User acceptance of Online Banking Service in Australia

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Abstract

The research investigates both positive and negative factors influencing user acceptance of online banking services (OBS) in Australia. A research framework was developed based on the Unified Theory of Acceptance and Use of Technology (UTAUT). One hundred and ninety respondents in Australia participated in a survey on their perceptions toward OBS. Results show that although respondents strongly believe that using OBS would benefit their daily life, many issues (such as security concerns and technology anxieties) reduce their self-efficacies. Recommendations were given to promote a safe, efficient and conducive environment for user adoption of online banking.

Keywords: Unified Theory of Acceptance and Use of Technology (UTAUT), technology acceptance, online banking, performance expectancy, perceived credibility

1. Introduction

By 2007, Australia is one of the countries with the highest online banking service [OBS] adoption around the world [1]. More than two thirds of Australians (68%) are banking online once a week and at least 16 % are banking online daily [1].

Despite the substantial number of OBS adoption, previous Australian studies on the perception of OBS are remarkably limited and narrowly scoped. One of the recent literatures, Heaney [10] concentrated only on the common online banking practices of Generations X and Y in Australia. Lichtenstein and Williamson [12] focused mainly on five positive factors, (accessibility, perceived security, self-efficacy, convenience and usability) that affect consumers' online banking decision with the omission of other important constructs such as performance expectancy, social influence, facilitating conditions, attitude towards using OBS and anxiety. Another study focused mainly on negative factors such as cost concerns that delay small businesses in adopting OBS [2] while others concentrated only on specific issue such as the safety and security of online banking transactions [9, 15]. Most of the previous studies were conducted years ago without applying any systematic theoretical approach in examining the OBS acceptance in Australia. In a dynamic area such as OBS, domestic banks should be equipped with the latest customer demands to prevent loss and maintain competitive advantage [16]. To redress the limitation of the previous research, this study is the first attempt in applying the Unified Theory of Acceptance and Use of Technology (UTAUT) model in Australia, which aims to conduct a thorough research on factors that encourage and discourage OBS adoption to assist domestic banks in offering better OBS in compliance to consumers' needs.

Research Framework

The UTAUT model is one of the most comprehensive, robust, and powerful model up-to-date. It captures all the essential elements, i.e. performance expectancy, effort expectancy, social influence, facilitating conditions, self-efficacy, attitude toward using technology, and anxiety, of the previously established models : Theory of Reasoned Action (TRA), Theory of Acceptance Model (TAM/TAM2), Theory of Planned Behaviour (TPB), Innovation Diffusion Theory (IDT), Motivational Model (MM), Model of Personal Computer Utilization (MPCU), Combined TAM and TPB (CTAM-TPB),and Social Cognitive Theory (SCT) [20]. It is able to account for 70% of the variance (adjusted R^2) in a technology acceptance scenario [20]. As much prior research on online banking highlights the importance of security and privacy issues, an additional factor namely, perceived credibility, is added in this study to improve the adjusted R^2 of the UTAUT model

User Acceptance

At the onset, user acceptance is defined as a user's psychological state with regard to his or her intention to use a technology [7]. As behavioural intention to use a technology has proven to be a good indicator of actual usage in numerous prior studies, the present study use consumers' behavioural intention to use OBS to measure user acceptance of the technology [5, 6, 7, 17, 19]. The construct is measured by three items adapted from Venkatesh et al. [20] (refer to Table 2: nos. 9-9.3) and can be fostered or hindered by the following independent variables:

Performance Expectancy
Performance expectancy, is defined as the degree to which an individual believes that using a service (i.e. OBS) will help him or her to attain gains in job performance [20]. The construct measures the productivity enhancement and time and cost saving in relation to the adoption of OBS. Prior research show that positive performance expectation increases users' intention to adopt technologies [6, 7, 14, 20].

Effort Expectancy
The second independent variable in this study, is effort expectancy. It is defined as the degree of effort which an individual believes he or she needs to spend on using OBS [7, 19, 20]. This construct is important as prior studies have shown that complexity of technology and information loading discourage bank customers to adopt OBS [12].

Social Influence
Social influence is defined as the degree to which an individual perceives others' belief that he or she should use OBS. This construct is about whether an individual will change his or her decision to adopt OBS in compliance to the social pressure [6, 7, 19, 20].

Facilitating Conditions
Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support or facilitate the use of OBS [6, 7, 19, 20].

Perceived Credibility
Perceived credibility is defined as the degree to which an individual believes an OBS as trustworthy and secure. This construct is important because security, privacy and trust issues are common concern of OBS users around the world [9, 12, 13, 15].

Anxiety
Anxiety is defined as the degree to which an individual becomes anxious when it comes to using OBS [5, 6, 20]. Doyle et al. found that individuals with little or no computer and Internet experience have higher level of anxieties than experienced computer and Internet users [8].

Self-Efficacy
Self- Efficacy is defined as the degree to which an individual is confident about his or her ability to use OBS [5, 12, 19, 20]. It is a self-assurance perception that individuals acquire from multiple positive experiences and familiarity with the Internet service [5, 12, 19, 20].

Attitude towards using OBS
Attitude towards using OBS is defined as an individual's level of joy or displeasure in using OBS. This construct is important because it significantly affects individuals' tendency to adopt OBS service in the near future [18, 19, 20].

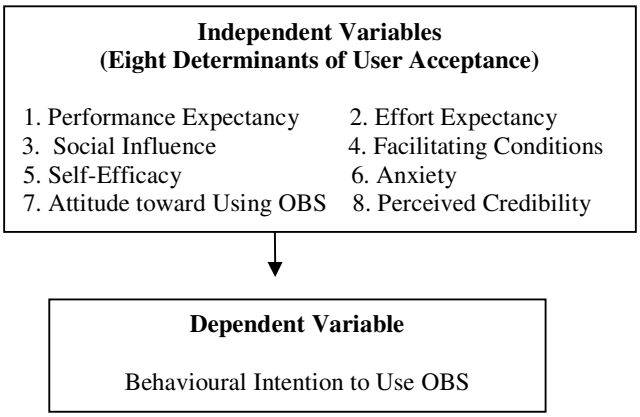

Fig. 1: Research Framework

2. Method
A preliminary sample of two hundred and six survey questionnaires was collected in Melbourne, Australia in September 2007 by using intercepts and snowball sampling methods. Sixteen non-OBS users were dropped and a total of 190 OBS users was included in this study. The questionnaire comprised 61 questions. Among them, 12 questions are related to performance expectancy, 12 questions are related to effort expectancy, six questions are related to social influence, four questions are related to facilitating conditions, nine questions are related to perceived credibility, seven questions are related to anxiety, four questions are related to self-efficacy, and four questions are related to attitude toward using OBS. In addition, three questions were used to measure respondents' behavioural intention to Use OBS. All questions were rated using a 5-point Likert's scale anchored by 1- Strongly Disagree, 2 – Disagree, 3 – Neutral/Unsure, 4 – Agree, 5 – Strongly Agree.

3. Results
Table 1 shows the demographic information of respondents. About 63.7 percent of respondents in this study are females while the remaining (36.3%) are males. Among the respondents, 35.3 percent earn less than A$200 per month, 26.3 percent earn between A$201 and A$1000 and 32.6 percent earn more than A$1000 a month. Ninety percent of respondents age between 20 and 29 while the remaining 10 percent are 30 years of age or above. Majority of them (81.6%) have 5 years or above experience in using OBS.

Table 1: Respondents' Profile

		Number of cases	%
Gender	Male	69	36.3
	Female	121	63.7
Monthly Income	<A$200	67	35.3
	A$201-A$1000	50	26.3
	A$1001 or above	62	32.6
Age	20-29	171	90.0
	30-39	18	9.5
	40 and above	1	0.5
Number of Years of OBS Use	<1 year	7	3.7
	1-<5 years	28	14.7
	5 years and above	155	81.6

Results of Factor Analysis

Results of factor analysis of independent factors and dependent factors show high construct validity with percentage of variance of 67.98% and 94.59%, respectively. In addition, the Cronbach's Alpha coefficients indicate high internal consistency in the respondents' answers (with Alpha coefficients of greater than 0.70). Multiple linear regression showed that Performance Expectancy, Facilitating Conditions and Anxieties are the most important predictors of Behaviour Intention to Use OBS.

Results of Descriptive Statistics

Due to the constraint on the length of this paper, only descriptive results such as the mean and standard deviation for attributes measuring each independent and dependent variable in this study are shown (in Table 2) and discussed in details in the paper.

Table 2: Mean and Standard Deviation (SD)

Independent Variables	**Mean**	**SD**
1. Performance Expectancy	**4.28**	**0.96**
1.1 I can manage my money online at anytime	4.45	0.88
1.2 I can keep a record of my finances	4.35	0.94
1.3 I need not visit traditional banks regularly	4.13	1.17
1.4 I can transfer money anytime and anywhere	4.30	0.98
1.5 I can save time paying essential bills at the post office	4.47	0.98
1.6 OBS is convenient and easy to access	4.53	0.87
1.7 OBS is efficient	4.39	0.88
1.8 OBS is effective	4.22	0.94
1.9 OBS improves productivity	4.07	1.01
1.10 OBS increases quality of output	3.63	1.08
1.11 OBS is useful	4.48	0.88
1.12 OBS fits into my lifestyle	4.39	0.93
2. Effort Expectancy	**3.97**	**0.93**
2.1 OBS is easy to learn	4.35	0.93
2.2 It is easy to do what I want to do by using OBS	4.24	0.86
2.3 OBS is easy to use	4.27	0.86
2.4 It is easy to become skilful in using OBS	4.22	0.86
2.5 Using OBS does not take too much time	4.31	0.86
2.6 Authentication code is easy to use	4.06	0.94
2.7 There is sufficient time for information entry	4.21	0.87
2.8 Fast information download	3.99	0.93
2.9 Easy web navigation	4.09	0.87
2.10 Detailed answers referring to Frequently Asked Questions (FAQs)	3.30	1.07
2.11 Comprehensive site map	3.28	1.03
2.12 Useful search engine	3.26	1.04
3. Social Influence	**3.36**	**0.95**
3.1 People who influence my behavior use OBS	3.22	1.06
3.2 Coworkers/classmates use OBS	3.82	0.89
3.3 Friends use OBS	3.52	0.96
3.4 People using OBS have high profile	3.21	0.94
3.5 People using OBS have more prestige	2.91	0.94
3.6 Most Australians like to use OBS	3.47	0.89
4. Facilitating Conditions	**3.90**	**0.90**
4.1 Basic system requirements for using OBS are met	4.27	0.92
4.2 All contents of OBS are easy to read and understand	4.02	0.88
4.3 Specific person (or group) is always available for assistance	3.36	0.91
4.4 The language in which the document is written is easily understood	3.96	0.90
5. Perceived Credibility	**3.54**	**0.94**
5.1 I trust in the ability of an online bank to protect my privacy and personal information	3.48	0.92
5.2 I believe no money will be lost in unauthorized electronic fund transfers	3.68	0.98
5.3 I believe online bank would not sell my personal information to third parties	3.76	0.97
5.4 Other people cannot view my bank account information	3.43	0.88
5.5 Online bank has enough	3.09	1.09

specialists to detect fraud and information theft		
5.6 I am not worried about being deceived into a fake website	3.47	0.93
5.7 Current password generation is secure	3.56	0.89
5.8 Sufficient guidance on password selection	3.87	0.92
5.9 Customers are automatically locked out after failed login attempts	3.48	0.92
6. Anxiety	**2.34**	**1.13**
6.1 I am afraid of high Internet connection cost	1.87	0.99
6.2 I am afraid of being charged for OBS	2.55	1.22
6.3 I am worried about the inaccessibility of OBS web pages	2.73	1.23
6.4 I don't know how to use OBS	1.93	1.13
6.5 I am afraid of losing information by hitting the wrong key	2.42	1.08
6.6 I am afraid of making mistakes that I cannot correct	2.68	1.22
6.7 OBS is intimidating to me	2.21	1.08
7. Self-Efficacy	**2.53**	**1.14**
7.1 I use OBS only if there is no one around me	2.93	1.23
7.2 I use OBS only if there is built-in help facility for assistance	2.56	1.08
7.3 I use OBS only if I could call someone for help	2.35	1.12
7.4 I use OBS only if I have a lot of time to learn and deal with the service	2.29	1.14
8. Attitude toward Using OBS	**3.84**	**0.86**
8.1 OBS makes banking tasks more interesting	3.59	0.95
8.2 I like working with OBS	3.89	0.80
8.3 It is a good idea to use OBS in daily life	4.08	0.83
8.4 OBS is enjoyable	3.81	0.86
Dependent Variable		
9. Behavioural Intention to Use OBS	**4.23**	**1.02**
9.1 I intend to use OBS in the near future	4.24	0.99
9.2 I predict I would use OBS in the near future	4.21	1.03
9.3 I plan to use OBS in the near future	4.24	1.05

4. Discussion and Recommendation

Performance Expectancy

The respondents have relatively high performance expectancy on OBS overall (Table 2, mean rating [MR] of 4.28). They strongly believe that using OBS would help them to attain gains such as those listed in Table 2 (except 1.10). They consistently agree that OBS is convenient and easy to access (Table 2, no. 1.6, MR of 4.53). This concurs with Polatoglu and Ekin [14] that online banking is perceived as a convenient mean of making transaction and processing payment, as it offers businessman and salesperson greater control over timing by performing bank transaction at stationary place (such as office) or in transit without affecting their daily working performance.

However, respondents have different opinions on whether there is still a need to visit traditional banks regularly after adopting OBS (Table 2, no. 1.3, Standard Deviation [SD] =1.17). Some respondents think that OBS saves their entire troubles of travelling, queuing up and waiting at the physical branch. Such results concur with a report from AC Nielsen [1] which shows that 16 percent of Australians banked online daily and never visited a bank branch. However, there are also respondents who prefer to maintain physical interpersonal interactions with bank officers even after adopting OBS. Despite the prevalence of OBS, branch networks are still the most popular delivery channel in the acquisition of current accounts, credit-based and investment-based services for senior citizens [11]. To promote the use of OBS, domestic banks should consider giving free demonstrations, briefing, and hands-on instructions on the convenience of using OBS at the physical branches.

Dissimilar views are also observed in the perceptions that "OBS improves productivity" (Table 2, no. 1.9, SD =1.01). Some working adults may perceive OBS adoption to have resulting in an improvement of their job productivity as they can carry out multiple tasks simultaneously. In contrast, others may feel that the time saved from using OBS interaction is not sufficient to cause any change in job productivity.

In addition, respondents also have different perceptions on the statement "OBS increases the quality of output." (Table 2, no. 1.10, SD =1.08). This indicates that some respondents are more concerned about the integrity, reliability and efficiency of the online transactions and data compared to others.

Effort Expectancy

Most items in effort expectancy have an average score of around 4 except for items relating to FAQ,

site map and search engine (Table 2, nos. 2.10–2.12). Different feedbacks are received from the question "there are detailed answers referring to Frequently Asked Questions (FAQs) of OBS" (Table 2, no. 2.10, SD =1.07). Some respondents feel easy to acquire information relating to OBS on the official web site of the banks while others believe that the information online is insufficient to clear their doubts. As prior studies show that users will continue using an online service if the service is easy to learn and understand [19, 20], banks should continuously update the answers referring to FAQs online at least once a week. This would benefit all users especially novice users who have little or no knowledge in accessing the OBS. All answers pertaining to the FAQs should be written in simple and understandable terminology to avoid confusions. For example, users are often confused by the term "Payee" and often unsure of whether it refers to the party who pays or the party who receives [3]. The use of a more proper and meaningful terminology such as "the account number for whom you are paying" is therefore recommended.

The official web page of a bank is the most important entry point to the OBS. Any accessibility issues will create problems to the users [4]. A prior research examined the official home pages results of eight domestic banks in Australia [4] show that none of the banks fully complies with the Web Content Accessibility Guideline (WCAG). WCAG is a standard developed by the Web Accessibility Initiative of the World Wide Web Consortium as the basis accessibility standard for online web content. Bank West, St. George Bank and Bendigo Bank were among the banks that failed to conform to about 40 percent of the total 65 checkpoints [4]. To improve web accessibility, Australian Bankers Association should clearly brief the WCAG standard to the representatives of domestic banks during seminars or conferences held by the government. Regular report supervision and on-site examinations could be held and punitive actions could be taken against domestic banks which fail to comply with the WCAG standard after 18 months of the seminars or conferences. As depicted in Table 2, some respondents are unable to find a comprehensive site map at the official web site of domestic banks (Table 2, no. 2.11, SD =1.028). This may be one of the WCAG checkpoints yet to be implemented by most banks in Australia. To increase the accessibility and usability of OBS, banks should develop easy to use and understandable navigation mechanisms, such as site maps, table of contents, proportional scroll bars, and side-by-side frames that facilitates consistent navigation within and between pages. Each online link should be clearly identified with a self-explanatory title so that users can understand the function of the link.

Some respondents also perceive the current search engine to be not so useful (Table 2, no. 2.12, SD =1.04). As an improvement, all domestic banks could provide different types of searches to meet the demands of users with different skill levels and preferences. A choice of basic or advanced search should be offered with the results being sorted by title, date, department, author and keyword to facilitate the searching process. Search engines that require perfect spelling may create problems for users who are unfamiliar with the exact spelling of a particular word. Therefore, designers of bank websites might want to include a search engine which offer best guess alternatives.

Social Influence

Overall, social influence does not seem to have much impact on respondents regarding their OBS usage (Table 2, no. 3, MR=3.36). The respondents are unsure whether people who use OBS in daily life have high profile (Table 2, no. 3.4, MR = 3.21). Such results contradict with Venkatesh and Davis [19]'s study that the adoption of a new technology tends to elevate an individual's standing within his or her social groups. Such a contradiction perhaps could be explained by the prevalence and convenience of OBS these days. OBS is now adopted by not only those with high monthly income but also those with low monthly income of <A$200 per month (which constitute 35.3% of this study). The wide adoption of OBS makes it nothing special to cause admiration and status elevation within social groups. Respondents are also unsure whether all Australians prefer to use OBS (Table 2, no. 3.6, MR = 3.47). Such results are unsurprising because unlike other technology innovations (e.g. mobile phones), OBS users are unlikely to access OBS in front of unfamiliar people. OBS is perceived as personal matters that require privacy. Therefore, only close friends would know whether an individual uses OBS or not.

Similarly, respondents do not think that using OBS is prestigious (Table 2, no. 3.5, MR=2.91). Perhaps, this is because the use of OBS is very common in Australia as the adoption rate is very high [1]. Some respondents are not influenced by important people in their social circle (e.g. parents, teachers) to use OBS (Table 2, no. 3.1, SD =1.06). This contradicts with Venkatesh et al. [20]'s findings that important people play an influential role particularly in the early stages technology adoption. Parents and teachers may not be ahead of their students or children in OBS adoption. Thus, campaigns specially designated to promote OBS interests can be conducted and users with cheerful OBS users can be invited to share their experiences in the talk shows. All these programmes are beneficial to domestic banks as it helps to increase their revenues and broaden their market share.

Facilitating Conditions

Overall, the facilitating conditions of OBS is quite sufficient (Table 2, no. 4, MR = 3.9). Basic system requirements for OBS are met (no. 4.1, MR = 4.27) and the OBS contents are easily read and understood (no. 4.2, MR = 4.02). However, there are also uncertainties on the availability of specific person (or group) for assistance when users are in doubts in using OBS (Table 2, no. 4.3, MR = 3.36). This is in line with Lichtenstein and Williamson [12]'s findings which show bank users had numerous complaints on the inadequate source of assistance of OBS. Inadequate consultation service may cause users and their families to hesitate from adopting OBS in the future [7]. In addition, it is also important for users to obtain advice from bank personnel prior to service registration to prevent unintentionally subscription to OBS that is inappropriate or unnecessary. To help customers overcome obstacles in using OBS, banks should provide a responsive and interactive consumer support in the forms of email, online chat, call centre or even face to face assistance. A collection of articles, publications or literature relating to the use and application of OBS should also be made available on the official web site of banks for users' easy reference. Since many users complained that Australian bank personnel at branches and call centres knew little about online banking or even did not understand how OBS works at all [12], intensive organizational training and examinations should be made mandatory for all banks. Banks could also consider giving free foundation tutorials to the public at schools, bank branches or shopping complexes

Perceived credibility

Customers are generally more concerned with the security of OBS compared with traditional banking services [15]. Overall, the respondents have insufficient trusts on OBS (Table 2, no. 5, MR=3.54). Some of them doubts on the availability of enough specialists and security measure to detect online fraud and information theft (Table 2, no. 5.5, MR = 3.09, SD =1.09). The security concerns drive quite a number of online banking users to undertake fraud preventive measures such as checking balances and transactions regularly and maintaining low balances online accounts [12].

Currently, there is a lack of widely–adopted online banking security standards in Australia. Therefore, industry-wide best security standards should be developed and made mandatory for all domestic banks to comply with. At a minimum, two-factor authentication should be implemented, with the use of username and password as the first authentication factor and the use of transaction authorization code (one time code), identity card or international passport number as the second authentication factor. To achieve better security, banks might want to consider adopting a three factor authentication, which includes the use of biometric such as iris or thumbprint recognition for user identification. With the implementation of two or three factor authentication, fraudsters need to get through another level of authentication to access a customer account even if they manage to obtain the username and password.

Consumers' unfamiliarity with the security technologies (e.g. firewalls, secure socket level, encryption, P3P policy) mentioned in the security policies of banks, may also increase their anxieties over online fraud and information theft. All information relating to security technologies should be explained to users in simple and layman's terms and accompanied by adequate illustration or demonstration. Consumer education programmes (e.g. seminars, exhibitions) should be held regularly to introduce the latest security technology to customers and encourage them to report any fraudulent incidents.

Self-Efficacy and Anxiety

Respondents have divided opinions towards the self-efficacy (Table 2, no. 6, SD = 1.13) and anxiety (Table 2, no. 7, SD = 1.14) of using OBS. While some respondents are confident in using OBS, others exhibit high anxieties of being charged for OBS (Table 2, no. 6.2, SD = 1.22), inaccessibility of OBS web pages (Table 2, no. 6.3, SD = 1.23), losing information by hitting the wrong key (Table 2, no. 6.5, SD = 1.08) and making mistakes that they cannot correct (Table 2, no. 6.6, SD = 1.22).

With a low level of self-efficacy, some respondents tend to hesitate using OBS in front of others (Table 2, no. 7.1, SD = 1.23), without built-in help facility (Table 2, no. 7.2, SD = 1.08), without the help of experts (Table 2, no. 7.3, SD = 1.12) and without having a lot of time to learn and deal with the service (Table 2, no. 7.4, SD = 1.14). This study consists of 18.4% of novice users with less than 5 year experience in using OBS (Table 1), who may perceive OBS as difficult to learn and access due to the lack of personal experience in dealing with the new service. Since an increase in experience are likely to reduce users' anxiety of using OBS and increase their self-efficacy [8], banks might want to consider free Internet trainings to novice users periodically.

Attitude and Behavioural Intention toward Using OBS

Overall, the respondents' attitude towards OBS is quite positive (Table 2, no. 8, MR=3.84 close to 4). Respondents generally agree that it is a good idea to use OBS in daily life (Table 2, no. 8.3, MR = 4.08). In addition, they also have high intention to use

OBS in the near future (Table 2, no. 9.1, MR =4.24). Users' attitudes and intentions to adopt OBS will be improved if issues such as security concerns and technology anxieties are addressed by implementing the above-mentioned recommendations.

6. Future study

Most of the respondents in the present study are youngsters (aged between 20 and 29). The study can be replicated in other age groups, particularly the middle-age users. They may have difference of opinion. It can also be replicated in other countries using the same model and instrument to identify factors that encourage and discourage the adoption of OBS in those countries.

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8. References

[1] ACNielsen. Aussie Consumers Choose Internet Banking over ATM, Phone and Branch. Retrieved 3 April 2008, from http://au.acnielsen.com/news/20070426.shtml

[2] April, W., and Deborah, R. "The Lagging Development of Small Business Internet Banking in Australia," *Journal of Small Business Management* (40:1), 2002, pp. 51-57.

[3] Bayles, M. Online Banking: Why People Are Branching Out. Retrieved 7 February 2008, from http://psychology.wichita.edu/surl/usabilitynews/62/online_banking.htm

[4] Celic, S., Faulkner, S., and Arch, A. "A Look at Internet Banking Accessibility in Australia," in AusWeb04. The Tenth Australian World Wide Web Conference, Seaworld Nara Resort, Gold Coast, 3-7 July 2004.

[5] Compueau, D. R., and Higgins, C. A. "Computer Self Efficacy: Development of A Measure and Initial Test," *MIS Quarterly* (19:2), 1995, pp. 189-211.

[6] Davis, F. D., Bagozzi, R. P., and Warshaw, P. R. "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models," *Management Science* (35:8), 1989, pp. 982-1002.

[7] Dillon, A., and Morris, M. "User Acceptance of New Information Technology: Theories and Models," in *Annual Review of Information Science and Technology,* M. Williams (ed.), Information Today, Medford, NJ, 1996, pp. 3-32.

[8] Doyle, E., Stamouli, I., and Huggard, M. "Computer Anxiety, Self-Efficacy, Computer Experience: An Investigation throughout A Computer Science Degree," in Proceedings 35th Annual Conference, 2005, pp. S2H- 3-7.

[9] Hain, D., Tootell, H. and Alcock, C. "Understanding Attitudes towards Internet Banking," in Proceedings of CollECTeR 2002, Seventh Annual CollECTeR Conference, Electronic Commerce, in Melbourne, Australia, 2002.

[10] Heaney, G. M. "Generations X and Y's Internet Banking Usage in Australia," *Journal of Financial Services Marketing* (11:3), February 2007, pp.196–210.

[11] Howcroft, B., Hamilton, R., and Hewer, P. "Consumer Attitude and the Usage and Adoption of Home-Based Banking in the United Kingdom," *The International Journal of Bank Marketing* (20:3), 2002, pp.111-121.

[12] Lichtenstein, S., and Williamson, K. "Understanding Consumer Adoption of Internet Banking: An Interpretive Study in the Australian Banking Context," *Journal of Electronic Commerce Research* (7:2), 2006, pp. 50-66.

[13] McCullagh, A., and Caelli, W. "Who Goes There? Internet Banking: A Matter of Risk and Reward," *Information Security and Privacy*, 3574/2005, Springer Berlin, Heidelberg.

[14] Polatoglu, V.N., and Ekin, S. "An Empirical Investigation of the Turkish Consumers' Acceptance of Internet Banking Services," *International Journal of Bank Marketing* (19: 4), 2001, pp.156-165.

[15] Sathye, M. "Adoption of Internet Banking by Australian Consumers: An Empirical Investigation," *International Journal of Bank Marketing* (17:7), 1999, pp. 324 – 334.

[16] Sullivan, R. J. "How Has the Adoption of Internet Banking Affected Performance and Risk in Banks," Financial Industry Perspectives, Federal Reserve Bank of Kansas City, December 2000, pp. 1-16.

[17] Sun, H., 2003. "An Integrative Analysis of TAM: Toward A Deeper Understanding of Technology Acceptance Model," in *Proceedings of the 9th American Conference on Information Systems,* Tampa, HL.

[18] Taylor, S., and Todd, P. A. "Understanding Information Technology Usage: A Test Of Competing Models," *Information System Research* (6:4), 1995, pp.144-176.

[19] Venkatesh, V., and Davis, F. D. "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Management Science* (45:2), 2000 pp.186-204.

[20] Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. "User Acceptance of Information Technology: Toward A Unified View," *MIS Quarterly* (27:3), 2003 pp.425-478