, but the Wilks' Lambda has a value between 0 to 1. When the Wilks' Lambda does not show much value it is good. This means that the independent variable influences the dependent variable.

When the results of tests of significance have low values, they are good. This indicates that the independent variable influences the dependent variable a great deal. In this study, the author used the test of significance at 0.05. If the results from the test were over 0.05, that variable was removed. So, the F-test, Wilks' Lambda and the test of significance must show consistency.

Table 4 shows the tested 8 hypotheses concerning the usage of Internet banking. There were only 2 hypotheses (can use everywhere, easy to use) which had results of value in contrast to the rule of F-test, Wilks' Lambda and the test of significance. So, these 2 hypotheses were removed because they were not seen as having an influence upon customers' favorable use of Internet banking.

TABLE 5: TEST OF EQUALITY OF GROUP MEMBERS

	Wilks' Lambda	F	Sig
24 hour service	0.936	27.358	0.000
Cheapness	0.986	5.739	0.017
Reliability	0.984	6.402	0.012
Security	0.971	12.097	0.001
Self service	0.959	16.816	0.000

Source: My data

There were 6 hypotheses that showed consistency with the F-test rule, Wilks' Lambda and the test of significance. These 6 hypotheses were tested in the next step.

TABLE 6: TEST OF NULL HYPOTHESIS OF EQUAL POPULATION VARIANCE-COVARIANCE MATRICES

Box's M		**5.081**
F	Approx	0.839
	Sig	0.539

Source: My data

One of the rules of usage in Discriminant analysis is that all independent variables should have variance-covariance matrices of equal value in each group. Box's M statistic was selected to test this principal in this study, because this principal of equal group variance-covariance matrices allows for a simplification of the formulas used to calculate the Discriminant functions and certain tests of significance. Values should be over 0.05. Significance for Box's M statistic was 0.05. If the results were higher than 0.05, it indicated that variance-covariance of independent variables of group 1 were equal to those of group 2. This study used a modification of the principal of Discriminant analysis because Box's M statistic was 0.539.

TABLE 7: CLASSIFICATION FUNCTION COEFFICIENTS

	Non-interest in using Internet banking	**Interest in using Internet banking**
24 hour service	1.071	1.409
Reliability	1.276	1.428
Self service	0.905	1.102
(Constant)	-5.177	-7.243

Source: My data

The main goal in this stage of the analysis was to develop a model that predicted those customers who have interest or non-interest in using Internet banking. The following predictive model format was developed, where D_m is the Discriminant score for case m and f_x is the factor score (Fisher, 1936):

$$D_m = Constant + m1f1 + m2f2 + ...+m_nfn$$

An application of this model would then be:

D_m = -5.177+1.071(24-hour service)+0.905(self service)
+1.276(reliability).....(Group of non-interest to use)

D_m = -7.243+1.409(24-hour service)+1.102(self service)
+1.428(reliability) .....(Group of interest to use)

After constructing these models which can forecast the sample who should be in the Group of interest in using Internet banking or Group of non-interest in using Internet banking, the next step, Canonical Discriminant Function Coefficients are selected to test to determine what variable most affecting the group was important (see details in Table 8). This was done so that the researcher could identify what independent variables *(fn)* are the cause of the problem. If this was known, the researcher could recommend or find a method to solve the problem.

TABLE 8: CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS

	Function
24-hour service	0.514
Reliability	0.231
Self-service	0.300

Unstandardized Canonical

Source: My data

Canonical Discriminant Function Coefficients values show that the variable 24-hour service is the most important affecting variable in the sample of interest or non-interest in using Internet banking (see details in Table 9). If this was known, the researcher could recommend or find a method to solve the problem.

But the value of this step is Unstandiardized Canonical Discriminant Function Coefficients values. For increasing confidence to forecast the factors which have most affect on the sample of interest or non-interest in using Internet banking correctly.

TABLE 9: STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS

	Function
24-hour service	0.702
Reliability	0.339
Self service	0.413

Source: My data

The Standardized Canonical Discriminant Function Coefficients are presented in Table 10. The relative importance of each function is represented by the Standardized Coefficients. The larger the Standardized Coefficient Value, the greater the discriminating contribution of its respective factor score. When, the Unstandardized Coefficients (as found in Table 9) were changed to Standardized Coefficients, it was possible to identify the variable 24-hour service (0.702) as the most influential to Thai people's interest in using Internet banking.

4.3.2. Negative Responses on Internet banking

A number of variables were generated around the concept of Internet banking service development, as based on the previous literature, to identify the determinants of customers who are not interested in using Internet banking. The respondents were asked to indicate their level of agreement or disagreement with the way each of the variables in the six hypotheses reflected the events that occurred with their choice to use or not use Internet banking.

Six hypotheses which are the factors affecting customers choice to not use Internet banking

H9: Customers do not use Internet banking service because they are not aware of the service and the benefits it provides offers.

H10: Customers do not use Internet banking service because they do not find that it is easy to use.

H11: Customers do not use Internet banking service because they are concerned about safety and security of transactions over the Internet .

H12: Customers do not adopt Internet banking service because it is not reasonably priced.

H13: Customers do not adopt Internet banking service because they do not want to change from current familiar ways of completing a transaction.

H14: Customers do not use Internet banking service because they do not have access to computers/Internet .

TABLE 10: TEST TO DETERMINE THE INDEPENDENT VARIABLES AFFECTING GROUP SEPARATION

	Wilks' Lambda	F	Sig
Unawareness	0.971	11.727	0.001
Difficult to use	0.986	5.703	0.017
No computers	0.985	6.246	0.013
Unsecured	0.982	7.341	0.007
No reasonably priced	1.00	0.038	0.845
Difficult to change lifestyle	0.997	1.123	0.290

Source: My data

Table 10 shows that the six tested hypotheses concerning those who are uninterested to use Internet banking. Only two hypotheses (difficult to change life style and not reasonably priced) were not used, because they had significant values over 0.05. As a result, the author tested the remaining four hypotheses to determine the factors which had an affect upon customers who do not like to use Internet banking (see Table 11).

TABLE 11: TEST OF EQUALITY OF GROUP MEMBERS

	Wilks' Lambda	F	Sig
Unawareness	0.971	11.727	0.001
Difficult to use	0.986	5.703	0.017
No computers	0.985	6.246	0.013
Security	0.982	7.341	0.007

Source: My data

TABLE 12: TEST OF NULL HYPOTHESIS OF EQUAL POPULATION VARIANCE-COVARIANCE MATRICES

Box's M		**4.822**
F	Approx	1.597
	Sig	0.188

Source: My data

This study has correctly used the principal of Discriminant analysis because of Box's M statistic is 0.188. This indicates a variance-covariance equivalent for the two groups, because their significant values are over 0.05. This further indicates that four hypotheses were influencing the population under study.

TABLE 13: CLASSIFICATION FUNCTION COEFFICIENTS

	Non-interest in using Internet banking	**Interest in using Internet banking**
Unawareness	1.824	1.555
Security	1.609	1.393
(Constant)	-6.196	-4.745

Source: My data

The main goal in this stage of the analysis was to develop a model that predicted those customers who are interested or not interested in using Internet banking. The following predictive model format was developed, where D_m is the Discriminant score for case m and f_x is the factor score (Fisher, 1936):

$$D_m = Constant + m1f1 + m2f2 + ...+m_nfn$$

An application of this model would then be:

D_m = -4.745+1.555(unawareness)+1.393(security) .....(Group of interest to use)

D_m = -6.196+1.824(unawareness)+1.609(security) .....(Group of non-interest to use)

After constructing these models which can forecast the sample who should be in the Group of interested in using Internet banking or the Group of non-interested in using Internet banking base, the next step, Canonical Discriminant Function Coefficients are selected to determine what variable most affecting the group was important (see details in Table 14). This was done so that the researcher could identify what independent variables *(fn)* are the cause of the problem. If this was known, the researcher could recommend or find a method to solve the problem.

TABLE 14: CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS

	Function
	1
Unawareness	0.571
Security	0.459
(Constant)	-3.155

Unstandardized Coefficients

Source: My data

Canonical Discriminant Function Coefficients values show that the variable unawareness has the largest affect on the sample of interested or non-interested in using Internet banking (see details in Table 14). If this was known, the researcher could recommend or find a method to solve the problem. But the value of this step is Unstandiardized Canonical Discriminant Function Coefficients values. For increasing confidence to forecast the factors which are the most important to the samples of interested or non-interested in using Internet banking correctly.

TABLE 15: STANDARDIZED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS

	Function
	1
Unawareness	0.795
Security	0.641

Source: My data

When, the Unstandardized Coefficients (as found in Table 14) were changed to Standardized Coefficients, it was possible to identify the variable unawareness (0.795) as the most influential to Thai people's non-interest in using Internet banking.

The larger Standardized Coefficient Value means that the independent variable has considerable influence upon the customers' interest in using Internet banking. Therefore, the most important factor affecting Internet banking use in Thailand is its 24-hour service (Standardized Coefficient value = 0.702), while self service is the second most important factor (0.413). Reliability is the third most important factor (0.339). The ability of the variables to discriminate between customers who are not interested in using Internet banking is the most important factor affecting Internet banking use. This is evident by the variables unawareness (0.795) and lack of security (0.641).

5. Discussion and Conclusions

The important attribute of most samples who are interested in using Internet banking such as, females or males who have an educated level of at least a bachelor's level, were 18-25, 26-35 years old and were state enterprise employees with an approximate income over 10,000 Baht/month. Most of this sample liked to use Internet at home and the best sources of information about Internet banking for them are the branches of the banks. The important attribute of most samples who are not interested in using Internet banking such as, females or males who have an education level below bachelor's level, were over 36 years old and with an approximate income below 10,000 Baht/month.

Furthermore, this research has indicated that the ATM network is still the most popular delivery channel in Thailand. Moreover, consumer preferences reveal that these respondents

are not generally predisposed to radically change their behavior nor wholeheartedly adopt Tele-banking and/or Internet banking. This study has also explained the demographic variables which have an affect upon ATM usage as follows: it has found that higher educational levels and government officials or individuals from state enterprises were positively related to ATM usage. This is most likely because most of the salaries of government or state enterprise officials in Thailand are paid through ATMs. The lowest age group (18-25) was negatively related to ATM usage. The main consumer motivation for using ATMs was related to accessibility benefits. Individuals seem to believe that improved technology service quality presented no security risk and was compatible with their need for simple and fast transactions. This result is consistent with previous research, such as Leblanc (1990) who found that the main consumer motivation for using ATMs was related to accessibility benefits. He also found that users tended to be more highly educated and believed that such technology improved service quality, presented no security risk and was compatible with their need for simple and fast transactions. Likewise, Rugimbana (1995) revealed that the most significant variables determining customer usage of ATM technology were those of convenience, ease of use and compatibility with people's lifestyles.

The branch network was also found to be the most commonly used channel for transaction banking, i.e. paying either by cheque or by cash into a current account. However, when withdrawing cash or obtaining balances on their accounts, consumers expressed a preference for using automated teller machines (ATMs), although banks try to use either telephone or Internet banking to replace the ATM and branch network as the dominant delivery channel. In fact, the results indicate that consumers have a preference for a mix of delivery channels rather than exclusive reliance upon any one single channel. In addition to the choice of delivery channel being influenced by a range of socio-economic factors, there is also a possibility that influence may come from the generic nature of the financial services being purchased. Moreover, the evidence indicates that the purchase and subsequent management-monitoring of financial services can involve individual consumers using a range of alternative delivery channels.

Competitive pressures on the banking sector in Thailand to reduce their costs and simultaneously increase revenue suggests that they will, nevertheless, continue to rationalize branch networks. However, public resistance to branch closures means that this will not be easy. Equally, failure to reduce the size of branch networks could result in a duplication of delivery channels and a commensurate increase in costs. The 24-hour service factor, the self service factor and the reliability factor in descending order of importance, are the three factors

found to contribute the most to customers who are interested in using Internet banking. In addition, the unawareness factor and security factor in descending order of importance, are the two factors found to contribute the most to the discriminating power of the function to customers who are not interested in using Internet banking.

Banks in Thailand will, therefore, have to introduce proactive strategies that are primarily aimed at educating consumers and encouraging greater usage of Internet banking. In this respect, the paper has shown that if these strategies are to be successful, they must focus on considerations, such as improved service quality, i.e. providing the system of security, promotion about the benefit of Internet banking. Similarly, the need for human interface might be important in the acquisition of investment-based products. The banks must, therefore, aim to provide consumers with a cost effective mix of different delivery channels that combine the advantages of Internet banking with some of the more human, social and relational aspects of branch networks. Respondents also expressed concerns about security and the basic safety of new technology, especially Internet banking. This is an important consideration not least because trust is a fundamental prerequisite of any banking activity and unless consumers can trust new technology, they will be reluctant to use it. Widespread acceptance of Internet banking, therefore, is equally dependent on bank strategies aimed at alleviating these fears and increasing the predisposition of individual customers to use the Internet. In addition to, these models can classify the customers who are interested or not interested in using Internet banking. The two models are as follows:

Model 1: D_m = -5.177+1.071(24-hour service)+0.905(self service)
+1.276(reliability).....(Group of interest to use)

D_m = -7.243+1.409(24-hour service)+1.102(self service)
+1.428(reliability) .....(Group of non-interest to use)

or

Model 2:

D_m = -4.745+1.555(unawareness)+1.393(security) .....(Group of interest to use)

D_m = -6.196+1.824(unawareness)+1.609(security) .....(Group of non-interest to use)

Usage of these models depends on data for example if the researchers have data which variable consist of 24-hour service, self service and reliability. Model 1 is selected to test the sample who are interested or not interested in using Internet banking. If the researchers have data with variables of unawareness, security self service. Model 2 is selected to test the sample who are interested or not interested in using Internet banking. The results after testing

these models for their customers, the banks can know who are interested in using Internet banking. That is the target customers. For example, Mr. A is one individual from the comprehensive list of 400 of the bank's customers. If the bank selected model 2 to test Mr. A by using the Likert Scale in questionnaires, data obtained from Mr. A revealed: level of unawareness of Internet banking= 5, level of confidence of Internet banking= 5

Applying his data into the equation, would reveal:

D_m = -4.745+1.555(unawareness)+1.393(security) .....(Group of interest to use)

D_m = -6.196+1.824(unawareness)+1.609(security) .....(Group of non-interest to use)

D_m = -4.745+1.555(5)+1.393(5) .....(Group of interest to use)

= -4.745+7.775+6.965

= 9.995

D_m = -6.196+1.824 (5)+ 1.609(5) .....(Group of non-interest to use)

= -6.196+9.120+8.045

= 10.969

Use D_m value has much more value to identify that group which the sample should be from. From this example, the results show that D_m value 10.969 has much more value than 9.995 value. So, the bank can forecast that the sample is the person who is not interested in using Internet banking. The bank does not lose the time and budget for motivating this sample to use Internet banking if the bank has a resources limit. But they should motivate the sample who are forecasted as being interested in using Internet banking. In addition, they can select only the factor which has the most affect to the customers' interest or non-interest to use Internet banking before considering other factors such as: unawareness factor. The bank must use the best communication through the branch and other channels to provide information about Internet banking to the customers. After that, if the banks have enough resources, they manage the next factor that is the security factor.

Banks cannot assume that consumers are homogeneous in terms of their attitudes towards Internet banking. Additional insights, which this paper provides on the socio-economic and demographic factors indicate that consumer attitudes differ according to age, gender, income, education, etc. Consequently, research into these factors is extremely important in enabling financial service providers to target specific segments of the customer base with messages aimed at changing consumer attitudes and ultimately their behavior.

6. Research Limitations and Future Direction

Internet banking in Thailand is a new product of financial service development involving a complex mixture of sequential and interactive events. Therefore, there are two main research limitations such as:

1) It is difficult to find bank customers who have never used Internet banking or applied to the banks to use Internet banking, because it is a new product, so, there are few customers who have ever used Internet banking or applied to the banks to use Internet banking.

2) In addition, it is difficult to find customers who apply or do not apply to the banks to use Internet banking. But it is possible to gather some aggregate data also, it is very difficult to gather this data from several banks for comparison purposes because of the ethics of the banks which cannot disclose the names of their customers to external persons.

If the author can eliminate these research limitations and obtain data from customers who have their own accounts, experience with Internet and who have ever applied to the banks to use Internet banking, and have this data for several banks for comparison between them, it will have better results to understand why the customers use or do not use Internet banking.

It is not surprising to find some unexplained variances in the factor solutions and some misclassification of results from the predictive ability of the Discriminant function. Some of these unexplained variances may be the result of different competitive and economic climates occurring over the time frame for the sample. Some variance may also be attributable to the possibility of excluded factors that may influence the development process. For example, budget restrictions of banks may affect the promotional information on Internet banking.

This study has shown that the newness factor in Internet banking may affect its development and acceptability as most people are unaware of its availability or of its added value.

This study has focused narrowly on the issues and factors influencing customers' interest or non-interest to use Internet banking. The results of this study indicate that only a few influential factors contribute to a customers' decision to use/not use Internet banking.

Further empirical research is required to determine the transferability of the findings to other issues such as:

-How banks can motivate customers to increase their use of Internet banking in Thailand and how banks can build brand loyalty from customers. Also needed is an examination of other innovative features and web sites on the Internet, a measurement of consumer preferences over time for these innovative Internet services and qualitative studies in the form of in-depth case studies which can provide a wide base of knowledge about successful usage of Internet banking from other countries.

In conclusion, this study provides a predictive model that identifies the character of customers who interest or non-interest to use Internet banking. The results of this study are beneficial to the Thai banking sector in terms of providing an understanding of details about customers who prefer to use Internet banking. In addition, banks are able to gain from results by applying them to their strategic implications to serve more specific benefits, products and services to target groups. It also points to a number of research questions that make this subject a rich area for future investigation.



University of South Australia

The Development and Implementation of an Internet banking System in Thailand

(Research Paper 3)

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Submitted on this 30th of November, 2004 for the

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Doctoral of Business Administration

RESEARCH PAPER 3

The Development and Implementation of an Internet banking System in Thailand

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Abstract: The Development and Implementation of an Internet banking System in Thailand

The purpose of this paper is to develop a conceptual framework based upon the customer survey results found in Paper Two and to make recommendations to Thai banks on how to provide motivation to Thai customers to use Internet banking. Therefore, all variables (age, income, education, 24 hour service, self service, reliability, unawareness and lack of security) have been selected to construct strategies for recommendations of what Thai banks should do to improve the percentage of transactions via Internet banking. This may build up confidence for Thai bank customers and can provide more of an opportunity for people to increase their use of Internet banking.

Thai banks' heavy promotion of the service and its benefits through some channels of the bank, such as branches and/or ATM's may motivate customers to increase usage of Internet banking. Possible solutions could include giving wider publicity to underscoring the benefits, demonstration kiosks at supermarkets or public libraries etc., where Thai people can have hands-on experience in Internet banking.

Thai banks should design attractive web sites for their customers. Web sites should provide details, rational information about the bank and its offerings.

Internet banking for Thai banks could develop various new functions, such as a shopping center for various financial products where insurance policies, pension funds, stock brokering, equity plans and unit trusts could be purchased.

Thai banks should provide real-time processing for their customers, because in real-time processing, they can use their computers to transfer money into checking accounts, so customers can see transactions at an ATM instantly.

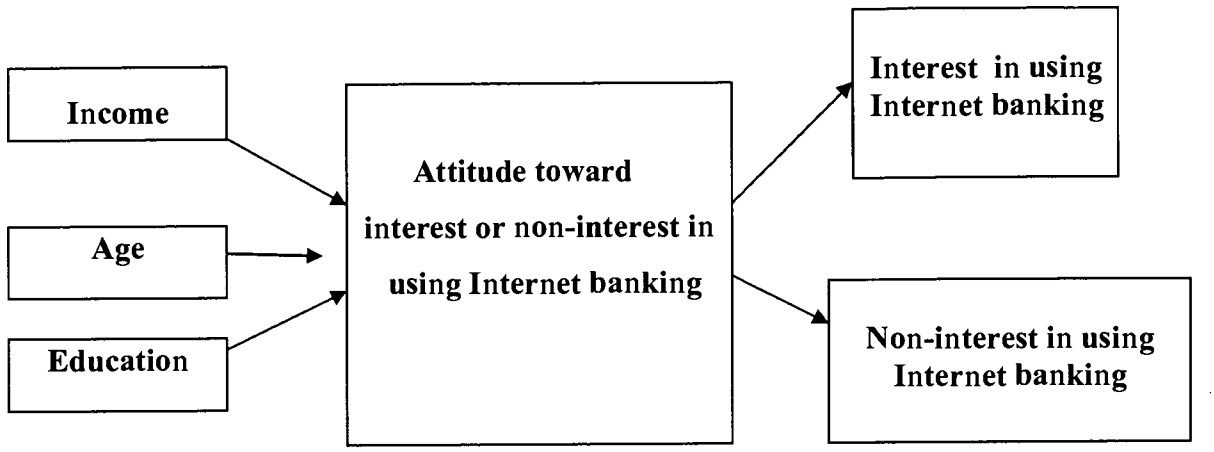
The Development and Implementation of an Internet banking System in Thailand

1. Introduction

The purpose of this paper is to develop a conceptual framework of customer survey results (paper 2) and to make recommendations to Thai banks to help persuade Thai customers to use Internet banking. The findings from the customer survey were instrumental in exploring the factors that are affected with customers' interest or non-interest in using Internet banking. Complex probability sampling was selected in the customer survey, using multistage cluster sampling, by selecting 400 respondents from various districts in Bangkok.

The customer survey results revealed a number of potentially interesting age-related differences. For example, younger consumers appear to value the convenience or time-saving potential of Internet banking more than older consumers. Similarly, younger consumers regard the lack of face-to-face contact as less important than older consumers. In regards to Internet banking, younger consumers are attracted to it more than older respondents, perhaps by the possibility of improved levels of service, the ability to bank whenever they choose (24 hour service), the enhanced convenience and the possibility of lower fees. The income levels and education level of respondents seem particularly important in determining whether Internet banking is likely to be used or not. It is possible that consumers with lower incomes have less opportunity to access the computer and the Internet at work and with lower education levels, are unfamiliar with the Internet. These results are consistent with previous research which has revealed that Internet banking users can be classified as highly educated, relatively young and wealthy people with a good knowledge of computers and, especially, of the Internet. It has been widely recognized that demographic factors have a great impact on consumer attitudes and behavior regarding Internet banking (Daniel, (1999); Sathye, (1999); Jayawardhena and Foley, (2000); Mattila, (2001); Karjaluoto, (2002); Karjaluoto *et al.*, (2002)). Moreover, a typical Internet banking user has been identified as a high involvement person belonging to the upper middle class or as a member of the career-orientated upper middle class (Roemer and Buhl, (1996); Jayawardhena and Foley, (2000)).

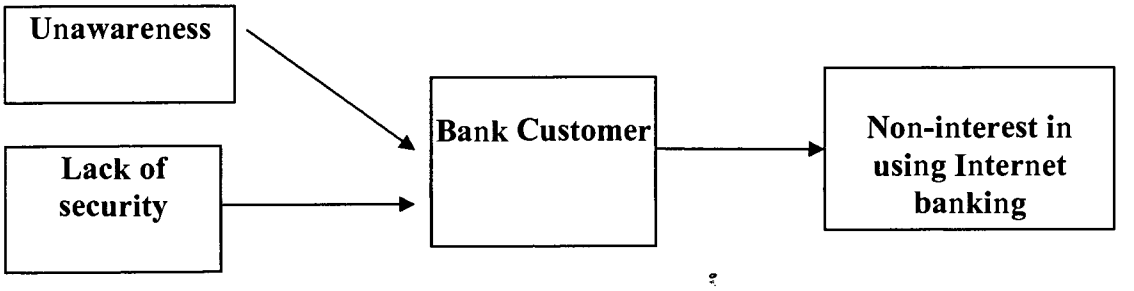
Figure 2: Demographic data affecting customers' interest or non-interest in using Internet banking



Source: My data

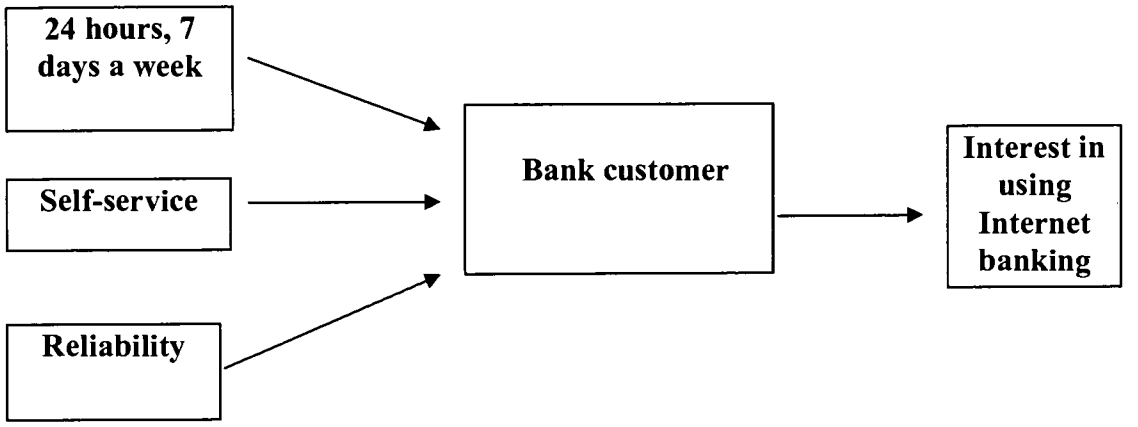
The author has used Standardized Discriminant Function Coefficients to test the factors affecting customers interest or non-interest in using Internet banking. The larger Standardized Coefficient Value means that the independent variable has considerable influence upon the customers interest or non-interest in using Internet banking. Therefore, the most important factor affecting Internet banking use in Thailand is its 24-hour service (Standardized Coefficient value = 0.702), while self service is the second most important factor (0.413). Reliability is the third most important factor (0.339). The ability of the variables to discriminate between customers who are not interested in using Internet banking is the most important factors affecting Internet banking use. This is evident by the variables unawareness (0.795) and lack of security (0.641).

Figure 3: Bank customers who are non-interested in using Internet banking



Source: My data

Figure 4: Factors affecting customers' interest in using Internet banking



Source: My data

However, all variables (age, income, 24 hour service, self service, reliability, unawareness and lack of security) were selected to construe the recommendations of what Thai banks should do to improve the percentage of transactions via Internet banking. In addition, the author recommends other aspects which would help Thai banks increase efficiency in Internet banking services.

2. Reasons for Thai banks to Continue Developing Internet banking Services

2.1 To increase use of computers and the Internet

Developments in technology have dominated the computer revolution in Thailand during the last decade. Statistics provided by the National Statistical Office, Ministry of Information and Communication Technology (ICT) in Thailand established that a dramatic increase in the number of users has taken place since 1991. In that year the total number of users was only 30 nationwide users; however, by 2003, this number was forecast to have risen to well over 65 million users throughout the kingdom. (www.nso.go.th/thai/stat/indicators/eco/ict.html). One explanation for this remarkable increase was the Thai governments' involvement in policies launched to assist the Thai people to increase their use of computers and the Internet. Social and work networks may be important for introducing Thai people to the Internet irregardless of whether individuals are taught by friends or family.

TABLE 16: NUMBER OF INTERNET USERS IN THAILAND

Year	Number of Internet users in Thailand
1991	30
1992	200
1993	8,000
1994	23,000
1995	45,000
1996	70,000
1997	220,000
1998	670,000
1999	1,500,000
2000	2,300,0000
2001	3,500,000
2002	4,800,000
2003	6,000,000

Source : www.nso.go.th/thai/stat/indicators/eco/ict.html

Igbaria *et al.*, (1995) suggests that prior experience with technologies, especially prior experience with computers, impacts consumer beliefs and attitudes towards related systems and technology. In the study conducted by Igbariea et. al. it is suggested that not only is prior experience an essential factor underlying attitudes, but also prior experience with computers has a greater effect on attitudes to use of a new technology than demographic characteristics. Similarly, Au and Enderwick (2000) claim that the more experience a consumer has with technology, the better understanding a consumer will have about new technologies. Thus, a greater understanding of technology allows the consumer to better appreciate the added value brought by new technological improvements, such as ATMs, Tele-banking, and Internet banking, Prior computer experience is also associated with the use of PCs, the Internet, and e-mail, to mention a few.

In addition, further estimates from the National Statistical Office, Ministry of Information and Communication Technology (ICT) in regards to concerning computer usage in Thailand reveals the following:

TABLE 17: COMPUTERS USAGE IN THAILAND, 2001-2002

	Index	2001	2002
1	Number of computers (Average per 100 households)	5.7	6.20
2	Number of computers (Average per 100 people)	1.5	2.2
3	Internet usage (Average per 100 people)	5.60	7.31

Source : www.nso.go.th/thai/stat/indicators/eco/ict.html

The usage of computers for 2003 was expected to increase because the Ministry of Information and Communication Technology (ICT) launched the computer project for low-cost PCs in May 2003, which received a good response from the public. In this program, Thai people can book an unlimited number of low-cost PC's. As a result, the people have increased their use and subsequent knowledge of the Internet. This could greatly benefit the banking sector because a massive number of people now have direct access to the Internet and to possibilities to which Internet banking can bring.

During the initial stages of Internet banking services in Thailand, banks may face some obstacles, including lack of clear regulations to support Internet banking services, some constraints in the Internet infrastructure, limited Internet access for some groups of Thai citizens, and unfamiliarity by some customers to its use in the early stages of services, etc. After the Thai government supports both cheap Internet and low price computers, Internet banking may continue its development to better respond to the daily lifestyles of people in modern times. The problem Thailand is currently facing is similar to the USA where US consumers began buying more PCs than television sets in 1994. In 1995, 35 million Americans or 12.7 percent of all American households had computers in their homes. In 1999, there were 13.2 million home computers sold in the USA. In May 1995, Wells Fargo (www.wellsfargo.com) became the first bank in the world to begin offering customers access to their accounts over the Internet. However, this early system only allowed customers to see, not access, their accounts. Wells Fargo has come a long way since the days when it transmitted or delivered money in stage coaches. Today, it is a leader in Internet banking.

Although the research results from paper 2 showed that Internet banking was the least popular service in Thailand in 2002 it may develop similar to the USA in 1995. The more Thai people who have access to the Internet and to computers, the more chance they stand to change from previous banking channels to Internet banking. Consumer behaviour literature suggests that a reference group often has an impact upon consumer behaviour (Kotler et al., 1999). However, banking is claimed to be extremely personal in the sense that it is seen as independent from other people's examples or influences. Although family influences on the adoption of Internet banking tend to be strong, the impact of other reference groups is still a relatively uncharted territory. Bagozzi (2000) has shown with empirical data, that social factors and forces are strong determinants of consumer behavior. In this sector, the meaning of prior experience, access to a computer and reference groups are seen as an extensive construct, referring to all factors influencing consumer behavior. Therefore, the more Thai people increase their access to the computer and to the Internet, the more they can access Internet banking.

2.2 Average income of Thai people has risen steadily

Estimates from the National Statistical Office, Ministry of Information and Communication Technology (ICT) about the incomes of Thai people is as follows:

TABLE 18: AVERAGE HOUSEHOLD INCOME IN THAILAND BETWEEN 1998-2002

Index	1998	1999	2000	2001	2002
Average household income (baht/month)	12,492	12,729	12,150	12,185	13,418
Average household expenses (baht/month)	10,389	10,238	9,848	10,025	10,908

Source: www.nso.go.th/thai/stat/indicators/eco/ict.html

The results of the customer survey from paper 2 show that income is a factor which affects Thai people's interest in using Internet banking. Table 3 shows that the average income of Thai people has risen steadily since 1998. This may provide more of an opportunity for the people to increase their use of Internet banking for as published literature suggests, as income levels increase, so does computer usage.

Thai customers are increasing their purchasing of goods and services through electronic commerce (E-commerce). E-commerce provides retailers with the means to buy, sell and provide support for business transactions via computer networks. Electronic commerce in Thailand has grown continuously, from an average market turnover of Bt22 billion in 1998 to Bt22.5 billion in 1999, and is forecasted to reach Bt24.00 billion in 2003 (www.tfrc.co.th). During this period, domestic trading constituted 80 percent of the total volume, while the remaining 20 percent was international. Thai banks are likely to follow this business trend by providing more Internet banking. Internet banking represents a critical element of the infrastructure needed for the successful development of e-commerce because it is a selected tool of payment. Internet banking is not only an infrastructure but includes a wide range of informational services for organizing, searching, retrieving, filtering and summarizing information and for processing transactions, sharing supplier catalogue information and for supplying chain co-ordination.

TABLE 19: ENTREPRENEURS IN THAILAND WITH ACCESS TO COMPUTER AND INTERNET IN THEIR PLACE OF BUSINESS

	Index	2001	2002
1	Computer usage in the business sector (%)	9.85	10.5
2	Internet usage in the business sector (%)	37	50
3	Entrepreneurs websites	6.10	7.60

Source: www.nso.go.th/thai/stat/indicators/eco/ict.html

2.3 The Thai banking industry is becoming very competitive and dynamic.

The Thai banking industry is becoming very competitive and dynamic. The increased level of competition for Internet banking is currently forcing banks to be in a constant state of attempting to keep up with one another. If one introduces Internet banking or a new feature, service or tool that works, there is pressure for others to match it. Table 5 depicts this competitive rivalry and shows the eight leading Thai banks' capital investments in electronic banking for the year 2001.

TABLE 20: BANKS' INVESTMENT IN ELECTRONIC BANKING, 2001

	Bank	2001 (million baht)
1	Kasikorn Bank	2,000
2	Siam Commercial Bank	1,000
3	Krung Thai bank	3,000
4	Krungsri Ayudhaya Bank	750
5	Asia Bank	1,000
6	UOB-Radanasin Bank	800
7	Siam City Bank	1,000
8	Bangkok Bank	2,500

Source : Money Magazine, 2001, Vol 1, No 5

2.4 Benefits of Internet banking

Internet banking has many features that can provide benefits for customers. These characteristics provoke interest among consumers, and generate success for Internet banking in Thailand; convenience, fee structure, and e-mail access.

Convenience is important because if bank customers can complete most of their banking business from either their home or their office, they will not have to spend additional time going to a branch or an ATM. Thai bank customers can do their banking business anywhere, anytime 24 hours a day, 7 days a week.

Of equal importance is the lower fees associated with Internet banking. Previously Thai bank customers paid more in fees for transferring money but with Internet banking these fees are much lower. The cost of one transaction through a branch of the bank is about 12 baht but one transaction through Internet banking costs about 2.50 baht (Business.com magazine, August, 2003). So, the price of Internet banking is cheaper than another channels.

E-mail access provides Thai consumers with the ability to request information from their homes with greater ease. For example, some banks, such as Krung Thai bank send loan interest rates to customers who request them. It is the combination of mass and interpersonal communication found on the Internet that has not only provoked the banks to rethink their

marketing strategies but also because of its unique ability to provide a tool for many-to-many communication scenarios. This characteristic of the web is what makes it such a successful advertising medium. Quinn (1996) supports this claim by arguing that this new breed of mass communication has enabled banks to have a very personalized one-on-one experience with their customers. It is believed that this heightening of customer intimacy will enable marketers to learn more about the individual behaviors and trends of their customers, thereby meeting consumer needs more efficiently.

3. Conclusion and Summary

The major challenges for Thai banks after the economic crisis in Thailand 1997 were first, they needed to satisfy complex and difficult customer needs. Second, they needed to face up to increased competition from within the sector and from new entrants coming into the financial services market. Finally, they needed to continually invent new products and services in the light of these changes.

Central to these challenges was the delivery strategies of strategic banking services. Internet banking was presented as an answer to many of the inherent disadvantages of a traditional branch. It was more than just another delivery channel for existing products and existing customers. Internet banking provided many opportunities for Thai banks. Internet banks can act as a facilitator in Internet payment systems or act as a provider of other services and a shopping opportunity and thus assist the growth of electronic commerce in Thailand. Other advantages of using Internet banking are a reduction in costs, such as lower advertising costs (e.g. providing brochures, catalogues, corporate information on a web site is considerably cheaper than traditional advertising and printing), lower transaction costs (e.g. the consumer fills in an order and/or transaction forms and the payment is automatic), improvements in productivity by allowing using computers to answer information requests and search for information. Finally, the Internet creates an additional channel of distribution for a bank's products/services and has the potential to increase profitability for a Thai bank by bypassing intermediaries.

It can enhance the bank's reputation and attract new customers. The size of Thai banks is not important (there is no need for large staff, or economies of scale) because the cost of gaining access to the web is miniscule. Internet banking can be of great help to improving the aspects of convenience, as it allows Thai bank customers to do their transactions from home, allows for 24 hour, seven days per week, and is well suited to be the point of customer contact for a

wide range of self-service applications. This means that Thai bank customers can contact banks anywhere, at anytime, and always have the same level of service. One capability of web sites is that they provide an efficient system for the delivery of information and services to customers, automating transactions and services. In addition to convenience, the Internet offers customers potential cost saving benefits. Prices tend to decrease as customers have access to more information on the best price/performance mix from a variety of sources via the Internet. Another difference between the physical service environment and the web site interface is that banks are able to customize their service to individuals, particularly when they interact directly with the customer. A web site is a powerful marketing tool with comparatively low outlays and can be used to promote other products and services to generate advertising revenue.

In spite of these advantages, the provision and the uptake of Internet banking has been slow. The unawareness factor and the security factor in descending order of importance, are the two factors by which Thai bank customers are not interested in using Internet banking. This analysis shows that Thai banks would do well to develop future awareness and security. Additionally, Thai banks should develop future functions as a shopping center for various financial products such as insurance policies, pension funds, stock brokering, equity plans and unit trusts. These services are currently limited.

4. Recommendations

The results of the customer survey from paper 2 show that unawareness and security are factors which affect Thai people's non-interest in using Internet banking. These recommendations are ways which may help Thai banks improve the percentage of transactions via Internet banking, as they build up confidence levels for Thai bank customers and provide more of an opportunity for the Thai people to increase their use of Internet banking.

4.1 Reducing the Unawareness Factor Among Thai Consumers

4.1.1 Reduction of the Unawareness Factor for Internet banking and Recognizing Its Benefits

Internet banking is a new product of the Thai banking sector and of the market in general. It is also a new delivery process, so an aggressive marketing communications strategy is needed, in the sense that innovative products that are promoted extensively have a higher chance of success in the market than similar products that are not given appropriate communications support during their launch. The systematic planning for the introduction of Internet banking in Thailand has become more important for the Thai banking sector if it wants to remain competitive. The program for developing new products such as Internet banking may be the most profitable growth strategy and essential processes for success, survival and renewal for all Thai banks in competitive markets. Thai banks are confronted with four important issues, namely *when* to launch the new product (i.e. timing), *where* to launch it (i.e. geographical strategy), to *whom* (i.e. target market selection), and finally *how* to launch it (i.e. introductory market strategy) (Kotler, 1997). This section provides the impetus for focusing on the *how* aspect of giving information to Thai customers or launching and especially, on the integration of marketing communications (IMC) (i.e. advertising, personal selling, public relations and sales promotion). This is considered the most costly part of a product launch, however, there are methods that can be used to encourage and develop customer awareness in Internet banking.

First, Thai banks should use advertising, which includes TV, radio, newspaper and magazines, pamphlets, leaflets, articles about a product, press kits, detailed product manuals for the sales-force. and articles about a product's performance. Whenever possible, the distribution of these promotional gimmicks should be distributed at places where young people like to go, such as shopping malls.

Second, Thai banks should use intensive sales as the most important marketing communications factor leading new retail financial products to success. Products that are strong in this factor should be presented at fairs and trade shows, have an extensive indoor advertising presence and should be promoted indirectly in conjunction with other company products (i.e. cross-selling techniques).

Third, Thai banks should use direct marketing strategies through the Internet and direct mailings, to measures the degree of use of Internet advertising, direct mailings, and use of the Internet as a selling point. Tele-marketing, the use of direct response advertisements, and sales efforts on the telephone, should also be used.

Fourth, Thai banks' heavy promotion of the service and its benefits through some channels of the banks, such as the branches and ATMs, should be conducted to motivate customers to increase their usage of Internet banking. Possible solutions could include giving wider publicity to underscoring the benefits, demonstration kiosks at supermarkets or public libraries etc., where Thai people can have hands-on experience of Internet banking.

Fifth, Thai banks should design web sites attractive to customers. Web sites should provide details, rational information about the bank and its offerings. These websites should motivate customers with an information/image-rich communications message. Examples of brand awareness and image building could include: postings of environmental policies, involvement in community projects, and corporate reports. The bank could also allow visitors to read about sports and fitness, hear from bank-sponsored athletes, and learn about human-rights activities, among other things.

4.1.2 Increasing Awareness of benefits and Usage of Internet banking

This part of the study provides recommendations or demonstrations for Thai bank customers. The demonstrations may allow Thai bank customers to understand about Internet banking. If Thai bank customers understand how to use Internet banking and understand the benefits of Internet banking, then they should be encouraged to use this service. These recommendations are discussed below.

Thai banks should use a trained direct salesforce, which captures the selling efforts made from the points of sales and particularly at customer sites and conduct training seminars for the salesforce.

Thai banks should use public relations campaigns, which refer to the set-up of an official product presentations, and product seminars-lectures for customers. Thai banks should provide computers in branch offices for customers to "test-use" the service. Workstations in branch offices could provide an excellent way for customers to become comfortable with

cyber banking. Furthermore, this would provide customers with valuable hands-on experience supported by the availability of trained bank staff who would be available to field questions and/or problems that may arise. Customers would also be able to obtain answers to questions related to security, privacy, the speed of the demonstrativeness of computer's Internet connection, ask about fees, as well as all the features and functions available, etc.

Thai banks should introduce proactive strategies which are primarily aimed at educating consumers and encouraging greater usage of Internet banking. Encouragement could come from banks in several ways:

- Initially, Thai banks could make demonstration documents available to customers so that they can understand and become aware of the benefits of Internet banking before signing up and applying. These demonstration documents would allow the customers to learn how to view funds, transfer funds between accounts, pay bills, and much more. Customers could obtain these demonstration documents at every branch office of the bank.

- Thai banks should train its staff to give information to customers. This information should include both customer benefits as well as details on how to use Internet banking. Bank staff could provide other information, on such topics as, security, privacy, the speed of the computer's Internet connection, fees, as well as any other features/functions available to customers.

4.2 Recommendations and Trust

This part of this study provides recommendations on the methods Thai banks could utilize to instill customer confidence with Internet banking. If bank customers have confidence in the security of Internet banking, it may encourage them to use this service. Security is one of the factors that affects customer trust in Internet banking. The results from the customer survey (paper 2) point out that Thai bank customers do not believe in the security of Internet banking. This reduces customers' level of trust, discouraging them from engaging in online information searches and from conducting online banking transactions. Thai banks should use communication as an antecedent of trust. Communication is considered a multidimensional construct. The variables that constitute communication are speed of response and quality of information. Pennathur (2001) found that man-machine communication, or at least the belief that the electronic system has the characteristics of social presence, is critical to building

online customer trust. The extent to which a web site can enhance its social communication in terms of openness, speed of response, and quality of information will influence the ability of the site to address needs for online customers, who in turn will respond to it. Thus, the higher the degree of social communication displayed by bank web sites, the greater the influence on customers' trust and increased likelihood of them engaging in online transactions. Therefore, speed of response, and quality of information will influence Thai bank customers positively related to trust.

Of particular importance is the need for Thai banks to incorporate encryption, protection, identify verification and authentication into their security systems for Internet banking. Each of these protective security measures are vital to the successful implementation of Internet banking systems, each one is discussed in detail.

Encryption is defined as the process of translating information from its original form to an encoded, incomprehensible form. The encryption mechanisms are a combination of complex mathematical algorithms and keys. The process of encryption on the web is implemented through the use of web servers and browsers that are built with a technology referred to as secure socket layer (SSL). When such a technology is implemented, the consumer uses the 'https' protocol instead of the traditional 'http' protocol used to communicate with the web server. The consumer is also introduced to this mechanism when web sites include statements such as click here for a secure transaction, or through dialog boxes that browsers present to indicate that the transaction is secure. Moreover, the image of an unbroken key or lock at the bottom of a browser denotes that the transaction is encrypted. Thus the visible nature of this mechanism should influence security perceptions.

Protection can be defined as the process through which customers are satisfied with the fact that their personal information is adequately safeguarded by the entity collecting the information. This process is primarily concerned with intrusions at the point of storage or destination. Protection is typically signaled to the consumer in many ways such as through disclosure policies. While these policies are primarily oriented towards privacy protection, they also include assurances about who is collecting the data, how it is stored, and how inaccessible it is. Internet bankers typically employ the use of sophisticated firewall technologies to prevent unauthorized attacks or intrusions. Firewalls are the first line of defense for banks networks. A firewall is a combination of hardware and software that separates a local area network (LAN) into two or more parts for security purposes. All public connections to and from the bank's network initially pass through a firewall, which acts as a

gatekeeper to give access to valid requests and, in the end, block out all other requests and transmissions (Cantin, 1999). In addition, firewalls can be implemented between banks to allow certain customers access to secure data. Consumers are further introduced to this process through the media that often carries reports of popular web sites that have been hacked into. Given that protection is a commonly encountered mechanism for information security, its extent should also influence consumer security perceptions.

The most important difference between Internet banking and traditional transactions is the lack of implicit identity verification associated with the transaction. For example, the familiarity of "The Mall" logo in Thailand is often sufficient for consumers to assure that they are indeed at "The Mall" department store website. In cases where the consumer is not familiar with the store location, a yellow pages reference often suffices. In contrast, this experiential aspect of the transaction is clearly not present in the online world. It is not only relatively easy for someone to create a phony web page, but it is also equally possible for a malicious operator to create an entirely spurious web site. For example, do all consumers know that Citibank is housed at "www.citibank.com" and not at "www.citibank.net" or even that Citibank is spelt with an "i" and not a "y" as in Citybank (Figure 13). Indeed, there are numerous examples of sites that have actually benefited from typographical errors. However, when consumers are not aware of the exact domain name, they may rely upon established portals such Yahoo! (www.yahoo.com) to verify the accuracy of the domain name (Figure 17). Given that verification is a commonly encountered problem, its extent should be expected to influence consumer security perceptions.

Authentication is defined as the process through which an Internet bank can be established through a trusted third party that guarantees that the bank is indeed who it claims to be. Independent third parties such as Verisign.com (www.verisign.com) provide these guarantees (Figure 15-16). The consumer is typically introduced to this mechanism through the presence of the authenticator's seal on the entity's web site or through the exchange of a digital certificate when coupled with encryption. Given that authentication is another implicitly perceptible mechanism for information security, it should also influence consumer security perceptions.

Given these facts on security and privacy, Thai banks should provide bank customers with details about its security system. If the bank does not provide this information or bank customers cannot find a security statement, customers may call the bank and ask if it has one posted on its site, if not, customers may not trust the bank. Bank customers want the bank to

have a system that automatically logs off if it remains idle for a certain amount of time. This is the best way to stamp out fraud at their end if a bank customer gets called away from his/her computer by someone at the door. For example, Wells Fargo Bank (www.wellsfargo.com), gives a detailed explanation of its security system. It also gives its Internet banking site users a 100 percent guarantee for any funds improperly removed from the bank customer's account (Figure 14). If Thai banks do not provide details about its security system, they might lose customers. This information ensures Thai bank customers that their information or money in their account is secure. Thai bank sites should be designed in a way that can address personal financial problems of individual customers while at the same time effectively communicating the trustworthiness of the site. In addition, integrating human assistants into web systems is a way to provide efficient user support and increases online customers' trust in a site.

5. General Recommendations

5.1 Thai Banks' Strategy to Slowly Move Towards the Development systems of a Complete Range of Internet banking Services

In embracing the Internet and exploiting its potential, a firm seems to go through different stages during which its role is seen to change. These different levels of exploitation are captured in different frameworks, which more or less pick up the various stages assimilating the new technology. The following are recommendations for Thai banks to adopt Internet banking and how it can be implemented through its four main stages.

The first stage consists of the presentation of information to customers, which involves an initiative to launch a basic on-line presence. The presentation of this information may involve one-way communication, such as informing customers about products and services, or two-way communication, involving some degree of interaction whereby users are allowed to send electronic mail to the bank in order to make enquiries, suggestions or complaints. In this stage, the overall purpose of using the Internet is a marketing one, namely to enhance the image and supply product information. At this point the bank has not set any formal structure for the Internet unit or Internet-related activities. As such, neither are given much visibility within the organization but are mainly driven by individual interests.

This can be seen as the first step a bank takes towards improving customer services through providing more information about its services and products. It is not very innovative since the Internet is simply used as yet another information channel. Usually customers would require more information, more interaction and transactions, and in response to such demands further investments in money and attention would be devoted. Alternative banking channels via PC/Internet have been in place in various banks in Thailand beginning in 1999. At that time, there were thirteen Thai commercial banks in Thailand but only six of these banks provided Internet banking (Figure 6-11). Kasikorn bank was the first bank to introduce Internet banking services via the World Wide Web in 1999. Asia Bank followed suit in the same year when they launched Internet banking at www.bankasia4u.com. Other banks soon began to offer Internet banking services. Bangkok Bank launched its service at www.bangkokbank.com, Krung Thai Bank, at www.ktb.co.th, Krungsri Ayudhaya Bank, at www.krungsri.com, and Siam Commercial Bank was launched at www.scb.co.th. According to Money Magazine (May, 2001), in this first stage, Thai banks should function simply as electronic brochures where customers can learn what a bank has to offer, but cannot complete any actual business online. However, it would be ideal if the basic banking functions would allow bank customers to complete simple transactions, such as transaction reviews, book balance update and other financial transactions.

In the second stage, a small full-time technical group of staff should be assigned the responsibility for establishing and maintaining the Internet site. The investment at this stage still lacks a clear vision and the site is mainly used as a context within which customers can carry out basic transactions, such as paying bills, transferring money from one account to another, etc. The Internet is used as a cost-efficient supplementary channel to bank branches, for promotion, transactions and delivery of services and products. By 2001, there were only six Thai commercial banks who had developed their Internet banking from the first stage to this second stage. Those banks were Kasikorn Bank, Asia Bank, Bangkok Bank, Krung Thai Bank, Krungsri Ayudhaya Bank and Siam Commercial Bank. It was at this same time that Siam Commercial Bank (SCB) began its promotional campaign "SCB Easy Banking" on their web site. Others soon followed and began to offer services to their customers over the Internet, which had been emerging as a key competitive tool among banks in Thailand. With their Internet banking services, banks tended to offer:

- Convenience and flexibility in completing transactions at any time
- Customized services

- Installed firewall systems for security and privacy when paying bills, transferring money from one account to another account but within the same bank. Thai bank customers cannot transfer money from one bank to another bank.
- Downloading of credit card applications

Although six Thai commercial banks have developed to the second stage and have prepared for the implementation of an e-commerce systems, thus providing customers with an understanding of what the bank has to offer, there still remains some difficulties. Bank customers cannot actually do any business online. The other eight banks remain in the preparation phase of the first stage because those banks have problems with investment capital.

In the third stage the Internet unit develops its own structure where marketing-related and technology-related activities are separated. This Internet unit begins to gain the status of a stand-alone unit, conducting its own activities and pursuing its own objectives. The bank is then able to expand the range of services and products offered, paying increasing attention to customer demands, by appreciating more and more the importance of the information it gathers from its customers and using it as input in developing new products and services. In order to create innovative new products and services that more effectively address customers overall problems and needs, banks may have to join forces and collaborate with other partners. At the same time, a bank should begin to make more sophisticated use of its site, such as customizing it to meet the requirements of its customers. This may imply the addition of more technical features such as connections with the Internet through mobile telephones, and offering customers, on-line services regardless of where the customer is actually at. The six Thai commercials banks in this stage are Kasikorn Bank, Asia Bank, Bangkok Bank, Krung Thai Bank, Krungsri Ayudhaya, and Siam Commercial Bank. These banks have more technical features such as Internet connections using mobile phone technologies such as WAP (wireless access protocal) or GRPS (general packet radio system). Each bank has invested about 1,000 million baht for technological development and has received approximately 1 million from Internet banking customers which equates to nearly 100 million baht/year in income (Business.com magazine, August, 2003).

The fourth stage features core business redefinitions and transformations where the Internet is not only used as a fully-fledged interface between the firm and its customers, but is also as a means for rethinking and transforming its core business, by transcending time-space

constraints, such as tapping new (international) markets and new businesses, (Gunasekaran, (1999), Furash's, (1999)).

Banks should intend to play very active roles. From the beginning of the process, customers should be able to access the website quickly, call the bank, and get direct involvement from bank staff so that immediate action can be taken to speed up the process in the event of problems. Banks should also provide more features about ease of use, good navigation techniques, strong interactivity, confidence regarding the roles and services provided, scripts, such as bank customers' transfer of money, etc. When bank customers have service problems or poor performance when using the Internet banking service, such as slowness, poor navigational possibilities, poor interactivity within the service setting and critical incidents, such as lack of help, banks should provide support personnel to provide information to bank customers as quickly as possible.

To the extent that the business nature at this stage is revisited, the role and image of the banks will be accepted. All six Thai commercial bank leaders are currently striving to develop their Internet banking systems to this stage. Nevertheless, it will be difficult to complete this task by 2004 because the infrastructure speed of Internet technology is limited to only 56 Kbps. This is very different from the USA or UK where the Internet speed is more than 200-300 Kbps. This affects Internet banking in Thailand as it cannot compete with the Internet banking services offered by banks in the USA or the UK. At present, Thai banks are trying to improve their Internet speed to 200-300 Kbps. In addition, Thai banks have continual problems with strong interactivity, security systems and limited capital. Nonetheless, the banks are committed to developing their Internet banking technologies (www.tfrc.co.th).

5.2 Recommendations for Thai Banks to Develop their Internet banking Systems

The author recommends to Thai banks that their Internet banking be developed in 3 time timeframes:

- Short term development
- Medium term development
- Long term development

5.2.1 Short Term Development

The customer survey results as found in paper two, revealed that a typical Internet bank user can be classified as a highly educated, relatively young (18-35 years old) and a wealthy person (income 10,000-30,000 baht/month) with a good knowledge of computers and, especially, of the Internet (bachelor's degree up). Older (over 35 years old) and lower income (income below 10,000 baht/month) bank customers are found to have problems with new technologies and, hence, are expected to have more negative attitudes towards Internet banking. In Thailand, Internet access for individuals is relatively expensive, requiring a high initial outlay and comparatively high monthly bills for telephone connection charges. Today's low earning Internet users are most likely to be students in tertiary education who have a good chance to use and familiarize themselves with computers and with the Internet. However, there are some individuals in this same category who do not use Internet banking, because they do not know of its benefits. Overall, this segment of the population appears to be the most ready to accept Internet banking. As a result, they represent a highly profitable and less risky customer-base for several reasons.

First, customers with higher income levels are more likely to deal with larger sums of money, both in borrowing and in savings. The aggregate cash flow from such a group should lead to economies of scale with a large turnover and a lower administrative workload for the banks, since the number of high net worth accounts is low.

Second, because the group is relatively young, they represent banking relationships that could be sustained for a long time. Third, this group is likely to be highly mobile, both within the geographical limits of the country and outside it. The Internet, particularly, provides the most reliable method for maintaining these banking relationships irrespective of geographical boundaries.

As with the global population, Thai people are becoming busier and hence are seeking to carry out transactions at times most convenient to them. This is confirmed by the increase in the widespread use of the now ubiquitous automated teller machines (ATMs). Unfortunately, today, most Thai customers remain poor and are often conscious of the expenses associated with banking and are generally better informed about alternative options. As a result, any services provided must be at minimal or competitive costs or preferably at no cost. This is especially so in carrying out information-rich transactions. Educated customers are seeking methods or sources that can carry out complex transactions at minimal cost and without

expensive paid advice. In addition, the obtained results from paper two pertaining to age, security and income are consistent with previous research which indicates that children between the ages of 10-17 are quite willing to provide information to websites and are not concerned with website security (Deibel, 2000). Furthermore, Wang and Petrison (1993) found that inner city residents, people of color (in the USA) and those with lower than average incomes were less concerned about consumer privacy issues. Older consumers were more likely to be concerned about financial privacy than younger consumers. Thus, the main target customer segment for Internet banking in Thailand and the segment in which the banks should pay particular attention to is the young, well-educated and higher income level person. Such persons are individuals who wield significant financial power. As such, Thai banks should attempt to become exclusive providers of services for these clients. This can be accomplished in a number of ways.

First, Thai banks should introduce the benefits of Internet banking, the ease of use and its low-cost structure to customers in branches, in shopping malls, theaters, fashion centers, etc which have direct and easy access to these young people. Thai banks should also try to motivate customers to access bank websites. According to Kierzkowski et al. (1996), this can be achieved by billboard advertisements, links from other sites and leveraging on existing marketing communications (such as advertisements and product packaging), as well as by advertising. In addition, several studies (e.g. Carpenter, (2000); Briggs and Hollis, (1997)) have indicated a positive relationship between strategies to attract customers and brand equity. The immediate objective of all consumer brand advertising is to increase brand equity (Ambler, 1997). The value of brand equity is commonly measured by a number of components including the price premium the name commands, the earning power of the brand awareness, brand identity and brand loyalty (Smart.com, 2000). It is suggested by Puth et al. (1999) that the attributes of products/services and, as with B2C companies, even the attributes of the websites can be used in advertisements to position a product in the minds of consumers according to specific attributes and can be used to change the perception of the brand that consumers currently hold. Low and Mohr (2000) also reported that companies with higher advertising budget allocations relative to sales promotions tend to attract customers with more favorable attitudes, stronger brand equity, which in turn results in higher market shares and profits. Therefore, Thai banks should obtain exposure in website advertising banners used to raise awareness and to attract younger, well-educated customers with higher income levels as this will have a strong immediate effect on the brand.

Second, Thai banks should offer two-way information presentations and interactive communications through e-mail. This method can use customer information provided in e-mails to learn more about customers so that individualized services can be provided. This assumes that local branches "better know" customers and their needs. They can take personalization and customization seriously and work on this concept. Using statistical methods they can analyze the types of customers who visit their website and learn about their behavior and needs, and thus be more able to respond with precision.

Third, Thai banks should reconfigure their businesses through collaboration with partners in order to provide customers with total solutions and new services – such as collaborations with Tesco Lotus, one of the major retailers in Thailand. The idea is that customers, when ordering their products at a Tesco Lotus's site, could use a link to a Thai bank's Internet site to pay their bills. Another similar move is that Thai banks should co-operate with Thai Airways, Thailand's leading airline, in regards to electronic distribution of travel information, bookings and tickets. Through Thai bank collaboration with Thai Airways, bank customers would have the opportunity to pay for their air travel online, in the same way as paying ordinary bills. Over and above Thai Airways, Thai banks should cooperate with other companies such as IBM and Nokia in order to offer wireless banking services.

Fourth, Thai banks should provide the features of Internet in the first period through a variety of functions. The view-only function would satisfy customers need to verify their individual bank account balances. This increasingly more important customer need has been confirmed by several studies that have monitored bank support call centers, concluding that more than 60 per cent of customer inquiries concern details about balances and the last few transactions made by the customer (Gandy, 1998). The primary reason seems to be that customer accounts are more active and users feel the need to reconcile more frequently. All Thai banks should offer view-only functions such as balance verification, view statements/accounts, historical records, etc. for a given period. The primary advantage for the banks is that this would reduce the workload for bank staff at both branch and call centers, and relieve congestion at ATMs. The benefit for customers is that they can be assured of a private, quick and efficient service at any time.

The action/account functions (accounts amendment, order cheque books, transfer funds, pay bills to third parties, standing orders/direct debit, order/print statements, send messages and pay credit card bills, etc.) are required to provide customers with the broadest range of access and control over their accounts. To provide maximum customer satisfaction is beneficial if as

many of these functions as possible are provided by an Internet bank. All Thai banks should offer the facility of transferring funds between accounts and providing the opportunity to pay bills to third parties. This is an important function as all households incur bills for services like utilities. Additionally, bills represent a significant proportion of a households' expenditures and the timing of these payments can be vital; hence the need for an active management of household cash flow. A standing order or a direct debit might not provide the best timing method for payments. Thai banks should allow for the creation or amendment of standing orders such as stop cheque requests. Thai banks should have the facility for customers to communicate with the bank through the Internet. The mechanics for setting up this facility would seem to be the least technically challenging of all account control functions. One might conclude that the features most banks do offer (e.g. the view-only functions and account transfers) can be handled automatically, without human intervention, hence there is no need for sending messages to the bank. While it is true that most account functions can be handled automatically, as all these Internet banking operations are in their infancy, they are all fraught with technical and other problems. Additionally, users too are only now beginning to get used to the whole concept of Internet banking. Therefore, it is essential that banks provide a facility to communicate and overcome any difficulties as easily and as quickly as possible.

Studies have revealed that there is a significant correlation between website download speed and user satisfaction (Muylle *et al.*, (1998); Hoffman and Novak, (1996)). While speed is often a factor beyond the control of a site owner, the use of extensive high-resolution graphics and an inefficient host server has a significant negative impact.

Content and design have been found to influence user satisfaction. Muylle et al. (1998), in their research of web user satisfaction, found that these attributes encompass the content and design of a website:

(1) Product information content
(2) Amount of product information
(3) Product information format
(4) Language(s)
(5) Layout features

These characteristics were found to influence the perception of information relevance, accuracy, comprehensibility, as well as perceived language customization (Doll *et al.*, 1995). The quality of content at sites was mixed, but most had a demonstration of the service available somewhere on the site. These site demonstrations were limited to small snapshots of

account screens. At some sites users had to download the program in order to view a demonstration. This has several disadvantages. First, most people are apprehensive about downloading anything from the Internet that could import unwanted components, like viruses. Second, most people are not willing to sacrifice hard disk space unless they observe a definite benefit. Downloading a demonstration may not be sufficiently attractive to cause all potential users to continue their connection to the site. Some sites had very plain designs, devoid of any graphics or colors. Others incorporate low quality graphics and altogether portray a rather poor image of the bank. In order to enhance the design, Thai banks should utilize frames in web pages. On the positive side, efficient use of frames is very useful for navigation. An almost ubiquitous use of frames strategically should be placed on the left-hand side of the monitor frame for the site index. When one scrolls down a page, the frame stays stationary, providing all the necessary links at all times, irrespective of the location on site.

Navigation refers to the hypertext connection of the multimedia content. Connection includes elements such as homepage hyperlinks, the number of web pages, the number of hyperlinks, and hyperlink encoding and personal contact possibilities, all of which have been found to influence user satisfaction (Gatian, (1994); Doll *et al.*, (1995)). A search facility along with a site map is useful. It was earlier emphasized that the content and the design of bank web pages must reflect the nature of the Internet, for instance a page that scrolls down for about six to seven pages long is inappropriate. Site navigation plays a large part in this context. The hallmark of a good site is that the site index should always be on display, thereby making it very easy and fast for someone to arrive at their desired location.

The interactivity of the site relates to the optimization of hypermedia attributes (Muylle *et al.*, 1998) by providing custom-made solutions, allowing users to customize preferences, and enables the bank to provide solutions to users who have provided personal information. It is technically feasible to provide interactive loan calculators, exchange rate converters, mortgage calculators, etc. on world wide websites. The provision of these facilities should work to the benefit of the banks in several ways. First, customers could judge for themselves their commitments on something like a loan, which might otherwise require the assistance of bank staff. Second, these facilities can draw non-customers into the bank. Third, as noted earlier, an Internet banking site has the opportunity to position itself as the focal point of electronic commerce. Interactive functions could be a focal point to attract customers. Perhaps the most important issue of all is how safe it is to use a website to conduct financial transactions over the Internet. Most sites employ a multitude of security features. Encryption technology is the most common feature that Thai banks should use on their sites. This should be supplemented by a combination of different unique identifiers, e.g. for a password, mother'

birthday, a memorable date, a favorite destination, etc. Additionally, most sites employ a method whereby five minutes of inactivity automatically logs users off the account.

A fifth way is which Thai banks can become an exclusive provider is to become a deep discounter, providing low cost, low priced, standardized services to a large number of customers who are in the target population segment. Internet banking represents an ideal channel for the transmission of these services, because of the specific characteristics of speed, flexibility and low cost.

Sixth, Thai banks should provide 24-hour phone access service. They should have a phone number clearly posted. It would be best if a line is staffed 24 -hours a day, 7 days a week. If banks only permit customers to talk a machine, they are not providing the best customer service possible.

Seventh, a bank's site should offer customers a lot of information about the financial tools available and provide several calculations so that customers can see which investment is best for them. Customers can use an automatic loan calculator to determine how much their monthly payments will be, based on their down payment, interest rate, and other factors.

Eighth, because the viability of the community model is based on user loyalty (as opposed to high traffic volume), users have a high investment in both time and emotion with the site. In some cases, users are regular contributors of content and/or money. Having users who continually visit offers advertising, info-mediary or specialized portal opportunities. The community model may also run on a subscription fee for premium services. Examples of the community model include:

- Thai banks can create a community of users who support the site through voluntary donations.
- Not-for-profit organizations may also seek funding from charitable foundations to support the organization's mission.

Figure 5: Thai Banks' Internet banking Features

		Thai Farmers Bank	Bangkok Bank	Krung Thai Bank	Bank of Ayudhya	Siam Commercial Bank	Bank of Asia
View only	Check balances	✓	✓	✓	✓	✓	✓
	View statements / Account	✓	✓	✓	✓	✓	✓
	Historical records	✓	✓	✓	✓	✓	✓
Account control	Account Amendment	✓	✓	✓	✓	✓	✓
	Order cheque books	✓	✓	✓	✓	✓	✓
	Pay bill to third parties	✓	✓	✓	✓	✓	✓
	Standing orders / Direct Debit	✓	✓	✓	✓	✓	✓
	Order / Print Statements	✓	✓	✓	✓	✓	✓
	Send Messages	✓	✓	✓	✓	✓	✓
	Pay credit card bills	✓	✓	✓	✓	✓	✓

		Thai Farmers Bank	Bangkok Bank	Krung Thai Bank	Bank of Ayudhya	Siam Commercial Bank	Bank of Asia
New services	Apply for loans						
	Open current account						
	Open savings account						
	Apply for credit cards						
	Apply for mortages						
	Apply for insurance						
	Recocilation/ integration						

Source: ***www.kasikornbank.com***
www.bangkokbank.com
www.ktb.co.th
www.krungsri.com
www.scb.co.th
www.bangasia4u.com

5.2.2 Medium Term Development

In this medium term, Thai banks should build brand loyalty for Thai customers who are interested in using Internet banking. Therefore, Thai banks should attempt to motivate these customer groups to increase their use of Internet banking and extend the new customer base by: Applying for new banking services.

To exploit the convenience of Internet banking fully, customers must be able to make applications for core banking services and open new accounts (savings accounts, loans, etc) on-line. Relatively few banks offer the on-line facility of completing applications and enabling new services. It is important that both existing and potential customers be

encouraged to make applications and acquire new services. If the entire process cannot be completed over the Internet due to regulatory barriers (e.g. money laundering regulations), the customer should at least be allowed to feed in personal details so that the process is expedited. The absence of these features is a lost opportunity to recruit new customers and increases the danger of losing existing ones, since a customer is only a few key strokes away from moving to a competitor with more Internet banking functions. Increasingly, customers are looking for opportunities to complete a number of diverse product and service transactions within one site. Today, banks are gradually beginning to offer non-core banking products and services. Therefore, it is logical that these products and services be made available through the Internet. Such facilities include insurance, credit cards, mortgages, etc. and can easily be completed at a computer. For example, after customers complete a mortgage application, some bank sites can tell the customer in less than a minute whether the loan is approved or not. Customers can then apply for the new mortgage or refinance their current one at most of the sites that offer loans.

Thai banks bring buyers and sellers together and facilitate transactions. These can be business-to-business (B2B), business-to-consumer (B2C), or consumer-to-consumer (C2C) markets. The intermediary or broker, which is typically a bank, makes money by charging a fee for each transaction it enables. As such, Thai banks should consider providing an on-line financial brokerage, where customers place buy and sell orders for transacting financial instruments. Travel agents also, fit into this category. In this model, the broker charges the buyer and/or seller a transaction fee. Some models work on volume and low overhead to deliver the best-negotiated prices.

Internet banking offered through Thai banks would do well to develop functions as a shopping center for various financial products such as insurance policies, pension funds, stock brokering, equity plans and unit trusts. However, in order to do this, the banks would have to prepare staff to respond to all customer questions and e-mails 24 hours a day.

Thai banks should allow customers to shop around for the best deals customers may obtain quotes from more than ten different insurance companies. Customers can compare rates for auto, home, life, annuities, and other special coverage needs. An example for this feature is www.wellsfargo.com.

5.2.3 Long Term Development

In the long term all, Thai banks should have a high speed, well established web connection in order to gain a competitive advantage. Banks should develop their Internet banking services to differentiate their websites from others. Some levels of Internet banking on which Thai banks could develop are discussed below.

First, in order to gain a long-term profitable relationship with customers, it is imperative that Thai banks strive to retain customers and induce them to make repeat purchases on their websites. Hence, the element of development of Internet banking relates to customer retention strategies, which require constant long-term resource commitments by the banks. Thai banks should keep their sites "fresh" by continuously renewing content and/or providing dynamic content such as stock quotes and weather reports. Next, creating switching costs is an essential strategy to retain customers. This occurs when the customers invest their own time and energy in the interaction with Internet banking application which creates a disincentive for them to repeat that investment with other banks. Loyalty programs and rewards for repeat purchases can also help with customer loyalty and in retaining customers. To prompt customers to make repeat purchases at the site, the installation of sufficient security features is crucial to build up the website's reputation for reliability. Having privacy statements also serves to guarantee the privacy of customers' personal information so that they are more inclined to revisit the web sites and make purchases of Internet banking services.

Thai banks should develop interactive functions for Internet banking because interactive functions are important in increasing the overall 'attractiveness' of the website and to differentiate the websites from other sites of the same nature(Ghose and Dou, 1998). In fact, interactive functions such as games not only serve to entertain customers but also help to reinforce their impressions about the company's products and services, positively impacting brand recognition and equity. They also suggest that web sites that are more oriented toward image or brand building should consider using certain interactive functions such as downloading of games and search functions. Leveraging on and balancing the interactivity and selectivity of the user interface are vital to building Internet banking brands (Moon and Millison, 2000).

A brand is about confidence and security (Davis, 2000). As such, a bank's brand and trust are closely related and play an important role in Internet banking markets. It has been observed that customers regularly buy from branded banks, such as citibank.com, even though those

banks do not necessarily offer the lowest prices (Smith *et al.*, 1999). To build and maintain consumer trust, it is imperative that B2C companies provide a clear and complete privacy policy (Wang *et al.*, 2000). This will overcome consumer privacy concerns and retain loyal customers, while at the same time build up the banks' online brand equity in an environment of trust.

Thai Internet banking services should utilize an entry system that allows customers to see and access their accounts and move money around. In order to fully exploit the convenience of Internet banking, customers must be able to make applications for core banking services.

An increasing proportion of customers use software packages to manage their finances. Therefore, it is important that these customers are given the opportunity to reconcile their accounts by freely downloading and sharing information from their bank accounts to their individual financial management software. So, all Thai banks should offer the facility of integration with software packages for account reconciliation purposes.

Thai banks should develop some features in the medium term. For example, banks should allow customers to shop around and compare rates from mortgage lenders around the country. All banks should have an extensive amount of mortgage information available online. When customers are at the page of a site such as Personal Finance, customers should be able to highlight and click Mortgage. From that page, the customers can obtain extensive information about buying or refinancing a home. Customers should also be able fill out a loan application at the same site. Educational material can be available on these sites to help customers understand. Customers can learn about how the loan is processed and what their financial obligations will be, use an online calculator to see how much they can afford and therefore, determine whether they should refinance. The site can even offer a step-by-step explanation on how to buy a home.

Thai banks are required to keep increasing the speed of online system responses to customers' input, upgrading web sites' navigational functions, and improving the compatibility of their online systems with customer application software as well as hardware. The website for Internet banking services should have good interactivity on the site relating to the optimization of hypermedia attributes by providing custom-made solutions, allowing users to customize preferences, and enable the bank to provide bespoke solutions on-line for users who have provided the appropriate personal information. It is technically feasible to provide interactive loan calculators, exchange rate converters, mortgage calculators, etc. on world

wide websites. The provision of these facilities should work to the benefit of the banks in several ways such as:

- Customers could judge for themselves their commitments for something like a loan, which might otherwise require the assistance of bank staff.
- These facilities can draw non-customers into the bank.
- An Internet banking site has the opportunity to position itself as the focal point of electronic commerce. Interactive functions could be a focal point to attract shoppers.

Thai banks should provide real-time processing for customers, because in real-time processing, customers can use their computers to transfer money into their checking account and immediately see that transfer if the customers go to an ATM right away. In batch processing, customers transfer funds into their checking accounts on their computer, but when the customers go to their ATM later that same day, this checking account balance doesn't reflect the change. This can cause confusion about how much the customers actually have in their accounts. Deposits and checks in a batch-processing environment typically are updated to the account at the end of the bank's business day.

Thai bank customers want a quick visual response at the click of a mouse clicks, and they want transfers from one account to another to take place in real time. In a real time system, transactions are actually made to the bank customers' account right when the bank customers click their mouse. If a Thai bank customer transfers 100,000 baht from their savings account into their checking account, the customer should be able to see that transaction instantly at on ATM.

Thai Banks should have features like Amazon.com, which can enable customers to be reminded of items they bought. This type of system can act as a prompt-subject, provided that an adequate database is in place. Moreover, such a database can be helpful by automatically advising the customer of any special features a product has. They can be either beneficial, or a warning. For example, if the bank knows that a customer does not like a specific bank product but also, at the same time suggests an alternative, it would speed up the process and ensure a happy customer who uses a suitable service, rather than one who finds that the purchase is unsuitable and tries somewhere else in the future.

6. General Recommendations

The results from paper 2 reveal three types of bank customers who are not interested in using Internet banking; older bank customers, less educated customers and customers who are relatively poor in terms of income levels. Thai banks should aim to become exclusive providers of Internet banking services for these clients, because most Thai people fall into these groups, especially the older customers who today have plenty of purchasing power, and in the very near future are expected to spend large sums on financial services. Some studies suggest that in just a few years' time older customers will control a considerable amount of funds for the entire population (Swartz, 1999). Given the magnitude of future power of this group, the marketing of banking services for older consumers should take into account at least three factors.

First, older customers are not a homogeneous segment of the retail banking market. Bone (1991) and Kennett *et al.* (1995) have demonstrated empirically the fragmentation of the older consumer segment in the financial services industry. This implies that any population segmentation of olderer customers will be by necessity based on more than one variable. Possible segmentation criteria include demographics, attitudes, and customer perceived benefits.

Second, as Mattila's (2001) empirical study points out, older customers appreciate and also demand face-to-face banking services more than Internet banking can provide because they have difficulty in searching on websites for the information they require, particularly if the websites contain complex information that is hard to understand. Because the provision of personal services is expensive, and because differentiation of services by segments is important, the need for tailored services, discounts, and special offers should show substantial growth. Despite the older populations' overall general preference for non use of the Internet, there are some who do show a willingness to use the computer for such things as, booking a holiday, buying or selling common stocks, gathering information on cancer drugs or about health, paying bills and e-mailing (Pennathur, 2001).

Third, older customers tend to be more conservative and have more difficulties in learning how to use new types of financial services and technologies (Kennett *et al.*, 1995). This brings up the question of segment-differentiated consumer education programs and entails calculations of cost-benefit ratios for the services to be offered to the various segments. It

should be ensured that the service encountered favorably affects older customers (Johnson-Hillery *et al.*, 1997) as well as meets the needs/requirements of other customers.

Kesner (1998) and Corlett (1999) have outlined some guidelines on how to market to older customers. They suggest the use of discounts and award programs to senior citizens, personalized services, relationship marketing, and customer education. In this marketing effort, it is seen as essential that marketers from Thai banks approach older customer in a sensitive way, treating them as grandparents, not as seniors, oldies, or retirees.

Some older customers have actually tried using Internet banking, but have discontinued its use after disappointments. The majority of usage disappointments were due to insufficient amount of training in the use of the Internet interface. This type of difficulty can easily be avoided by having bank personnel provide 'hands-on-training' to this particular population segment. Barriers in Internet banking for older customers are explained in detail below.

The first strategy is that Thai banks should have staff available at each branch location to train customers or even to show them how to use Internet banking in practice. Also, the feeling of confusing web pages might be solved with more careful initial training of customers. These customers feel that the pages lack sufficient guidance and that advice during use is almost impossible to obtain. Therefore, the importance of pre-education in the use of Internet banking web pages is even more emphasized. Web pages that are confusing and difficult to use should be simplified.

Second, older customers also think that Internet banking costs them more than paying bills over-the-counter. The reason for the higher cost is that older consumers have less access to Internet banking. Thus, they add the cost of a computer, service provider fees, and telephone calls to the actual transaction fee. Thai banks should provide information on the rate of charges for Internet banking and clearly define that these fees are less than the transactional fees charged for services.

Thai banks should take a multi faceted approach to the development of Internet banking. First, multi-dimensional web pages with voice recognition should be used. This feature can increase the level of understanding of benefits and usage of Internet banking because customers can become more aware of how Internet banking functions without needing to read about it.

Thai banks should use promotional tools to communicate to consumers about the measures that have been taken to reduce the risks associated with any new technology-based self-service. If this is done, then consumers will begin to perceive risks as being minimual or even eliminated. If these methods were implemented it is highly likely that Internet banking will become a more favorable option for many people in Thailand.

Thai banks should coordinate with tour companies or health companies to providing sufficient information on the websites of bank, tour companies, and/or of health companies. Information is especially critical for "searching" all services of a given tour company or of a health company. As such, the site should contain many details, inclusive of the payment steps required to complete a transaction via the Internet. Thai consumers would then be able to easily evaluate the available information and make purchases on the Internet.

Thai banks need to ensure that older bank customers, less educated customers and the relatively poor customers do not become frustrated in attempting to use Internet banking. It is quite common for this population segment (and others as well) to become frustrated by something as simple as a defective grocery-self-scanner. Consider, most consumers expect grocery self-scanning equipment to be relatively simple and easy to use. Yet when they experience problems while scanning their grocery items they may become frustrated and perceive that this method is too difficult for them. These experiences will negatively influence their attitudes and behaviors. Applying this scenario to the frustrations which can occur when one is not familiar with the Internet banking system, it can easily be assumed that frustration can lead to non-use. In order to avoid this, Thai banks need to design scanning equipment that is as easy to use as consumers expect it to be and in reference to their websites, these must be user friendly with easy navigation and minimum download time for all linked sites and promotions.

The results from paper two reveal that Thai banks cannot assume that consumers are homogeneous in terms of their attitudes in all bank services. The additional insights, which the paper provides on the socio-economic and demographic factors, indicates that consumer attitudes differ according to age, income, education, etc. A number of differences about usage of services of the banks are also apparent in relation to age and the acquisition of current accounts. For example, the lowest preference for branch usage is amongst those consumers aged 26-35 years old, who expressed the highest preference for using Internet banking. In contrast, consumers over 35 years old express the least amount of preference for Internet banking. This suggests that delivery channel usage is to some extent generation driven. This

does not necessarily mean that branch networks will eventually move into terminal decline, but once again, it might be indicating that Internet banking has a definite future. The most significant finding in relation to income is that high income consumers (i.e. those earning in excess of 30,000 Baht) express far less preference than low income consumers (i.e. those earning less than 9,999 Baht) for branch networks.

The research results indicate that the branch network and ATM's are still the most popular delivery channels. Consequently, research into these factors is extremely important in enabling Thai banks to target specific segments of the customer base with messages aimed at changing consumer attitudes and ultimately their behavior. The results have also shown that consumers have a preference for continuing to use a mix of delivery channels when acquiring financial services. Under consideration are predictions that the level of Internet banking usage will increase while traditional services, such as branches and ATMs, will remain important delivery channels for the immediate future, because they are redefined to reflect or support the processing and delivery of the newly-emerging services such as Internet banking that customers require. In other words, branches should be designed to mainly support transaction-processing environment, cross-selling, advisory services. Thus, banks should develop these branches to maintain performance and increase interest by re-arranging the layout of its branches in an environment featuring a friendly atmosphere similar to as if they were in their living room. In this comfortable environment customers and bank staff can sit around a table, side by side, rather than in the traditional design, characterized by a front desk separating bank staff from customers. This change in the physical arrangement of space between customers and staff is also symptomatic of a deeper change; namely the change in the skills of bank personnel. To the extent that more and more of the transactional chore is taken over by technology, banks are in the process of up-grading the skills of their staff from transaction processors to financial advisors. Financial advisors will populate the new branches, which are an appropriate context for exchanges with customers and an appropriate mode of delivery of specialized, advisory services. In fact, the results indicate that consumers have a preference for a mix of delivery channels rather than exclusive reliance upon any one single channel. Competitive pressures on Thai banks to reduce their costs and simultaneously increase revenue suggest that they will, nevertheless, continue to rationalize branch networks.

However, public resistance to branch closures means that this will not be easy. Equally, failure to reduce the size of branch networks could result in a duplication of delivery channels and a commensurate increase in costs. Thai banks will, therefore, have to introduce proactive strategies, which are primarily aimed at educating consumers and encouraging greater usage

of Internet banking. In this respect, the paper has shown that if these strategies are to be successful, they must focus on considerations, such as improved service quality, i.e. providing value for money, be error free, convenient and provide an easy to use service. Thai banks must, therefore, aim to provide consumers with a cost effective mix of different delivery channels which combine the advantages of Internet banking with some of the more human, social and relational aspects of branch networks. This is an important consideration not least because trust is a fundamental prerequisite of any banking activity and unless consumers can trust new technology, they will be reluctant to use it. Widespread acceptance of Internet banking, therefore, is equally dependent on bank strategies aimed at alleviating these fears and increasing the predisposition of individual customers to use the Internet and other forms of Internet banking.

7. Summary of recommendations

In the last decade, financial companies especially those operating in retail markets faced intense competitive pressures caused by deregulation, technological advances and globalization. If these companies were to survive in such a turbulent business environment, they needed to commercialize a steady flow of successful new products. The demographic results from paper two shows that age, education and income are the factors strongly influencing the use or non-use of Internet banking. The strategic importance of the speed of a web site and good interactivity of the site relates to the optimization of hypermedia. Of special importance is the target group of Internet banking, which is the younger people who prefer speed and quickness of sites. In addition to pricing, these are the reasons influencing customers to decide to bank online. If Thai banks give service free-of-charge this may influence customers to increase their use of Internet banking. In addition, the customers surveyed from paper 2 show that awareness is the factor having the greatest affect upon customers who do not use Internet banking, as these customers appear to be much more concerned with the security of their banking transactions and with protecting the privacy of their personal information than do traditional banking customers. Therefore, Internet banks should consider heavy promotions to customers by setting up demonstration kiosks at supermarkets or public libraries, by providing bank staff to give information about security, fees, as well as all the features and functions available, and to give information so customers can understand and be aware of the benefits of Internet banking. This can also be done at branch offices.

Internet banking websites must ensure the security of their customers' personal information and banking transactions. The threat of computer security is one of the main barriers to the use of Internet banking. Thai banks should develop security measures by using encryption, firewalls, verification and authentication. They should also provide details on security, how safe it is to use a given website and how to conduct financial transactions over the Internet. The banks should provide customers with details about their security systems. If banks do not provide this information or if bank customers cannot find a security statement, they will not trust the banks. Internet banking should also develop functions such as a shopping center for various financial products like insurance policies, pension funds, stock brokering, equity plans and unit trusts.

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www www.nso.go.th/thai/stat/indicators/eco/ict.html

www.wellsfargo.com

www.tfrc.co.th

www.kasikornbank.com

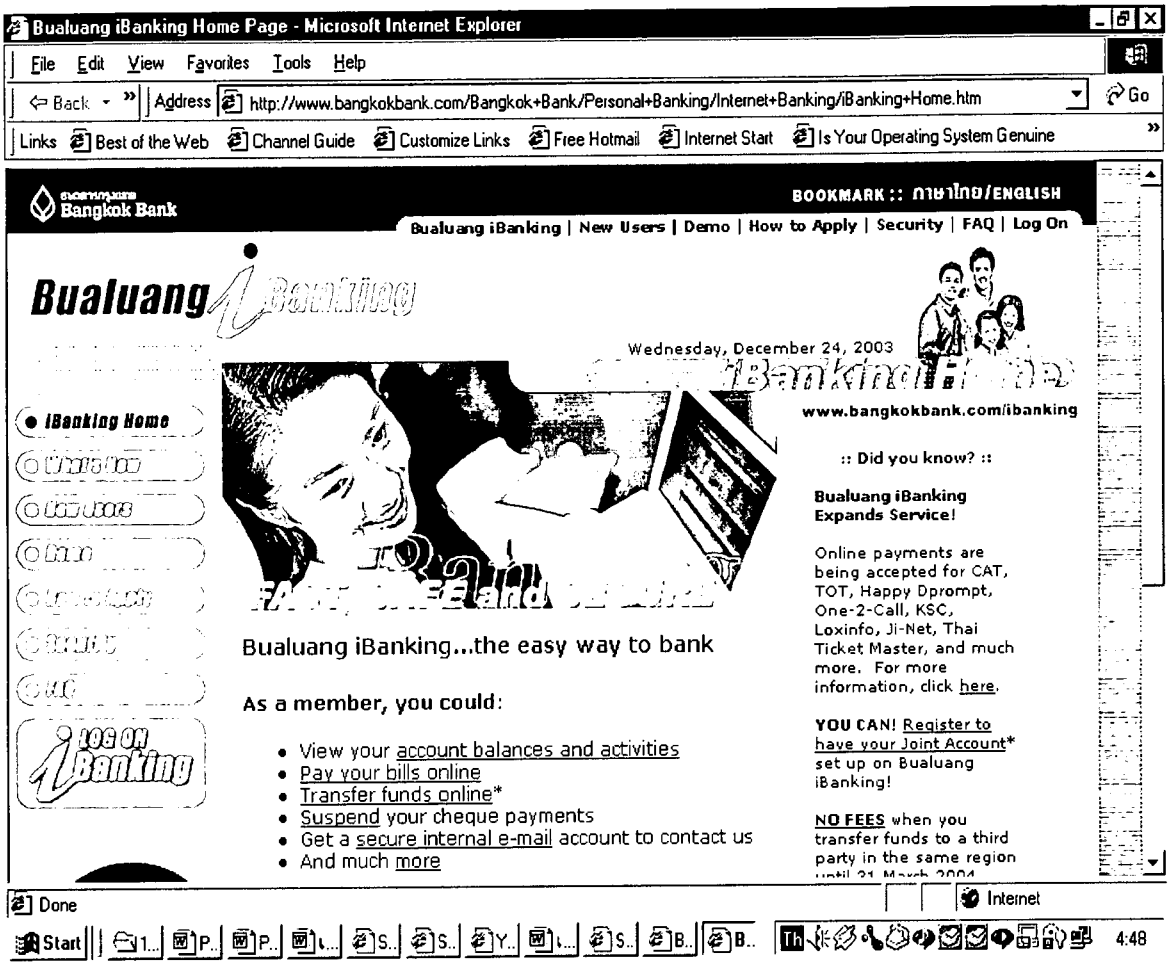
www.ktb.co.th

www.krungsri.com

www.scb.co.th

www.bangasia4u.com

Figure 6: Web page of Bangkok Bank



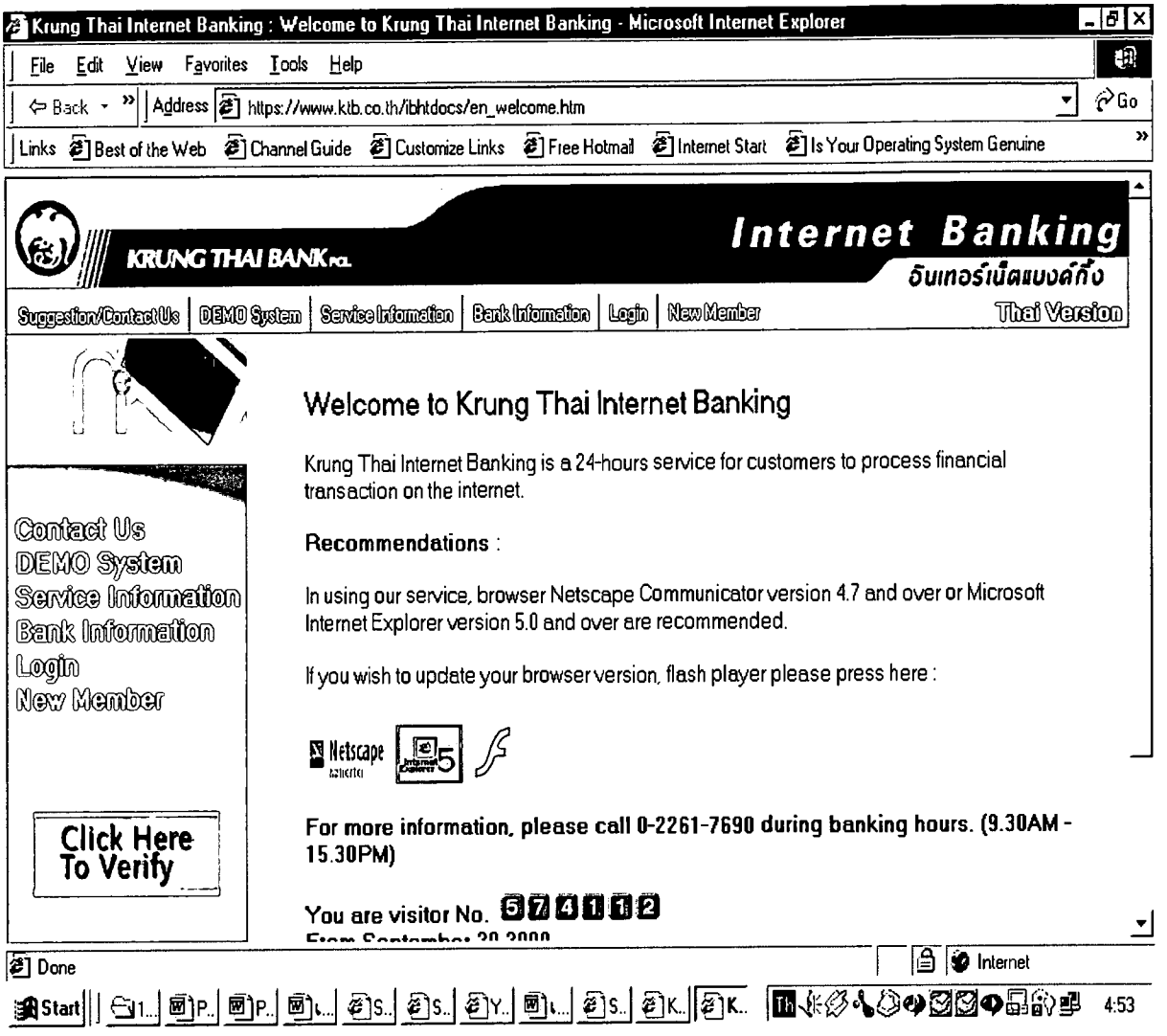
Source: www.bangkokbank.com/Bangkok+Bank/Personal+Banking/Internet

Figure 7: Web page of Kasikorn Bank



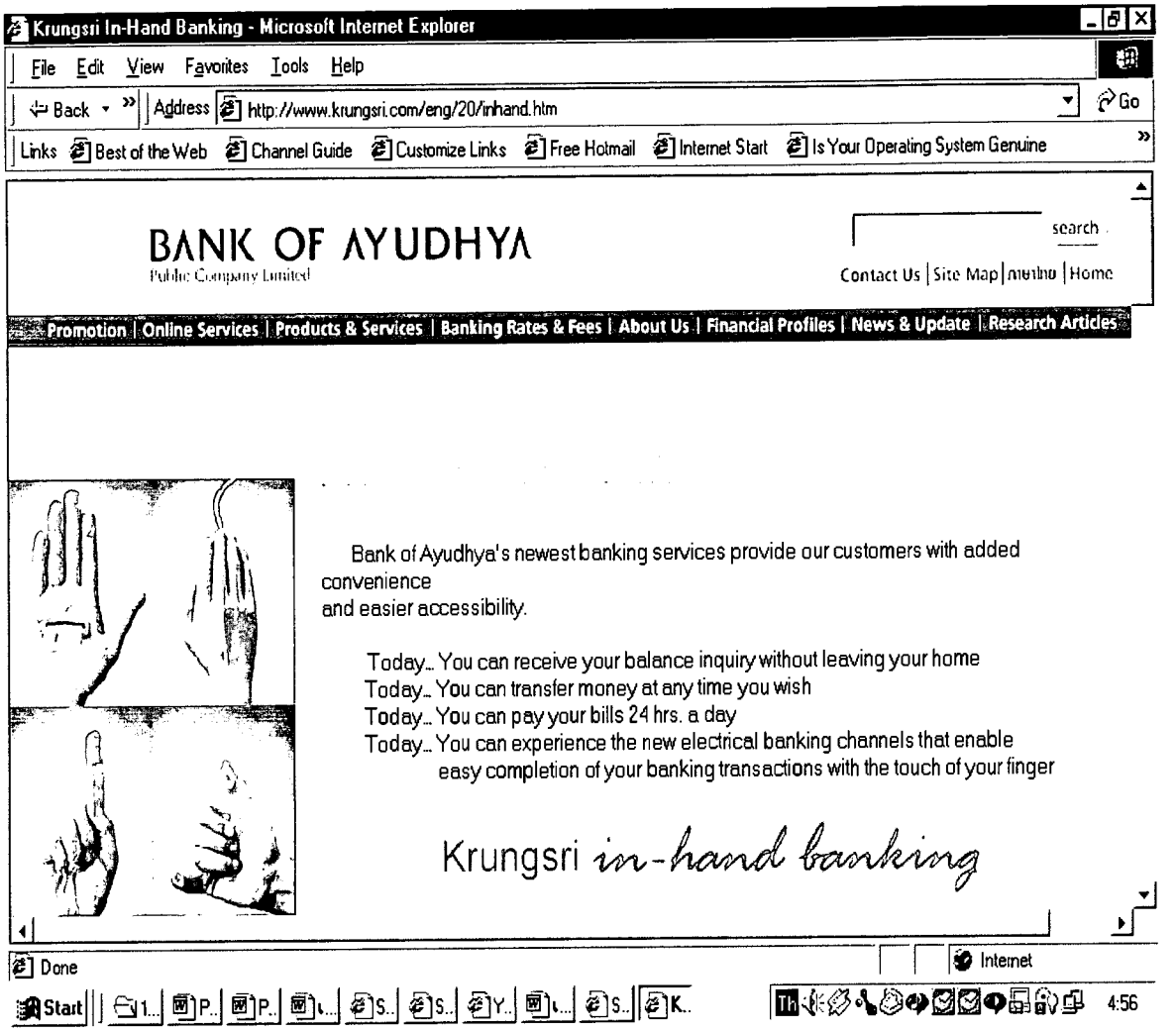
Source: www.kasikornbank.com/GlobalHome/0,1083,-EN-1,00.html

Figure 8: Web page of Krungthai Bank



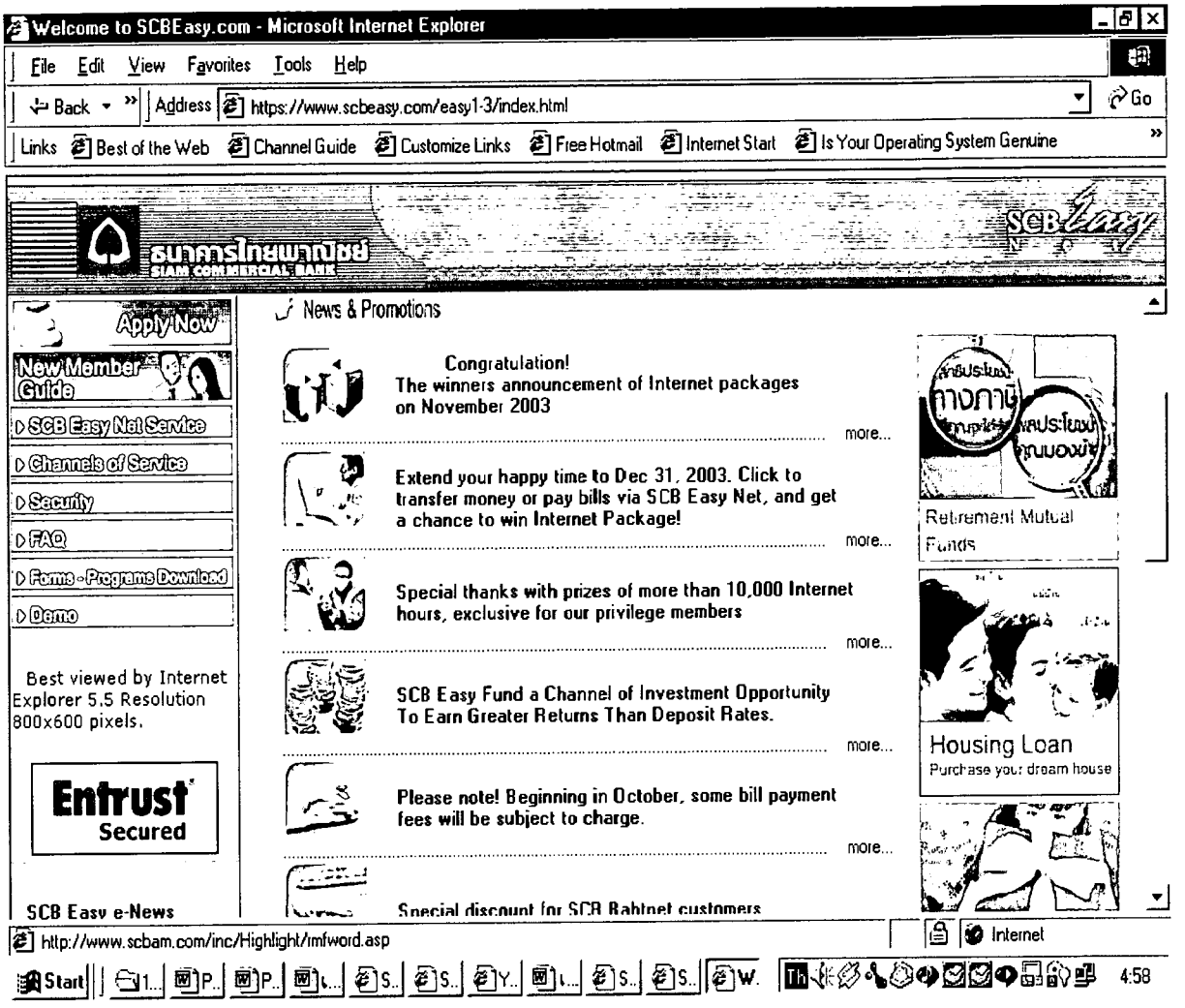
Source: www.ktb.co.th/ibhtdocs/en_welcome.htm

Figure 9: Web page of Bank of Ayudhya



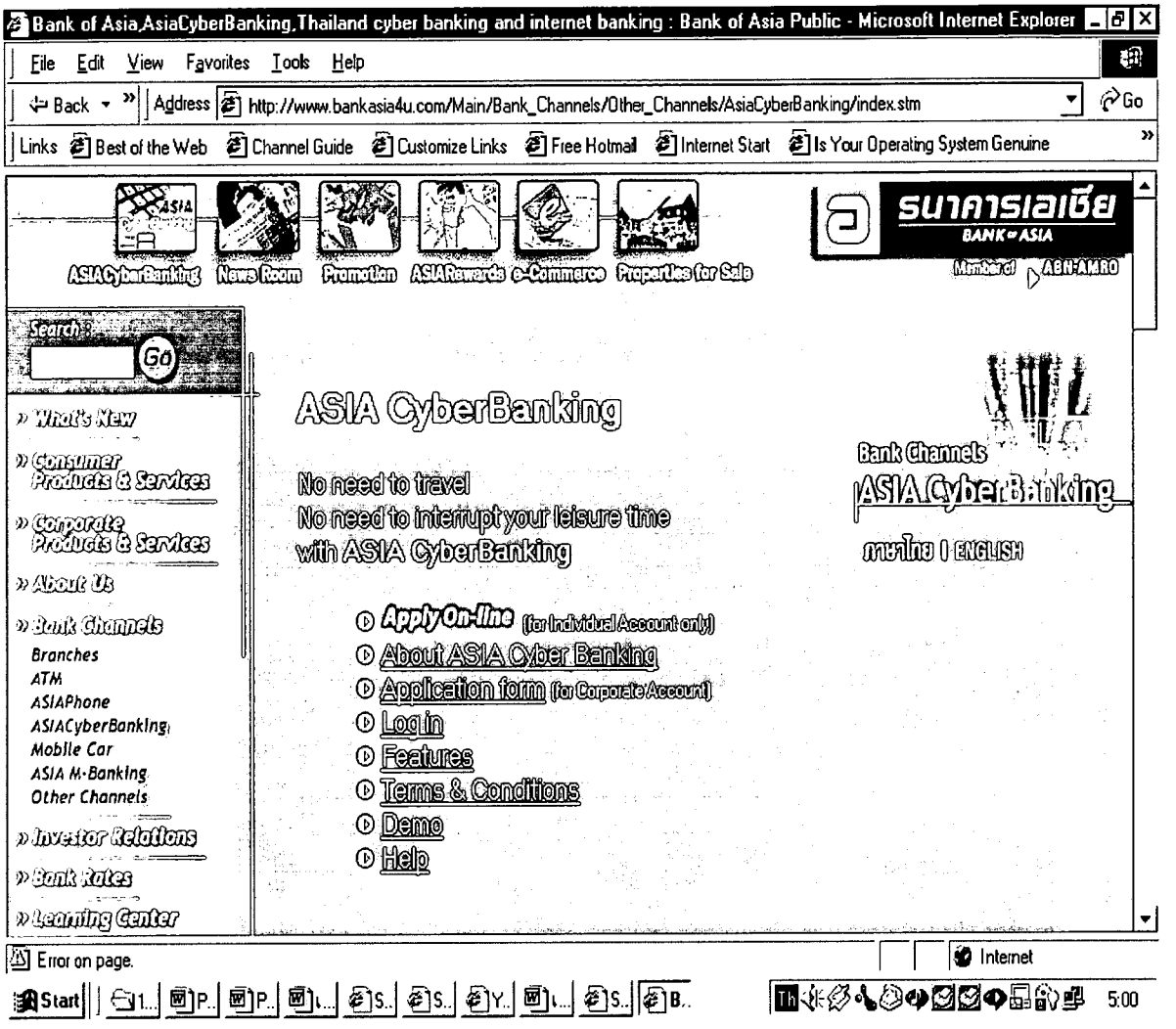
Source: www.krungsri.com/eng/20/inhand.htm

Figure 10: Web page of Siam Commercial Bank



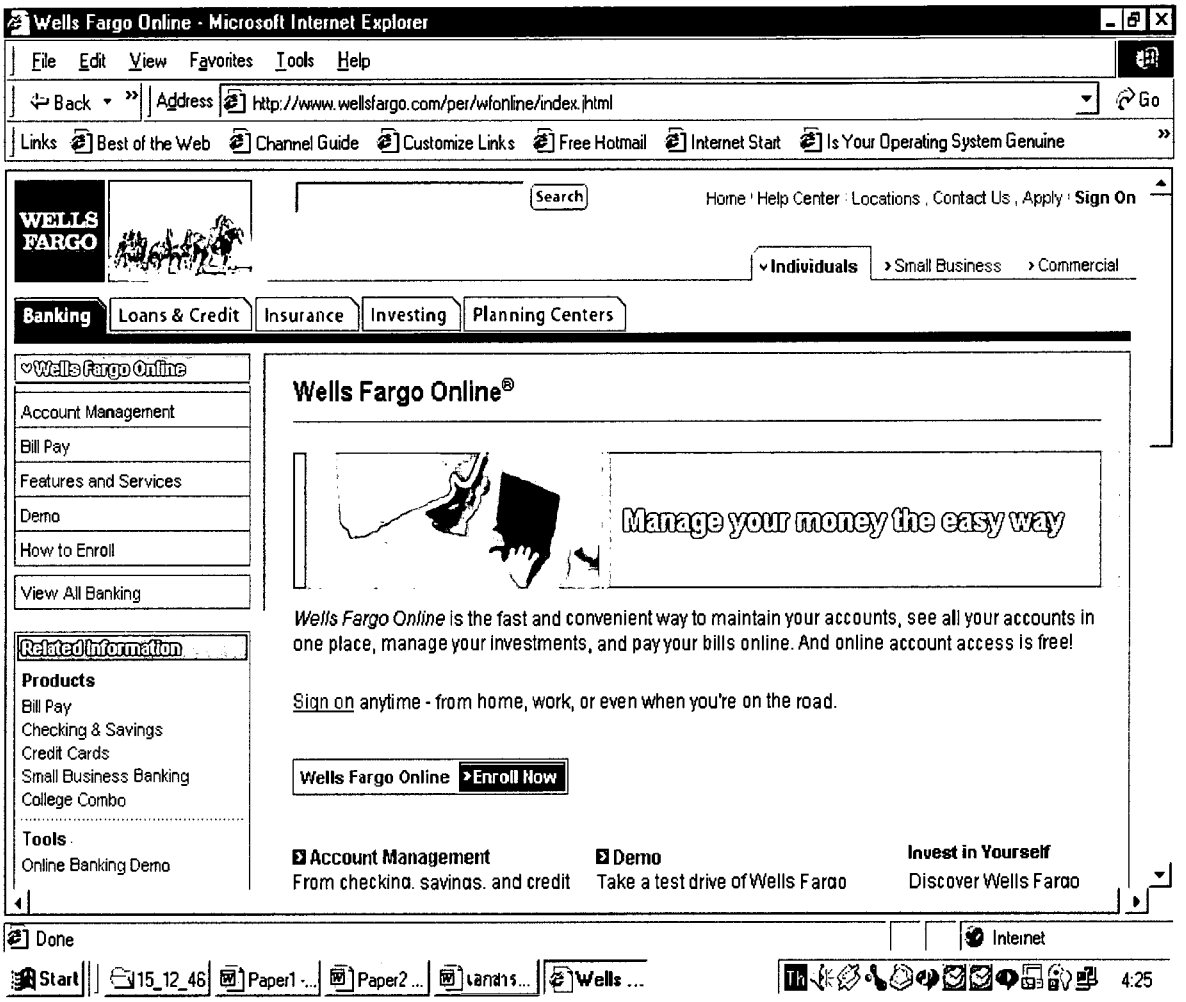
Source: www.scbeasy.com/easy1-3/index.html

Figure 11: Web page of Bank of Asia



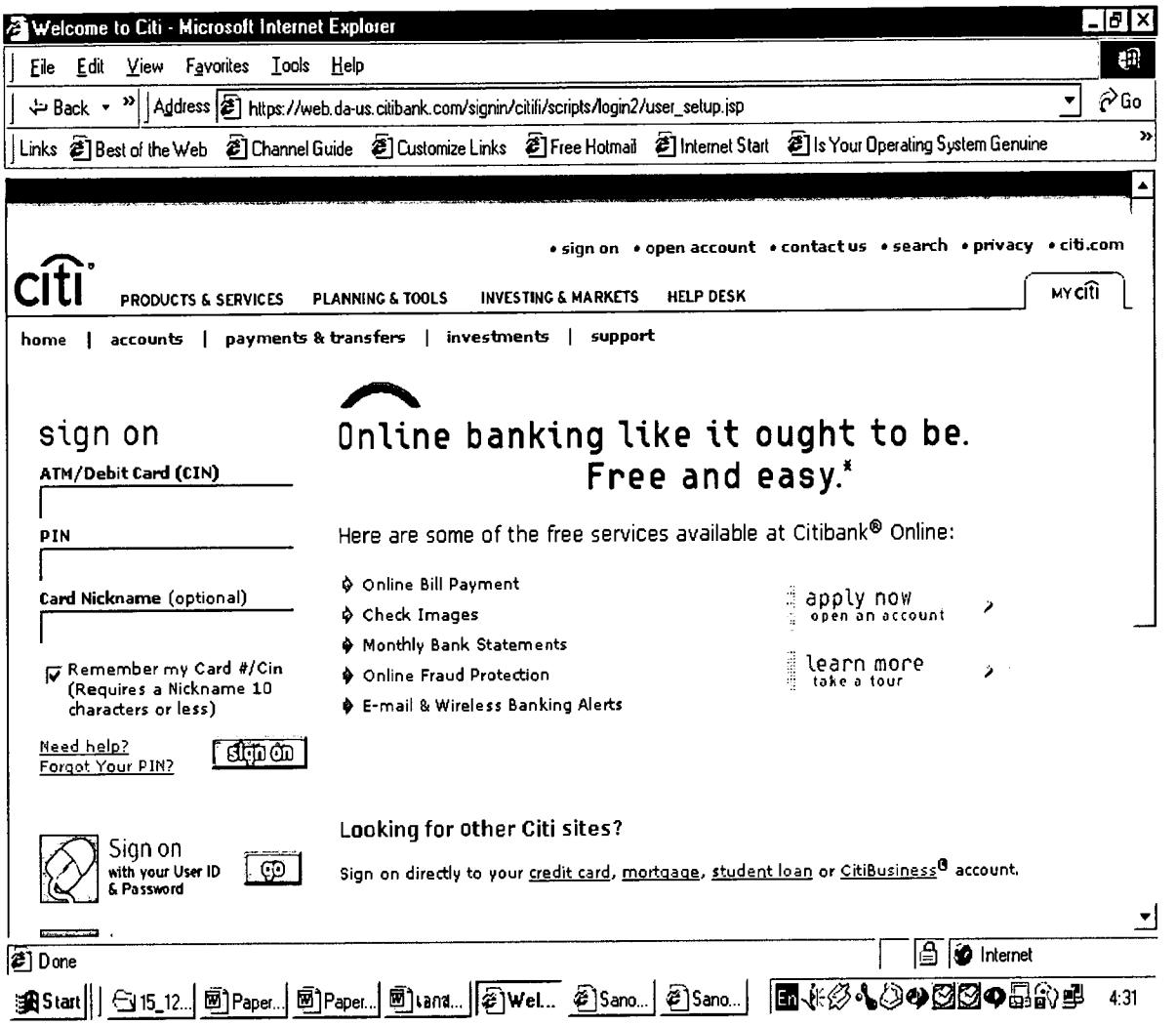
Source: www.bankasia4u.com/Main/Bank_Channels/Other_Channels/AsiaCyberBanking/

Figure 12: Web page of Wellsfargo Bank



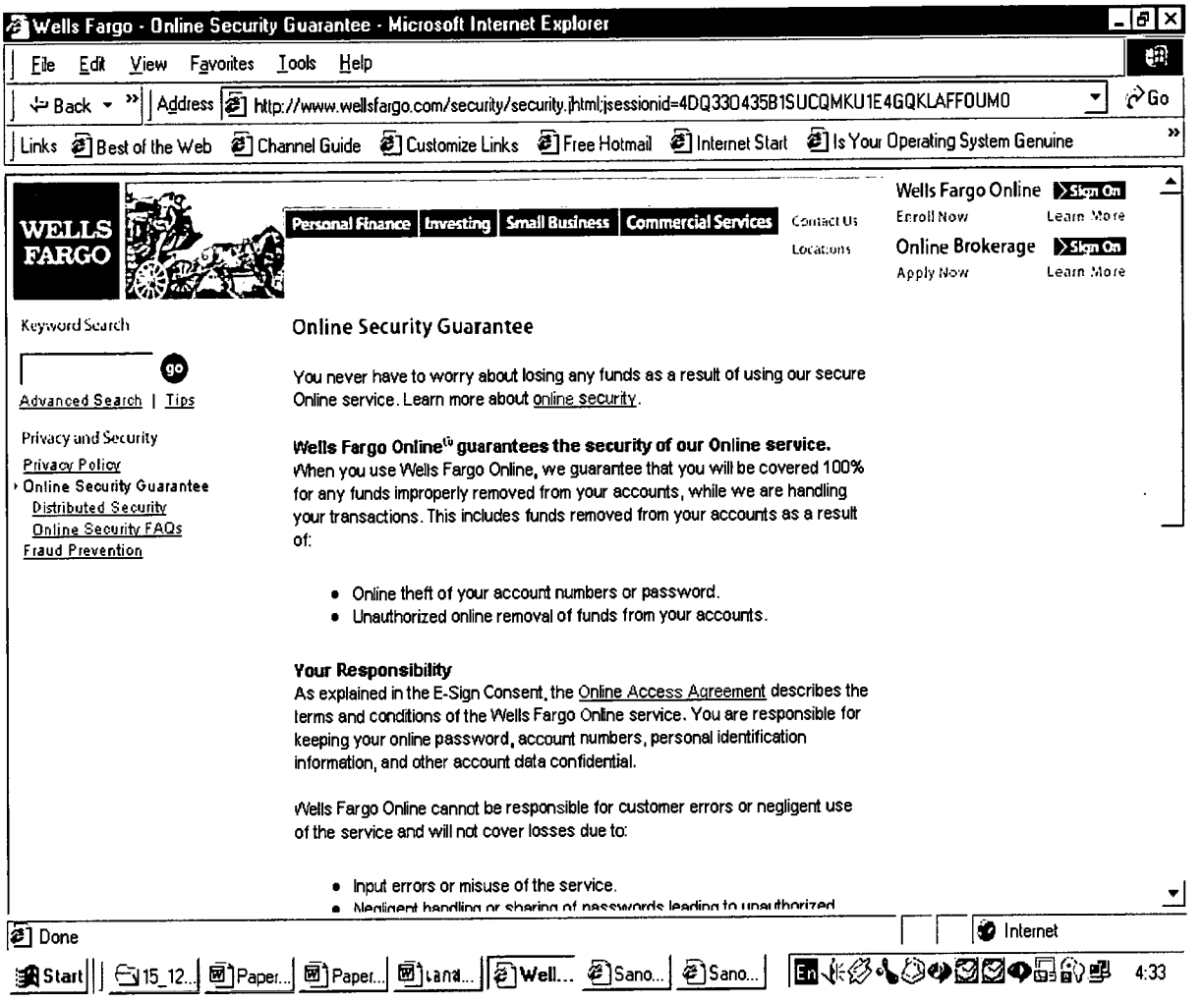
Source: www.wellsfargo.com/per/wfonline/index.jhtml

Figure 13: Web page of Citi Bank



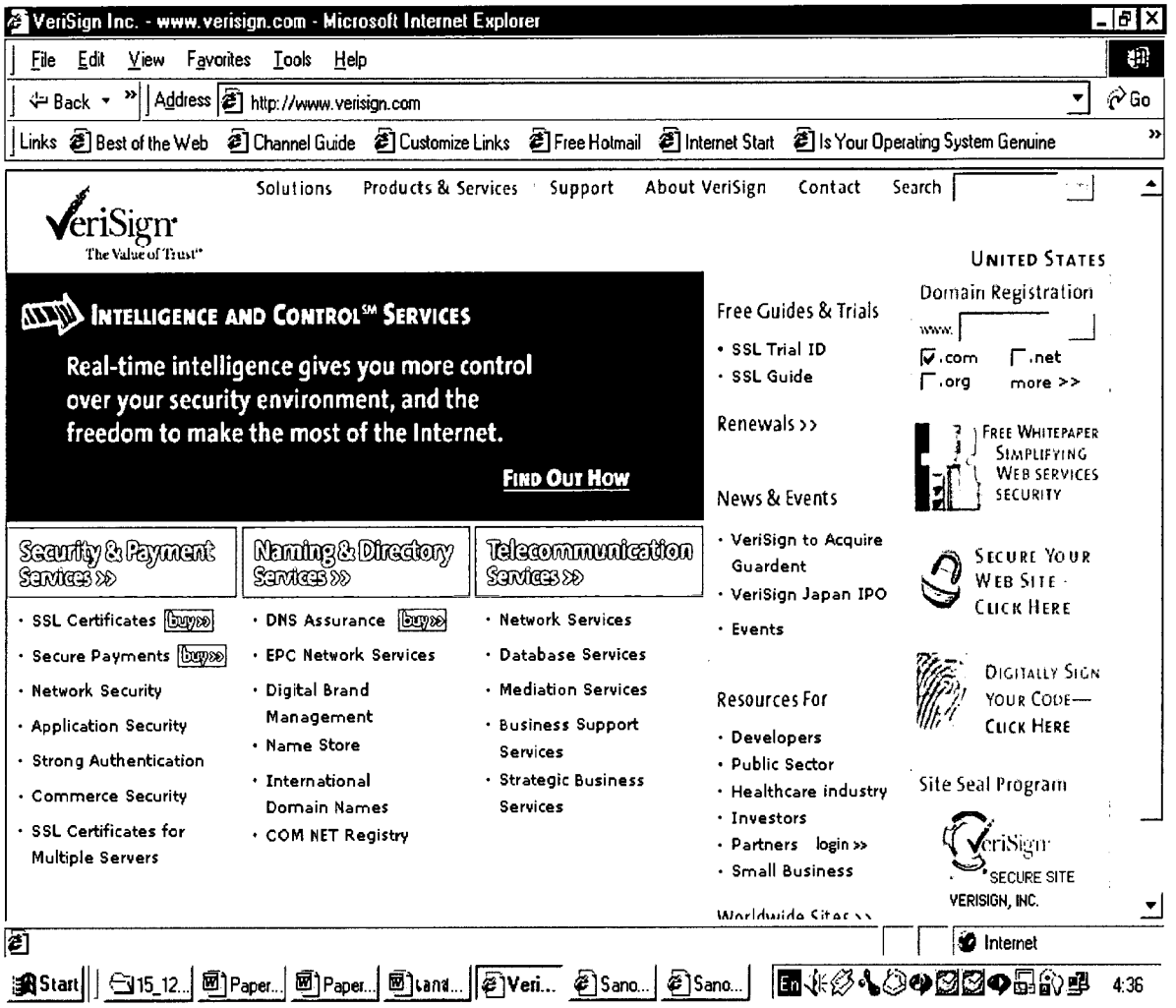
Source: www.web.da-us.citibank.com/signin/citifi/scripts/login2/user_setup.jsp

Figure 14: Wellsfargo's web page provides about security guarantee



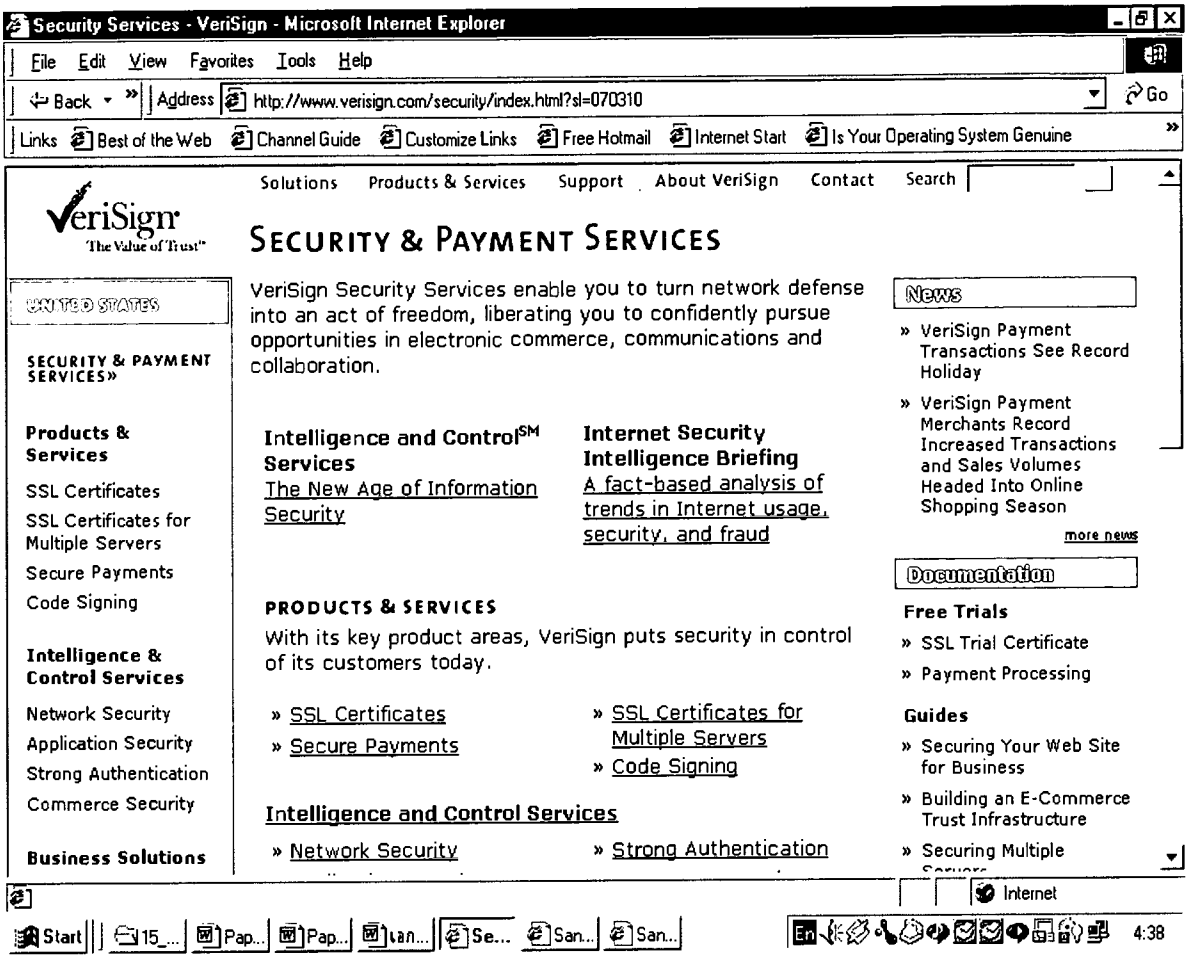
Source: www.wellsfargo.com/security/security.jhtml

Figure 15: Verisign's web page provides about security



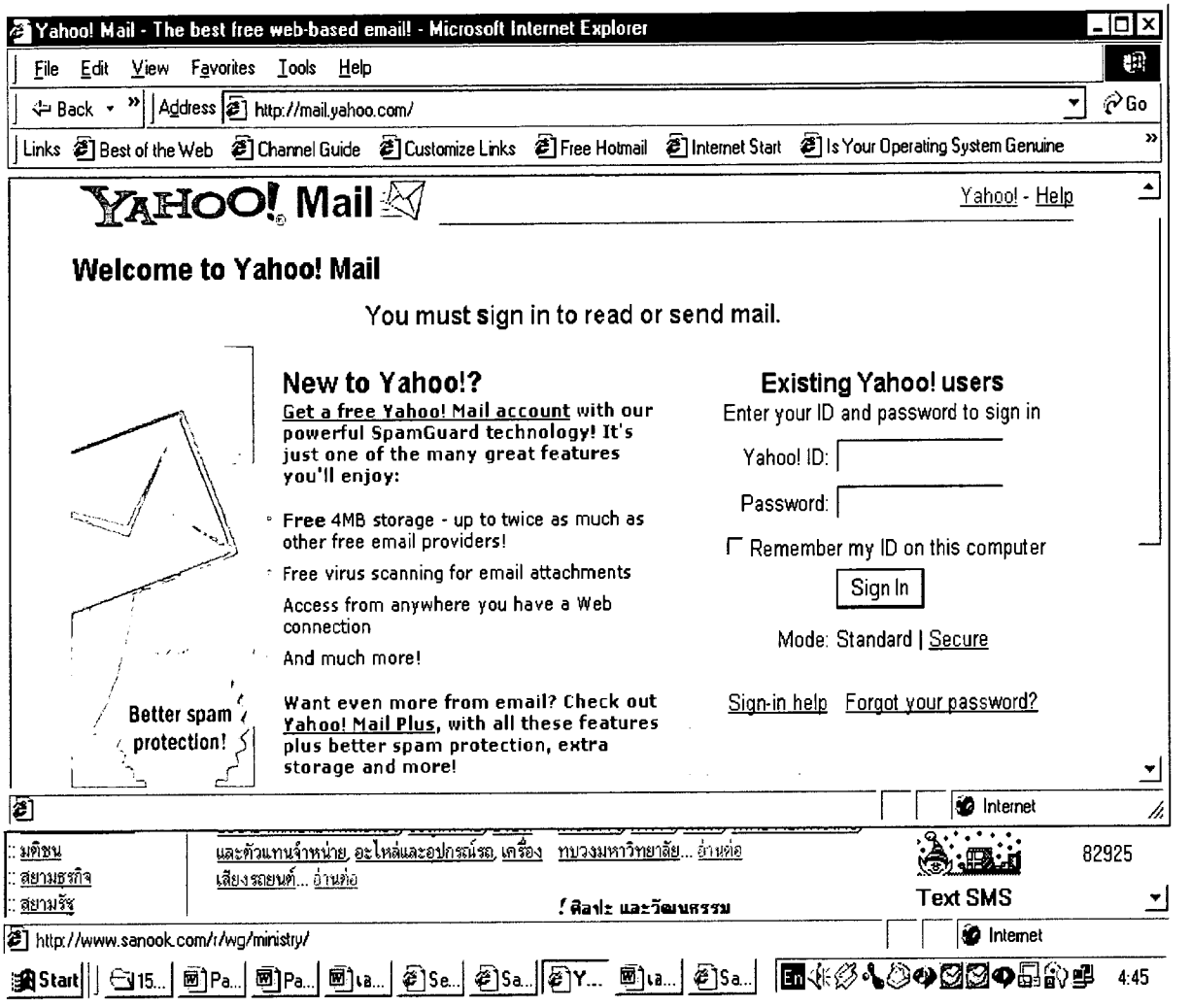
Source: www.verisign.com

Figure 16: Verisign's web page provides about security & payment services



Source: www.verisign.com/security/index.html?sl=070310

Figure 17: Web page of Yahoo



Source: www.mail.yahoo.com/

Appendix 1

Sampling formula of Yamane (1967) is as follow:

$$n = \frac{N}{1+N(e)^2}$$

where N is the total number of elements in the population

n is the sample size to be estimated

$(e)^2$ is the standard error of the estimate [(e) needed in this study is 5 percent]

Applying the correlation formula, that is

$$n = \frac{5,647,799}{1+5,647,799(0.05)^2}$$

$$n = 399.97 \text{ or } \approx 400$$

TABLE 21: PROCESS OF MULTISTAGE SAMPLING

The *first stage*, used stratified sampling method by dividing 50 districts of Bangkok into 6 groups as follows:

Name of groups	Total districts	Name of districts	Population
A	9	1.Pranakon	83,742
		2.Promprabsatrupay	78,376
		3.Sampantawong	38,628
		4.Bangrak	64,345
		5.Patumwan	111,052
		6.Payathai	92,852
		7.Dusit	160,243
		8.Bangsui	163,245
		9.Rajtawee	108,085
B	9	1.Donmuang	78,376
		2.Lalsi	117,075
		3.Saimai	136,103
		4.Bangkhen	165,357
		5.Jatujak	170,901
		6.Ladpraow	106,704
		7.Bungkrum	135,851
		8.Bangkrapi	141,308
		9.Wangthonglang	104,800
C	8	1.Sapansung	69,787
		2.Meanburi	92,480
		3.Krongsamwa	82,445
		4.Nongjok	84,481
		5.Ladkrabang	108,017
		6.Prawech	115,697
		7.Suanlung	109,797
		8.Kunnayao	74,979

Name of groups	Total districts	Name of districts	Population
D	9	1.Dindang	168,552
		2.Huaykwang	79,070
		3.Wattana	80,601
		4.Klongtaey	144,595
		5.Bangna	99,312
		6.Prakanong	101,757
		7.Sathorn	112,227
		8.Bangkolam	121,853
		9.Yannawa	94,019
E	7	1.Pangpad	124,451
		2.Talingchan	98,550
		3.Bangkognoi	167,171
		4.Bangkogyai	91,584
		5.Pasrijarern	142,694
		6.Nongkam	106,202
		7.Taweewattana	50,066
F	8	1.Banhkuntein	101,728
		2.Bangborn	69,829
		3.Jomthong	176,309
		4.Ratburana	95,564
		5.Tungkru	84,561
		6.Tonburi	193,783
		7.Klongsan	115,794
		8.Bangkae	169,615
Total	50		5,647,799

Source : www.dola.go.th

The *second stage*, used quota sampling method by selecting 2 districts from each group as follows:

1. Group A 2 districts
2. Group B 2 districts
3. Group C 2 districts
4. Group D 2 districts
5. Group E 2 districts
6. Group F 2 districts

The third stage, used simple random sampling by selecting 2 districts from all districts in each group as follows:

1. Group A Panakon and Patumwan
2. Group B Jatujak and Bangkrapi
3. Group C Prawech and Suanluang
4. Group D Satorn and Dindaeng
5. Group E Bangprad and Bangkogyai
6. Group F Thonburi and Jomtean

The *fourth stage*, used quota sampling by selecting 400 samples from each of the districts in each group as follows:

Name of groups	**Name of districts**	**Population**	**Population Percentage**	**Number of Samples**
A	Panakon and Patumwan	83,742 111,052	5.23 6.94	22 28
B	Jatujak and Bangkrapi	170,901 141,308	10.68 8.83	42 36
C	Prawech and Suanluang	115,697 109,797	7.23 6.86	30 28
D	Satorn and Dindaeng	112,227 168,552	7.01 10.53	28 41
E	Bangprad and Bangkogyai	125,451 91,584	7.84 10.53	32 24
F	Thonburi and Jomtean	193,783 176,309	7.84 5.72	45 44
		1,600,403	**100**	**400**

Appendix 2: Questionnaire Administered Surveying Bank Customers Use of Internet banking (IB) Services

Please, tick ✓ only one choice.

Part 1 Demographic characteristics of the sample

1) Gender

☐ Male ☐ Female

2) Age

☐ 18-25 ☐ 26-35 ☐ 36-45 ☐ over 45

3) Education

☐ Below high school ☐ Certificate of diploma

☐ Bachelor degree ☐ Over bachelor degree

4) Occupation

☐ Government officers ☐ State enterprise officers

☐ Commercials ☐ Business men

☐ Engineering ☐ Teachers

☐ Doctors/nurses ☐ Students

5) Your income (bath per month) about:

☐ Less than 10,000 ☐ 10,000 – 20,000

☐ 20,001 – 30,000 ☐ over 30,001

Part II Usage of Internet banking services

1) The level of interesting to use Internet banking.

☐ strongly uninteresting ☐ uninteresting ☐ Not Sure

☐ Interesting ☐Strongly interesting

2) Most of time, where do you use Internet ?

☐ House ☐ Office

☐ Internet cafe ☐ School

3) What banking channels do you favorite to use?

☐ A.T.M ☐ Branch

☐ Tele-banking ☐ Internet banking

4) You used Internet: (hours per day)

☐ Less than 2 hours per day ☐ 2-3 Hours per day

☐ 3.1-4 Hours per day ☐ Over 4 hours per day

5) If you have ever heard Internet banking (IB), sources of information for IB services from:

☐ Television ☐ Radio

☐ Magazine or newspaper ☐ The branches

☐ Web site of the banks

6) Have someone in your family used Internet banking?

☐ Yes ☐ No

Part III satisfaction from Internet banking services

	Not at all satisfied	**Low satisfied**	**Some satisfied**	**Good satisfied**	**Very satisfied**
Available 7 days and 24 hours.	1	2	3	4	5
I can access from anywhere.	1	2	3	4	5
It provides time savings.	1	2	3	4	5
The transactions have low or no cost.	1	2	3	4	5
Easy to use.	1	2	3	4	5
Internet banking services are reliable.	1	2	3	4	5
Internet banking services are secure.	1	2	3	4	5
It is self-service.	1	2	3	4	5

Ranging from 1 = not at all satisfied to 5 = very satisfied

Part IV In your opinion, you do not use Internet banking services because:

Ranging from 1 = Strongly Disagree to 5 = Strongly Agree

1) You do not adopting Internet banking service because you are unaware of the service and the benefits it offers.

☐ Strongly Disagree ☐ Disagree ☐ Not Sure ☐Agree ☐ Strongly Agree

2) You do not adopting Internet banking service because you do not find that it is easy to use.

☐ Strongly Disagree ☐ Disagree ☐ Not Sure ☐Agree ☐ Strongly Agree

3) You do not adopting Internet banking service because you are concerned about safety and security of transactions over the Internet.

☐ Strongly Disagree ☐ Disagree ☐ Not Sure ☐Agree ☐ Strongly Agree

4) You do not adopting Internet banking service because it is not reasonably priced.

☐ Strongly Disagree ☐ Disagree ☐ Not Sure ☐Agree ☐ Strongly Agree

5) You do not adopting Internet banking service because you do not want to change from currently familiar ways of transacting.

☐ Strongly Disagree ☐ Disagree ☐ Not Sure ☐Agree ☐ Strongly Agree

6) You do not adopting Internet banking service because you do not have access to computers or Internet.

☐ Strongly Disagree ☐ Disagree ☐ Not Sure ☐Agree ☐ Strongly Agree

Appendix 3

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TABLE 22: GENDER OF RESPONDENTS AND INTEREST/NON-INTEREST IN USING INTERNET BANKING CROSSTABULATION

Sex * INTEREST/UNINTEREST TO USE IB Crosstabulation

			INTEREST/UNINTEREST TO USE IB		
			uninteresting	interesting	Total
Sex	man	Count	143	79	222
		% within Sex	64.4%	35.6%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	59.6%	49.4%	55.5%
		% of Total	35.8%	19.8%	55.5%
	woman	Count	97	81	178
		% within Sex	54.5%	45.5%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	40.4%	50.6%	44.5%
		% of Total	24.3%	20.3%	44.5%
Total		Count	240	160	400
		% within Sex	60.0%	40.0%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	100.0%	100.0%	100.0%
		% of Total	60.0%	40.0%	100.0%

Source : My data

TABLE 23: EDUCATION OF RESPONDENTS AND INTEREST/NON-INTEREST IN USING INTERNET BANKING CROSSTABULATION

Education * INTEREST/UNINTEREST TO USE IB Crosstabulation

			INTEREST/UNINTEREST TO USE IB		
			uninteresting	interesting	Total
Education	below secondary	Count	46	16	62
		% within Education	74.2%	25.8%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	19.2%	10.0%	15.5%
		% of Total	11.5%	4.0%	15.5%
	dipoma	Count	57	19	76
		% within Education	75.0%	25.0%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	23.8%	11.9%	19.0%
		% of Total	14.3%	4.8%	19.0%
	bachelor	Count	110	87	197
		% within Education	55.8%	44.2%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	45.8%	54.4%	49.3%
		% of Total	27.5%	21.8%	49.3%
	over bachelor	Count	27	38	65
		% within Education	41.5%	58.5%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	11.3%	23.8%	16.3%
		% of Total	6.8%	9.5%	16.3%
Total		Count	240	160	400
		% within Education	60.0%	40.0%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	100.0%	100.0%	100.0%
		% of Total	60.0%	40.0%	100.0%

Source : My data

TABLE 24: CHI-SQUARE TESTS

	Value	**Asymp.Sig (2-sided)**
Pearson Chi-Square	22.982	0.00
Likelihood Ratio	23.480	0.00
Linear-by-Linear Association	20.343	0.00
N of Valid Case	400	

Source : My data

TABLE 25: AGE OF RESPONDENTS AND INTEREST/NON-INTEREST IN USING INTERNET BANKING CROSSTABULATION

age * INTEREST/UNINTEREST TO USE IB Crosstabulation

			INTEREST/UNINTEREST TO USE IB		
			uninteresting	interesting	Total
age	18-25	Count	41	49	90
		% within age	45.6%	54.4%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	17.1%	30.6%	22.5%
		% of Total	10.3%	12.3%	22.5%
	26-35	Count	63	73	136
		% within age	46.3%	53.7%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	26.3%	45.6%	34.0%
		% of Total	15.8%	18.3%	34.0%
	36-45	Count	72	22	94
		% within age	76.6%	23.4%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	30.0%	13.8%	23.5%
		% of Total	18.0%	5.5%	23.5%
	over45	Count	64	16	80
		% within age	80.0%	20.0%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	26.7%	10.0%	20.0%
		% of Total	16.0%	4.0%	20.0%
Total		Count	240	160	400
		% within age	60.0%	40.0%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	100.0%	100.0%	100.0%
		% of Total	60.0%	40.0%	100.0%

Source : My data

TABLE 26: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	42.544	0.00
Likelihood Ratio	44.197	0.00
Linear-by-Linear Association	34.947	0.00
N of Valid Case	400	

Source : My data

TABLE 27: AGE OF RESPONDENTS AND INTERNET USAGE CROSSTABULATION

age * You used internet:(hours per day) Crosstabulation

			You used internet:(hours per day)				
			Not over 2 hours per day	Over 2-3 hours per day	Over 3-4 hours per day	Over 4 hours per day	Total
age	18-25	Count	8	24	30	15	77
		% within age	10.4%	31.2%	39.0%	19.5%	100.0%
		% within You used internet:(hours per day)	11.4%	21.1%	37.0%	55.6%	26.4%
		% of Total	2.7%	8.2%	10.3%	5.1%	26.4%
	26-35	Count	26	47	36	12	121
		% within age	21.5%	38.8%	29.8%	9.9%	100.0%
		% within You used internet:(hours per day)	37.1%	41.2%	44.4%	44.4%	41.4%
		% of Total	8.9%	16.1%	12.3%	4.1%	41.4%
	36-45	Count	5	43	15		63
		% within age	7.9%	68.3%	23.8%		100.0%
		% within You used internet:(hours per day)	7.1%	37.7%	18.5%		21.6%
		% of Total	1.7%	14.7%	5.1%		21.6%
	over45	Count	31				31
		% within age	100.0%				100.0%
		% within You used internet:(hours per day)	44.3%				10.6%
		% of Total	10.6%				10.6%
Total		Count	70	114	81	27	292
		% within age	24.0%	39.0%	27.7%	9.2%	100.0%
		% within You used internet:(hours per day)	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	24.0%	39.0%	27.7%	9.2%	100.0%

Source : My data

TABLE 28: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	144.933	0.00
Likelihood Ratio	140.059	0.00
Linear-by-Linear Association	61.115	0.00
N of Valid Case	400	

Source : My data

TABLE 29: EDUCATION OF RESPONDENTS AND INTERNET USAGE CROSSTABULATION

Education * You used internet:(hours per day) Crosstabulation

			You used internet:(hours per day)				
			Not over 2 hours per day	Over 2-3 hours per day	Over 3-4 hours per day	Over 4 hours per day	Total
Educatior	below seconda	Count	4	13	17	5	39
		% within Education	10.3%	33.3%	43.6%	12.8%	100.0%
		% within You used internet:(hours per	5.7%	11.4%	21.0%	18.5%	13.4%
		% of Total	1.4%	4.5%	5.8%	1.7%	13.4%
	dipoma	Count	3	9	20	13	45
		% within Education	6.7%	20.0%	44.4%	28.9%	100.0%
		% within You used internet:(hours per	4.3%	7.9%	24.7%	48.1%	15.4%
		% of Total	1.0%	3.1%	6.8%	4.5%	15.4%
	bachelor	Count	41	75	36	9	161
		% within Education	25.5%	46.6%	22.4%	5.6%	100.0%
		% within You used internet:(hours per	58.6%	65.8%	44.4%	33.3%	55.1%
		% of Total	14.0%	25.7%	12.3%	3.1%	55.1%
	over bachelor	Count	22	17	8		47
		% within Education	46.8%	36.2%	17.0%		100.0%
		% within You used internet:(hours per	31.4%	14.9%	9.9%		16.1%
		% of Total	7.5%	5.8%	2.7%		16.1%
Total		Count	70	114	81	27	292
		% within Education	24.0%	39.0%	27.7%	9.2%	100.0%
		% within You used internet:(hours per	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	24.0%	39.0%	27.7%	9.2%	100.0%

Source : My data

TABLE 30: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	63.680	0.00
Likelihood Ratio	62.390	0.00
Linear-by-Linear Association	38.640	0.00
N of Valid Case	400	

Source : My data

TABLE 31: OCCUPATION OF RESPONDENTS AND INTEREST/NON-INTEREST IN USING INTERNET BANKING CROSSTABULATION

Occupation * INTEREST/UNINTEREST TO USE IB Crosstabulation

			INTEREST/UNINTEREST TO USE IB		
			uninteresting	interesting	Total
Occupation	government officer	Count	63	14	77
		% within Occupation	81.8%	18.2%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	26.3%	8.8%	19.3%
		% of Total	15.8%	3.5%	19.3%
	state enterprise	Count	58	21	79
		% within Occupation	73.4%	26.6%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	24.2%	13.1%	19.8%
		% of Total	14.5%	5.3%	19.8%
	commercial	Count	43	27	70
		% within Occupation	61.4%	38.6%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	17.9%	16.9%	17.5%
		% of Total	10.8%	6.8%	17.5%
	business man	Count	33	40	73
		% within Occupation	45.2%	54.8%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	13.8%	25.0%	18.3%
		% of Total	8.3%	10.0%	18.3%
	engineering	Count	11	20	31
		% within Occupation	35.5%	64.5%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	4.6%	12.5%	7.8%
		% of Total	2.8%	5.0%	7.8%
	teacher	Count	23	20	43
		% within Occupation	53.5%	46.5%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	9.6%	12.5%	10.8%
		% of Total	5.8%	5.0%	10.8%
	doctor/nurse	Count	1	11	12
		% within Occupation	8.3%	91.7%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	.4%	6.9%	3.0%
		% of Total	.3%	2.8%	3.0%
	student	Count	8	7	15
		% within Occupation	53.3%	46.7%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	3.3%	4.4%	3.8%
		% of Total	2.0%	1.8%	3.8%
Total		Count	240	160	400
		% within Occupation	60.0%	40.0%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	100.0%	100.0%	100.0%
		% of Total	60.0%	40.0%	100.0%

Source : My data

TABLE 32: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	50.056	0.289
Likelihood Ratio	52.685	0.265
Linear-by-Linear Association	33.028	0.233
N of Valid Case	400	

Source : My data

TABLE 33: INCOME OF RESPONDENTS AND INTERNET USAGE CROSSTABULATION

Income/month * INTEREST/UNINTEREST TO USE IB Crosstabulation

			INTEREST/UNINTEREST TO USE IB		
			uninteresting	interesting	Total
Income/month	below 10000	Count	58	29	87
		% within Income/month	66.7%	33.3%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	24.2%	18.1%	21.8%
	10001-20000	Count	77	45	122
		% within Income/month	63.1%	36.9%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	32.1%	28.1%	30.5%
	20001-30000	Count	72	40	112
		% within Income/month	64.3%	35.7%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	30.0%	25.0%	28.0%
	over 30001	Count	33	46	79
		% within Income/month	41.8%	58.2%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	13.8%	28.8%	19.8%
Total		Count	240	160	400
		% within Income/month	60.0%	40.0%	100.0%
		% within INTEREST/UNINTEREST TO USE IB	100.0%	100.0%	100.0%

Source : My data

TABLE 34: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	13.893	0.003
Likelihood Ratio	13.659	0.003
Linear-by-Linear Association	8.558	0.003
N of Valid Case	400	

Source : My data

TABLE 35: PREFERENCE OF CHANNELS OF THE BANK AND OCCUPATION OF RESPONDENTS CROSSTABULATION

		What do you prefer to use				Total
		ATM	Branch	Tele Banking	Internet banking	
Government Official	Count	45	18	4	10	77
State Enterprise employee	Count	41	27	2	9	79
Commercial	Count	35	16	10	9	70
Businessmen	Count	27	14	13	19	73
Engineer	Count	2	10	11	8	31
Teacher	Count	25	11	3	4	43
Doctor/nurse	Count	2	3	3	4	12
Student	Count	9	2	2	2	15
Total	Count	186	101	48	65	400

Source : My data

TABLE 36: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	74.402	0.00
Likelihood Ratio	84.077	0.00
Linear-by-Linear Association	7.835	0.005
N of Valid Case	400	

Source : My data

Appendix 4

TABLE 37: PREFERENCE OF CHANNELS OF THE BANK AND EDUCATION OF RESPONDENTS CROSSTABULATION

		What do you prefer to use				Total
		ATM	Branch	Tele Banking	Internet banking	
Below secondary School/level	Count	33	17	6	6	62
Dipoma Level	Count	41	19	8	8	76
Bachelor's level	Count	82	51	21	43	197
Higher than Bachelor's level	Count	30	14	13	8	65
Total	Count	186	101	48	65	400

Source : My data

TABLE 38: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	14.773	0.020
Likelihood Ratio	14.396	0.109
Linear-by-Linear Association	4.411	0.036
N of Valid Case	400	

Source : My data

TABLE 39: PREFERENCE OF CHANNELS OF THE BANK AND INCOME OF RESPONDENTS CROSSTABULATION

	What do you prefer to use				Total
	ATM	Branch	Tele banking	Internet banking	
Below 10,000	41	24	10	12	87
10,001-20,000	69	31	8	14	122
20,001-30,000	47	27	14	24	112
Over 30,001	29	19	16	15	79
Total	186	101	48	65	400

Source : My data

TABLE 40: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	16.863	0.045
Likelihood Ratio	16.681	0.054
Linear-by-Linear Association	6.668	0.10
N of Valid Case	400	

Source : My data

TABLE 41: PREFERENCE OF CHANNELS OF THE BANK AND AGE OF RESPONDENTS CROSSTABULATION

		Age				Total
		18-25	**26-35**	**36-45**	**Over 45**	
ATM	Count	42	59	45	40	186
	% Within Prefer to use	22.6%	31.70%	24.20%	21.5%	100.0%
	% Within Sex	46.70%	43.40%	47.90%	50.00%	46.50%
Branch	Count	25	27	28	21	101
	% Within Prefer to use	24.80%	26.70%	27.70%	20.80%	100.00%
	% Within Sex	27.80%	19.90%	29.80%	26.3%	25.30%
Tele banking	Count	9	21	7	11	48
	% Within Prefer to use	18.80%	43.80%	14.60%	22.90%	100.00%
	% Within Sex	10.00%	15.40%	7.40%	13.80%	12.00%
Internet banking	Count	14	29	14	8	65
	% Within Prefer to use	21.59%	44.60%	21.50%	12.30%	100.00%
	% Within Sex	15.60%	21.30%	14.90%	10.00%	16.30%
Total	Count	90	136	94	80	400
	% Within Prefer to use	22.50%	34.00%	23.50%	20.00%	100.00%
	% Within Sex	100.00%	100.00%	100.00%	100.00%	100.00%

Source : My data

TABLE 42: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	10.809	0.025
Likelihood Ratio	11.156	0.007
Linear-by-Linear Association	1.421	0.012
N of Valid Case	400	

Source : My data

TABLE 43: PREFERENCE OF CHANNELS OF THE BANK AND GENDER OF RESPONDENTS CROSSTABULATION

		Gender		Total
		Man	Woman	
ATM	Count	117	69	186
	% Within Prefer to use	62.90%	37.10%	100.0%
	% Within Sex	52.7%	38.80%	46.50%
Branch	Count	56	45	101
	% Within Prefer to use	55.4%	44.6%	100.00%
	% Within Sex	25.7%	25.30%	25.30%
Telebanking	Count	12	36	48
	% Within Prefer to use	25.00%	75.00%	100.00%
	% Within Sex	5.40%	20.02%	12.00%
Internet banking	Count	37	28	65
	% Within Prefer to use	56.90%	43.1%	100.00%
	% Within Sex	16.70%	15.70%	16.30%
Total	Count	222	178	400
	% Within Prefer to use	55.50%	44.50%	100.00%
	% Within Sex	100.00%	100.00%	100.00%

Source : My data Prefer of usage

TABLE 44: CHI-SQUARE TESTS

	Value	Asymp.Sig (2-sided)
Pearson Chi-Square	20.859	0.00
Likelihood Ratio	21.203	0.00
Linear-by-Linear Association	8.792	0.003
N of Valid Case	400	

Source : My data

TABLE 45: PREFERENCE OF CHANNELS OF THE BANK

	Frequency	Percent	Valid Percent	Cumulative percent
ATM	186	46.5	46.5	46.5
Branch	101	25.30	25.30	71.80
Telebanking	48	12.00	12.00	83.80
Internet banking	65	16.30	16.30	100
Total	400	100.00	100.0	

Source : My data

TABLE 46: PREFERENCE OF USAGE OF E-BANKING

	What do you prefer to use				Total
	ATM	**Branch**	**Telebanking**	**Internet banking**	
Easy to access	63	26	8	18	115
Easy to check when problems occur	55	50	17	23	145
Easy of use	22	7	9	10	48
Cheapness price	15	9	6	6	36
Quick and reliable	31	9	8	8	56
Total	186	101	48	65	400

Source: My data