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Profiles, Use, and Perceptions of Singapore Multiple Credit Cardholders

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Abstract

This study analyzes Singapore's diverse cardholders in search of variations among demographic groups, credit card profiles, and their perceptions with regards to credit card ownership and use, it then discusses possible reasons governing Singaporeans' credit card ownership and use. A survey was conducted (n = 636), decision trees were then constructed using Chi-square automatic interaction detection algorithm (CHAID) and SPSS software AnswerTree to examine the association between the number of credit cards (target variable) and the demographic characteristics, perceptions and other credit card related variables. The number of credit cards was found to be significantly influenced by income and gender as well as perceptions that include "credit card leads to overspending", "savings as payment source", "unreasonable interest rates", "credit card as status symbol". The number of credit cards was also affected by credit card related variables such as missing payments sometimes, frequency of use, entertainment expenditures, and petrol purchase. This research provides an in-depth understanding of Singaporean multiple cardholders, thus it is useful in designing marketing strategies for card-issuers as well as anti-debt strategies for policy-makers in Singapore. Despite the importance of consumer credit, virtually no literature or research exists on the ownership and use of credit cards in Singapore, so this paper intends to close this gap. Further, by combining the demographics, cardholders' profiles and usage patterns with the respondents' perceptions concerning credit card ownership and use, our study offers a richer analysis to explain consumer behavior than previous literatures.

Keywords: Credit card ownership, credit card use, credit revolving, credit debts, decision tree, Singapore.

JEL Classification: G28

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Introduction

Asia is still an untapped market as far as the credit card industry is concerned. Lafferty Financial Consultancy Group, for example, estimated that in 2000, consumers in Australia, Hong Kong, India, Japan, Korea, Singapore and Taiwan had disposable incomes totaling S$4.46 trillion, slightly less than Europe's S$5.01 trillion. However, only 7.3 percent of the Asian sum was spent through credit cards compared to 35 percent of the corresponding figure in the United States. The liberalization of the financial sectors in Asia, has resulted in the rapid proliferation of credit card companies and financial companies providing other types of consumer credit. This, coupled with the entry of foreign banks under qualifying full bank (QFB) licenses has greatly increased the number of credit cards available, and hence such spending in Singapore. Despite intermittent periods of rising unemployment and pay cuts, approximately 4.2 million main and supplementary cards were in use as of September of 2005 (Monetary Authority of Singapore, 2005), an increase of 78 percent from the same period in year 2000! According to the Credit Bureau of Singapore (CBS), the primary credit cardholder on average holds 3 credit cards and 60 percent of them own cards issued by more than one bank (*The Straits Times,* 2004a). According to other statistics, the average household in Singapore owned 3.4 credit cards, compared to 4 per household in Hong Kong and at least 5 credit cards per household in Taiwan (Visa International, 2004a, 2004b, 2004c).

According to statistics from the Monetary Authority of Singapore (2005), the total annual credit card billings in Singapore grew drastically to S$14 billion in 2004, a rise of 13 percent from 2003. This was equivalent to 18 percent of household consumption and 8 percent of total GDP in Singapore in 2004 (Singapore Department of Statistics, 2005). The rollover balance for credit and charge cards in Singapore stood at S$2.7 billion in September of 2005 (Monetary Authority of Singapore, 2005), with approximately 40

percent of cardholders rolled over their credit card balances in March of 2005, compared to a peak of 44 percent in September of 2004 (*The Straits Times*, 2005d) -- hence creating a healthy source of profits for credit card issuing companies and banks.

A more recent study conducted by Lafferty Group (2004) found that despite being the smallest consumer credit market in Asia, Singapore has one of the highest levels of consumer debt per person in the world. The debt of the average Singaporean was estimated to be 122 percent of his personal disposable income, a rise of 2 percent from 2003. Credit spending, and credit cards in particular, have been singled out as the tool that fueled indiscriminate spending. Recent data from the MAS showed that banks in Singapore wrote off as much as S$196 million in credit card debt in 2004. Although this only translated into approximately 1.5 percent of total credit card billings that year, it represented a rise of 43 percent over the previous year and was seven times higher than a decade ago. Singapore cardholders ran up a median debt of S$1,022 on their credit card accounts while the average monthly balance was approximately S$3,800 in June of 2004 (*The Straits Times,* 2004a). While this may not seem like much, recent data from the Credit Bureau of Singapore revealed the presence of credit card big spenders – in March 2005 alone, 25,000 cardholders charged at least S$10,000 on their cards, and among them 4,000 charged at least S$20,000 (*The Straits Times*, 2005d).

Overspending on credit, which attracts as high as 24 percent of the annual interest rate, is the primary cause of bankruptcies in Singapore (*The Straits Times,* 2005e). Between 2001 and the third quarter of 2005, Singapore had more than 22,765 un-discharged bankruptcy cases, with 2,562 people filing bankruptcies since the beginning of 2005, according to data from the Insolvency and Public Trustee's Office (Ministry of Law, 2005). Since its inception in August 2003, Credit Counseling of Singapore had counseled 940 financially distressed consumers (*The Straits Times,* 2005a). As Singapore's

financial markets have traditionally been heavily regulated, and since the population has been customarily frugal in its credit spending, what started as a convenient means of spending could inadvertently be used as a source of unsecured credit leading to additional and unexpected risk in the financial markets. Of course the additional concerns regarding the social effect of a credit-ridden society cannot be underestimated nor overlooked.

This study analyzes Singapore's diverse cardholders in search of variations among demographic groups, cardholders' profiles, and their perceptions with regards to credit card ownership and use. The paper then discusses possible reasons governing Singaporeans' credit card ownership and use as well as practical implications for card-issuers and policy makers. In spite of the significance of consumer credit, little if any literature or research is available about credit card ownership and use in Singapore. Thus, this study is intended to fill this void by identifying and quantifying the demographics, profiles and usage patterns of cardholders and their perceptions regarding credit card ownership and use.

Literature Review

Soman and Cheema (2002) found that consumers regarded the size of their credit limits as a signal of their future income and hence, were more likely to spend up to the maximum credit limit. Lunt (1992) found that a generous credit limit, quality customer service, fair credit card fees, and interest rates were the factors that count at the point of sale. Gross and Souleles (2002) observed that an increase in credit limits generates an immediate and significant rise in debt. Liquidity constraints would disproportionately affect young and low-income people, and people with low credit scores. Paquin and Squire-Weiss (1998) showed that the personal bankruptcy rate can be explained by the supply of consumer credit, interest rates, the capacities of cardholders to service their debts, and the conditions of the job market. Another study revealed a general consensus that the

consumers' lack of understanding about the use of credit is a problem in the credit markets (Lee and Hogarthe, 1999). Mandatory disclosure of information such as interest rates may not necessarily assist consumers at arriving at better credit decisions; but rather an increase in consumer understanding in the use of credit can lower the related debts (Warwick and Mansfield, 2000). It is noteworthy that a number of studies have found that credit card defaults and personal bankruptcies were closely related to the rise in the household debt burden (Ausubel, 1997, Kowalewski, 1997, Morgan and Toll, 1997).

Studies that focus on the relationship between credit card use or selection, and attitudinal, demographic and socio-economic characteristics include those of Slocum and Matthews (1969, 1970), who discovered that social class affects consumer attitudes towards credit card usage within certain income categories. Research by Gan *et al.* (2006), Kinsey (1981), Barker and Sekerkaya (1992), Wasburg *et al.* (1992), Heck (1987), Arora (1987), Mandell (1972) also found a high income to be an important determinant for increasing the number of credit card accounts as well as increased credit card usage. However, Choi and DeVaney (1995) found income level to be insignificant in determining the use of credit cards while Danes and Hira (1990) showed that middle-income families actually used credit cards more than families of higher income.

Where gender is concerned, Kinsey (1981), and Slocum and Matthews (1970) found gender and marital status to be significant determinants of credit card usage. White (1975), and Adcock *et al.* (1977), suggested that single males were more likely to use credit cards than females. Contradicting this, both Kinsey (1981) and Arora (1987) found females used their credit cards more frequently, while Armstrong and Craven (1993) found that females tended to have a higher average number of credit cards than males. Ingram and Pugh (1981) concluded that the least number of credit cards were owned by single member households, young married couples, retirees, and sole survivors.

Over the past three decades, there has been a significant increase in the holding and use of general-purpose credit cards with a revolving feature as well as a provision for balances outstanding. Zhu and Meeks (1994) analyzed consumer credit use in low-income families and discovered that age and employment status were significant determinants of the amount of credit outstanding. Younger households and those employed full-time were found to have higher outstanding credit balances as compared to the elderly or the unemployed. A number of studies identified that credit card users tended to overspend relative to those who use cash or checks (Soman, 2001; Feinberg, 1986; Hirschman, 1979). Feinberg (1986), especially concluded that credit cards facilitate spending in terms of its motivation, probability, and amount spent.

Literature on the use of credit cards for convenience and protection purposes vs. uses for economic and promotional reasons can be found as early as Slocum and Matthews, (1969), who found that people in the lower socio-economic classes used their credit cards more for installment financing while people in the higher socio-economic groups used credit cards for convenience. Supporting this and going further, Canner and Cyrnak (1986) showed that the major reason for credit card use was convenience, and this factor was positively correlated with income, age, and relative financial liquidity. In contrast, a liberal attitude toward borrowing is related to the use of revolving credit (Canner and Cyrnak, 1986). Kinsey (1981) found that the ease of payment and the risk of carrying cash were major reasons for using a credit card. Kaynak and Harcar (2001) attributed consumers' perceptions of the ease of credit card use to the evolution of it. Social acceptability and easy access to cash were also seen as push factors for the use of credit cards.

In addition, high income earners emerged among other demographic segments, as more receptive to convenience than credit features (Barker and Sekerkaya, 1992). Kaynak *et al.* (1995) revealed that consumers with lower and middle incomes are likely to value

6

credit features more than the service features, such as safety and convenience. This is further supported by Chan (1997) who found that economic factors such as "a long interest-free repayment period" and "a low annual fee" were most important for consumers in Hong Kong when deciding whether to use credit cards. Further, Gan *et al.* (2006) found that a low interest rate and the absence of an annual fee were the two most valued economic factors in determining credit card selection in Singapore.

Durkin (2000) observed that cardholders favored not only the convenience of open-ended credit lines associated with cards, but they also used credit cards as a source of revolving credit. Lee and Hogarthe (2000) distinguished between card users for convenience and those distinguished as credit revolving cardholders. They observed that convenience users utilized credit cards as a mode of payment and typically paid their balances in full, but revolvers used their card as a mode of financing, and chose to pay the interest charges on the unpaid balance. At least one study (Moschis, 1990) has shown that the convenience users were more likely to be high-income, older adults, who were more inclined to pay their credit card balances in full. Lee and Hogarthe (2000) further concluded that convenience users preferred to have a card with no annual fee and other enhancements, such as frequent flyer miles, than a low interest rate, which the majority of revolvers would prefer most.

Methodology

The purpose of this study is to examine demographic groups, cardholder's profiles, and usage patterns, and their relationships to card owners' perceptions of credit card ownership and use. In addition to asking the questions used to identify the respondents' demographic profiles and credit card usage patterns, the main part of the questionnaire sought to examine the cardholders' perceptions of credit card ownership in the forms of

statements.   These 13 statements were developed according to the credit card trends at the point of the study in Singapore (see Table I), and they were anchored on a Likert-type scale ranging from (1) strongly disagree to (5) strongly agree.

<take in Table I>

Data collection

A survey of consumer perceptions of credit card ownership and use was conducted in November, 2002, and the data was collected from a sample of 636 cardholders from the city business centre as well as the western, eastern, and northern parts of Singapore. Fieldwork was conducted in the form of street-intercept interviews at high human traffic locations. Respondents had to own at least one credit card issued in Singapore. Questionnaires were distributed to these individuals who then completed them on site. Six trained interviewers were engaged in the selection process at each location.

Descriptive Data

Table II presents the demographic composition and credit card usage profile of the survey sample expressed in terms of frequency of response and percentage for each category. Nearly 48   percent of the cardholders are degree holders and 58 percent belong to professional occupations. The sample was comprised of 56 percent male respondents and 44 percent were females, with the majority (39 percent) in the lowest income range (below S$39,999 per annum). The largest responding age group was 26 to 35 years of age (45 percent), followed by 36 to 45 year-olds (31 percent), somewhat in line with national demographic data. The ethnic Chinese and Malay respondents accounted for 83 percent of the total sample, nearly identical to the national statistics on the ethnic composition of the Singaporean population. The majority of our respondents (65 percent) owned 1-2 credit

cards and VISA accounted for 42 percent of the total credit cards owned. 46 percent used their cards at least once a week while 54 percent used them less frequently than one time per week. Further, 70 percent of the respondents paid their monthly credit card bill in full whereas 23 percent of them missed their monthly payment at least once. Payment sources come mainly from salaries (75 percent), followed by savings (18 percent). During the previous year, 29 percent had procured a new credit card account and only 7 percent had transferred their balance to another credit card account.

<take in Table II>

Results and discussion

In analyzing the data, two decision trees are constructed (i.e., the recursive partitioning algorithm is applied). For both decision trees, the target variable is the number of credit cards held by cardholders. The first decision tree examines the association between the number of credit cards and the demographic characteristics, card owners' perceptions and other credit card related variables of the cardholders. In particular, the input variables are:

(1) Demographic characteristics such as gender, ethnic group, age group, educational level, marital status, occupation and annual income.

(2) Perceptions related to interest rates, annual fees, any related status symbol, overspending, purchase funding, loyalty/rewards program and purchase protection.

(3) Other variables relating to the credit card such as typical monthly payments, missed payments, balance transfers and income sources for payment.

The second decision tree looks at the association between the number of credit cards and the frequency of card usage as well as the use of credit cards for petrol, restaurant

expenses, cash advances, groceries, clothing and shoes, books and magazines, insurance, car installments, furniture and appliances, medical and dental charges, internet shopping, computer hardware/software, utilities, entertainment, travel and other costs.

The Chi-square automatic interaction detection algorithm (CHAID) and SPSS software AnswerTree are used to construct the two decision trees. Decision trees are useful techniques for analyzing the data because they can handle non-linear and interaction effects well. The results can also be represented visually and hence are easier to understand and interpret.

Decision tree results

Decision tree 1

The results of the first decision tree are summarized in Figure 1. As shown, the mean number of credit cards in the sample is 2.27 (see node 0). Annual income is the most important variable associated with the number of credit cards (p-value = 0.0001). In particular, a higher level of annual income is associated with a greater number of credit cards. This is supported by previous studies that found income to be an important determinant for increasing the number of credit card accounts (Gan *et al.* 2006; Wasburg *et al.* 1992; Kinsey, 1981) as well as more extensive credit card usage (Kaynak and Harcar, 2001; Heck, 1987; Arora, 1987; Mandell, 1972) in both advanced developing nations (e.g. Singapore and Turkey) and advanced nations (e.g. the United States).

<take in Figure 1>

This study further combines the demographics of respondents with their perceptions about credit card ownership and use. For respondents in the high income group (more than S\$50,000 annual income), the perception about credit cards leading to overspending (p-value = 0.0301) and payment of credit card bills from savings (p-value =

0.0668) are the next two most important variables. *Those who agree or are neutral about the fact that credit cards lead to overspending and pay their credit card bills from savings own the highest number of credit cards (mean = 3.50, see node 16).* On the other hand, those who disagree, strongly disagree or strongly agree that credit cards lead to overspending have a mean number of credit cards of only 2.52.   The perception of our high income respondents is consistent with studies conducted in the United States (Soman, 2001; Feinberg, 1986; Hirschman, 1979) that agree credit cards do lead to overspending when viewed from various perspectives. By combining the demographics (e.g. high income) and credit card profile (e.g. financing bills from one's savings) with perceptions (e.g. credit card leads to overspending) of the respondents, our study specifically found that those who own the most number of cards in our study are higher end income earners who finance their credit card bills from their own savings and hold the view as well that credit card use leads to overspending. Thus, our research offers a richer analysis as compared to previous research in explaining the behavior of cardholders.   In this case, we are able to deduce that our respondents are inclined to be prudent/shrewd savers who hold more cards perhaps to take advantage of different discounts and perks offered by various merchants that have ties with different card issuers.

For respondents with annual income of S$40,000 to S$49,000, gender (p-value = 0.0091) and missed payments (p-value = 0.0977) are the next two most important variables.   In particular, *female credit cardholders in this income group have, on average, 2.36 credit cards as compared to 1.97 for males (see nodes 7 and 8).* This is consistent with the Armstrong and Craven (1993) finding that females tend to hold a higher average number of credit cards than males.   However, *male respondents in this income group who sometimes missed their credit card payments have, on average, 2.25 credit cards as compared to fellow males who never missed payments (mean = 1.89) (see nodes 13 and*

14). This is not surprising since those with a greater number of cards would be more likely to miss payments occasionally, having to manage a greater amount of credit card bills.

Finally, respondents with annual incomes below S$40,000 have rather interesting patterns. For this group, the perception that interest rates charged on a credit card are reasonable [1] is the next most important variable (p-value = 0.0008). In particular, *those who perceive interest rates to be reasonable have a mean of 1.48 credit cards while those who strongly disagree with this perception have a higher mean of 2.48 (see nodes 4 and 6).* This seems counter-intuitive and can probably be explained by the fact that those who strongly disagree with the statement or feel interest rates are unreasonable are more likely to be credit revolvers (instead of convenient users) who tend to hold more cards so as to roll over their credit card debts. This is supported by a number of studies that found lower income earners who value "credit features" such as low interest rates (Kaynak *et al.*, 1995) or use their credit card for "installment or mode of financing" (Slocum and Matthews, 1969; Lee and Hogarthe, 2000) or "as a source of revolving credit" (Durkin, 2000) so as to pay the interest charges on the unpaid balance. Such credit revolvers usually prefer a card with a low interest rate, as suggested by Lee and Hogarthe (2000).

The inverse relationship between incomes and the perception of the level of interest rates comes as no surprise, this being supported by other findings (Gan *et al.*, 2006; Kaynak *et al.* 1995; Barker and Sekerkaya, 1992; Canner and Cyrnak, 1985, 1986; Kinsey 1981, Slocum and Matthews, 1969) that found lower income earners weighed economic features such as the interest rates (that they might be too high or unreasonable) more than those with higher incomes.

For the low income (<S$40,000 per annum) cardholders who are either neutral or disagree

with the perception that interest rates charged on credit card are reasonable, gender is the next most important variable (p-value = 0.0070). *Within the lower income group, male respondents actually own* more *credit cards, on average, than female respondents (1.99 versus 1.61) (see nodes 11 and 12).* Based on the earlier argument, this implies that males are more likely than females to be credit revolvers within the lower income group. Further, for females with lower incomes, the perception that a credit card is a status symbol is the next most important variable (p-value = 0.0055). *Females who are neutral or perceive the credit card as a status symbol have a higher mean of 1.87 credit cards as compared to fellow females who strongly disagree, disagree or strongly agree with this perception (1.32) (see nodes 17 and 18).* This is supported by Gan *et al.* (2006), who found that the majority of Singapore cardholders do not consider the ownership of credit cards a form of status, thus do not see the need to own more of them. In contrast, at least two Turkish studies found "prestige" as one of the factors affecting how consumers viewed credit cards (Kaynak and Harcar, 2001; Barker and Sekerkaya, 1992). Meidan and Davos (1994) also found that housewives in Greece actually thought "status symbol" was important when selecting a credit card.

The following variables do not appear to be significantly associated with the number of credit cards held: ethnic group, age group, educational level, marital status, occupation, perceptions related to annual fees, purchase funding, loyalty/rewards program and protection, and typical monthly payment and balance transfer options.

Decision Tree 2

The results of the second decision tree are summarized in Figure 2. As can be seen, *respondents who use their credit cards daily or at least once a week tend to hold more cards compared to those who use their credit cards less frequently (mean of 2.45 versus 2.13; p-value = 0.0014).* This is supported by Hirschman (1979) who found those with two types of cards are more likely to spend than those with only a single card. For the

former (to be referred to as more-frequent card users), the following card uses are significantly associated with the number of credit cards held: (1) medical and dental [p-value = 0.0001], (2) entertainment [p-value = 0.0083], (3) petrol [p-value = 0.0143 at node 4 and 0.0995 at node 15], and (4) internet shopping [p-value = 0.0279]. Overall, *more-frequent card users who hold more credit cards tend to use them for medical and dental expenses as well as petrol purchases (mean = 3.33) (see node 10).* Another group also tends to use them for entertainment and petrol but not medical and dental or Internet shopping (mean = 2.80). More-frequent card users with a low average number of credit cards tend to be: (1) those who use their cards neither for medical and dental bills nor for entertainment (mean = 2.03) and, (2) those who use their cards for entertainment and Internet shopping but not medical and dental (mean = 2.14).

<take in Figure 2>

For respondents who use their credit cards less frequently than once a week (referred to as less-frequent card users), the group with the highest average number of credit cards (mean = 2.92) tend to use their credit cards for entertainment (p-value = 0.0001) and utilities (p-value = 0.0001) (see node 14). The group with the second highest mean of 2.63 use their credit cards for entertainment and petrol (p-value = 0.0019) but not utilities. Finally, less-frequent card users who tend to use their credit cards for entertainment only but not utilities, petrol or travel (p-value = 0.0013) have the lowest average number of credit cards (mean = 1.60). In addition, the group with the second lowest mean of 1.66 neither uses their credit cards for entertainment nor petrol.

Overall, the results suggest that holding more credit cards is associated with using them for entertainment and petrol purchases. Also the following card uses do not appear to be significantly associated with the number of credit cards held: expenditures at restaurants, cash advances, groceries, clothing and shoes, books and magazines, insurance,

car installments, furniture and appliances and computer hardware/software.

The link between the number of credit cards carried and their use for entertainment is not surprising as various cards offered ticket discounts from different movie theaters, concert halls and performing arts centers, so such cardholders could be expected to hold a greater number of cards to take advantage of ticket discounts and promotions offered by one card but not by another.   The association between petrol purchases and the number of cards could be anticipated as well.   Almost every credit card issued by the local banks offers petrol discounts from different petrol companies in Singapore.   For instance, United Overseas Bank (UOB) ties up with Royal Dutch Shell to offer petrol discounts or rebates to its cardholders.   Similar tie-ups can be found between Citibank and Exxon-Mobil, the Hong Kong and Shanghai Bank (HSBC) and Caltex, and Development Bank of Singapore (DBS) and Singapore Petroleum Company. As Transportation and communication represented 20 percent of household consumption in 2002, and considering the prevalence of an intense petrol price war (*The Straits Times*, 2002) at the time this survey was conducted, it was not surprising to find cardholders possessing more than one card to take advantage of successive discounts offered by different petrol stations in Singapore. According to a report by Visa International (2004a), Singaporeans hold multiple cards simply because one card may offer benefits such as discounts and promotions that another card does not. This is supported by studies (Carow and Staten, 1999; Schlossberg, 1998; Stavins, 1996) from the United States that found rebates and enhancements such as frequent-use rewards were major reasons for consumers to use their credit cards.

Conclusion and future research

Our research supports previous studies on the significant relationship between the number of credit cards and demographics such as income and gender, and it adds to the

relevant literature concerning an advanced developing economy in Asia. By combining further these demographics and credit card profiles of the respondents with their perceptions towards card ownership and use by means of a decision tree analysis, our research offers a richer analysis to explain cardholder behavior than previous literature. Moreover, our research indicates that Singaporean respondents do not view credit card ownership and use much differently from cardholders from advanced economies such as the United States. Singaporean cardholders are inclined to be more diverse by holding a greater number of cards, mostly to take advantage of discounts, promotions and perks offered by different card-issuing banks. Using the statistics between mid 2003 to mid 2004, the Credit Bureau of Singapore (CBS) estimated Singaporean cardholders possess on average 2.4 to 3.4 cards, although it was not difficult to find someone with more than 6 to 12 credit cards (*The Straits Times*, 2005e). This is supported by a report by Lafferty Group (2004) that estimated eligible Singaporean cardholders owned more than 4 to 5 general purpose credit cards. Does it imply that multiple-cardholders are easily lured by various discounts/promotions and perks/enhancements offered by different card issuers, and thus are not as loyal as those who hold one or at the most two cards? This will be an interesting research issue to extend across different cultures and regions.

Our research also highlights some marketing strategies card-issuers can adopt in terms of customer segmentation. They would want to target the following potential card users: (1) Higher income earners (for instance, by offering a Platinum card); (2) middle income females (for instance, by offering "ladies" cards as have already been aggressively marketed by at least 2 local banks in Singapore); (3) lower income females who are attracted by the "status symbol" of the card (for instance, by offering card privileges and designs that create a sense of "exclusiveness"); and (4) lower income males who are credit revolvers (for instance, by offering attractively low interest rates for

balance transfers).   Once a certain cardholder group has been segmented, card-issuers can analyze and study the group's behavior in terms of what will boost higher usage. Cross-selling is another strategy card-issuers can adopt to promote card usage as well as cardholders' loyalty.   Our research suggests cross-selling products and services relating to entertainment, sports, leisure and transportation will help card-issuers to extend their customer base effectively.   Examples can include discounts or rebates when paying for tickets to various cultural performing arts centers, monthly health club memberships, monthly car insurance installments, and periodic car maintenance services among others.

In terms of cross-selling, Citibank recently introduced a "one-bill" payment service in Singapore.   This is a move to tie-up with companies that provide routine monthly services that require recurring monthly payments (*The Straits Times*, 2005b). Some examples of such payment items include utilities, telephone/Internet/cable TV subscriptions, insurance or income tax installment payments, and club/gymnasium memberships among others. Such a move will encourage cardholders to consolidate their bills into one monthly payment by credit card, ultimately promoting a lock-in of customer loyalty.   From the card issuers' perspective, this translates into higher cardholders' expenditures and therefore interest incomes without marketing new cards, and thus should be encouraged.   For consumers, it can mean cutting down the number of cards owned and being on a faster path to earning loyalty rewards points. Our finding indicates that a lower number of cards owned by a typical cardholder implies better credit management and lower chances of missing payments, and eventually less likelihood of rolling over credit and thus incurring lower credit debts.   It seems like a win-win situation for both card-issuers and cardholders, and it fulfills the policy makers' goal of reducing household debts. However, would the "one-bill" payment service lead to a lesser number of cards owned by a typical cardholder, thus promoting consumer loyalty and resulting in higher

interest income earned for a single car-issuer, or would it lead to a loss of interest income as a result of not marketing new cards?   This indeed would be an interesting research issue for both researchers and industry practitioners to explore in the future.

In addition, our research raises a major issue concerning whether the goals of credit-issuing banks are consistent with those of the government.   For instance, the selling of more cards to the lower income credit revolvers by card issuers may encourage credit roll-over, thus it may not be in line with the government's goal of reducing credit debts.   Further, do credit-issuing banks really wish for cardholders to get out of their credit debts or do they wish to continue earning interest incomes from the latter's debts? There have been cases of local banks offering prizes to cardholders just to stay in debt (*The Straits Times*, 2005c).   For instance, one bank recently gave away PDA mobile phones to cardholders who pay only the minimum monthly balances while another bank offers cash to those who do not pay up in full!   More importantly, are card issuers offering consumers credit limits beyond the latter's ability to service payments?   Studies have shown that generous credit limits can lead to immediate and significant debt (Gross and Souleles, 2002) and even personal bankruptcies (Paquin and Squire-Weiss, 1998). Indeed a number of studies in the United States (Ausubel, 1997, Kowalewski, 1997, Morgan and Toll, 1997) found that the rise in the household debt burden was closely related to credit card defaults and personal bankruptcies.   This is true in the case of Singapore too (*The Straits Times*, 2005d, 2005e).

Our research thus raises the social responsibilities of card-issuers, and it points to the need for active regulatory roles played by agencies such as the Monetary Authority of Singapore (MAS) in formulating control measures to prevent recurring credit debts that can lead to personal bankruptcy.   The MAS can ensure that card-issuing banks follow certain sets of guidelines to achieve the goal of reducing the credit debts.   For instance,

card-issuing banks can contribute by: (1) lowering the credit limits [2] on the credit card even though that may compromise their marketing goal of selling more cards; (2) assigning each cardholder an appropriate credit limit according to the latter's ability to pay; (3) imposing an "outstanding credit limit" in which cardholders are required to pay off the balance they owe beyond that limit within, for instance, 3 months, before they can incur new debts; (4) raising the monthly minimum payment [3] on credit cards to discourage cardholders from rolling over their debts.

Furthermore, in curtailing personal bankruptcy as a greater goal of the society, agencies such as the Consumer Association of Singapore (CASE), the Credit Bureau of Singapore (CBS), and Credit Counseling Singapore (CCS) can all play their respective roles. On the one hand, CASE, the local consumer protection agency, can continue to feedback consumers' concerns to the banks and urge the latter to lower interest rates on credit card debts. On the other hand, CBS, since its inception in October 2002, had set up a database to help banks pool information on consumers to better manage their risks. Banks that participate can disclose and receive credit histories of customers to assess their credit-worthiness. This development is likely to lower credit defaults and delinquency rates, eventually reducing household bankruptcies.

Finally, our research also highlights the social responsibilities of consumers. While it is true that consumers ultimately are financially responsible for their own debts, they have social responsibilities too. Some consumers, however, are quite naïve in terms of credit features such as the interest rates charged and credit limits available to them (Warwick and Mansfield, 2000). In some instances, consumers do not even realize they habitually spend more than their incomes (Mapother, 1999). A study in the United States showed that mandatory disclosure of information such as interest rates, may not necessarily help consumers make better credit decisions; instead, a better understanding

of credit use on the consumers' part can lower their debts (Warwick and Mansfield, 2000). This is supported by Lee and Hogarthe, (1999), citing the consumers' lack of understanding in the use of credit as a problem in the credit markets. Credit Counseling Singapore (CCS), a local non-profit organization, is correcting this shortcoming by: (1) providing credit education to the public to help them to manage their money and use their credit responsibly; and (2) counseling the financially distressed and helping them to negotiate a schedule of payment with the banks. Since the set up of CCS in August 2003, the number of debtors seeking credit counseling has increased from 150 in October 2004 to 1,000 by November 2005 (*The Straits Times*, 2004b, 2005a). However, in the long run, cardholders are ultimately responsible for their debts; hence, future research can focus on general attitudes of cardholders towards credit debts and whether debt is seen as something cardholders can control, and if not, whether they would seek help from any known sources.

Endnotes

[1] At the time of the writing, most credit card companies and card-issuing banks in Singapore charged an annual interest rate of 24 percent, with the exception of Maybank's eCard and Flash card (15 percent).

[2] Credit limit for credit cards is restricted to a maximum of 2 months salary in Singapore, although some banks grant exceptions to some clients on a case-by-case basis.

[3] Most local banks in Singapore currently charge a monthly minimum payment at 3 to 5 percent of balance or S$50, whichever is higher.

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Table I. Perceptions Concerning Credit Card Ownership and Use

a. Interest rates charged on credit card balances are reasonable.

b. Credit card annual fees are reasonable.

c. Credit card companies should ensure complete privacy over customers' information.

d. I am satisfied with the level of service provided by my credit card company.

e. Owning a credit card is a form of status symbol.

f. Consumers would be better off if there were no credit cards.

g. Consumers tend to overspend when they have credit cards.

h. I have no qualms about switching credit card companies due to poor service.

i. Credit cards are useful because they allow purchase before funds are actually available.

j. I use credit cards because they offer loyalty and reward programs.

k. Credit cards are useful because they can be used anytime at most places.

l. I use credit cards because they offer protection against loss/damage of purchased goods.

m. Using credit card to purchase air ticket often provides travel insurance.

Table II.   Credit Card and Demographic Characteristics of the Sample
(N = 636)

Part I: Credit Card Profile	Total	Percent
Number of Credit Cards Owned		
1	191	30.0
2	225	35.4
3	121	19.0
4	55	8.6
5	43	6.8
5 or more	1	0.2
Types of Credit Cards Owned		
Visa	555	42.4
American Express	157	12.0
MasterCard	332	25.4
Diners Club	106	8.0
Departmental Store	153	11.7
Others	6	0.5
Usage Frequency		
Daily	55	8.6
Weekly	235	36.9
Fortnightly	153	24.1
Monthly	169	26.6
Others	24	3.8
Usage Pattern		
Restaurants	510	16.5
Clothing and Shoes	411	13.4
Entertainment	365	11.8
Travel Services	327	10.6
Petrol	244	7.9
Internet Shopping	183	5.9
Groceries	175	5.7
Books and Magazines	174	5.6
Furniture/Appliances	142	4.6
Utilities	142	4.6
Medical/Dental	140	4.5
Computer Hardware & Software	105	3.4

Insurance	66	2.2
Cash Advance	65	2.2
Car Installments	28	0.9
Others	5	0.2

Typical Monthly Credit Card Payment

Entire Balance	444	69.8
Between Minimum & Entire Balance	144	22.6
Minimum Balance	47	7.4
Others	1	0.2

Missed Payment

Never	492	77.4
Sometimes	132	20.7
Often	12	1.9

New Credit Card Account Owned in the Past Year

0	448	70.4
1 card	142	22.4
2-3 cards	42	6.6
More than 3 cards	4	0.6

Transferred Balance in the Past Year

Never	592	93.4
Once	29	4.6
2-3 times	11	1.7
More than 3 times	2	0.3

Payment Sources

Salary	605	75.4
Savings	144	17.9
Investment/Rental	34	4.3
Balance Transfer/Credit Line	17	2.1
Borrow	2	0.2
Others	1	0.1

Part III: Demographic Profile

Gender

Male	357	56.1
Female	279	43.9

Ethnic Group

Chinese	382	60.1
Malay	144	22.6
Indian	95	14.9
Others	15	2.4

Age Group

25 and below	87	13.7
26 - 35	285	44.9
36 - 45	194	30.6
46 - 55	66	10.3
56 and above	3	0.5

Education Qualification

Graduate Degree Holder	106	16.7
Tertiary Degree Holder	197	31.0
Diploma Holder	197	31.0
GCE 'A' Level	55	8.6
GCE 'O'/'N' Level	76	11.9
Others	5	0.8

Marital Status

Married	361	56.8
Single	260	40.8
Divorced	15	2.4

Occupation

Professional, Manager or Executive	365	57.7
Sales and Service Worker	86	13.6
Self-Employed and Businessman	68	10.7
Clerical and Other White-Collar Worker	63	9.9
Army/ Police/Security Staff	28	4.4
Production, Transport and Other Blue-Collar Worker	6	0.9
Others	18	2.8

Annual Personal Income

< S$30,000	5	0.8
S$30,000 - S$39,999	245	38.5
S$40,000 - S$49,999	177	27.9
S$50,000 - S$59,999	102	16.0
S$60,000 - S$69,999	41	6.4
S$70,000 and above	66	10.4

Figure 1: Decision Tree Results (1)

Number of Cards

Mean	2.2720
N	636 (100%)
Predicted	2.2720

Annual Income (P-value=0.0001)

<$40,000

Node 1
Mean	1.8000
N	250 (39.31%)
Predicted	1.8000

$40,000-49,000

Node 2
Mean	2.1582
N	177 (27.83%)
Predicted	2.1582

>=$50,000

Node 3
Mean	2.9330
N	209 (32.86%)
Predicted	2.9330

Interest Rates are Reasonable (P-value=0.0008)

Agree; Strongly Agree

Node 4
Mean	1.4773
N	44 (6.92%)
Predicted	1.4773

Disagree; Neutral

Node 5
Mean	1.7600
N	175 (27.52%)
Predicted	1.7600

Strongly Disagree

Node 6
Mean	2.4839
N	31 (4.87%)
Predicted	2.4839

Gender (P-value= 0.0091)

Male

Node 7
Mean	1.9667
N	90 (14.15%)
Predicted	1.9667

Female

Node 8
Mean	2.3563
N	87 (13.68%)
Predicted	2.3563

Credit Card Leads to Overspending (P-value=0.0301)

Neutral; Agree

Node 9
Mean	3.1007
N	149 (23.43%)
Predicted	3.1007

Strongly Agree; Disagree; Strongly Disagree

Node 10
Mean	2.5167
N	60 (9.43%)
Predicted	2.5167

Gender (P-value=0.0070)

Male

Node 11
Mean	1.9859
N	71 (11.16%)
Predicted	1.9859

Female

Node 12
Mean	1.6058
N	104 (16.35%)
Predicted	1.6058

Missed Payment (P-value=0.0977)

No, Never

Node 13
Mean	1.8857
N	70 (11.01%)
Predicted	1.8857

Yes, Sometimes

Node 14
Mean	2.2500
N	20 (3.14%)
Predicted	2.2500

Payment from Savings (P-value=0.0668)

No

Node 15
Mean	3.0163
N	123 (19.34%)
Predicted	3.0163

Yes

Node 16
Mean	3.5000
N	26(4.09%)
Predicted	3.5000

Owning credit card is status symbol (p-value=0.0055)

Disagree; Strongly Disagree; Strongly Agree

Node 17
Mean	1.3200
N	50 (7.86%)
Predicted	1.3200

Agree; Neutral

Node 18
Mean	1.8704
N	54 (8.49%)
Predicted	1.8704

Figure 2: Decision Tree Result (2)

Number of Cards

Node 0	
Mean	2.2720
N	636 (100%)
Predicted	2.2720

Usage Frequency (P-value=0.0014)

At Least Once a Week

Node 1	
Mean	2.4448
N	90 (45.60%)
Predicted	2.4448

Medical and Dental (P-value=0.0001)

No

Node 3	
Mean	2.2748
N	222 (34.91%)
Predicted	2.2748

Entertainment (P-value=0.0083)

No

Node 7	
Mean	2.0349
N	86 (13.52%)
Predicted	2.0349

Yes

Node 8	
Mean	2.4265
N	136 (21.38%)
Predicted	2.4365

Internet Shopping (P-value=0.0279)

No

Node 15	
Mean	2.5862
N	87 (13.68%)
Predicted	2.5862

Petrol (P-value=0.0995)

No

Node 19	
Mean	2.4043
N	47 (7.39%)
Predicted	2.4043

Yes

Node 20	
Mean	2.8000
N	40 (6.29%)
Predicted	2.8000

Yes

Node 16	
Mean	2.1429
N	49 (7.70%)
Predicted	2.1429

Yes

Node 4	
Mean	3.0000
N	68 (10.69%)
Predicted	3.0000

Petrol (P-value=0.0143)

No

Node 9	
Mean	2.5517
N	29 (4.56%)
Predicted	2.5517

Yes

Node 10	
Mean	3.3333
N	39 (6.13%)
Predicted	3.3333

Less Frequent Than Once a Week

Node 2	
Mean	2.1272
N	346 (54.40%)
Predicted	2.1272

Entertainment (P-value=0.0001)

No

Node 5	
Mean	1.7405
N	158 (24.84%)
Predicted	1.7405

Petrol (P-value=0.0625)

No

Node 11	
Mean	1.6639
N	119 (18.71%)
Predicted	1.6639

Yes

Node 12	
Mean	1.9744
N	39 (6.13%)
Predicted	1.9744

Yes

Node 6	
Mean	2.4521
N	188 (29.56%)
Predicted	2.4521

Utilities (P-value=0.0001)

No

Node 13	
Mean	2.1917
N	120 (18.87%)
Predicted	2.1917

Petrol (P-value=0.0019)

No

Node 17	
Mean	1.9481
N	77 (12.11%)
Predicted	1.9481

Travel (P-value=0.0013)

No

Node 21	
Mean	1.6000
N	40 (6.29%)
Predicted	1.6000

Yes

Node 22	
Mean	2.3243
N	37 (5.82%)
Predicted	2.3243

Yes

Node 18	
Mean	2.6279
N	43 (6.76%)
Predicted	1.6279

Yes

Node 14	
Mean	2.9118
N	68 (10.69%)
Predicted	2.9118