

Internet - The Future Delivery Channel for Banking Services?

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Abstract

Much has happened in the world of Internet banking since we started examining the parameters of bank participation and the potential risks involved in Internet banking from a customer's point of view in our previous study. In order to assess the importance of the Internet as a future delivery mechanism for the banking industry, we now focus on the potential risks involved in offering Internet services from the banks' point of view. By correlating the risks perceived by both customers and banks with the actual Internet services offered, we provide a more complete picture of the requirements and concerns in this new way of doing business now and in the future.

1. Background

1.1. Banking Activities on the Internet

Since 1993, businesses started to use the Internet, especially the World Wide Web (WWW), to carry out business activities. Typical business related usage of the WWW ranged from gathering general information, vendor support, to direct selling of products and services. As there are more than ten million users on the WWW, companies have realized that the Internet has encompassed revolutionary changes in communications, entertainment, information and computing. The implications of these changes will be persuasive, transforming banking as we know it today. Banks not only initiate their own moves onto the Internet but are also pushed by other non-bank competitors.

In offering services on the Internet, banks have to understand the types of services that customers will readily accept through this new delivery channel, while considering the investment and human resources involved in introducing it to both existing and potential customers. As of today, many banks do not have a clear strategy, but hope that starting their own Web pages will give them some idea of customer requirements.

1.2. Transactions on the WWW

Electronic delivery of financial products and services

over the WWW involves transactions that take place in part or entirely using the Internet. In order to encourage customers to use Internet banking services, both consumers and suppliers must be confident that:

- i) electronic communications and transactions are secure
- ii) the origin of messages can be verified and accepted as legally binding
- iii) personal privacy can be protected.

We concluded from Figure 1 [1] that customers have not yet developed complete confidence in electronic commerce. Customers' perception of security directly influences their behaviour towards Internet banking. Although several security protocols such as RSA Public Key Encryption [2] have been introduced to address this concern, customers still do not understand or have confidence in using these security features. In order to succeed in Internet banking, banks and their partners must educate their customers. Even though security protocols are available for Internet transactions, customers still think that their personal information is not adequately protected because no government regulations are in place to monitor different activities on the Internet in contrast to the number of regulations that are imposed on the financial services industry.

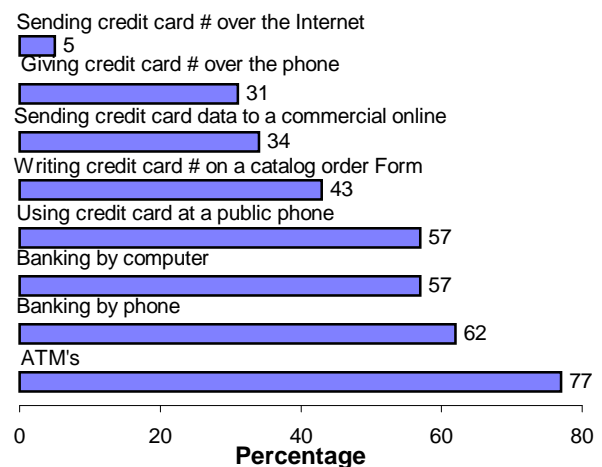


Figure 1. Computer Users Confidence in Electronic Commerce.

2. Future Banking Trends

Over the past 30 years, banks have developed many new delivery channels. These include automatic teller machines (ATMs), phone banking, kiosks, and recently PC banking. Studies have shown that customers are looking for ways to meet their banking needs without visiting a bank branch. Figure 2 [1] reports on the results of a study done by the Bank Administration Institute (BAI) on typical customer interactions with banks. It showed that about 58% of typical customer interactions with banks are through the phone and mail that they called "virtual interaction". The total "physical interaction" which includes branch, ATMs and POS (point of sales terminal) accounts for only 32%. The amount of "physical interaction" is declining as the number of bank branches decrease. However, in order to virtually interact, typically, customers must obtain a copy of the banks' proprietary software, learn to use it, then dial into the banks' network when needed. This is inconvenient for many customers who travel constantly because of the need to retrain and to keep up with different versions of the software. Internet banking seems to be a solution to this problem. The tremendous networking power and easy access of the Internet allow customers to reach the banks' Web pages regardless of their physical location. As long as they have a browser and an Internet Service Provider (ISP), they will be able to see their own financial data and perform almost any transaction they desire.

Introducing the idea of Internet banking to today's customers is similar to introducing ATMs to the market more than two decades ago. It took 15 years of building to reach critical mass acceptance in the case of ATMs and credit cards [3]. Once at the critical mass, credit card and ATM transactions progressed fairly quickly. Electronic banking, which includes Internet banking, is reaching that same critical mass after a decade's development. Today, many bank customers are quite comfortable with personal computers. Banking Technology [3] reported that about 50% of banking households have personal computers in the United States. Enticing these customers to use electronic banking will reduce costs for the banks. This article also stated that the transition to electronic banking will not be driven by the consumer but rather by business as it seeks to reduce the high costs generated by paper.

2.1. Customer Acceptance of Internet Banking

Although hundreds of banks created their own Web pages over the last 15 months, whether they are accepted by their customers are in question. This was partially addressed by Yan et al. [4] where they looked at customers' concerns about the types of services offered on the WWW by these institutions. The study showed that customers are not comfortable in using the Internet for any transaction that involves money exchange because transactions such as

funds transfer, bill payment and cheque issuance are considered to be very risky.

Interactions	Electronic 10%	Phone and Mail (Virtual) 58%	Branch and ATM (Physical) 32%
Includes	- Wholly electronic transactions	- Non-electronic Interactions not requiring a physical location	- Interactions requiring a physical location
Primary Channels	- Phone (AVRU) - Electronic Funds Transfer	- Mail - Phone (involving person)	- Branch - ATM - POS TM

Figure 2. Typical Customer Interactions with Banks (AVRU= automatic voice response utility; POS = point of sale).

2.2. Immediate Issues for Banks

As reported by Taylor et al. [5], the opportunities and risks arising from the rapid growth of online delivery and the new competitive environment for retail banking have become prominent, CEO-level issues. Most banks are now aware of online delivery and indeed, many banks now view online delivery as an important strategic initiative. However, being aware of the issue is not enough for banks to achieve a competitive position in electronic banking. As George reported in Banking Technology [6], significant progress in Internet banking has been made during 1996. In 1995, a large number of banks introduced their first Web pages to test customer response [7]. At the time, the world's first Internet-only bank, Security First Network Bank (SFNB) started its brave, but as yet unproven, experiment on the Internet. Since then, SFNB picked up respectable customer base, demanding that the bank extends its product range to include a securities brokerage service. Although its creators still refer to it as a prototype, it is now undeniably a very real and flourishing bank. The success of SFNB has pushed other members of the Financial Services Industry (FSI) to seriously investigate the possibility of using the Internet as a delivery channel for essentially all banking services. In fact, during the last few months, banks around the world have made significant progress in increasing their Internet service offerings. These new Internet based services include credit card application and pre-authorization, loan application and pre-authorization, as well as providing access to Internet banking services through Microsoft Money 97 ([8]; [9]; [10]; [11]).

The issues faced by most banks using this new technology are three fold: customer acceptance, security and competition. Online Banking Report [12] has stated that 2.5 million people in the U.S. were able to access their

checking accounts online in 1996, so customer acceptance is growing rapidly as this number is 10 times as much as it was in 1995. It also reported that Wells Fargo's online customer base has grown from 20,000 to 270,000 in 18 months. Still, security is a serious issue and many companies have introduced new security software to handle Internet transactions. Security is not just an issue for the banks: Banking Technology Magazine [13] reported that, Tandem, a computer manufacturer, has launched its first products aimed at the Internet market by adding security related systems to its fault tolerant computer systems. Net browsers such as Netscape and Explorer now support web pages developed in a secure language such as Java. As well, the browsers are capable of applying cryptography to incoming and outgoing messages to enhance security. The next step is to educate customers about these security features, so that they will have enough confidence in the system and use it for cash related transactions.

With technological advances in communications and computing, companies can move into global markets much easier and faster than before and therefore increase competition. Banks are facing two types of competition: from other banks and from non-banks. The former is familiar to banks, but the latter is new and includes firms such as GE, Intuit, AT&T and Microsoft which are moving into the financial services industry by introducing products, such as Quicken and Money, that are important for linking banks to their customers [14]. Non-bank companies such as Visa, Microsoft, MasterCard, IBM and Netscape form strategic payments alliances for developing payment systems that will have significant impact on the members of the FSI ([15]; [16]). To be successful, banks will need to operate in a fast-changing, technology driven environment where product life cycles are as short as 18 to 24 months. As Taylor et al. [5] suggested, banks must adapt to the more frenetic pace of the online environment, and be much more aggressive in defending and expanding their businesses.

As always, cost is an issue when developing a strategy for Internet banking. A BAI study [1] analyzed the likely impact of online delivery on retail bank economics and on the overall delivery infrastructure. Their results suggest that the growth of online banking will have two profound effects on the retail delivery structure of banks. The first is the overall increase in activity that banks are likely to experience as they make online access available just like the introduction of ATMs and telephone access. The second effect is the substitution of activity across channels. The retail delivery infrastructure accounts for the largest single item of non-interest expenditure for most retail banks. Branch costs account for a significant, although declining, portions of this total. Innovations in delivery over the past two decades have increased customer convenience and access, but they have also increased the cost and complexity of the delivery infrastructure, making

it more difficult for banks to serve customers consistently across all channels. Although investment might increase as banks start to offer online services, other industry analysts suggested that offering online services would help banks to cut operating cost since it will eliminate much of the paper usage. Whether or not offering online services is a cost saving strategy, depends on the type of system and application that a bank invests in as well as customer acceptance on the application.

3. Objectives

Although the number of bank web sites increased significantly during the past 12 months, the number of banks actually offering transaction services amounts to only 2.8% of the total [12]. This suggests that while banks are investigating the Internet as a future delivery channel for their services, they appear to be slow to act. Therefore, the objectives of our study are to develop a strategy for using the Internet as the next delivery channel as well as try to foresee the possible problems and concerns that banks will likely face when their Internet services go into production.

4. Methodology

In order to obtain the banks' perspective in offering Internet Services, a survey was designed and administered to bank personnel through email. In order to obtain broad coverage, the survey was divided in 5 sections. The first section was on Internet Operational Information where information on the Web site was requested along with information on the site developer, on maintenance policies, on the methods used to update the web page contents and their email response rate. Functional information on Web pages was obtained in section B, where we tried to determine the actual functions provided on the Web site. Specific questions on the percentage breakdown of text and graphics contents, as well as the number of languages available were included. In addition, specific bank services were listed in this section where respondents were asked to provide a risk factor for each service on the list. This risk factor ranged from 1 to 10, 1 being the least risky and 10 being the most risky. Respondents were asked to indicate whether their institution provided any of the services on the list. This will shed light on the types of transactions available on the Internet. The list of services on the survey is tabulated in Table 1. A comment section followed section B allowed respondents to state any concerns, problems and issues they have with the implementation of their service. Section C probed for marketing information about target customers, such as age and goals of their Web pages. General information about the responding bank was obtained in Section D, including data on the bank's history, types of business, asset size and mode of operation.

5. Internet Banking from a Bank's Perspective

The survey was sent to more than 200 banks around the world. These are banks that explicitly listed their email addresses on their Web site. The survey was not sent to banks which only provide a feedback form on their Web site for communication simply because we could not attach the survey to these forms. Among these banks, 19 returned the survey at the time this paper was written. Within these 19 respondents, there were 1 German bank, 1 Canadian bank, 1 British bank, 1 Korean bank, 1 Lebanese bank, 1 Swiss bank, 2 Mexican banks, 3 Australian banks, and 8 U.S. banks. Besides the 19 banks that completed the survey, 10 other banks replied to the initial email acknowledging the receipt of the survey and promising to pass it onto the right person at their organization.

In the following sections of this paper, we report the results of our study based on the section orders on the survey.

Banking Services Provided on the Internet
Bill Payment (BP)
Account Balance (ACB)
Funds Transfer (FT)
Cheque Issuance (CHQ)
Online Credit Card Pre-authorization (OCC)
Online Mortgage Pre-authorization (OLM)
Online Loan Pre-authorization (OLL)
Downloadable Financial Tools, Forms and Information (DFT)
Electronic Commerce Capability (EC)
Products and Services Information (P&S)
Corporate Information (CI)
Investment Information and Statistics (Stat)
E-mail Capability (Email)
General Information (GI)

Table 1. Bank Services Provided on the Internet.

5.1. Internet Operational Information

In the section entitled "Internet Operational Information", data were collected on the development and maintenance of the bank's Web site as well as some statistics such as the number of emails and hits they received on a weekly basis.

Among the returned surveys, 68% of the bank sites were developed internally. The average number of FTE (full time employees) responsible for maintaining and enhancing the web pages was 3.2. This is twice as many as the number reported by George [7] in 1996 where 8 British

bank sites were studied and all of which have answered that they have about 1.5 FTE keeping their site up-to-date. This increase in FTE in supporting the Web sites suggests that banks are putting more emphasis on their Web sites than they did before.

Among the respondents, about 32% update their site daily. It is also interesting that one of the two cyberbanks, which responded to the survey, updates its web page only monthly. The number of hits and emails received vary significantly and 26% did not keep a record of this data. The weekly hit rate for the rest of the respondents ranged from 150 to 1,500,000, email received weekly varied from 1 to more than 1,500.

5.2. Web Page Information

5.2.1. Web Page Design. In this section, we focused on evaluating web page design. In particular, we sought data on the amount of text, static graphics, dynamic graphics, movie clips, audio clips and other features such as forms. We found that about 84% was text, static graphics constituted 46%, dynamic graphics was 5.7%, audio clips 0.6% and 4.2% other features.

Depending on the bank's nationality and its target markets, it is expected that banks provide information in different languages on their web site. According to our results, 68% of the responding banks provide information in one language only, 16% provide it in 2 languages, 11% has 3 languages and 5% has 4 different languages on their web sites. The choice of language is solely focused on local customer groups. For instance, the German bank only provides information in German whereas U.S. bank sites are in English only. One possible explanation is the regulations imposed on the banking industry. Traditionally, each country has its own banking regulations that very often protect local banks by preventing foreign competition. Therefore, banks are bound to target local customers as their first priority, except those big banks that have entered the global market long before the emergence of the Internet. These banks have subsidiaries all over the world and each subsidiary has its own web site which provides information on services tailored to their local customers. The other situation where multiple languages are provided, typically a market pull consequence, is where the local population is composed of large ethnic groups. A good example of this situation is Canada which is at least a "dual-culture" society, hence almost all banks offer information in both English and French, some sites even provide information in other languages such as Chinese.

In terms of communication and customer interaction, all respondents provided email address on their sites and 68% also provided some sort of feedback form for obtaining customer comments. These feedback forms are useful in gathering ideas, insights, comments, service requirements and gauging the level of customer satisfaction. As George

[7] mentioned, many existing bank sites are in their pilot stage because banks are still trying to assess customer acceptance and service demand for Internet banking.

5.2.2. Transactions and Services Offered on Bank Web Sites. The second part of this section focused on actual transactions and services available at this time. Respondents were asked to indicate whether their web sites provide the specific services listed in Table 1 and to rank these services from 1 to 10. Figure 3 shows the percentage of banks offering various services on the Internet based on survey results. It shows that over 60% of the respondents offer general services such as email, products and services information, corporate information and downloadable financial tools. The percentage of banks offering transaction based services including bill payment, account balance and funds transfer are 26%, 37% and 32% respectively. Services such as cheque issuance, online pre-authorization and electronic commerce were offered at lower percentages.

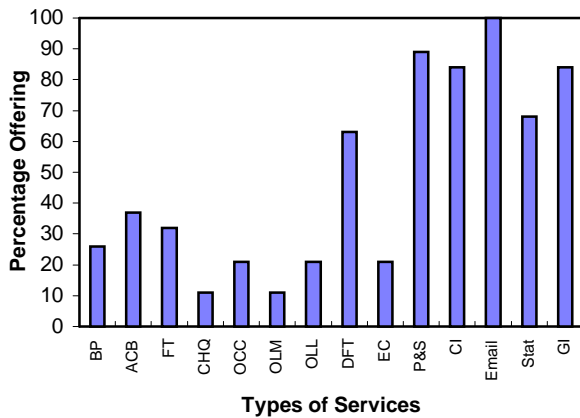


Figure 3. Percentage of Banks Offering Various Services on the Internet.

The risk factor corresponds to each service shown in Figure 4 indicating that services / transactions associated with the highest risks from the banks' perspective are: funds transfer, bill payment, cheque issuance, account balance, online credit card, online mortgage pre-authorizations, online loan, and electronic commerce. The least risky services were downloadable financial tools, corporate information, email, product and services information. The percentage of banks offering these services reflects the banks' perspective of the risks of as shown in Figure 3. When comparing Figures 3 and 4, it is interesting to see that although banks don't consider cash transaction services extremely risky, and in fact none of the services in Table 1 has a risk factor higher than 5.1, less than 50% of the respondents offered any services with a

risk factor of 3 or higher.

We then tried to compare the risk factors from both customers' [4] and the banks' perspective. Figure 5 shows two sets of risk factors along with the percentage of banks offering different services based on our bank survey. It is easy to see that the two risk factors across service types are similar. Although the risk factors given by the customers are consistently higher than those given by the banks, the trends for the two are very similar. Issuing cheques and transferring funds over the Internet seem to be the most risky services from both customer and bank perspectives. In order to assess the correlation between risk and services offered, a combined risk factor was computed by averaging both bank and customer risk factors. The result was plotted together with percentage of banks offering the corresponding services on Figure 6. The data in Figure 6 suggest that risk factors and the portion of the banks offering these are inversely related to one another for services listed in Table 1. As expected, the higher the risk involved, the lower the percentage offering of a particular service on the Internet. This observation is less pronounced for bill payment, account balance, funds transfer and electronic commerce. One possible explanation is that the banks responding to our survey focused their business mostly on retail banking (40% of the total business). Since paying bills, obtaining account balances and transferring funds are core services required or used by most retail customers, it is essential for banks to provide them on all of their delivery channels even if there are some risks. In the case of electronic commerce (i.e. any functionalities for purchasing goods and services as well as links to commercially available financial management software), although the risk factor is relatively low when compared with cash type transaction services, the percentage offering it is low simply because of the large amount of work required in setting up this service. In order to do electronic commerce, banks not only have to develop a payment protocol but also create an appropriate system interface and establish agreements with merchants planning to participate in the electronic mall. This process is time consuming. Due to the relatively low demand for electronic commerce at present, it is really not very cost-effective yet for banks to provide such a service. Some services listed in Table 1 have the same risk factor. An average percentage offering was computed by grouping these services together. Figure 7 shows an inversely proportional relationship between service offering and risk. This result is consistent with Yan et al.[4] where it was concluded that banks are very conservative in offering risky services on the Internet. However, they drew this conclusion based on first hand evaluation of Web sites not on actual bank responses. By including bank responses, our results provide a more accurate picture from a bank's perspective.

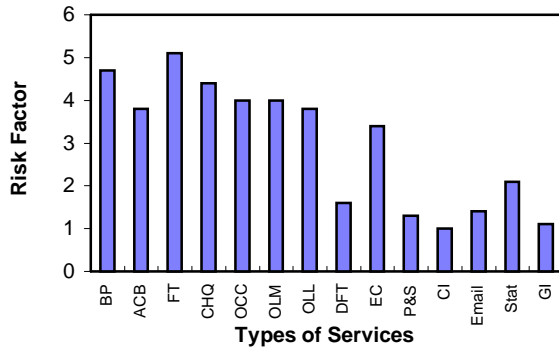


Figure 4. Risk Factor Associated with Various Bank Services Provided on the Internet from Banks' Prospective.

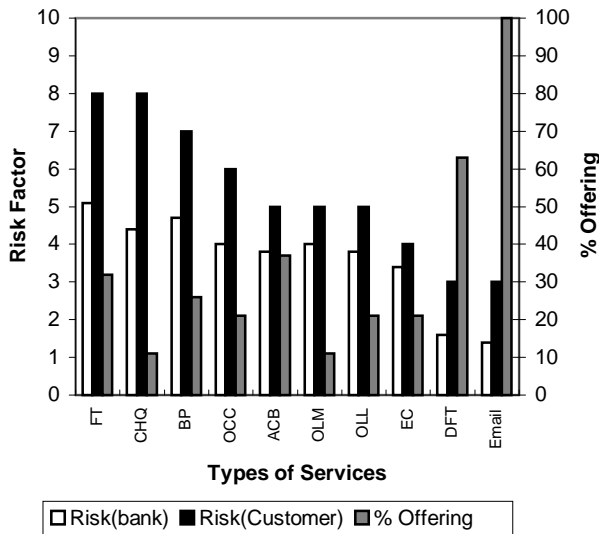


Figure 5. Comparison Between Risk Factors Given by Customers and Banks.

5.3. Marketing Information

In order to determine whether a particular medium is suitable for use as a delivery channel, banks must identify their target customers first. Section C of the survey was dedicated to evaluating marketing efforts. Since using the Internet involves some knowledge of computers, not all existing customers will be able to use bank services on this delivery channel. Our survey classified potential customers into 6 age groups. Banks were asked to provide their best estimates of their customers' age. As can be seen in Figure 8, customers in the age group of 36 to 45 are the main targets for Internet banking, as about 28% of the marketing effort emphasis was aimed at this particular age group. The second age group target was 26 to 35, followed by 46 to 55, then older than 55 and the last target age group was 16 to 25 years of age. This result is consistent with the results shown in Table 2 by the American Banker and Gallop [12] on percentage PC ownership across different age groups in

the United States. According to Table 2, PC owners in the age group of 35 to 44 are very likely to use Internet banking because a high percentage of PC owners in this age group have already used many of the services listed in the table. The table also shows that individuals who have a higher household income are more likely to use these services. Therefore the Internet is a possible delivery channel for a specific customer segment: the computer literate and high net worth customers.

We are also interested in the banks' other goals in using their web pages, thus Figure 9 shows the percentage breakdown of these different goals. Based on our survey results, 28% of the web pages are aimed to achieve actual transactions, 32% is for providing product and service information, 22% is marketing effort and 18% is

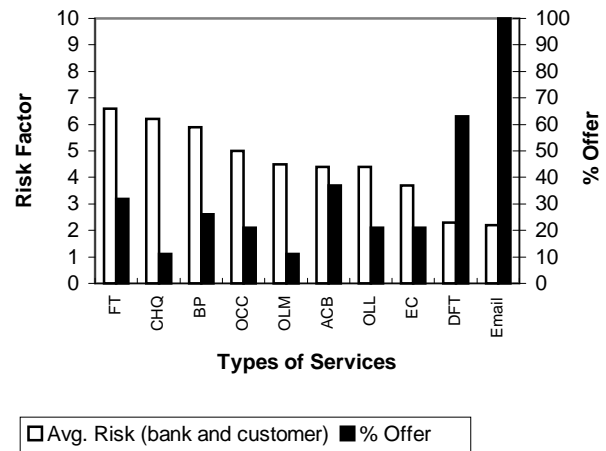


Figure 6. Relationship Between Average Risk Factor and Percentage Offering of Different Internet Services.

advertising. Yan et al. [4] had concluded that banks used their web sites as a marketing tool at the time when they finished their study in 1996. Today, this picture has changed, as an ever increasing number of banks are using the Internet as a service delivery channel [12], evidenced by the fact that they offer transaction based services in addition to general information.

5.4. Corporate Information

In this section of the survey, we obtained corporate information on the respondents. Special emphasis was placed on the respondent's business focus because this directs bank policies and dictates their behaviour in certain situations. Based on our results, the average breakdown of business is: retail banking 46%, business banking 21%, corporate banking 9%, foreign exchange 6%, investment banking 9% and other business 8%. This result supported our previous conclusion in section 5.2 where we suggested

All households who:	All	Age					Household Income		
		18-34	35-44	45-54	55-64	65+	<\$40k	\$40 - 75k	>\$75k
Have PC at home	48%	48%	61%	58%	44%	17%	31%	58%	77%
Have PC & modem at home	36%	39%	36%	38%	42%	12%	24%	34%	55%
PC Owners who:									
Have used the Internet	59%	76%	63%	50%	40%	19%	54%	56%	70%
Have used the Internet for commerce	27%	33%	35%	18%	su	su	23%	24%	39%
Subscribe to an online service	36%	39%	36%	38%	42%	12%	24%	34%	55%
Have used PC for finances	42%	40%	50%	37%	40%	37%	38%	43%	44%
Have used online banking	6%	6%	9%	2%	4%	0%	3%	6%	7%
Are very interested in online banking	23%	27%	26%	20%	15%	8%	18%	23%	29%
Are somewhat interested in online banking	29%	30%	26%	30%	31%	31%	28%	30%	34%
Total very or somewhat interested	52%	57%	52%	50%	46%	39%	46%	53%	63%

Table 2. 1996 American Banker/Gallup Consumer Survey on Personal Computer Ownership. (su = statistically unreliable). Source from = Online Banking Report, Vol.21, January 1997.

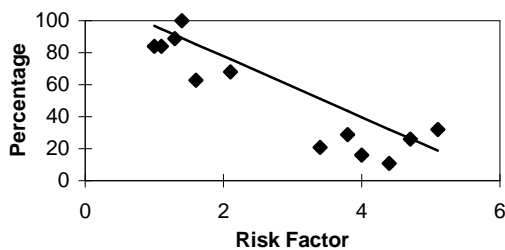


Figure 7. Correlation Between Percentage Offering and Grouped Risk Factors.

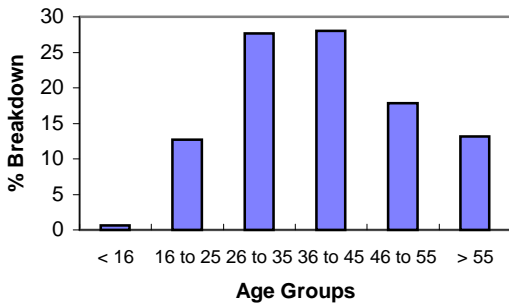


Figure 8. Age Distributions of Target Customers.

that the focus on retail banking affects the types of bank services offered on the Internet. As expected, we found that the only branchless bank, offering its services solely through its Web site (cyberbank), responded to this question focused 100% on retail banking offering a full line of services on its Web site as if it were a bank branch.

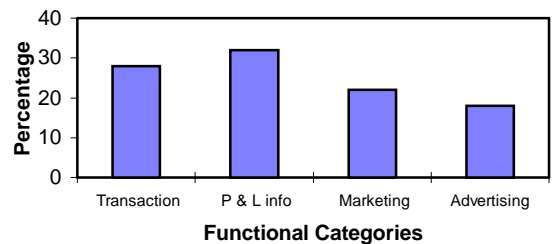


Figure 9. Goals that Banks Like to Achieve through Their Web Site.

5.5. Web Page Design and Customer Response

We also evaluated the respondent banks' web pages to determine whether there is any correlation between web page design and customer response. Once a bank returned the survey, we then examined its web site in detail and the information in Table 3 was recorded.

Since not all banks returned a complete survey, some information was not available from certain respondents. To provide a more complete picture, we only included banks that fully completed the survey. This reduced the number of banks to 11 at the time this paper was written. The small sample size may not give us as accurate a picture as we would like of the global Internet banking services offering but it can serve as an indication to the real picture. Other methods such as emailing or calling the person in charge of Internet banking are being pursued to obtain more responses.

Information Items Gathered from the Banks' Web Pages
Number of External Links
Number of Internal Navigational Links
Number of Text Pages

Table 3. Information Items Recorded from Banks' Web Page.

The correlation between web page design and customer response is assessed by relating the different design features of a web page to the number of hits per week. First, we counted the number of links available, "links" are connections between the different pages on the bank's site. They included functionality buttons, keywords, graphics that can bring the user to the page that contains the corresponding information by clicking the mouse. Due to the complex design of some bank sites, we only counted these links down to 4 layers. Pages beyond layer 4 were not included. Figure 10 shows the relationship between the number of hits per week and the number of links in the web site. It was found that number of hits increases as the number of links increases in Figure 10. Figure 11 shows an inversely proportional relationship between weekly hit rates and the number of external links available on a web site ($r^2=0.52$). On the other hand, Figure 12 shows a proportional relationship between weekly hit rates and the number of text pages ($r^2=0.35$). Since text pages are the key features used in providing information on banks' services, one would expect that the more text pages, the more customers will visit the site. Based on Figures 10 to 12, it was found that customers are looking for "value-added" web pages. These "value-added" features are not external links but internal links and text pages. In fact they are real functionalities where real interactions are available to the customers. For the cyber bank, its web site is the only medium for its services, therefore its design is focused on transactions and interaction rather than information exchange. Hence, the number of hits it received weekly is significantly higher than the others. In order to attract more customers to use Internet banking, banks must provide transaction services on their web sites the same as those available at a bank branch. This is supported by the rankings done by MoneyPageTM [17] where the top ten ranking bank sites all offer Internet banking and bill payment.

In addition, we also attempted to assess the relationship between asset size and weekly hit rates. Figure 13 shows a linear relationship between these two variables when excluding 3 bank responses (those that are beyond one standard deviation, where $\sigma = 1.76$ on a log-log scale). This might be caused by the higher confidence level that customers have in the bigger banks but most likely it is due to their size differences - the larger they are, the more

customers they have. When we excluded the response of 3 banks, there was a strong linear correlation between the number of hits and assets (in US million). The r^2 is 0.91 and the slope of the regression line is 0.943 when plotted on a log-log scale.

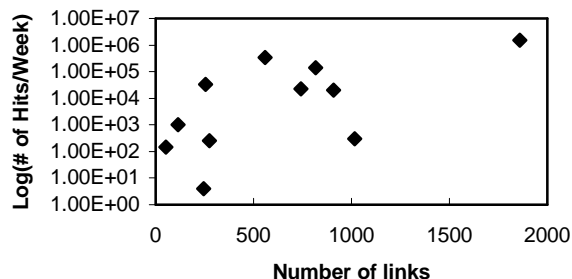


Figure 10. Relationship Between Number of Hits and Number of Internal Navigations on Banks' Web Page.

We further investigated the data points that lie outside the linear relationship. The 3 outlier banks consist of 1 cyberbank, 1 German bank and 1 Korean bank. Interestingly, but not unexpected, the data showed that hits per week on the cyber bank web sites was 2000 times higher than that of the banks with similar asset size. The German bank does not seem to fall into the linear relationship since the number of hits it gets is significantly higher than the others that are similar in asset size. This might be due to the ready acceptance of the Internet technology by Germans. On the other hand, Koreans seem to be very conservative in terms of Internet Banking. The number of hits received at the Korean bank is significantly lower than banks around the world.

Results in Figure 13 suggests that for banks which have physical locations, their asset sizes seem to have positive effects in attracting customers to their web sites. On the other hand, cyberbanks seem to be gaining more attention for their web site when compared to their competitors of similar size but with physical branch locations. Based on our results, in order for banks to succeed in Internet banking, they should consider creating a subsidiary in the cyberspace that offers actual transactions tailored to customer needs.

5.6. Concerns

This study tried to determine the problems or concerns banks face in offering Internet banking. Banks were asked to state their concerns in the comment section and two thirds of the respondents provided such comments. Among these respondents, one-third of them stated that attracting customers to their site is a major challenge. Some of these banks do not have a formal marketing plan on Internet

banking. Since millions of companies are on the Internet at present, it is not easy for users to causally come across a particular site if the company is otherwise unknown to them. Advertising on the Web through Web Browsers, ISP (Internet Services Provider) Home pages or Search Engine Home pages is one way of marketing the company's web site.

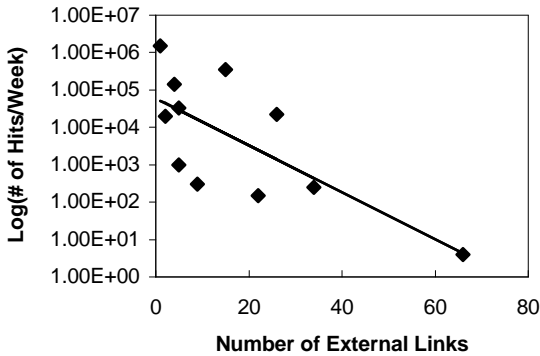


Figure 11. Relationship Between Number of Hits and Number of External Links on Banks' Web Page.

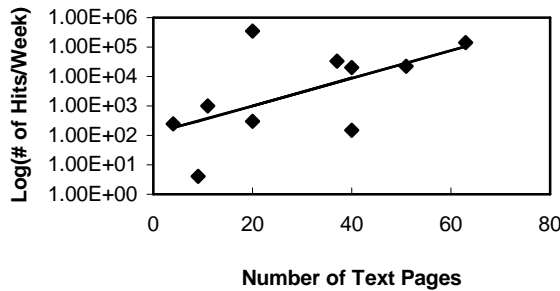


Figure 12. Relationship Between Number of Hits and Number of Text Pages on Banks' Web Page.

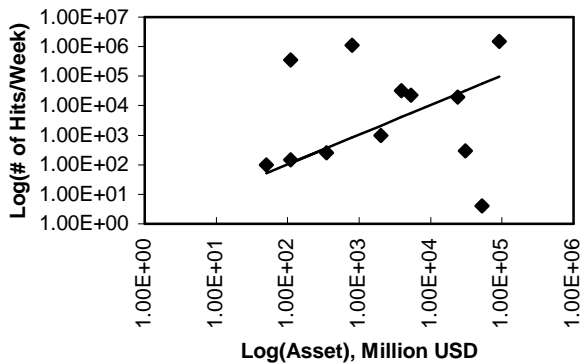


Figure 13. Relationship Between Number of Hits and Asset Size.

The second major concern is customer acceptance and satisfaction. One bank specifically stated that their staff was worried that if the customer's needs are not fulfilled

through Internet banking, customers will leave the bank. Another bank mentioned that they have problems overcoming customer perception of the Internet as lacking security. Although the WWW can be more secure than using a standard telephone line for transactions due to advance encryption technologies, customers trust traditional delivery channels much more than the Internet.

The third concern is the cost of developing and maintaining a web site that provides full functionality. The January issue of the Online Banking Report [12] showed the start-up cost of a PC banking service via Intuit's Quicken for a small US bank. Including the amount spent on the Web site, this amounted to almost \$500,000 US. For a large bank, this amount might not be significant, but for small banks, such as those which have only one or at most a few branches in one state, this cost is unacceptable. This also explains the linear relationship between asset size and weekly hit rates in Figure 13. When more resources are allocated to web site development, banks are able to provide more features to attract and retain customers.

One bank commented on the future of Internet banking within the next 5 to 10 years. Assuming that access speeds increase as anticipated the Internet will play a major role in the financial services industry. This view point is also supported by the literature ([18]; [19]). As people are increasingly pressed for time in the coming millennium, new technologies such as the set-top box, which transforms domestic television sets into home banking terminals, incorporating a smart card reader for payment of goods and services, will allow people to meet many of their financial needs in their own home and, in turn, save a lot of time ([20]; [21]). In order to gain their market share, banks have to act in a timely manner in offering services on the Internet. There seems to be little doubt that the Internet is one of the important future delivery channels for banking services. As stated in the book Digital Money [22], bank customers are more likely to accept Internet banking faster than they accepted ATMs in the 1980s. Today, the general public is exposed to computers much more than they were in the 1980s. They are comfortable with computers at their work place and at home. As well, the rapid development in computer hardware led to powerful, but low cost personal computers, hence more people can now afford to buy one for their home use. Quick action will ensure that by the time Internet banking reaches critical mass, the banks will be ready to take their share.

6.0 Summary

Our study has found that banks have started to use the Internet as one of their delivery channels. Although not all banks act the same way when they offer services on the Internet. Results from this study show that cyberbanks are more successful in Internet banking because of the types of services they offer on their Web pages together with their

business focus. Customers are looking for full services instead of just general information. Banks which offer transactional services on the Internet attracted more customers.

Customers who have confidence in the Internet to execute transactions are very likely to use Internet banking if it is offered in a way that will save them time and money. As in the case of ATMs, banks have to move quickly in establishing their strategy.

As more non-bank institutions are involved in the Financial Services Industry, banks need to form alliances with these technology companies to learn about state-of-the-art technologies as well as to be involved in setting standards for electronic transactions. Having technical knowledge in online transaction processing, banks can prepare themselves in areas such as major hardware upgrades, human resources allocations and strategic developments.

In summary, our results indicated that banks will likely lose their competitiveness if they delay their actions in offering transactions based services on the Internet because customers are very comfortable in using computers as well as remote banking services. The low costs of computer and communication devices will encourage customers to move into electronic banking much faster than they did in the case of ATMs. If banks can't meet these customer demands quickly, they will lose a substantial part of their business in the next 5 to 10 years. Traditional banks have to move into other markets quickly. As cyberbanks move into the investment market and merchant market in addition to retail banking, traditional banks will lose their competitive edge if they allow these cyberbanks to become leaders in Internet banking. In the end, to be successful, banks have to drive Internet banking themselves instead of being pushed into it by others.

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