Internet Banking and Organizational Change: From a Customer Perspective

Luai Jraisat* and Raef Alsaied *

*Department of Marketing, Faculty of Business and Finance, American University of Madaba (AUM), Jordan**

Abstract: The aim of this research is to examine the factors affecting the acceptance and adoption of Internet banking, from end-customer perspectives. A structured and self-administered survey is employed targeting customers who are using Internet banking in Jordan. A number of 200 questionnaires are delivered in three major cities. A simple regression analysis and a t-test are used, and then based on an illustrative empirical case; a simple variance-based reflective structural equation model is tested. The results indicate that each construct of the Technology Acceptance Model (TAM), perceived ease of use and perceived usefulness constructs have a positive influence, while each construct of Perceived Risk Theory (PRT), security and privacy have a negative influence on acceptance and adoption of Internet banking leading to organizational change. The framework that shows the results of variance-based reflective PLS SEM is presented by using the structural relationship between independent and dependent factors for Internet banking service. This research has important implications for different level managers at banks. Organizational change between banks and their customers at online service level leads managers to focus their efforts on this change in order to foster successful acceptance and adoption of Internet banking. This research provides one of few attempts that investigate Internet banking service in developing countries. The results provide support of the integrated TAM and PRT perspectives and confirm its robustness in predicting customers' behaviour of adoption and acceptance of Internet banking.

Keywords- *Technology Acceptance Model (TAM), Perceived Risk Theory (PRT), Internet Banking, Developing Country.*

Introduction

The explosion of Internet usage and the huge finding initiatives in electronic banking have drawn the attention of researchers towards Internet (online) banking. By the end of the last century, digital technology has become an important factor for both industrial and services sectors. Most industries have been influenced in different ways by e-commerce (Foxall et al. 2003) and that the banking industry has been subject to this technological change (Kalakota and Whinston, 1997; Bradley and Stewart 2003). More importantly, online service has shifted the delivery channels used by the financial services industry (Drennan et al., 2006; Manchanda et al., 2011). Thus, banking sector can benefit from much lower operating costs by offering Internet banking services, which require less staff and fewer

physical branches.Thus, previous research highlights a gap and demands to investigate and identify the factors influencing resistance to adopt and accept Internet banking. This information has practical implications for the bank managers who can make informed decisions and formulate effective strategies aimed at increasing Internet banking use. Most of the previous research (e.g. Davis, 1989; Taylor and Todd, 1995; Venkatesh, 1999; Gupta and Kamilla, 2014) states that constructs of the Technology Acceptance Model (TAM), perceived ease of use and perceived usefulness and constructs of Perceived Risk Theory (PRT), security and privacy must be managed in an online service in order to establish interactions for benefits of banks and end-customers. To date, research has been conducted in investigating factors influencing the acceptance and adoption of e-commerce in retail business. However, the present research is an attempt to contribute to the body of knowledge in the field of Internet banking services and identifies the factors affecting acceptance and adoption of such services by banks' end customers. In fact, little has been done to investigate these factors in Internet banking in developing countries like Jordan. The purpose of the present research, thus, is to investigate the factors influencing the acceptance and adoption of Internet banking, from end-customer perspectives.

Literature Review

In late 1990s many anticipated that Internet banking services, such as viewing banking transactions, bill payments and online loan applications would become industry standards. These expectations were realized in a much shorter time than expected for such benefits. Despite of these potential benefits, customers have not adopted Business to Consumer "B2C" e-commerce and e-banking to the extent it was expected (Hoffman et al., 1999), primarily due to issues of perceived ease of use and perceived usefulness (Venkatesh, 1999; Gupta and Kamilla, 2014) and account of risk inhibitions (Palmer et al., 2000; Yiu, Chi Shing et al. 2007). Several researchers have emphasized upon significance of trust toward understanding interpersonal behavior and economic expansion (Luhmann, 2000; McKnight and Chervany, 2001). Such rapid expansion is most noticeable in the developed countries such as USA (Kolodinsky et al., 2004), Australia (Sathye, 1999), Estonia (Eriksson et al., 2005) and others in Europe (Pikkarainen et al., 2004) where the availability and access to the Internet has made it easier. On the other hand, adoption of Internet banking services in the developing countries appears to be taking place at a slower pace. Statistics of Internet banking penetration are: Europe (75 percent), USA (70 percent), Arab States (40 percent), Asia Pacific (33 percent) and Africa (19 percent) of Internet users for the year 2015 (Statista, 2015). In fact, in recent years banks in developing countries are increasingly offering Internet banking services despite the limitation they face (Jenkins, Hatice, 2007). This put the lens on opportunities for the banking industry to strategically strengthen better online relationships with the Internet users. This signifies the need for an empirical research to identify the factors that determine acceptance of Internet banking by the users. According to TAM, perceived ease of use and perceived usefulness constructs are believed to be fundamental in determining the acceptance and use of various information technology systems (Wang et al., 2003).

There is a growing body of academic research being focused on examining the determinants of computer technology acceptance and the utilization among users as part of organizational change (e.g. Davis, 1989; Davis et al., 1989; Moore and Benbast 1991; Mathieson 1991; Wang et al., 2003; Sentosa et al., 2012). According to TAM, adoption behavior is determined by the intention to use a particular system, which in turn is

determined by the perceived usefulness and perceived ease of use of the system. However, the importance of security and privacy to the acceptance of online banking has been noted in many banking studies. In such studies, perceived risk was found to be significant obstacle for the adoption of online banking. There exits plethora of research that has examined the relationship of gender to computer related outcomes (Powell, 2013). Gutck and Bikson (1985) found that men tend to bring more computer–relevant skills to the workplace than women. Computer use has been perceived to be a male-oriented activity and males have also demonstrated a greater liking for the computer (Wilder et al., 1985; Woodfield, R. 2002). Females have reported more health problems from computer usage. Women have expressed higher levels of anxiety when imagining sitting down at a computer (Heinssen et al 1987; Schumacher and Mo- rahan-Martin, 2000; Mikkelsen, A., Ogaard, T., Lindoe, P., & Olsen, O. 2002). Raub (1981) reported a positive relationship between age and computer anxiety, suggesting that older employees have less computer knowledge and training (Slegers, Van Boctel and Jolles. 2012). He also found that older employees hold unfavorable attitudes toward micro-computers. Based on a sample of computer operators, Nickell and Pinto (1986) found age to correlate negatively with computer attitudes. In an attempt to examine the ability of people from different ages to learn computer skills, Czara et al. (1989); and Slegers, Van Boctel and Jolles (2012) found age group differences in learning skills do exist. Younger subjects achieved significantly better results than did older subjects. Davis and Davis (1990) found end users with higher levels of education to perform significantly better in a training environment than those with less education. Education has been reported to be negatively related to computer anxiety and positively correlated with computer attitudes (Gutck and Bikson 1985; Igbaria and Parasuraman, 1989; Raub 1981; Powell, 2013 and Chou and Tsai, 2009). Lucas (1978) found that less educated individuals possess more negative attitudes toward information system than individuals with more education. One purpose of this paper is to explore whether or not there is any difference between males and females in this respect, whether there is a significant difference between the two age groups, i.e., young and older, and whether there is a significant difference between highly educated and less educated respondents. These variables are used as moderators in the current research where a basic moderator effect can be used as an interaction between a focal independent variable and a factor that specifies the appropriate conditions for its operation.

Research Methodology

Sampling and Data collection

The population of this study consists of customers of some commercial banks in three major cities in Jordan. The data were collected using a structured questionnaire survey via face-to-face interviews carried out during September and October 2015. A non-probability sample of purposive sampling approach was selected (Trochim, 2006). The sample is 200 customers, where a total of 200 questionnaires were collected and 180 of these were returned at which of 146 deemed usable and valid for the analysis (n=146), resulting in a usable response rate of 73 percent. Hard copies of the questionnaire were distributed personally to the end-customer (user) by four data collectors, using the bank interception method for doing the research survey.

Constructs and measurements

The questionnaire was derived from previous research. Constructs, analyzed as latent reflective construct, were measured using five-point Likert-type scales ranging from 5

"Strongly Agree" to 1 "Strongly Disagree". The items measuring the identified constructs were adapted for the current research (Table 1).

Data Analyses

A set of analyses is conducted into two parts. In part one, simple regression analysis was used to assess the degree of influence of independent variables on the dependent variable. Then, a t-test was applied to assess the differences between sub-groups of respondents with relation to their demographic variables. In part two, a simple Structural Equation Modeling (SEM) was functioned to test the theoretical model.

Table 1. Research constructs and their operationalization

Results
Simple Regression and T-test

	Constructs and Items	Operationalization)
	TAM	
	Perceived Ease of Use	
TAM1	1-My interaction with IB is clear and understandable.	
TAM2	2-Learning to use IB is easy for me.	
TAM3	3-Easy for me to become skillful at using IB.	
TAM4	4-I would find IB easy to use.	
TAM5	5-I find it easy to do what I want in IB.	
TAM6	6-I find IB to be flexible to interact with.	
	Perceived Usefulness	Venkatesh, 1999; Sentosa et al., 2012; Gupta and Kamilla, 2014
TAM7	1-Using IB enhances my effectiveness of buying banking services.	
TAM8	2-Using IB makes it easier for me to utilize services.	
TAM9	3-Using IB enables me to utilize banking services.	
TAM10	4-Using IB increases my productivity.	
TAM11	5-Using IB improves my performance of transactions.	
TAM12	6-Overall, IB is useful for me to utilize services.	
	PRT	
	Perceived Risk (Security and Privacy)	
PRT1	1-I trust in the technology of IB which is using.	
PRT2	2-I trust in the ability of IB to protect my privacy.	Kalakota and Whinston, 1997;
PRT3	3-I trust in IB as a bank.	
PRT4	4-Using IB is financially secured.	
PRT5	5-I am not worried about the security of IB.	
	Acceptance (A) of IB	
AIB1	1-Account transfer is often used.	
AIB2	2-Bill payment is often used.	
AIB3	3-View of account balance is often used.	Sentosa et al., 2012; Gupta and Kamilla, 2014
AIB4	4-Open account is often used.	
AIB5	5-Credit-account application usage.	
AIB6	6-Foreign currency deposit is often used.	
AIB7	7-Insurance is often used.	
AIB8	8-Interest rate, exchange rate and stock quote inquiry are often used.	
	IB: Internet Banking	

A simple regression analysis was used. It indicates that there is a significant positive influence of TAM factors: perceived ease of use (p = 0.038) and perceived usefulness (p = 0.005) and a significant negative influence of PRT factors: security and privacy (p = 0.035) on consumer acceptance of Internet banking, which lends support to the research propositions.

The t-test was used to identify whether there is any difference between the means of sub-groups' demographics (Table 3). Findings have showed that there was no significant difference in terms of gender (male/female) for both TAM and PRT: perceived ease of use (p=0.534), perceived usefulness (p =0.724), security and privacy (p = 0.961). There was no significant difference in terms of age (younger/older) for both TAM and PRT: perceived ease of use (p=0.636), perceived usefulness (p =0.321), security and privacy (p = 0.461). In addition, there was no significant difference in terms of education level (undergraduate/graduate) for both TAM and PRT: perceived ease of use (p=0.175), perceived usefulness (p =0.055), security and privacy (p = 0.834). To sum up, no significant differences exist between demographic sub-groups with regard to perceived ease of use, perceived usefulness, nor perceived risk.

Measurement Model

Reliability Analysis

In table 4, reliability was found high based on the measurements scale. The mean results of a simple average from all the items, for the five-point Likert-type scales, were highlighted for the four-modeled latent constructs.

Table 2. Reliability and Correlation Analysis

Constructs	Mean	Cronbach's α
-Acceptance of Internet Banking	5.60	0.88
-Perceived ease of use	5.34	0.85
-Perceived usefulness	5.10	0.83
-Security and privacy	4.57	0.80

Convergent validity

The measurement model demonstrated adequate convergent validity. The convergence validity was assessed by the use of factor loadings, composite reliability and average variance extracted (Table 5.) (Hair et al., 2011; Ringle et al., 2012).

Table 3. Results of Convergent Validity

Construct	Measurement Item	Loading	Composite Reliability	AVE
-Perceived ease of use	TAM1	0.880	0.752	0.900
	TAM2	0.872		
	TAM3	0.860		
	TAM4	0.870		
	TAM5	0.854		
	TAM6	0.882		
-Perceived usefulness	TAM7	0.850	0.781	0.952
	TAM8	0.862		
	TAM9	0.870		
	TAM10	0.844		
	TAM11	0.884		
	TAM12	0.860		

-Security and privacy	PRT1	0.854	0.742	0.976
	PRT2	0.882		
	PRT3	0.844		
	PRT4	0.804		
	PRT5	0.820		
-Acceptance of Internet Banking	AIB1	0.854	0.762	0.944
	AIB2	0.982		
	AIB3	0.944		
	AIB4	0.924		
	AIB5	0.890		
	AIB6	0.854		
	AIB7	0.882		
	AIB8	0.894		

Discriminant validity

The measurement model demonstrated adequate discriminant validity. The discriminant validity was assessed by comparing the squared correlations between constructs and variance extracted for each construct (Table 6) (Diamantopoulos and Siguaw, 2006; Cheung and Lee, 2010; Hair et al., 2012; Hair et al., 2014).

Table 4. Results of Discriminant Validity

Constructs	A	B	C	D
-Perceived ease of use (A)	**0.88**			
-Perceived usefulness (B)	0.62	**0.84**		
-Security and privacy (C)	0.64	0.60	**0.82**	
-Acceptance of Internet Banking (D)	0.82	0.80	0.40	**0.80**

Structural model

In PLS SEM, an inter-construct correlation matrix presents pair-wise correlation coefficients between each of the four-modeled latent constructs as shown in Table 6 above. Most of the correlation coefficients show low or moderate pair-wise correlations that lead to acceptable levels of multicollinearity in this research. The values of the square roots of the average variance extracted (AVE) are applied in order to better report PLS SEM results. The structural model indicates the causal relationships among constructs in the model that includes the estimates of the path coefficients, and the R^2 value, which determine the prediction power of the model. The R2 and the path coefficients of loadings and significance indicate how well the data support the proposed model. The square root AVE values are compared to each individual pair-wise correlation coefficient between any two constructs, which highlights the fact that the PLS SEM framework of main effects supports both types of validity criteria as shown in Table 5 and Table 6 above. Figure 1, presents the framework that illustrates the results of variance-based reflective PLS SEM.
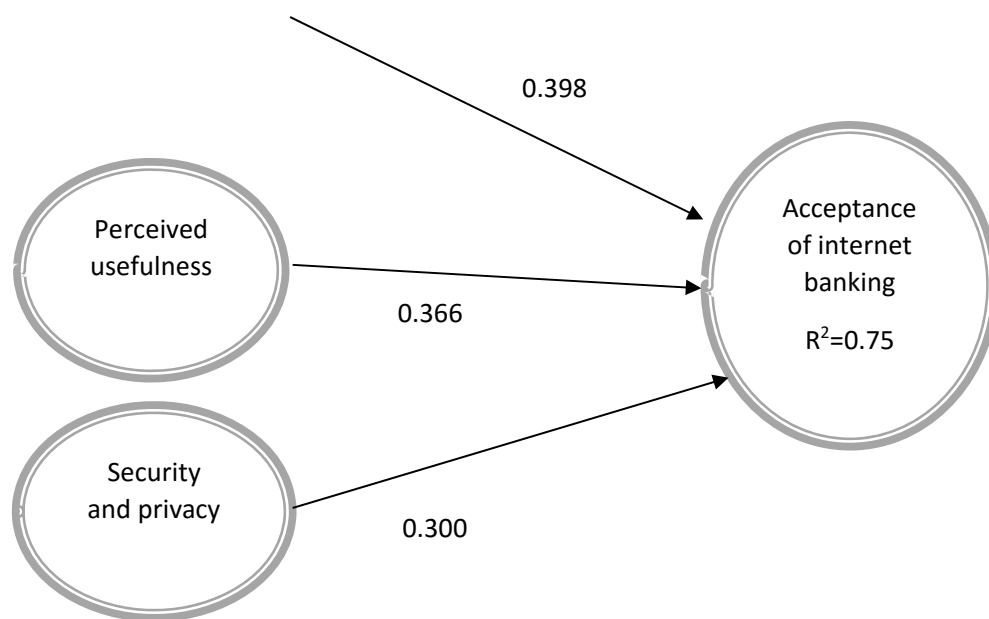
Perceived ease of use

Figure 1. Framework: PLS-SEM.

Discussion, Contribution and Further Research Directions

The research objective was to examine the factors influencing acceptance of the Internet banking. It has contributed to knowledge by providing an understanding of acceptance of Internet banking concept by analysis of the Technology Acceptance Model (TAM), perceived ease of use and perceived usefulness and Perceived Risk Theory (PRT), security and privacy. The research has confirmed a formulation of a significant link between TAM, PRT and acceptance of Internet banking. This research provides significant insight into the consumer's perception of Internet banking however some limitation exits. Although, collection of data from three major cities with a 70 percent population provided valid results, however, by increasing the sample size will allow more generalizability to other demographics. Also, this research can be conducted in different cities with varying socio-economic setting for more generalized findings. Future research suggestions are to explore the role of social media for enhancing customers' perception about Internet banking and facilitating adoption among the people of Jordan. Another area of research to consider for future work is mobile banking. With the advancement in applications and security features on mobile phones and popularity of smart phones provides a new venue to explore customer's attitude towards mobile banking.

References

Bradley, L. and Stewart K. (2003), A Dlphi study of the drivers and the inhibitiors of internet banking", *The International Journal of Bank Marketing.* Vol. 20, No. 6, pp. 250-60.

Cheung, C. M.K. and Lee, M. K.O. (2010), "A theoretical model of intentional social action in online social networks", *Decision support system.* Vol. 49, No.2, pp. 24-30.

Chou, J. and Tsai, H. (2009). "On-line learning performance and computer anxiety measure for unemployed adult novices using a grey relation entropy method". *Information Processing and Management*, Vol. 45, No. 2, pp. 200–215.

Czara, S.J.; Hammond, K.; Blascovich, J.; and Swede, H. (1989), "Age related differences in learning to use a text-editing system", *Behavior and Information Technology*. Vol. 8, No. 4, pp. 309-19.

Davis, F.D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, Vol.13, No. 3, pp. 318-40.

Davis, F.D., Bagozzi P., and Warshaw R. (1989), "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models", *Computer Journal of Management Science,* Vol. 35, no. 8, pp. 982-1003.

Davis, L.D., and Davis, D.F. (1990), "The effect of training techniques and personal characteristics on training end users of information systems", *Journal of Management Information Systems,* Vol. 7, No. 2, pp. 93-110.

Foxall, G.R.; Shumalla, Y.Y.; and Pallister, J.G. (2003), "A proposal model of E-trust for electronic banking", *Technovation,* Vol. 23, pp. 847-60.

Gupta, D. and Kamilla, U. (2014), "Cyber banking in India: a cross sectional analysis using structural equation model", IUP Journal of Bank Management, Vol. 13 No. 2, pp. 47-63.

Hair, Joseph F., Sarstedt, Marko, Ringle, Christian M., Mena, Jeannette A., (2012), "An assessment of the use of partial least squares structural equation modeling in marketing research", Journal of the Academy of Marketing Science, Vol. 40 No.3,pp. 414–433.

Heinssen, R.K.; Glass, C.R.; and Knight, L.A., (1987), "Assessing computer anxiety: development and validation of the computer anxiety rating scale", *Computer in Human Behavior*. Vol. 3, pp.49-59.

Hu, P.J.; Chau, P.Y.K.; Sheng, O.R.I.; and Tam, K.Y. (1999), "Examining the technology acceptance model using physician acceptance of telemedicine technology", *Journal of Management Information Systems,* Vol. 16, No.2, pp. 91-112.

Igbaria, M., and Parasuraman (1989), "A path analytic study of individual characteristic, computer anxiety, and attitudes toward microcomputers", *Journal of Management*, Vol. 15, No. 3, pp. 373-88.

Jenkins, Hatice (2007), "Adopting internet banking services in a small island state: assurance of bank service quality", *Managing Service Quality,* Vol. 17, No. 5, pp. 523-37.

Kalakota, R. and Whinston, A.B. (1997), Electronic Commerce: A Manager's Guide, Addison Wesley Professional, Reading, MA.

Karjalouto, Heikki; Mattila Minna; and Tapio Pento (2002), "Factors underlying attitude towards online banking in Finland", *International Journal of Bank Marketing,* Vol. 20, No. 6, pp. 261-72.

Lee, Y.; Kozar, K.A.; and Larsen K.R.T(2003), "The technology acceptance model: past, present, and future", *Communications of the Association for Information Systems,* Vol. 12, No. 50, pp. 752-80.

Lee, M.K.O.; and Turban, E. (2001), "A trust model for consumer internet shopping", *International Journal of Electronic Commerce,* Vol. 6, No. 1, pp. 75-91.

Lucas, H.C., Jr. (1978), "Empirical evidence for a descriptive model of implementation", *MIS Quarterly*, Vol. 2, pp. 27-52.

Mathieson K., (1991), " Predicting user intention: comparing the technology acceptance model with the theory of planned behavior", *Information System Research*, Vol. 2 No. 3, pp. 173-91.

Mikkelsen, A., Ogaard, T., Lindoe, P., & Olsen, O. (2002). 'Job characteristics and computer anxiety in the production industry'. *Computers in Human Behavior*, Vol.18, pp. 223–239

Moore G. and Benbasat I. (1991), "Development of an instrument to measure the perceptions of adopting an information technology innovation", *Computer Journal of Information Systems Research*, Vol.2, No.3, pp. 192-222.

Nickell, G.S.; and Pinto, J.N. (1986), "The computer attitude scale", *Computers in Human Behavior*, Vol.2, pp. 301-6.

Pikkarainen, Tero; Kari Pikkarainen; Heikk; Karjalouto; and Seppo Pahnila (2004), "Consumer acceptance of online banking: an extension of the technology acceptance model', *Internet Research*, Vol. 14, No. 3, pp. 224-35.

Polatouglu, V.N.; and Ekin, S. (2001), "An empirical investigation of the Turkish consumers' acceptance of internet banking services", *International Journal of Bank Marketing*, Vol. 19, No. 4, pp. 156-65.

Powell, A. (2013), "Computer anxiety: Comparison of research from the 1990s and 2000s". *Computers in Human Behavior,* Vol. 29, No. 6, pp. 2337–2381

Raub, A.C. (1981), "Correlates of computer anxiety in college students", *Unpublished doctoral dissertation*, University of Pennsylvania.

Robinson, T. (2000), "Internet banking still not a perfect marriage", *Informationweek.com*, April 17, pp. 104-6.

Woodfield, R. (2002),"Woman and information systems development: not just a pretty (inter)face?", *Information Technology & People*, Vol. 15 Iss 2 pp. 119 - 138

Sathye, M. (1999), "Adoption of internet banking by Australian consumers: an empirical investigation", *International Journal of Bank Marketing*, Vol. 17, No. 7, pp. 324-34.

Schumacher, P., and J. Morahan-Martin. (2000). "Gender, Internet and Computer Attitudes and Experiences'', *Computers in Human Behavior*, Vol. 16, pp. 13–29.

Sentosa, I., Ming, C.W., Soebyakto, B.B. and Nik Mat, N.K. (2012), "A structural modeling of internet banking usage in Malaysia", Researchers World – A Journal of Arts, Science and Commerce, Vol. 3 No. 1, pp. 75-86.

Slegers, K., Van Bixtel, M. and Jolles, J. (2012), "Computer use in older adults: Determinants and the relationship with cognitive change over a 6 year episode", *Computers in human behavior*, Vol. 28, No. 1, pp. 1-10.

Tan M.; and Teo, T.S.H. (2000), "Factors influencing the adoption of internet banking", *Journal of Association Information Systems*, Vol. 1, pp. 1-42.

Taylor, S., and Todd, P. (1995). Understanding information technology usage: A test of competing models. Information Systems Research, 6(2), pp. 144–176.

Trochim, W. (2006). The Research Methods Knowledge Base, 3rd Edition. Atomic Dog Publishing, Cincinnati, OH.

Venkastesh, V. (1999), "Creation of favorable user perception: exploring the role of intrinsic motivation", *MIS Quarterly*, Vol. 23, No. 2, pp. 239-60.

Wang, Y.S; Wang, Y.M.; Lin, H.H.; and Tang, T.J. (2003), "Determinants of user acceptance of internet banking: an empirical study" *International Journal of Service Industry Management*, Vol. 14, No. 5, pp. 201-19.

Wilder, G.; Mackie, D.; and Cooper, J. (1985), "Gender and computers: two surveys of computer-related attitudes", *Sex Roles*, Vol. 13, No. 3-4, pp. 215-88.

Yiu, Chishing; Kevin Grant; and David Edgr (2007), "Factors affecting the adoption of internet banking in Hong Kong- implications for the banking sector", *International Journal of Information Management*, Vol. 27, pp. 336-51.