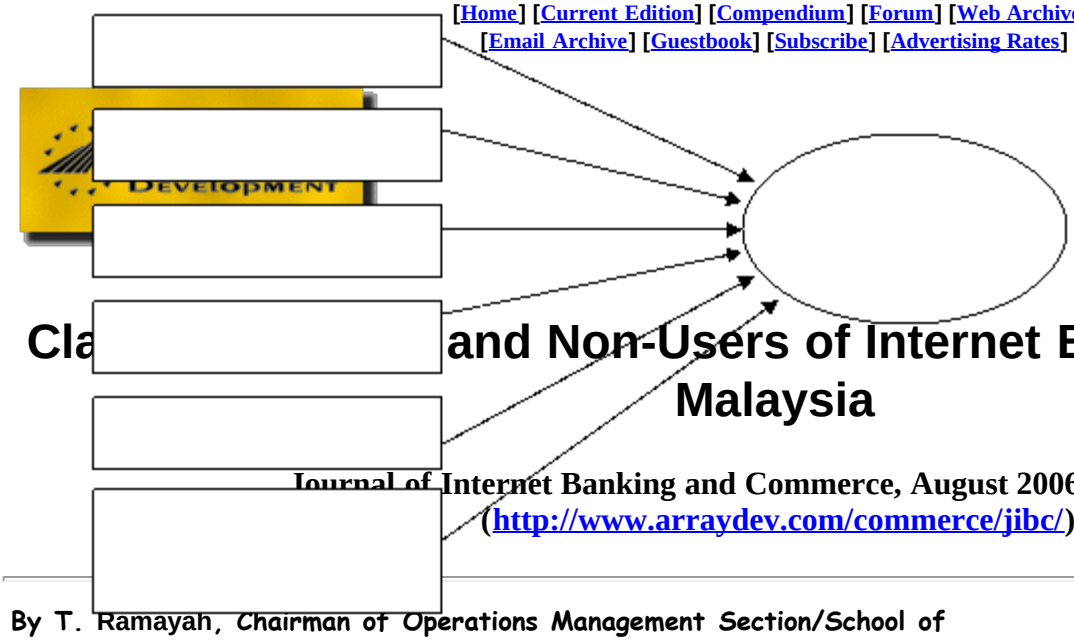

Cla and Non-Users of Internet Banking in Northern Malaysia

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Abstract

Internet banking has become the latest delivery channel for banking services due to the backlash from globalization and liberalization of financial services. Malaysian banks are desperately embracing this new distribution channel to prepare themselves for the competition which is looming in the near future. Using a structured questionnaire data was collected through a convenience sampling from 180 banking customers in the state of Penang, this study revealed that the banks have achieved considerable success as far as awareness is concerned as a vast majority of the respondents reported that they were aware of Internet banking. Although awareness was high, this has not translated into actual use as only 24.4% have had some Internet banking experience. Using the discriminant analysis it was found that Internet banking users had more prior Internet experience, had positive views on ease of use, were more aware of the Internet banking services and benefits and also had less security concerns as compared to the non-users of Internet banking. Implications of these findings are further discussed.

Keywords: Internet Banking, classifying, awareness, security concern, survey

Introduction

The last several years have seen rapid technological changes among which is the advent of electronic commerce, or the exchange of products and payments via telecommunication systems (Kalakota & Whinston, 1997). This technological change has impacted many industries but one of the most impacted is the banking industry. For the first time the local banking industry is facing the global competition from larger more financially stable foreign banks who will be coming into the local markets as soon as the protection is lifted.

To face the new challenge from competition, it is imperative that the banks become more efficient and reduce costs. They have to explore a new distribution channel which is less costly compared to the traditional brick and mortar bank. The traditional delivery channels include the brick and mortar branch office networks, automated teller machines (ATMs), automated self-banking channels, tele-banking via the telecommunication channel and desktop banking. This new push opened the way for a new distribution channel for banking products and services, i.e. Internet banking. Internet and other virtual banking channels have significantly lower cost structure than traditional delivery channels (Sathye, 1999). “Internet banks can operate at an expense 15-20 per cent compared to 50-60 per cent for the average bank” (Booz Allen Hamilton, 1997) So it can be argued that encouraging customers to use Internet banking can help the banks to save considerable costs. It has been estimated that 60% of retail banking transactions will be online in ten years’ time (Barwise, 1997). It was also shown in a study by Booz Allen Hamilton (1997) that “up to 20 per cent of retail and 30 percent of corporate customers will use some form of Internet banking capability within the next five years”.

The Malaysian banking sector is undergoing rapid transformation due to the developments in both information technology and telecommunications. The major impact is the changes in the distribution channels of the financial institutions. The innovation of Internet banking has made it the most recent distribution channel for financial services. In fact, Pang (1995) reported that the major electronic revolution started in 1970’s with the computerization of financial institutions.

It is believed that financial transactions will be increasingly conducted online as the Internet becomes widely accessible and security is improved through technologies such as encryption

and authentication. Internetnews.com (2001) reported that users of online banking in Malaysia will reach 1.1 million by 2004 and the total number of online banking accounts reaching 1.6 million or 23% of all Malaysian Internet users for that year. This is an indicator of the potential of Internet banking in Malaysia. A study by Sulaiman, Lim and Wee (2005) also shows that the E-banking adopters' perceptions of E-banking appear to be very favourable. At the basic level, a bank will set up a web page to provide information on its products and services. Advance level of Internet banking involves provision of facilities such as accessing accounts, funds transfer and buying financial products or services online (Sathye, 1999). Internet is currently used by the financial services industry in Malaysia mainly for brand awareness and promotion.

It all started on June 1, 2000, when the Malaysian Central Bank provided a legal framework for locally owned commercial banks to offer Internet banking services. This offers local banking institutions a new frontier of opportunities and challenges further augmenting competition in the global financial market. However, foreign banks were excluded from engaging in transactional Internet banking until Jan 1, 2002. Maybank, the largest locally owned commercial bank launched its own portal (www.maybank2U.com) on June 15, 2000. It has emerged as the first domestic bank to offer comprehensive Internet banking services in Malaysia. The services provided to individual customers include banking enquiry functions, funds transfer, bill payment, credit card payment, cheque services, fixed deposits, and summary of accounts transactions. Subsequently the other banks also started to commission their own portals due to the realization that this new channel of distribution is set to become “the” channel of distribution in the near future. In surfing on the wave of e-banking, all 10 domestic banks and 4 foreign banks among 13 other foreign banks are offering Internet banking services (for details see Goi, 2005).

The present available research materials are mainly centered on e-commerce adoption. There is limited research studies conducted on Internet banking adoption by individuals. Therefore, it is timely and worthwhile to conduct a research to understand individual’s acceptance and their concerns of Internet banking in Malaysia. Although 6 years have past since the inception of Internet banking in Malaysia, it has still to get off the ground, therefore what are the reasons for this dilemma? In line with the above, the main purpose of this study was to gauge to what extent is the acceptance/adoption, and what are the main concerns that are hindering the acceptance/adoption of Internet banking in Malaysia.

Literature Review

With the extensive technology innovation and telecommunications, we have seen new financial distribution channels increasing rapidly both in numbers and form, from ATMs, telephone banking, PC banking to Internet banking. A broad range of financial distribution channels must be available to deliver varying service needs of consumer segments (Easingwood & Storey, 1996).

Developing alternative distribution channels is not only important in terms of reducing costs and improving competitiveness but also in terms of a financial institution’s ability to retain the existing customer base (Kimball & Gregor, 1995) as well as to further attract new customers.

For Internet banking to take off, one of the important factors will be Internet access or number of people connected to the Internet. This is because a customer will not be able to use Internet banking if he/she does not have any form Internet connectivity be it at home or the office. It was reported by Computer Industry Almananc Inc. (http://www.c-i-a.com/) that there were 10,040,000 Internet users as of March 2005, which accounts for a penetration rate of 36.7% of the population. As consumers and companies become more familiar and comfortable with making purchases online, this increase in knowledge and comfort level will benefit banks by bringing more retail and commercial consumers to their virtual branches.

While the trend within the banking industry is to replace human tellers with self-service distribution channels, the strength of customer intentions for usage of human tellers within the next two years support the concept that the branch will still play an instrumental role in the

delivery of services to customers in the future (Greenland, 1995; Woodruffe, 1995; Thornton & White, 2000).

Subsequently, as reported by Guru, Vaithilingam and Prasad (2001), most Malaysian consumers will patronize the bank branches and also find human interaction with tellers as important. It also indicated that the PC-based channels of banking have not realized its full potential in Malaysia. In addition to the above, Sathye (1999) proposed a model for Internet banking adoption, which argued that the intention of Internet banking in Australia is significantly influenced by variables of system insecurity, ease of use, awareness of service and its benefits, reasonable price, availability of infrastructure and resistance to change.

The Wallis Report (1997 in Sathye, 1999) stated that the technology must be reasonably priced relative to alternatives for customer to adopt. Otherwise, the acceptance of the new technology may not be viable from customer's standpoint. Consumers today are more conscious of the expenses associated with banking as they are generally better informed about alternative options. The total costs incurred in using Internet banking must be minimal or competitive (Jayawardhena & Foley, 2000).

Howard and Moore (1982) reported that consumers must be aware of the new brand before adoption. Therefore, it is an important factor that the banks have to create awareness on Internet banking to the consumers. Adoption means acceptance and continued use of a product, service and idea. Consumers go through a process of knowledge, persuasion, decision and confirmation before they adopt the product or services. Also, according to Polatoglu and Ekin (2001), as more and more banks in Turkey offer the Internet banking, the greater the awareness level among consumers and therefore the higher will be Internet banking adoption. Besides awareness, the services provided by the banks should be perceived to be innovative with high quality and user friendliness to meet an individual's expectation. Cooper (1997) reported that ease of use of innovative product or service as one of the three important characteristics for adoption from the customer's perspective. This is related to user friendliness and ease of navigation as well as simple instructions to use the service.

O' Connell (1996) and Daniel (1999) discovered that security concern is an important factor which affects acceptance and adoption of new technology or innovation. Lockett and Littler (1997) reported that perceived risks of the innovation were inversely related to adoption in telephone based direct banking services. According to Stewart (1999), the failure of the Internet as a retail distribution channel has been attributed to the lack of trust customers have in the electronic channel and in the web merchants. Sathye (1999) confirmed security concerns are a burning issue for financial transactions done over the Internet.

The research model was adapted from Sathye (1999) who also looked into the adoption of Internet banking by Australian consumers and Teo (2001) who looked at the demographics and motivational variables associated with Internet usage activities and also Tan and Teo (2000) who looked at factors influencing the adoption of Internet banking.

Figure 1
The Research Model

Methodology

The unit of analysis for this study is individuals. Since it is against the Banking and Financial Institution Act (BAFIA) to obtain a list of customers' contact numbers and addresses from financial institutions, telephone interviews cannot be implemented. In order to ensure a better response rate and cooperation from potential respondents, mail survey was also avoided. Due to the above constraint, probability sampling was ruled out. The non-probability sampling method of convenience sampling was used. This method was the most appropriate due to the lack of a sampling frame. Respondents comprise of individuals from both Penang Island and mainland of Penang state, Malaysia. The method of data collection was through a structured questionnaire with the use of intercept survey of customers in various locations from various banks to have better distribution of customers from the various banks operating in Penang.

Results

A total of 194 questionnaires were collected out of the total 230 questionnaires distributed. There were 14 incomplete questionnaires that were discarded. Therefore, only 180 questionnaires were used for data analysis, thereby giving a response rate of 78.26%. The high response rate was due to the fact that the researchers were directly involved in the distribution and collection of the questionnaire.

The profile of the respondents broken down by usage of Internet banking is shown in Table 1.

Table 1
Comparison of Internet Banking Users and Non-Users in terms of Demographic Characteristics

Variable	Categories	Users (n_1 = 44) (%)	Non-users (n_2 = 136) (%)
Gender	Male	54.5	44.9
	Female	45.5	55.1
Age	Less than 20 years	2.3	2.9
	21 – 30 years	47.7	55.1
	31 – 40 years	38.6	29.4
	More than 40 years	11.4	12.5
Educational Level	Master Degree	9.1	14.7
	Bachelor Degree	56.8	47.8
	Diploma	13.6	17.6
	High School or lower	20.5	19.9
Personal Income Per Annum	Student/Unemployed	-	5.1
	Less than RM10,000	6.8	4.4
	RM10,000 – RM24,999	18.2	28.7
	RM25,000 – RM49,999	36.4	39.7

	RM50,000 – RM74,999	15.9	13.2
	RM75,000 and more	22.7	8.8
	Executive/Top Management	20.5	22.1
Position	Middle Management	38.6	28.7
	Supervisory	11.4	11.8
	Administrative/Clerical	13.6	11.8
	Technical	11.4	11.8
	Other	4.5	14.0
	Single	56.8	52.9
Marital Status	Married	43.2	47.1

Table 2
Distribution for Internet Usage

Variable		**n = 180 %**
Internet or Computer Access	Yes	98.3
	No	1.7
Internet Experience	Yes	96.7
	No	3.3
Experience Using Internet	< 6 months	4.5
	0.5- 1 year	3.9
	1-2 years	9.5
	> 2 years	82.1
Frequency of use	Only once before	1.1
	Few time before	3.4
	Few time a month	6.7
	Once a week	2.2
	Few times a week	27.8
	Everyday	58.7

Table 3
Distribution for Internet Banking

Variable		**n = 180 %**
Aware of Internet Banking	Yes	77.7
	No	22.3
Internet Banking Experience	Yes	24.4
	No	75.6
		n = 44 %
Frequency of use	Only once before	11.5
	Few times before	29.5
	Once a month	13.6
	Few times a month	29.5
	Once a week	9.1
	Few times a week	6.8

Among the respondents, there were only 3 respondents who had no access to Internet or computers and also 10 respondents who have not used Internet or do not have Internet experience. Most of the respondents have used Internet for more than 2 years (82.1%) and a few times a week or everyday (86.5%). Distribution for Internet usage and Internet banking is shown in Table 2 and 3 respectively.

Awareness is not an issue here as most of the respondents (77.7%) are aware of Internet banking. But when we take a look at the actual adoption/acceptance, it shows a very contrasting pattern where 75.6% of the respondents have not used Internet banking at all. Only 24.4% of the respondents have used Internet banking which indicates low receptiveness or adoption/acceptance. A closer look at the users reveals that most of them (54.5%) have used the services occasionally, while 38.6% have use it on a higher frequency with only 6.8% using it regularly.

Respondents were also asked when Internet banking will become the primary transaction medium for banking to which about 77.2 % agreed that Internet banking will be the primary medium of transaction within the next 5 years whereas there was only a very small percentage (2.2%) who said that Internet will never become the primary transaction medium.

Table 4
When Will Internet Banking Be A Primary Transaction Medium?

	Frequency	Percentage
2 years time	47	26.1
5 years time	92	51.1
10 years time	37	20.6
Never	4	2.2

Determining Variables that Discriminate Between Users and Non-Users of Internet Banking

Discriminant analysis was conducted to test whether the 6 variables can help to discriminate users and non-users of Internet banking. Discriminant analysis was conducted due to the fact that the dependent variables were a dichotomous nominal variable (user vs non-user) and the distribution follows a normal distribution, whereas if the data did not follow a normal distribution a logistic regression could have been used. The sample was divided randomly into two groups based on a 65–35 ratio with the first group as the analysis sample and the second group as the holdout sample. The analysis sample was used for estimation whereas the holdout sample was used for validation.

As shown in Tables 5 and 6, the predictive accuracy of the model for the analysis sample and holdout sample of each user was 95.8% and 93.3% respectively. From the results, it can be concluded that by using the model, one could classify the respondents according to their usage level, i.e. user or non-user of Internet banking.

Table 5
Hit Ratio for Cases Selected in the Analysis

Actual Group	No. of Cases	Predicted Group Membership	
		User	Non-User
Internet Banking User	29	24 82.8	5 17.2
Internet Banking Non-user	90	0 0.0	90 100.0

Percentage of “grouped” cases correctly classified: 95.8%

Table 6
Hit Ratio for Cases Not Selected in the Analysis (Holdout Group)

Actual Group	No. of Cases	Predicted Group Membership	
		User	Non-User
Internet Banking User	15	11 73.3	4 26.7
Internet Banking Non-user	45	0	45

		0.0	100.0

Percentage of "grouped" cases correctly classified: 93.3%

To examine whether the model was good and accurate, three tests were conducted as shown in Table 7 where the hit ratio exceeded both the maximum likelihood and proportional chance value. The Press's Q statistic was significant at 0.01. Therefore it can be concluded that the model developed was good and accurate. With a canonical correlation of 0.7848, and by squaring this value, it can be concluded that 61.6% of the variance in the dependent variable can be accounted for by this model. The overall hit ratio also exceeded the proportional chance criterion (62.5%) by the requisite 25% cutoff (exceeded 78.13%), giving support to the confidence in the predictive validity of the discriminant function and confirming the inferences made based on the univariate results (Hair et al., 1998). This result further confirmed that the discriminant model is a good and valid model.

Table 8 presents the summary of interpretive measures for the discriminant analysis. The discriminant function has a canonical correlation of 0.616 and is statistically significant with Wilks' Lambda = 0.384, p-value = 0.000. From the discriminant function loading, it can be concluded that prior experience of using Internet, perceived ease of use, awareness of Internet banking and security concerns were the factors that will help to discriminate Internet banking usage. The discriminant loadings of the four variables all carried positive values. This indicates that Internet banking users had more prior Internet experience, had positive views on ease of use, were more aware of the Internet banking services and benefits and also had less security concerns compared to the non-users of Internet banking.

Table 7
Comparison of Goodness of Measures (Holdout Sample)

Measure	**Value**	**Hit Ratio for Holdout Sample**
Maximum Chance	75.00 %	93.3 %
Proportional Chance	62.50 %	93.3 %
Press Q Table Value	6.635	
Calculated Value	30.77**	

** p < 0.01

Table 8
Summary of Interpretive Measures for Discriminant Analysis

Independent Variable	**Discriminant Loading**	**Univariate F Ratio**
Prior Experience Using Internet	0.976	178.397**
Perceived Usefulness	0.200	7.467**
Perceived Ease of Use	0.171	5.447*
Security	0.154	4.427*
Awareness of Services and Benefits	0.153	4.414*
Price	-0.072	0.982
Group Centroid for Users	2.210	
Group Centroid for Non-users	-0.712	
Wilks Lambda	0.384	
P-value	0.000	
Canonical squared correlation	0.616	

** p < 0.01; * p < 0.05

Discussion

The main driving factor for the adoption of Internet banking is the extent of Internet connectivity as it is the precursor to Internet banking. As shown in this study more than 98% of the respondents have indicated that they have some form of Internet access. This goes to show that prior experience of using the Internet is very high in the Malaysian context and this

is good news for the local banks that are pursuing this new delivery channel. This may be due to the efforts by the government to move towards knowledge economy which has kept the prices of Internet access down and affordable for more users.

The study shows that awareness of Internet banking was high among the respondents whereby up to about 77.7% indicated that they were aware of Internet banking. These can easily be attributed to the fact that more than 90% of the respondents have experience using the Internet for more than 1 year. The banks have been successful in promoting and creating awareness of the product and services that they are offering through the Internet. Although awareness was high, this awareness has not translated into actual use as it was found that only 24.4% of the respondents were actually using Internet banking and only 6.8% of them were using Internet banking regularly. The migration from traditional banking to Internet banking is still very far behind and the banks have so far not been successful in the process.

On the contrary, there is also an avenue for the banks to exploit the bigger portion of non-users as the study has shown that approximately 77.2% of the respondents agreed that Internet banking will be the primary medium for transaction within the next five years. This shows that although they are optimistic respondents there still are certain other factors that are hindering them from actually embracing the new distribution channel.

The discriminant analysis showed that Internet banking users had more prior Internet experience, had positive views on ease of use, and were more aware of the Internet banking services and benefits and also had less security concerns compared to the non-users of Internet banking. Therefore, most of the individuals are reluctant to use Internet banking as they have major concerns over security and privacy issues. This supports the findings by Sathye (1999) who found that Australian consumers are not adopting Internet banking because they are concerned about safety and security of transactions over the Internet. This finding also supports the findings of Suganthi et al. (2001) who found that one of the important factors affecting Internet banking in Malaysia is security concerns.

The findings that perceived ease of use and perceived usefulness are strong discriminators of usage goes to show that the ease of navigating and use of the Internet banking services must be highlighted when designing the web pages. The easier it is to use the services the higher the chances that the non-users will be attracted to use them. The services must also be perceived to be useful before it can take off. These findings are in line with the findings of Sathye (1999) and many other researchers using the Technology Acceptance Model which have shown that perceived ease of use and perceived usefulness are important drivers of technology acceptance. Although Internet banking has several advantages such as no queue, no parking problems and convenience, the security concern has overshadowed the benefits derived from it.

Surprisingly, price was a non issue in their concern which is contrary to the findings of Sathye (1999) which found Australian consumers were not adopting Internet banking because it is not reasonably priced. This finding also contradicts the findings of Suganthi et al. (2001) which found that cost of computers and Internet access were one of the factors affecting adoption of Internet banking in Malaysia. This contradiction can be attributed to the efforts of the Malaysian government which has been pushing the masses towards the knowledge economy. In line with this, the cost of Internet access has been kept under control. The cost of getting connected and using Internet can be considered one of the lowest compared to many other countries.

Implications

This research bears key implications for practice. As observed from this study, majority of the respondents have no experience in using Internet banking. Therefore, banks should take the opportunity and look at long-term benefits of Internet banking to establish a wider customer base without actually having to open new branches. At the same time, Internet penetration has increased rapidly and local banks should look aggressively into the future and understand the trend and needs of customers. Banks

may also need to advertise and promote usefulness and ease of use of their Internet banking websites to create awareness among the users. For instance, Maybank and Citibank are aggressively advertising and promoting usefulness and ease of use of their full-fledge Internet banking services to their customers and public.

With increasingly tech-savvy and IT talented customers who are perceived to be more demanding and discerning of IT, banks have to make their sites customer friendly and provide a range of services for one-stop banking. In order to increase the volume that an individual transacts, banks need to be more responsive and adopt a strategy of bundling products to fit individual preferences. For instance, banks have to strategize and offer consumers more than the ability to check daily balances, transfer funds or bills payments. Some of the more creative solutions will develop from banks penetrating with Internet retailer and non-financial companies. For instance, Maybank's Internet financial portal Maybank2u.com has enabled users to pay more than 179 types of bills besides performing the other banking activities. Thus, this will also increase the perceived usefulness of Internet banking that lead to higher intention to use Internet banking system. In this regard, banks will probably be able to increase fee revenue from services like online bill payment and profits from collections of credit cards, home loans, insurance and online share trading.

On the legislative side, the government has developed information technology (IT) governance to further protect the users to obtain assurance, security and controls of IT services provided by internal or third parties. In addition, Budget 2002 (Malaysia Budget, 2002) contained components that reflect the country's aggressive approach in encouraging the adoption of e-business. Therefore, banks should emphasize the usefulness of Internet banking systems and in line with the government's effort to develop IT applications in government, business and industry.

With the increasing security threats from the Internet, Bank Negara Malaysia has imposed Computer Crimes Act 1997 that came into effect on June 1, 2000. Subsequently, Bank Negara Malaysia announced that laws to protect personal data are being drafted. Local enforcement authorities are also steadily building up their expertise in computer crime.

Most of the respondents also indicated that they think Internet banking will be the primary transaction medium in Malaysian banking industries in 5 years time. In order to increase the number of Internet banking users, Malaysian government plays an important role to prepare Malaysian for positive Internet usage as propagating the Knowledge-based economy. In this regard, The Energy, Communications and Multimedia Ministry launched its Internet Desa programme 2001("A Quarter of Malaysians", 2001) whereby 100 cyber centers will be established in rural areas by 2002. This programme enables rural and low-income Malaysians surf the Net for free. Besides, the government also launched PC ownership campaign to allow citizens to withdraw RM 3,500 from Account II of their Employees Provident Fund (EPF) contributions to purchase a personal computer for home use. It is hoped that Internet penetration in the country will rise tremendously with support from the government and financial institutions.

The recent move by Bank Negara and the local banks to set up a joint consumer education programme which has been dubbed BankingInfo was launched by Bank Negara Governor Tan Sri Dr Zeti Akhtar Aziz. The aim of the programme is to educate consumers on new and innovative ways of conducting banking such as Internet banking, which has yet to gain acceptance among banking consumers even though it is fast and convenient. (Muthiah, 2003). This programme entails production of 12 information booklets and also via the BankingInfo website, www.bankinginfo.com.my is a move in the right direction.

Limitations

Time constraints have resulted in a small sample size collected for this study. In

addition, the current responses collected are mainly from the 21-30 years old and most of them are bachelor degree holders. Furthermore, the scope of this study is only confined to Penang state. Therefore, the sample may not be a true representation of the beliefs and intention of the Malaysian population towards using Internet banking. As Internet banking is still at its infancy stage in Malaysia and most of the respondents have no prior experience in Internet banking, this again may not be a true representation of the entire population.

The various external factors used in this study were adopted from literature review. As Internet banking is a new phenomenon that emerged in banking industries, thus it is possible that some of the important factor determinants in intention to use Internet banking were left out in this research.

Since there are very few similar researches done, this study provides a guideline for future research to better understand Internet banking. Future researches can be performed in the similar area of interest to understand Internet banking adoption covering wider geographical area. Alternatively, researches can be conducted to examine users' satisfaction on using Internet banking compared to traditional banking. Banks expect to see a surge in Internet banking usage in year 2002 after all foreign banks are allowed to offer full-fledged Internet banking system. Therefore, it is definitely worthwhile to conduct and intensify the future research in this area.

Conclusion

Internet banking is here to stay whether we like it or not. It will become one of the most convenient ways of delivering financial services in the future. The main hindrance to the adoption is the security concerns that the banking consumers have. With the recent launching of BankingInfo it is hoped that the perception of consumers will eventually change and Internet banking will become **the delivery channel** of banking services in the future.

References

A quarter of Malaysians will have Internet access by 2005. (2001, September 18). The Star.

Barwise, P. (1997). "Editorial", The Journal of Brand Management, Vol. 4, pp. 220-223.

Booz Allen Hamilton (1997). Internet Banking: A Global Study of Potential, Booz , Allen & Hamilton Inc., New York, NY.

Cooper, R.G. (1997). "Examining some myths about new product winners", in Katz, R. (Ed), The Human Side of Managing Technological Innovation, Oxford, pp. 550-560.

Daniel, E. (1999). "Provision of electronic banking in the UK and Republic of Ireland", International Journal of Bank Marketing, Vol. 17, No. 2, pp. 72-82.

Easingwood, C. & Storey, C. (1996). "The value of multi-distribution systems in the financial services sector", Services Industries Journal, Vol. 13, No. 4, pp. 223-241.

Goi, C.L. (2005). "E-banking in Malaysia: Opportunity and Challenges", Journal of Internet Banking and Commerce, Vol. 10, No. 3, available: http://www.arraydev.com/commerce/JIBC/2006-02/GOI.htm

Greenland, S. (1995). "Network management and the branch distributions channels", International Journal of Bank Marketing, Vol. 13, No. 4, pp. 12-18.

Guru, B. K., Vaithilingam, S. & Prasad, R. (2001). "Electronic banking in Malaysia: a note on evolution of services and consumer reactions", Journal of Internet Banking and Commerce, Vol. 5, No.1, [online] available: http://www.arraydev.com/commerce/jibc/0001-07.htm

Hair, J.F.Jr., Anderson, R.E., Tatham, R.L. & Black, W.C. (1998). Multivariate Data Analysis, 5th edition, Prentice-Hall, Englewood Cliffs, New Jersey, NJ.

Howard, J. & Moore, W. (1982). "Changes in consumer behavior over the product life cycle", in Tushman and Moore (Eds), Readings in the Management of Innovation, Pitman, p. 128.

IDC: Widening Gap in Malaysian Internet Use. (2002, January 22). The Star.

Internetnews.com (2001). "Malaysia's Home Banking Consumers to Reach 1M", [online] available: http://www.Internetnews.com/bus-news/article/0,,6_575351,00.htm

Jayawardhena, C. & Foley, P. (2000). "Changes in the banking sector- the case of internet banking in the UK", Internet Research: Electronic Networking Applications and Policy, Vol. 10, No. 1, pp.19-30.

Kalakota, R. & Whinston, A. (1997). E-commerce: A Manager's Guide, Addison Wesley, Reading, MA.

Kimball, R. & Gregor, W. (1995). "How distribution is transforming retail banking: changes leading banks are making", Journal of Retail Banking Services, Vol. 17, No. 3, pp. 1-9.

Lockett, A. & Littler, D. (1997). "The adoption of direct banking services", Journal of Marketing Management, Vol. 13, pp. 791-811.

Malaysia Budget (2002). Budget speech 2001/2002, [online] available: http://www.mir.com.my/lb/budget2002/index.htm

Muthiah, W. (2003, January 31). Zeti: Consumers can help banks, *The Star*.

O'Connell, B. (1996). "Australian banking on the internet – fact or fiction?", The Australian Banker, December, pp. 212-214.

Pang, J. (1995). Banking and Finance Malaysia, Federal Publications Sdn. Bhd.

Polatoglu, V.N. & Ekin, S. (2001). "An empirical investigation of the Turkish consumers' acceptance of Internet banking services', International Journal of Bank Marketing, Vol. 19, No. 4, pp. 156-165.

Sathye, M. (1999). "Adoption of Internet banking by Australian consumers: an empirical investigation", International Journal of Bank Marketing, Vol. 17, No. 7, pp. 324-334.

Stewart, K. (1999). "Transference as Means of Building Trust in World Wide Web Sites". Proceedings of the 20th. ICIS, Charlotte, North Carolina.

Suganthi, Balachander and Balachandran (2001). "Internet banking patronage: an empirical investigation of Malaysia", Journal of Internet Banking and Commerce, Vol. 1, [online] available: http://www.arraydev.com/commerce/jibc/0103_01.htm

Sulaiman, A., Lim, C.H., & Wee, A. (2005). Prospects and Challenges of E-Banking in Malaysia, The Electronic Journal of Information Systems in Developing Countries, September, Vol. 22, Available at: http://new.ejisdc.org/ojs/include/getdoc.php?id=167&article=184&mode=pdf

Tan, M. & Teo, T.S.H. (2000). "Factors influencing the adoption of internet banking", Journal of the Association for Information Systems, Vol. 1, No. 5, pp. 1-14.

Teo, T.S.H. (2001). "Demographic and motivational variables associated with Internet usage activities", Internet Research: Electronic Networking Applications and Policy, Vol. 11, No. 2, pp. 125-137.

Thornton, J. & White, L. (2000). “Financial distributions channels: technology versus tradition”, Journal of Professional Services Marketing, Vol. 21, No. 2, pp. 59-73.

Woodruffe, H. (1995). Services Marketing, Pitman Publishing, Great Britain.