The Profiling the Internet Banking Adopter

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Abstract

This paper presents the profile of the internet banking adopter in Malaysia based on a large scale survey. A logistic model is used to estimate the probability of a bank customer adopting internet banking. The profile of the adopter is constructed using demographic, social economic and technological capacity indicators. The method is a very simple one, which can be used by financial institutions to gain better understanding of their own internet banking customers.

Introduction

Internet banking is both a process and product electronic innovation (Chang 2004). It enables customers to handle their banking transactions online, without physical visits to the bank. In general, however, new innovations particularly technological ones, are not readily accepted and adopted by everyone. Rogers (1995) classifies innovation adopters into five broad categories:

(1) innovators,
(2) early adopters,
(3) early majority,
(4) late majority, and
(5) laggards.

Innovators are the first adopters, who are interested in technology itself and possess positive technology attitudes. On the other hand, early adopters are also interested in technology and are willing to take risks. The International Data Corporation investigated urban internet users in six Asian countries (IDC

2002) and found some important profiles of internet adopters. Early adopters of wireless internet were usually young and male tech-savvy users at an average age of 28 years. 64% of them were male. In contrast, the early majority category consisted of mainly young working adults. There was a larger proportion of females and working population within the late majority category. Finally, laggards were found to be predominantly older people.

In Malaysia, a large scale survey was conducted in 2004 to examine selected individual characteristics of over 800 bank customers. This paper reports some major findings of the Malaysian study. Using data obtained from the sample, an attempt is made in this paper to construct the profile of a 'typical' customer who has adopted internet banking, and to estimate marginal effects of general individual attributes on the predicted probability of the internet banking adopter.

Methodology

A large scale survey was conducted on the island of Penang in Malaysia in the months of April and May 2004. The subjects consisted of bank customers outside of bank branches and shoppers who maintained bank accounts. Out of the total of 831 questionnaires collected, 763 were used for the purpose of data entry, processing and analysis. Among others, the study attempted to explain the probability that a person will adopt internet banking. For this purpose, the explanatory variables were confined to individual attributes, which are divided into three categories, viz., demographic, social economic standing, and technological competency/access. Theses factors are then examined to see how they affect the dependent variable, which is the adoption of internet banking. A logit specification is adopted, the parameters in the discreet choice models are transformed to yield estimates of the marginal effects, i.e. the change in predicted probability associated with changes in the explanatory variables. The model reported in this paper is therefore a very simple one, aiming only to provide an initial estimate of the probability of a person adopting internet banking, and explain how marginal changes in each explanatory variable affect the probability of adoption.

Profile of the 'typical' Internet Banking Adopter

Table 1 shows the mean values of the explanatory variables as found in the survey sample (column 2). Using the mean values, we can construct the profile of a 'typical internet banking adopter.' Our survey shows that a 'typical' Malaysian internet banking adopter is a Chinese male aged 29. He has had tertiary education, works in the private sector or is self-employed, drawing a monthly income of RM2255. The typical internet banking adopter is married and resides in urban areas. Proficient in the English language which is the most common medium of communication in the internet, he is also computer literate and has ready access to the internet. In general, he visits the bank three times a month and is a risk averter.

Table 1 : Profile & Marginal Effects on the Probability of Adopting Internet Banking

Independent Variables	Sample	Marginal Effects
Ethnicity	Chinese	0.08007
Gender	Male	0.05818
Age	29	-0.00597
Education	Tertiary	0.11856

Occupation	Private Sector/self employed	0.11654
Income (Malaysian ringgit)	2255	0.00019
Marital Status	Married	-0.04024
Residence	Urban	0.08769
Language	English	0.11611
Frequency	3	-0.20230
Risk	Risk Averter	0.10001
Computer Literacy	Computer Literacy	0.23964
Internet Access	Internet Access	0.27436

Marginal Effects on Probability of Adopting Internet Banking

A significant advantage of using the logit model is the opportunity provided by the model for us to examine the marginal effects. The estimated logit coefficients generated from our sample data show how individual characteristics affect the log odds of adopting internet banking. Given the estimated coefficients and the changes in odds, we can compute, using the binary choice logit model, the predicted probability of the adopter for any change in any of the explanatory variable. The marginal effects shown in the last column of Table 1, which are associated with respective explanatory variables, have been computed from the estimated coefficients of and the changes in the log of odds. The impact of selected marginal effects on the predicted probability of the typical internet banking adopter is shown in Table 2.

To start with, Case no. 1 in Table 2 represents the profiles of the 'typical internet banking adopter' discussed earlier, which has been constructed from the mean values of the variables. The predicted probability of 0.69 simply means that bank customers with such individual profiles have a 69% chance of being an internet banking adopter. However, what happens to the predicted probability if the profile of the typical adopter is changed marginally each time? Using data from Table 2, we shall look at marginal effects arising from demographic and social economic factors below.

Marginal effects of Demographic Factors

Suppose the bank customer happens to be a non-Chinese, but all other characteristics of the typical adopter remain the same? Case no. 2 shows that the predicted probability diminishes by 0.08 compared to the original typical adopter. As a result, the predicted probability of such a person is now 0.60. This means that a non-Chinese customer identical in all other attributes will be 8% less likely to adopt internet banking. The next two cases indicate the changes in the predicted probability consequent to marginal changes in other demographic factors (viz. gender and age). It shows that an older person, ceteris paribus, is less likely to adopt internet banking. If the age of the typical adopter is increased to 45, (case no. 4), the predicted probability of internet banking adoption diminishes considerably to 0.58.

Table 2: Marginal Effects on Probability of Adopting Internet Banking

No	Characteristics	Predicted Probability
1	Chinese male age 29 with tertiary education, working in private sector/ self employed, monthly individual income of RM2255, married, residing in urban area, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, literacy in computer and have access to internet	0.69
2	**Non-Chinese** male, age 29 with tertiary education, working in private sector/ self employed, monthly income of RM2255, married, residing in urban area, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, literacy in computer and have access to internet.	0.60
3	Chinese **female**, age 29 with tertiary education, working in private sector/ self employed, monthly income of RM2255, married, residing in urban area, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, literacy in computer and have access to internet.	0.63
4	Chinese male, **age 45** with tertiary education, working in private sector/ self employed, monthly income of RM2255, married, residing in urban area, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, literacy in computer and have access to internet.	0.58
5	Chinese male, age 29 with **non tertiary** education, working in private sector/ self employed, monthly income of RM2255, married, residing in urban area, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, literacy in computer and have access to internet.	0.56
6	Chinese male, age 29 non tertiary education, working in private sector/ self employed, monthly **income of RM1000**, married, residing in urban area, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, literacy in computer and have access to internet.	0.41
7	Chinese male, age 29 with tertiary education, working in private sector/ self employed, monthly **income of RM3000**, married, residing in urban area, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, literacy in computer and have access to internet.	0.81
8	Chinese male, age 29 with tertiary education, working in private sector/ self employed, monthly income of RM2255, married, **residing in rural area**, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, literacy in computer and have access to internet.	0.59

9	Chinese male, age 29 with tertiary education, working in private sector/ self employed, monthly income of RM2255, married, residing in urban area, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, **non literate in computer** and have access to internet.	0.42
10	Chinese male, age 29 with tertiary education, working in private sector/ self employed, monthly income of RM2255, married, residing in urban area, ability to communicate in English language, average of visiting bank 3 times in a month, risk averter, literacy in computer and have **no access to internet**.	0.38

Marginal effects of Social Economic Factors

We can similarly estimate marginal effects of social economic factors on the predicted probability of the typical adopter. Cases 5 to 8 in Table 2 show some worked out examples. Income appears to be a major determinant of adoption. A slight increase in the person's monthly pay to RM3000 enhances the probability from 0.69 to 0.81 (Case 7). On the other hand, if the typical person has only RM1000 in monthly income, the predicted probability declines to 0.41 (Case 6)! Residence can be classified as either demographic or social economic factor. Table 2 shows that residing in rural areas reduces the predicted probability of adopting internet banking to 0.59. Among social economic environmental limitations, non-availability of internet services in the rural areas is definitely a significant constraint, reducing the predicted to a mere 0.38 (Case 10).

Conclusion

This short paper attempts to show that using the logistic model, it is possible to quickly come up with a profile of bank customers who adopt internet banking. Most of the data on the explanatory variables, such as the demographic and social economic indicators can be readily found in the data base of customers. Hence financial institutions will be able to construct the profile of their own customers. Knowledge of the profiles or more generally the individual characteristics of customers is useful in many ways. Equipped with information on customers who already adopt internet banking or likely to do so, banks will be able to identify the market segments that should be targeted. They can then introduce banking products and services that better suit the needs and wants of the customers in the segment.

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