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## The factors impacting on customers' decisions to adopt Internet banking

### Abstract

Technological developments, particularly in the area of telecommunications and information technology, revolutionize the banking industry. Internet banking is one of the most rapidly diffused banking technologies and providing Internet banking is a vital strategy for banks and financial institutions to keep customers engaged and remain competitive. A current empirical study examining the main factors impacting on customer's decisions to adopt Internet banking will add to the existing literature in a changing bank marketing environment. This empirical research focuses on the factors that influence customers' Internet banking adoption in the New Zealand banking industry.

The data for this analysis were obtained through a randomized mail survey. The decision to adopt Internet banking is hypothesized to be a function of convenience, user-friendly website, Internet access/Internet familiarity, marketing communications, word-of-mouth, perceived risks, price, self-image and demographic characteristics. Factor analysis and multivariate analysis are used to analyze the data and rank the factors that impact on customers' decisions to adopt Internet banking.

The findings reveal that a user-friendly website, marketing communications, perceived risks, price, and Internet access/Internet familiarity have an impact on customers' decisions to adopt Internet banking. The results also reveal that consumers in the young age and the high income groups are more likely to adopt Internet banking.

The results of this research will aid banks and financial institutions to implement efficient service marketing strategies to increase the rate of Internet banking adoption, increase their competitiveness, and boost revenues. Furthermore, this study provides useful information for future researchers who examine the links between customers' decision making and Internet banking.

**Keywords:** Internet banking, decision factors, multivariate analysis.

**JEL Classification:** G18, G21.

### Introduction

In the late 1970s, electronic commerce (e-commerce) emerged as a new concept in the business vocabulary (Wigand, 1997). E-commerce refers to sharing business information, maintaining business relationships, and conducting business transactions using telecommunications networks. Traditional e-commerce, conducted using information technologies centering on electronic data interchange (EDI) over proprietary value-added networks moved rapidly to the Internet in the early 1990's (Zwass, 1996).

The increasing popularity and interest in using the Internet is driven by its World Wide Web (WWW) subset and has created numerous opportunities for many organizations, from small businesses to large corporations, including financial institutions (Lallmahamood, 2007; Chau and Lai, 2003; Rashid and Al-Qirim, 2001). Banks are currently gaining several benefits from WWW technology (Lallmahamood, 2007). In particular, banks and financial institutions that have implemented WWW delivery of their services have captured a large share of the financial market (Tan and Teo, 2000).

Internet banking refers to the use of the Internet as a delivery channel for banking services, including traditional banking services such as balance enquiry,

printing statements, fund transfers to other accounts and bill payments (Frust, Lang and Nolle, 2000) and new banking services such as electronic regular payments and direct credit for salaries (Mukherjee and Nath, 2003). Internet banking has created new ways of banking in the main areas of distribution, production, payment and trading (Jayawardhena and Foley, 2000).

From the viewpoint of banks, Internet banking helps them to maintain profitable growth through reducing operation and fixed costs (Hernando and Nieto, 2007; Chung and Paynter, 2002). A simple transaction cost for a non-cash payment at a branch is likely to cost a bank as much as 11 times more than the same transaction over the Internet (Jayawardhena and Foley, 2000). In addition, Internet banking enhances marketing and communication, as it serves 24 hours a day and a customer can be guided through a catalogue of products and services (Jayawardhena and Foley, 2000). Moreover, an Internet banking system allows banks to expand their business geographically without investing in the establishment of new branches and, as a result, the customer base is broadened (Giannakoudi, 1999).

From the viewpoint of consumers, Internet banking is attractive because of its convenience and lower fees. Internet banking users can perform financial transactions at anytime and anywhere without queuing at bank branches (Sayar and Wolfe, 2007).

Internet banking also offers better rates on deposits and loans enabling the cost savings to be passed on to consumers (Polasik and Wisniewski, 2009). Furthermore, Internet banking provides customers with rapid transaction updating, information richness (Palmer, 2002; Shapiro, 1999), speedy transaction access (Mavri and Loannou, 2006) and absolute self-service (Eriksson and Nilsson, 2007).

Internet banking has become one of the most popular banking channels and providing Internet banking is perceived to be a vital strategy for customer retention and remaining competitive for banks and financial institutions (Kim, Widdows and Yilmazer, 2005).

**Consumer beliefs about Internet banking.** The adoption of Internet banking has been a challenging issue for banks and various academic researchers (Karjaluoto et al., 2002). Athanassopoulou and Labrouko (1999) illustrate that price, transaction speed and a bank's reputation are important criteria for the adoption of Internet banking in Greece. Daniel (1999) concludes that in the United Kingdom, customers tend to value convenience, increased choice of access to the bank, and improved control over their banking activities and finances using Internet banking. Furthermore, consumers consider accessibility, functionality and services at a low price as important factors in Internet banking (Karjaluoto et al., 2002). Wang, Wang, Lin and Tang (2003) find evidence that perceived ease of use, perceived usefulness and perceived credibility all have significant and positive effects on customers' intentions to adopt Internet banking in Taiwan. Gerrard and Cunningham (2003) maintain that Internet banking adopters, when compared with non-Internet banking adopters, believe Internet banking to be more convenient, less complex, and more compatible. However, Lee (2009) notes that perceived risk, in terms of security/privacy risk, is the greatest obstacle to Internet banking adoption. Lockett and Litter (1997) indicate that two negative attributes of Internet banking are risks and complexity, whereas the most important perceived positive attribute of Internet banking is its 24 hours and 7 days availability. Furthermore, Gerrard, Cunningham and Devlin (2006) use a content analysis procedure and find that eight factors explain why consumers are not using Internet banking in Singapore. In order of frequency, they are: perceptions about risk, the need, lacking knowledge, inertia, inaccessibility, human touch, pricing and IT fatigue.

**Internet banking in New Zealand.** The substantial upgrade of the telecommunication infrastructure and the high degree of computer and Internet penetration provided a favorable situation for the development of Internet banking in New Zealand (Chung and Paynter, 2002). Since Auckland Savings Bank (ASB) introduced its Internet banking service in

1996, increasing numbers of bank institutions have been offering their Internet banking services in New Zealand. BankDirect commenced online banking in October 1997, followed by National Bank of New Zealand (NBNZ) and Bank of New Zealand (BNZ), both of which offered Internet banking in late 1999 (Barton, 2000). Australia and New Zealand Banking Group (ANZ) launched its website in the first half of 2000, Westpac Banking Group (Westpac) soon after and the TSB Bank (TSB) introduced Internet banking in early 2001 (Chung and Paynter, 2002). Kiwibank was the last bank to offer Internet banking in 2002 (Bruce, 2002; O'Connell, 2002). Among these banks, the ANZ, BNZ, ASB, WestpacTrust and NBNZ control more than 90 percent of the on-line banking market (Taylor, 2002). In addition, the ASB, Westpac and NBNZ are the most popular banking Internet sites (Nielsen, 2008).

The population of Internet banking users had rapidly increased since Internet banking was introduced in New Zealand. The number of Internet banking users was approximately 310,000 in 2000, and it increased to around 480,000 in 2001 (Taylor, 2002). Recent research shows that the number of Internet banking users reached over 1 million in 2008 (Nielsen, 2008; Statistics New Zealand, 2008). More than two thirds (68%) of Internet users accessed online banking sites in January 2008 (Nielsen, 2008).

**Research justification and objectives.** Although numerous consumers have turned to Internet banking because of its greater convenience, low cost, and speed (Kerem, 2003) many consumers are still not using Internet banking services due to several factors, such as a lack of Internet access and perceived risks (Lee, 2009; Lichtenstein and Williamson, 2006).

Published studies have investigated the determinants that affect consumers' adoption of Internet banking (Suki, 2010; Polasik and Wisniewski, 2009; Padachi, Rojidi and Seetanah, 2007; Chiemeke, Ewiewkpaefe and Chete, 2006; Gerrard et al., 2006; Eriksson, Kerem and Nilsson, 2005; Akinci, Aksoy and Atilgan, 2004; Wang et al., 2003; Gerrard and Cunningham, 2003; Karjaluoto et al., 2002; Liao and Cheung, 2002). However, the key determinants and their importance warrant examination due to continual changes in economic, social, political and cultural factors. This empirical research is intended to fill this gap and focuses on the factors that influence customers' Internet banking adoption in the New Zealand banking industry. The study also examines if the results and findings are similar or different to those of previous studies.

## 1. The factors influencing the adoption of Internet banking and hypothesised relationships

**1.1. Convenience.** The American Heritage Dictionary (1992) defines convenience (noun) as "the

quality of being suitable to one's comfort, purposes, or needs" and as "something that increases comfort or saves work." Convenient (adj.) has been defined as "easy to reach; accessible" and "suited or favorable to one's comfort, purpose, or needs". In the context of a service encounter, convenience has been described in terms of lifestyle, not having to travel, personal safety, and not having to wait (Lichtenstein and Williamson, 2006).

Convenience may influence consumption behavior and service convenience is also seen as instrumental when consumers determine the choice of a service and evaluate a firm's service performance (Mohr and Bitner, 1995). In the consumer services research area, convenience has increasingly been recognized as a salient product attribute and as a basis for making purchase decisions (Voli, 1998).

Liao and Cheung (2002) empirically identify convenience as a significant quality attribute in the perceived usefulness of Internet banking, which positively influences consumers' willingness to use Internet-based e-banking. Wan, Luk and Chow (2005) confirm that convenience has a significant impact on customers' adoption of banking channels in Hong Kong. Lee et al. (2005) find that consumers perceive convenience to be an important determinant of intention to adopt Internet banking services. Likewise, Yu and Lo (2007) discover that perceived convenience significantly influences consumers' actual behavior to bank online. Thus, the following hypothesis is proposed.

*H1: There is a positive relationship between perceived convenience and Internet banking adoption.*

**1.2. User-friendly website.** A user-friendly website refers to the fluency or ease with which a user is able to interact with an information system (Nantel and Glaser, 2008; Hiller, 2003). A user-friendly website has features of a quick response time, easy navigation, rich information content, and responsive interaction with customers (Al-Hawari and Ward, 2006; Jayawardhena and Foley, 2000).

A user-friendly website plays an important role in increasing web users' satisfaction which increases the probability of obtaining loyal customers (Al-Hawari and Ward, 2006; Jayawardhena and Foley, 2000). Alternatively, a poor website design may prevent users from finalizing the desired transactions and, consequently, the users will not revisit the financial entity (Hernandez-Ortega et al., 2007). In addition, a user-friendly bank website has been linked to attracting customers' intentions to purchase a financial service (Bai, Law and Wen, 2008; Waite and Harrison, 2004), perceived online system quality in the success of Internet banking (Jun and Cai, 2001), valuing efficiency of services (Padachi

et al., 2007), inducing trust among customers (Bose and Leung, 2008), and enhancing financial performance (Al-Hawari and Ward, 2006).

Padachi et al. (2007) empirically validate that a user-friendly bank site is an important determinant of ease of use, which in turn affects the adoption of Internet banking services. Akinci et al. (2004) demonstrate that a user-friendly website is regarded as one of the important criteria to influence consumers' selection and adoption of Internet banking services. Jaruwachirathankul and Fink (2005) conclude that it is essential for banks to provide a well-designed and user-friendly website to attract potential adopters' attention. Hence, the following hypothesis is proposed.

*H2: There is a positive relationship between a user-friendly website and Internet banking adoption.*

**1.3. Internet access/Internet familiarity.** Internet access is a bundle of complementary services which at a minimum includes the services of a terminal and information transportation services to an Internet gateway (Bauer, Berne and Maitland, 2002).

People's everyday activities have changed with the growth in the number of people with Internet access and the increase in the range of transactions that can be accomplished online. People can conduct a greater range of activities in Internet cyberspace, including e-mailing, Web surfing, online shopping, and online banking (Ren and Kwan, 2008). Sathye (1999) illustrates the availability of access to the Internet is a prerequisite for the adoption of Internet banking. Furthermore, Sohail and Shanmugham (2003) identify Internet access as one of the major factors affecting the adoption of Internet banking services and note that the more widespread the access to the Internet, the greater the possibility of the use of Internet banking.

Familiarity, related to experience, has a positive effect on the degree of consumer skill and favors an increase in the individual trust in one's own abilities (Flavián, Guinalíu and Gurrea, 2006). Since Internet banking services are delivered through the medium of the Internet, consumers need to be familiar with computers in general and should be, to some extent, proficient in the use of web browsers (Lee et al., 2005). Lassar et al. (2005) note that Internet experience is important in understanding how belief in one's capability to organize and execute Internet banking affects the use of the technology. O'Cass and Fenech (2003) illustrate that accumulated sufficient Internet experience creates a belief in Internet users' ability to use the Internet for commercial purposes. Polasik and Wisniewski (2009) determine that Internet familiarity/experience is an important factor that



influences customers to adopt Internet banking. Therefore, the following hypothesis is proposed.

*H3: There is a positive relationship between the availability of Internet access/Internet familiarity and Internet banking adoption.*

**1.4. Marketing communications.** Marketing communications inform customers about services provided by an organization, persuade customers that a specific service product offers the best solution to a customer's needs, remind customers of service product availability, and motivate customers to act (Lovelock, Patterson and Walker, 1998). In a banking context, the most widely applied forms of marketing communications are advertising and personal selling (Laskey, Seaton and Nicholls, 1992; Berry and Tantaka, 1990).

Advertising is most commonly used to create awareness and stimulate interest in the service offered, educate customers about service features and applications, establish or redefine a competitive position, and help make services more tangible (Lovelock et al., 1998). Effective bank advertising can influence consumers' attitudes toward a bank and bank services (Page and Luding, 2003). Polatoglu and Ekin (2001) report that marketing efforts such as advertising influence Internet banking acceptance in Turkey. Lichtenstein and Williamson (2006) note that ineffective marketing communication, such as ineffective advertising, poor television and/or radio advertisements eludes the attention of many banking consumers who may be prospective adopters of Internet banking.

Personal selling is considered to be the backbone of communication in services marketing (Kasper, Helsdingen and Vries, 1999). A major benefit of personal selling is that the salesperson is in an excellent position to encourage the customer to act. Personal selling's one-on-one interactions answer customers' questions immediately, offers more explanations about service products, and provides persuasion and reassurance to customers when they make their purchase decisions (Howcroft, Hewer and Durkin, 2003). Laukkanen et al. (2009) emphasize the importance of face-to-face contact and find that interpersonal face-to-face communication provided by banks can inform consumers of the Internet banking option. Therefore, the following hypothesis is proposed.

*H4: There is a negative relationship between ineffective marketing communications and Internet banking adoption.*

**1.5. Word-of-mouth.** Word-of-mouth (WOM) is particularly important in service marketing due to the heterogeneity of service quality, the higher asso-

ciated risks, and the intangible nature of services (Bansal and Voyer, 2000). Consumers often rely on WOM to reduce the level of unperceived risk and the uncertainty that is often associated with the service purchase decision (Murray, 1991). Researchers have demonstrated that WOM plays an important role in the information diffusion in consumer markets and shaping consumers' attitudes.

Owusu-Frimpong (1999) argues that WOM effectively informs customers about bank services. Kim and Prabhaker (2000) suggest that WOM referral is a key antecedent of initial trust in an electronic channel and has an effect on the adoption of Internet banking. Similarly, Yu and Lo (2007) find that the adoption of Internet banking is significantly influenced by friends, family, colleagues, and/or peers. Hence, the following hypothesis is proposed.

*H5: There is a positive relationship between positive word-of-mouth and Internet banking adoption.*

**1.6. Perceived risks.** The concept of risk is organized around the idea that consumer behavior involves risk in the sense that any consumer action (some of which may be likely to be unpleasant) will produce consequences that they cannot anticipate with anything approaching certainty (Bauer, 1967). Perceived risk is powerful in explaining a consumer's behavior because consumers are more often motivated to avoid mistakes than to maximize utility in purchasing (Mitchell, 1999). Risk is often present in a choice situation as consumers cannot always be certain that a planned purchase will achieve satisfactory goals (Cox and Rich, 1967).

Consumers perceive greater risks when purchasing services other than goods, because services are intangible, non-standardized, and often sold without guarantees or warranties (Murray and Schlacter, 1990; Zeithaml, 1981). Uncertainties associated with the purchase of services and the possibility of service failure result in a very high degree of risk in the services purchase situation (Zeithaml, 1981).

Perceived risk is generally regarded as being a composite of several categories of risk. Six types or components of perceived risk in the case of Internet banking have been identified (Featherman and Pavlou, 2003; Lee, 2009):

1. *Security/privacy risk.* Refers to security/privacy threats whereby a fraud or a hacker may get unauthorized access to the online bank user's account and fraudulently acquire sensitive information, such as usernames, passwords and credit card details (Lee, 2009; Littler and Melanthiou, 2006).
2. *Financial risk.* Represents the possibility of monetary loss due to transaction error or bank account misuse (Lee, 2009).

3. *Performance risk.* Refers to an unexpected breakdown of system servers or disconnection from the Internet while conducting online transactions and the consumer may not be certain whether the transactions are performed or not (Lee, 2009).
4. *Psychological risk.* Occurs when something goes wrong with Internet banking transactions and consumers are likely to feel frustrated or annoyed, and their self-image may be adversely affected by the adoption of Internet banking (Littler and Melanthiou, 2006).
5. *Social risk.* Refers to the possibility that using Internet banking may result in the disapproval of one's family, friends or work group (Lee, 2009).
6. *Time risk.* Related to the significant length of time involved in learning and using Internet banking (Lee, 2009). Time risk is also related to the time involved in dealing with erroneous transactions or the failure to effect transactions expeditiously (Litter and Melanthiou, 2006).

Several empirical studies identify perceived risk as having a significant negative and direct effect on consumers' adoption of Internet banking (Lee, 2009; Kuisma, Laukkanen and Hiltunen, 2007; Polatoglu and Ekin; 2001; Tan and Teo, 2000). The security/privacy risk, as one of the main dimensions of perceived risk, appears to be the most inhibiting factor in the adoption of Internet banking (Lee, 2009; Rotchanakitumnuai and Speece, 2003). Therefore, the following hypothesis is proposed.

*H6: There is a negative relationship between higher perceived risks and Internet banking adoption.*

**1.7. Price.** From a customer's cognitive conception, price is something that must be given up or sacrificed to obtain certain kinds of products or services (Zeithaml, 1998). An overall perceived price is a combination of monetary price and non-monetary price (Chen, Gupta and Rom, 1994).

Price is also one of the fundamental sets of factors defining user needs (Rothwell and Gardiner, 1984). Price is a cue used by consumers to select an alternative and a consumer's choice relies heavily on the price of alternatives (Engel, Blackwell and Miniard, 1995).

Sathye (1999) maintains that, in the context of Internet banking, two kinds of price are involved: the normal cost associated with Internet activities, and the bank's costs and charges. Polatoglu and Ekin (2001) note that Internet banking users are significantly satisfied with cost savings made through banking on the Internet. Alternatively, Sathye (1999) argues that the unreasonable cost of Internet banking activities and bank charges have a negative effect on

Internet banking adoption. Hence, the following hypothesis is proposed.

*H7: There is a positive relationship between low price and Internet banking adoption.*

**1.8. Self-image.** Sharp (2002) notes that self-image represents your own beliefs about your strengths and weaknesses, your own understanding of possibilities and limitations. Our reactions to life and other people, the way we think, act, respond and even our abilities, often are determined by subconscious self-image (Sportelli, 2008). Graeff (1996) identify that attitude or purchase intention towards a service is highly dependent on the extent to which a service displays similarities to the consumer's self-image. Kleijnen, Ruyter and Andreassen (2005) find that self-image has a significant impact on consumer attitudes and the adoption decision regarding service innovations (mobile services). Self-image has been identified as one of the major factors that affect consumers' preferences for using the self-service technology (Globerson and Maggard, 1991). Therefore, the following hypothesis is proposed.

*H8: There is a positive relationship between a high self-image and Internet banking adoption.*

**1.9. Demographic characteristics.** Consumers' demographic characteristics have been widely used to distinguish the differences between segments of customers (Kotler, 1982). Kotler (1982) classifies demographic characteristics as age, sex, income, occupation, education, race, religion, nationality, family size, and family life cycle. The popularity of using demographic factors is attributable to the observed relationship between the consumption of certain products and certain demographic factors (Block and Roering, 1976).

The demographic characteristics of customers can influence their choice probabilities. For example, Gao and Owolabi (2008) find that female respondents are more likely to adopt Internet banking than males in Nigeria. Sohail and Shanmugham (2003) conclude that young and affluent people are more likely to use Internet banking services in Malaysia. Flavián et al. (2006) report that in Chile, older and lower income groups are less likely to conduct their banking operations using the Internet. Stavins (2001) notes that white collar and married consumers adopt Internet banking more readily than other consumer groups. Polatoglu and Ekin (2001) report that highly educated consumers are more likely to accept Internet banking. Gerrard et al. (2006) illustrate that less-educated people are less likely to use Internet banking. Therefore, the following hypotheses are proposed.

*H9: There is a positive relationship between females and consumers' adoption of Internet banking.*

*H10: There is a positive relationship between younger age and consumers' adoption of Internet banking.*

*H11: There is a negative relationship between older age and consumers' adoption of Internet banking.*

*H12: There is a positive relationship between marital status and consumers' adoption of Internet banking.*

*H13: There is a positive relationship between higher-level occupations and consumers' adoption of Internet banking.*

*H14: There is a positive relationship between a higher educational level and consumers' adoption of Internet banking.*

*H15: There is a negative relationship between a lower educational level and consumers' adoption of Internet banking.*

*H16: There is a positive relationship between higher incomes and consumers' adoption of Internet banking.*

*H17: There is a negative relationship between lower incomes and consumers' adoption of Internet banking.*

*H18: There are some different perceptions of the Internet banking adoption factors within demographic groups.*

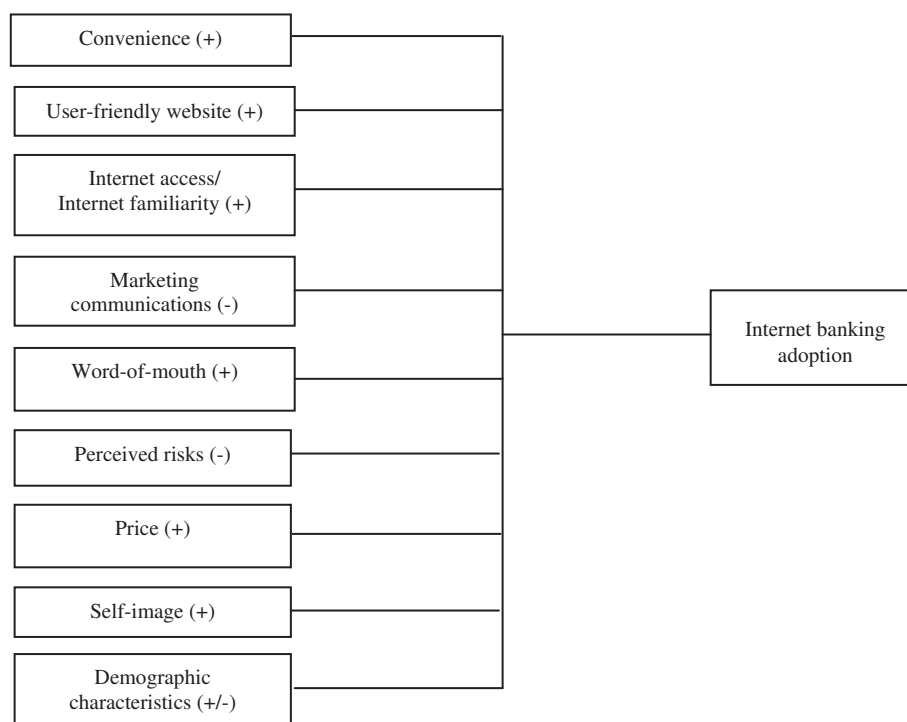
The Internet banking decision factors model is presented in Figure 1.

## 2. Methods and data

Exploratory factor analysis was used to determine the factors that contributed to Internet banking adoption. The data was tested for its appropriateness for factor analysis. Most of substantial correlations are above 0.3 as suggested by Hair et al. (2010) and the values of anti-image correlation matrix are close to zero. The Barlett's test of sphericity was large at 12587.048 and the level of significant is low 0.000.

The value of Kaiser-Meyer-Olkin was 0.925 defined as "marvelous" by Kaiser and Rice (1974). Therefore, the data set was appropriate for factor analysis.

Factor loadings of 0.50 and above were selected as Hair et al. (2010) recommend values greater than 0.50 are considered more practical to improve factor structure. Results of the latent root criterion indicate that eight factors should be extracted from the 41 variables submitted for factor analysis. The eight factors are: (1) user-friendly website; (2) Internet access/Internet familiarity; (3) perceived risks; (4) word-of-mouth; (5) price; (6) convenience; (7) marketing communications; and (8) self-image.



Note: Binary variable: 1 = Adopt Internet banking, 0 = Do not adopt Internet banking. Independent variables: these eight factors explain 70.98% of the variation in the data.

**Fig. 1. Internet banking decision factors model**

## 3. Multivariate analysis

Following the factor analysis, a logit model (qualitative choice model) was used in this study to analyze the adoption of Internet banking in New Zealand. A qualitative choice situation is one in which a deci-

sion-maker faces different options among which one has to be selected (Elleithy, 2008). The purpose of qualitative choice models is to determine the probability (or likelihood) that a decision maker, with a given set of attributes, makes one choice rather than the alternative (Liao, 1994). Qualitative choice analy-



sis is widely used in describing decision-makers' choices in certain areas such as transportation, energy, housing, telecommunications and banking (Train, 1993). The qualitative choice models are valuable when used as a methodology in financial services where a binary choice is the function of several factors (Clemes et al., 2010; Clemes et al., 2007; Gan et al., 2006). For example, consumers who are considering Internet banking services are faced with a simple binary choice situation; to adopt Internet banking, or not to adopt Internet banking. The consumer's utility associated with adopting Internet banking is denoted as  $U_{in}$  and the utility associated with not adopting Internet banking as is denoted as  $U_{on}$ , which is represented as:

$$U_{in} = V_{in} + \varepsilon_{in} \quad \forall i \in J_n, \quad J_n = \{0, 1\}. \quad (7)$$

The consumer will choose to adopt Internet banking if  $U_{in} > U_{on}$ , and the utility of each choice depends on the vector of observable attributes of the choices and the vector observable consumer characteristics, summarized as  $V_{in}$ . All unobservable and excluded attributes and consumer characteristics are represented by the error term,  $\varepsilon_{in}$ , that is assumed to be independently and identically Gumbel distributed. The choice probability of  $U_{in} > U_{on}$  is given as:

$$P_{in} = Pr_n(U_{in} > U_{on}) = 1 / (1 + e^{-\mu[v_{in} - v_{on}]}) ,$$

where  $\mu > 0$ . In an Internet banking decision, the vector of observable consumer characteristics is represented in parametric function form:

$$IBANK = f(CV, UFW, IA/IF, MC, WOM, PR, PI, SI, GEN, AGE, MAR, EDU, OCC, INC, \varepsilon), \quad (8)$$

where *IBANK* is the dependent variable which identifies whether an individual has adopted or has not adopted Internet banking. *IBANK* takes a value of 1 if the respondent has adopted Internet banking; and 0 is otherwise. In equation (8), *CV* is the convenience, *UFW* is the user-friendly website, *IA/IF* is the Internet access/Internet familiarity, *MC* is the marketing communication, *WOM* is the word-of-mouth, *PR* is the perceived risks, *PI* is the price, *SI* is the self-image, *GEN* is the gender, *AGE* is the age, *MAR* is the marital status, *EDU* is the education, *OCC* is the occupation, *INC* is the income and  $\varepsilon_{in}$  is the error term.

**3.1. Demographic characteristics.** The dummy variables for demographic characteristics are as follows:

1. *GEN* (+/-). Dummy variables for gender (Gender: 1 if respondent is a male and 0 otherwise).
2. *AGE* (=/-). Dummy variables for age group (Age group 1: 1 if respondent is between 18 to 35 years old and 0 otherwise; Age group 2: 1 if

respondent is between 36 to 50 years old and 0 otherwise; Age group 3: 1 if respondent is 51 years old and over and 0 otherwise).

3. *MAR* (+/-). Dummy variables for marital status (Marital status 1: 1 if respondent is single/never married and 0 otherwise; Marital status 2: 1 if respondent is married and 0 otherwise; Marital status 3: 1 if respondent is divorced/separated or in a de facto relationship and 0 otherwise).
4. *EDU* (+/-). Dummy variables for educational qualifications (Education 1: 1 if respondent completed low-level education (e.g.) and 0 otherwise; Education 2: 1 if respondent completed middle-level education (e.g. trade qualification, Diploma/Certification) and 0 otherwise; Education 3: 1 if respondent completed high-level education (e.g. Bachelor Degree, Postgraduate Degree) and 0 otherwise).
5. *OCC* (+/-). Dummy variables for occupational status (Occupation 1: 1 if respondent is professional and 0 otherwise; Occupation 2: 1 if respondent is retired and 0 otherwise; Occupation 3: 1 if respondent is sales (e.g. sales/services, tradesperson, clerical) and 0 otherwise; Occupation 4: 1 if respondents is others (e.g. student, laborer, farmer, unemployed, home maker, other) and 0 otherwise).
6. *INC* (+/-). Dummy variables for annual income levels (Income 1: 1 if respondent annual income is low income level (e.g. under \$10,000-39,000) and 0 otherwise; Income 2: 1 if respondent annual income is middle income level (e.g. \$40,000-69,000) and 0 otherwise; Income 3: 1 if respondent annual income is high income level (e.g. \$70,000 and over) and 0 otherwise).

The marginal effect analysis was applied in this study to rank the factors that influenced customers to adopt Internet banking from the most to the least important. T-tests and one-way ANOVA were used to determine different perceptions of the Internet banking adoption factors between demographic characteristics.

**3.2. Questionnaire development.** Primary data was collected to test the 18 hypotheses and to answer the research objectives of this study. As this research is exploratory, a thorough review of the literature and focus group discussions were used to help identify the factors that consumers consider important when deciding to adopt Internet banking services. Initially, the factors derived from the literature review and the feedback from the focus groups were used to assist in developing the questionnaire.

Focus group research has been used to "review consumers' hidden needs, wants, attitudes, feelings, behaviors, perceptions, and motives regarding services, products, or practices" (Hair, Bush and Orti-



nau, 2003, p. 223). Integrating focus group interviews with quantitative methods such as questionnaire surveys is critical for developing and creating reliable measurement scales (Hair et al., 2010). Two focus groups (each consisting of six participants) were conducted for this study. Participants were asked to explain the factors that influenced them to adopt Internet banking. Participants were also asked to identify the factors that they considered to be the most influential in their decision to adopt Internet banking. In addition, participants were encouraged to list any additional factors that influenced their decision to bank online. Focus group members also suggested some additional factors to include in the analysis.

The questionnaire consists of four sections in this study. The first section identifies which group the customer belongs to: Internet banking user, or non-Internet banking user. Section two addresses questions relating to the factors that may influence bank customers' decisions to adopt Internet banking. Section three addresses questions relating to the factors that may influence consumers' decisions to not adopt Internet banking. The last section captures customers' demographic information, such as gender, age, marital status, qualification, occupation, and income. The questionnaire was inspected by two marketing experts and two bank managers to ensure face validity.

In order to improve the reliability of the constructs, a multiple-item measurement scale was used (Churchill, 1979). A seven-point Likert scale is the optimum size compared to five and ten point scales (Schall, 2003). Therefore, a seven-point weighted Likert scale was used to measure all the items in section two and section three of the questionnaire, where 1 = "Strongly disagree" to 7 = "Strongly agree".

A pre-test is necessary to assess the reliability and validity of a questionnaire. In the pre-test procedure, a random sample of 30 bank customers aged 18 years and over was drawn to clarify the questions and statements in the questionnaire. The respondents were asked to make comments on any ambiguous or unclear questions. Some minor wording modifications to the survey questionnaire were made as a result of this process.

**3.3. Data.** A survey questionnaire was used to collect the primary data from bank customers in Christchurch, New Zealand in early 2010. A total of 462 survey questionnaires were returned from 1500 questionnaires that were randomly distributed using the mail sampling method. Further, 28 questionnaires were returned to the sender as the addresses were no longer current, 13 were not filled out, and 32 were partly filled out and not suitable for use. This resulted in 389 useable questionnaires, or a 25.9% useable response rate.

From the total 389 useable questionnaires, 63.5% (247) of the respondents were Internet banking users, while 36.5% (142) of the respondents were non-Internet banking users. The sample respondents consisted of 47% (183) males and 52.4% (204) females, and 71.2% (277) of the respondents were married at the time of the survey. The dominant age groups were between 51 to 55 years (17.5%) and 46 to 50 years (13.9%). The main qualification level for the sample respondents were Diploma/Certification (21.9%) and Bachelor Degree (18.3%). In terms of occupation, the dominant groups were respondents who worked as professionals (35.2%) and those who were retired (26.2%). In addition, the major income groups were between \$40,000-\$49,999 (14.7%) and \$20,000-\$29,999 (13.1%) (see Appendix A).

#### 4. Empirical analysis

The Cronbach's Alpha coefficient was used to measure reliability. A Cronbach's Alpha of 0.60 or above is deemed to produce a reliable measure in exploratory research of Churchill (1979). All factors, except factor 8 which has a one item measure, have a Cronbach's  $\alpha$  value greater than 0.60 (see Appendix B).

Logistic regression analysis was used to identify the factors that influence bank customers' adoption of Internet banking in New Zealand. The logistic regression model containing all predictors is statistically significant (Chi-square = 441.43,  $P$  value = 0.000, degrees of freedom = 15) (see Appendix C).

Table 1. Summary of logistic regression results

Factors	B	S.E.	Sig.
User-friendly website	4.34348	0.85407	0.0000***
Internet access/ Internet familiarity	0.67361	0.34057	0.0479**
Perceived risks	-2.29629	0.53547	0.0000***
Price	0.74892	0.33167	0.0239**
Marketing communications	-3.11289	0.64757	0.0000***
Gender	-1.52859	0.78625	0.0519*
Young age group	1.19739	0.58619	0.0411**
Old age group	-1.20401	0.58475	0.0395**
Low qualification group	-1.85254	0.84043	0.0275**
Low income group	-1.58290	0.55213	0.0041***
High income group	1.41504	0.54473	0.0094***

Note: \*\*\*, \*\*, \* denote significance at 1%, 5%, 10% level, respectively.

The results presented in Table 1 show that user-friendly website, Internet access/Internet familiarity, and price positively influenced customers to adopt Internet banking. Therefore, Hypothesis 2, Hypothesis 3, and Hypothesis 7 are supported. A significant negative relationship between marketing communications and Internet banking adoption supports Hypothesis 4. Similarly, there is a significant negative relationship between perceived risks and Internet banking adoption. Thus, Hypothesis 6

is supported as well. The results do not show significant relationships between convenience, word-of-mouth, and self-image and Internet banking adoption. Hence, Hypothesis 1, Hypothesis 5 and Hypothesis 8 are rejected.

In a demographic context, the logistic regression results revealed that the female, young age group and high income group positively influenced bank customers' adoption of Internet banking, while old age group, low qualification group and low income group negatively influenced bank customers' decision to adopt Internet banking. Therefore, H9, H10, H11, H15, H16 and H17 are supported. However, the coefficient values for the married group, professional group, and high qualification group are not statistically significant. Hence, H12, H13 and H14 are rejected.

Table 2 summarizes the marginal effects of the influencing factors on bank customers' adoption of Internet banking. Table 2 shows that user-friendly website has the maximum impact on customers' adoption of Internet banking. A unit increase in user-friendly website results in an estimated 19.57% increase in the probability of a customer adopting Internet banking. Marketing communications has the second highest impact on customers' adoption of Internet banking. A unit decrease in effective marketing communications results in a 14.02% probability that a customer will not adopt Internet banking. The third and fourth most important factors influencing customers to adopt Internet banking are Perceived Risks and Price. Internet access/Internet familiarity ranks as the fifth most important factor that influences customers' adoption of Internet banking.

Table 2. Marginal effects of influencing factors

Factors	Marginal effect	Ranking
User-friendly website	0.19566	1
Marketing communications	-0.14023	2
Perceived risks	-0.10344	3
Price	0.03374	4
Internet access/Internet familiarity	0.03034	5

In addition, the *T*-test and ANOVA were employed to test Hypotheses 18 to examine whether there were any different perceptions about adopting Internet banking between the different demographic groups (for the test results, see Du, 2011). The results show that consumers of different genders, ages, marital status, and with different qualifications, occupations, and annual incomes attribute different amounts of importance to the influencing factors of Internet banking adoption: user-friendly website, Internet access/Internet familiarity, perceived risks, word-of-mouth, price, convenience, and marketing communications. However, self-image is not considered differently by consumers with different demographic characteristics. Therefore, Hypothesis 18 is partially supported.

## 5. Implications

This research identifies a range of factors that affect bank customers' decision to adopt Internet banking using an exploratory investigation. This study also reveals that some factors are more influential than others. An understanding of these influencing factors can assist banks in developing more effective strategies to promote and encourage Internet banking adoption.

**5.1. User-friendly website.** This research reveals that a user-friendly website has the strongest influence on New Zealand bank customers' adoption of Internet banking. This result is consistent with a number of researchers that indicate a user-friendly website is an important determinant that affects the adoption of Internet banking (Akhlaq, 2011; Padachi et al., 2007, Lichtenstein and Williamson, 2006; Jaruwachirathankul and Fink, 2005; Akinci et al., 2004; Sohail and Shanmugham, 2003).

In order to enhance the adoption rate of Internet banking, banks should develop the user-friendliness of their website by considering several factors, such as clear and comprehensible instructions which are easy to read, prompt processing of transactions, and a wide range of services. In addition, bank websites should be available 7 days and 24 hours and banks should regularly provide accurate information and update records on their websites. A periodic pilot test of a bank's website is important as it can help to obtain timely feedback from its website users. To be effective, bank management should envoke procedures for maintaining and updating their websites by developing Internet banking technology including ease of use, comprehensive information on the site, fast downloading of materials, and effective communication with customers.

**5.2. Marketing communications.** This research reveals that the quality of marketing communications also has a strong influence on customers' decisions to adopt Internet banking. This result is consistent with several researchers that found marketing communications have an impact on consumers' adoption of Internet banking (Laukkanen et al., 2009; Prasad and Arumbaka, 2009; Lichtenstein and Williamson, 2006; Polatoglu and Ekin, 2001). Prasad and Armbaka (2009) show that most non-Internet banking customers have poor awareness of Internet banking services, often due to a lack of marketing effort by the banks. The need for banks to provide aggressive marketing communications that specifically targets non adopters is evident (Lichtenstein and Williamson, 2006).

Banks should ensure they use effective media advertising such as radio and TV advertisement, leaflets, brochures, and web pages to introduce Internet

banking services to a wider audience and educate potential customers about how to become Internet banking users, the range of services Internet banking provides, and the benefits of Internet banking. To increase adoption rates, relevant and timely information about Internet banking including references to time saving, convenience, low cost and information availability should be provided to customers by bank tellers and bank assistants at bank branches.

Banks should emphasize the positive attributes of Internet banking in their marketing campaigns. Banks can also advertise the safety of their websites and generate publicity detailing their efforts to maintain safety. This will increase the level of customer trust in Internet banking and encourage its adoption.

**5.3. Perceived risks.** This study reveals that perceived risks is an important factor influencing customers' adoption of Internet banking. Several researchers indicate that perceived risks plays an important role when bank customers decide to adopt Internet banking services (Lee, 2009; Kuisma et al., 2007; Polatoglu and Ekin, 2001; Tan and Teo, 2000). Therefore, banks need to develop risk-reducing strategies that foster a high level of confidence in potential customers.

In New Zealand, Security/Privacy in terms of authorized use and abuse of accounts, and keeping customers' personal details private, is a concern to the majority of bank customers has affected the adoption of Internet banking (Chung and Paynter, 2002). To overcome such risk issues, bank management should take steps to manage and minimize perceived security risks. Bank management should consider focusing on the prevention of intrusion, fraud and identity theft. Banks can use encryption, firewall, intrusion detection and other related security devices to properly safeguard their Internet banking security systems. Banks should also recommend that customers install a firewall, anti-virus and anti-spyware and software on their computers (Polasik and Wisniewski, 2009). In addition, banks should explain that online systems are only accessible to registered customers who use the correct password and the customers' information remains confidential at all times. Furthermore, banks should develop service recovery programs that provide a guarantee for every transaction to increase confidence in their Internet banking services.

**5.4. Price.** The results of this study confirm that price is another important factor influencing consumers to adopt Internet banking, supported by the findings of Sathye (1999), Kerem (2003) and Karjaluoto et al. (1999). Sathye (1999) argues that, in the context of Internet banking, two kinds of price are involved: the normal cost associated with Internet

activities, such as cost of computers and Internet connection, and the bank costs and charges.

Internet banking reduces a bank's operating costs and improves a bank's competitiveness (Rotchanakitumnuai and Speece, 2003). Banks can charge higher fees for the transactions at bank branches, but offer lower fees or free services for Internet banking transactions. As a result, customers should be positively motivated to adopt lower cost Internet banking rather than using higher priced branch services. Banks can also reduce home loan interest rates or pay higher interest rates on deposits for online accounts.

However, non-Internet banking users may see no major financial benefits in becoming an Internet banking customers. Therefore, banks should explain the financial benefits by making comparisons of how fees differ between traditional banking and Internet banking.

**5.5. Internet access/Internet familiarity.** This study illustrates the importance of Internet access/Internet familiarity as an antecedent of Internet banking adoption. This finding is supported by Polasik and Wisniewski (2009), Lichtenstein and Williamson (2006), Centeno (2004), Karjaluoto et al. (2002) and Lee and Lee (2001). Centeno (2004) notes the pre-existence of PC, Internet access and literacy are a pre-requisite for Internet banking adoption. Familiarity with the Internet environment also encourages acceptance of Internet banking by individuals who have previous experience on the Internet.

Karjaluoto et al. (2002) find one reason many non-users do not adopt Internet banking is that they do not have access to the Internet. Banks should provide free access to their networks in bank branches or public places, such as shopping centres to increase the rate of Internet banking adoption. Banks may also be able to collaborate with Internet service providers to offer free networks to non-Internet users. Gerrard and Cunningham (2003) find that some customers do not adopt Internet banking because of their lower computation proficiency and Internet skills. Karjaluoto et al.'s (2002) report that customers with a good knowledge of computer and Internet technologies are generally more likely to adopt Internet banking. Therefore, banks should provide free hands-on computer and Internet training projects to educate people on how to use Internet banking. In addition, banks could provide Internet banking training using DVDs to offer Internet banking operating instructions.

**5.6. Demographic characteristics.** The empirical results reveal that the low qualification group has the highest impact on customers' adoption of Internet banking and this result is consistent with the findings of Yiu et al. (2007) and Gerrard et al. (2006). The



low qualification group consumers are less likely to adopt Internet banking because generally they lack knowledge of computer technology and lack computer skills when compared to consumers in the high qualification group. Less-educated people may not be familiar with the Internet and they may find Internet banking is too complex to use. Therefore, banks should provide free computer education and training about Internet banking to bank customers. When customers gain more knowledge and skills about computers and the Internet, they may perceive Internet banking as more easily to use and be more likely to adopt Internet banking.

The low income group is less likely to adopt Internet banking, and the high income group is more likely to adopt Internet banking. These results are consistent with Flavián et al. (2006) findings. A possible explanation for this result is that people with higher incomes are more likely to possess a personal computer and pay Internet fees compared to less-wealthy people. In addition, a high household income may mean that a customer has more financial resources to manage, and thus a stronger need for a channel with high level of flexibility, such as Internet banking. To enhance the rate of Internet banking adoption, banks should provide the public with free access to Internet banking facilities to encourage consumers on lower incomes to adopt Internet banking services.

Gender also influences the preference for Internet banking. The empirical results in this study show that females are more likely to use Internet banking than males. This result is similar to findings in Gao and Owolabi (2008) and Lichtenstein and Williamson's (2006) studies. Lichtenstein and Williamson (2006) note that in Australia, female users are more likely to do Internet banking because these women have busy lives raising children and managing households and often working part or full time. Thus, banks need to be aware of the time pressures on females and design promotional communication targeted at females that highlights the time saving potential of Internet banking.

This study reveals that the young age group is more likely to adopt Internet banking, whereas the old age group is less likely to adopt Internet banking. These results are consistent with Flavián et al.'s (2006) findings. Younger customers adopt Internet banking

due to a greater convenience, lower prices, and/or time savings. In order to encourage more young customers to adopt Internet banking, banks can offer price incentives. For example, banks can offer lower monthly fees to students as the young age group may not have sufficient disposable incomes. Lower transaction costs for Internet banking may encourage students to use Internet banking.

Jaruwachirathanakul and Fink (2005) find that older customers have negative attitudes towards Internet banking as they do not fully understand the usefulness of Internet banking. Therefore, banks should develop effective promotion strategies to emphasize the advantages of their Internet banking services to older customers, such as convenience, savings of time and effort, lower costs, greater control over finances, and information availability.

### Limitations and avenues for future research

Although this study provides valuable contributions from a theoretical and practical perspective, there are a few limitations.

First, this research was conducted in Christchurch, New Zealand. People's beliefs and attitudes can vary across different regions and countries. A probability sample in a different geographic area may reveal differences in consumers' attitudes towards the adoption of Internet banking. Therefore, future researchers should use a more geographic dispense sample to analyze consumers' behavioral intentions towards Internet banking services. Future researchers can also undertake a comparative study between two different countries, such as New Zealand and Australia.

Secondly, this study empirically examined eight factors that may influence consumers' adoption of Internet banking. However, there may be some other factors that can impact on customers' adoption of Internet banking but were not identified in this study. Further research is required to identify other factors that may impact on customers' adoption of Internet banking. This approach may be particularly important in a different cultural setting.

Thirdly, this study focused on the customers' perspectives. Future research could focus on the banks' perspectives. Interviews with bank management could be conducted to discuss their strategies regarding the implementation of Internet banking.

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## Appendix A

Table 1A. Descriptive statistic of demographic characteristics

Variables	N		Total respondents		Internet banking users		Non-internet banking users	
			Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent
Gender	Valid	Male	183	47.0	117	47.4	66	46.5
		Female	204	52.4	128	51.8	76	53.5
		Total	387	99.5	245	99.2	142	100.0
	Missing	-999	2	0.5	2	0.8	0	0.0
	Total		389	100.0	247	100.0	142	100.0
Age	Valid	18-24	4	1.0	3	1.2	1	0.7
		25-30	17	4.4	14	5.7	3	2.1
		31-35	17	4.4	15	6.1	2	1.4
		36-40	27	6.9	24	9.7	3	2.1
		41-45	42	10.8	35	14.2	7	4.9



Table 1A (cont.). Descriptive statistic of demographic characteristics

Variables	N		Total respondents		Internet banking users		Non-internet banking users	
			Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent
Age		46-50	54	13.9	38	15.4	16	11.3
		51-55	68	17.5	49	19.8	19	13.4
		56-60	39	10.0	32	13.0	7	4.9
		61-65	31	8.0	19	7.7	12	8.5
		66-70	37	9.5	12	4.9	25	17.6
		71-75	18	4.6	4	1.6	14	9.9
		76+	34	8.7	1	0.4	33	23.2
		Total	388	99.7	246	99.6	142	100.0
	Missing	-999	1	0.3	1	0.4	0	0.0
	Total		389	100.0	247	100.0	142	100.0
Marital status	Valid	Single/ Never married	40	10.3	14	5.7	26	18.3
		Married	277	71.2	191	77.3	86	60.6
		De facto relationship	28	7.2	21	8.5	7	4.9
		Divorced/ Separated	43	11.1	20	8.1	23	16.2
		Total	388	99.7	246	99.6	142	100.0
	Missing	-999	1	0.3	1	0.4	0	0
	Total		389	100.0	247	100.0	142	100.0
Qualification	Valid	Primary education	3	0.8	0	0.0	3	2.1
		Secondary education	70	18.0	38	15.4	32	22.5
		Fifth form education	38	9.8	23	9.3	15	10.6
		Bursary	18	4.6	12	4.9	6	4.2
		Trade qualification	41	10.5	18	7.3	23	16.2
		Diploma/ Certification	85	21.9	57	23.1	28	19.7
		Bachelor Degree	71	18.3	52	21.1	19	13.4
		Postgraduate Degree	46	11.8	40	16.2	6	4.2
		Other	17	4.4	7	2.8	10	7.0
	Total		389	100.0	247	100.0	142	100.0
Occupation	Valid	Professional	137	35.2	120	48.6	17	12.0
		Tradesperson	16	4.1	9	3.6	7	4.9
		Student	8	2.1	6	2.4	2	1.4
		Clerical	38	9.8	27	10.9	11	7.7
		Laborer	5	1.3	2	0.8	3	2.1
		Farmer	4	1.0	2	0.8	2	1.4
		Unemployed	22	5.7	14	5.7	8	5.6
		Retired	102	26.2	33	13.4	69	48.6
		Sale/Services	22	5.7	16	6.5	6	4.2
		Home maker	17	4.4	8	3.2	9	6.3
		Other	17	4.4	9	3.6	8	5.6
		Total	388	99.7	246	99.6	142	100.0
	Missing	-999	1	0.3	1	0.4	0	0.0
	Total		389	100.0	247	100.0	142	100.0
Income	Valid	Under \$10,000	15	3.9	9	3.6	6	4.2
		\$10,000- \$19,999	49	12.6	19	7.7	30	21.1
		\$20,000- \$29,999	51	13.1	18	7.3	33	23.2
		\$30,000- \$39,999	48	12.3	27	10.9	21	14.8

Table 1A (cont.). Descriptive statistic of demographic characteristics

Variables	N		Total respondents		Internet banking users		Non-internet banking users	
			Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent
Income		\$40,000- \$49,999	57	14.7	40	16.2	17	12.0
		\$50,000- \$59,999	35	9.0	22	8.9	13	9.2
		\$60,000- \$69,999	28	7.2	21	8.5	7	4.9
		\$70,000- \$79,999	31	8.0	26	10.5	5	3.5
		\$80,000- \$89,999	18	4.6	18	7.3	0	0.0
		\$90,000- \$99,999	9	2.3	6	2.4	3	2.1
		\$100,000- \$120,000	17	4.4	15	6.1	2	1.4
		\$120,000+	23	5.9	20	8.1	3	2.1
		Total	381	97.9	241	97.6	140	98.6
	Missing	-999	8	2.1	6	2.4	2	1.4
	Total		389	100.0	247	100.0	142	100.0

## Appendix B

Table 2A. The reliability test for the measures of Internet banking adoption

Constructs	Items	Cronbach's Alpha
User-friendly website	1. Internet banking is convenient, in terms of time saving.	0.95
	2. Internet banking is convenient, in terms of 7 days and 24 hours services.	
	7. The bank's website enables me to move back and forth quickly between sections of the website.	
	8. The transition of the bank's website has short waiting time.	
	9. The bank website has a clear and easy guidance screen.	
	10. Information displayed on the bank's website is clear, well organized, and easy to read.	
	11. The positioning of information on the bank's website allows me to navigate effortlessly through the site.	
	12. The search function within the bank website enables me to find the information I need.	
	13. The website offers me enough information to answer my questions.	
	14. The bank website is updated regularly.	
Internet access/Internet familiarity	15. I can easily get access to the computer.	0.935
	16. I can easily get access to the Internet.	
	17. Using the Internet is more accessible to me than visiting a bank.	
	18. I have adequate computer skills.	
	19. I am very skilled at using the Internet.	
	20. I consider myself knowledgeable about using good search techniques on the Internet.	
	21. Learning how to use Internet banking is easy for me.	
	22. I find it easy to get Internet banking to do what I want to do.	
Perceived risks	29. I am confident with the security aspects of Internet banking.	0.824
	30. I feel safe providing personal information about my banking through the Internet banking.	
	31. I trust that my bank provides security protection (technology) to prevent unauthorized intrusion.	
	32. Internet banking is just as secure as traditional banking.	
	33. In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money.	
Word-of-mouth	26. I use Internet banking because of positive word-of-mouth.	0.800
	27. I use Internet banking because of my friends/family/colleagues recommendations.	
	28. My decision to adopt Internet banking was influenced by my friends/family/colleagues.	
Price	40. Internet banking offers lower services fees.	0.927
	41. The transactions in Internet banking are at a lower price, or at no cost.	

Table 2A (cont.). The reliability test for the measures of Internet banking adoption

Constructs	Items	Cronbach's Alpha
Convenience	3. In-branch banking involves too much queuing time.	0.824
	4. Internet banking makes it easier for me to do my banking.	
	5. Using Internet banking services enables me to complete banking activities more quickly.	
	6. Internet banking is a convenient way to manage my finances.	
Marketing communications	23. I am interested in the Internet banking services that banks promote.	0.682
	24. I use Internet banking because of bank promotions, such as bank staff promotions and advertising.	
	25. My decision to adopt Internet banking was influenced by bank staff promotions.	
Self-image	35. I feel Internet banking is consistent with my self-image.	N/A

## Appendix C

Table 3A. Logistic regression results for influencing factors and demographic characteristics on Internet banking adoption

Number of observations: 389 Log Likelihood function: -34.57322 Restricted log likelihood: -255.28600 Chi-Squared statistics: 441.42557 Degrees of freedom: 15 Prob [ChiSqd > value]: 0.00000 McFadden R-squared: 0.86457				
	Coefficients	Std error	Sig.	Marginal effects
User-friendly website	4.34348	0.85407	0.0000***	0.19566
Internet access/ Internet familiarity	0.67361	0.34057	0.0479**	0.03034
Perceived risks	-2.29629	0.53547	0.0000***	-0.10344
Word-of-mouth	-0.21918	0.30829	0.4771	-0.00987
Price	0.74892	0.33167	0.0239**	0.03374
Convenience	0.43593	0.45949	0.3428	0.01964
Marketing communications	-3.11289	0.64757	0.0000***	0.14023
Self- image	-0.08686	0.23215	0.7083	-0.00391
Gender	-1.52859	0.75625	0.0519*	-0.06886
Young age	1.19739	0.58619	0.0411**	0.05394
Old age	-1.20401	0.58475	0.0395**	-0.05424
Married	-0.25555	0.83738	0.7602	-0.01151
Low qualification	-1.85254	0.84043	0.0275**	-0.11219
Professional	-0.53831	0.60442	0.3731	-0.02425
Low income	-1.58290	0.55213	0.0041***	-0.07131
High income	1.41504	0.54473	0.0094***	0.06374

Note: \*\*\*, \*\*, \* denote significance at 1%, 5%, 10% level, respectively.