

Factors Influencing the Adoption of Internet Banking: (Special Reference to the South Eastern Region, Sri Lanka)

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Abstract

Internet banking plays a major role in banking sector. It seems that commercial banks has not yet attracted sufficient customers to use internet banking when compared with the other developed and developing countries in the South Eastern Region part of Sri Lanka. This study examines the factors influencing the adoption of internet banking services by commercial banks in the South Eastern region in Sri Lanka. The data were collected through questionnaire. The methodology espoused for this study is case study research approach for which the data gathered were quantitative. Theory was developed to identify the factors that influence the adoption of Internet banking. 227 respondents in South Eastern Region part of Sri Lanka were involved in this study. 51 were adopters who use internet banking. 176 were non adopters who do not use internet banking. Factor analyses and regression technique are used to study the relationship. The results of the model tested that use of internet banking in South Eastern Region part of Sri Lanka. The adoption/ non-adoption decision is highly influenced by attitude toward Change, Perceived benefits, perceived risks, Occupation, Users' IT knowledge except Information on online banking. Only information on online banking did not affect intention to use internet banking service in the mentioned research area. The results also propose that age, gender and occupation are significantly relate with internet banking behaviour. Finally, this paper recommend that understanding the factors influencing the adoption of internet banking is very significant to the commercial banks and Bank managers can make use of these information to advance appropriate strategies to attract new customers to use Internet banking in future.

Key words: Internet, Banking, Adoption, Commercial Banks.

Introduction

Advances in information and communication technologies in particular, the growing use of the internet for business transaction, have had a profound effect on the banking industry. While this is a global phenomenon, creating a truly global marketplace, penetration of internet banking into developing countries lags behind that of the developed countries. While poor economies, education and infrastructure are obvious factors in the slow adoption of technology in some developing countries, there are probably also other issues like Trust that plays role.

Banking has always been a highly information intensive activity that relies heavily on information technology (IT) to acquire, process, and deliver the information to all relevant users. Not only is IT critical in the processing of information, it provides a way for the banks to differentiate their products and services. Banks find that they have to constantly innovate and update to retain their

demanding and discerning customers and to provide convenient, reliable, and expedient services. Driven by the challenge to expand and capture a larger share of the banking market, some banks invest in more bricks and mortar to enlarge their geographical and market coverage. Others have considered a more revolutionary approach to deliver their banking services via a new medium: the Internet. Since the introduction of the Internet in 1969, it has evolved from the sole domain of the computer nerd and the academic to a mainstream channel of communication (Nehmzow, 1997). Recently, it has been rapidly gaining popularity as a potential medium for electronic commerce (Crede, 1995; Ooi, 1999; U.S. Department of Commerce, 1999). The rapid growth of the Internet has presented a new host of opportunities as well as threats to business. Today, the Internet is well on its way to become a full-fledged delivery and distribution channel and among the consumer-oriented applications riding at the forefront of this

evolution is electronic financial products and services.

Indeed, the emergence of Internet banking has prompted many banks to rethink their IT strategies in order to stay competitive. Customers today are demanding much more from banking services. They want new levels of convenience and flexibility (Birch and Young, 1997; Lagoutte, 1996) on top of powerful and easy to use financial management tools and products and services that traditional retail banking could not offer. Internet banking has allowed banks and financial institutions to provide these services by exploiting an extensive public network infrastructure (Ternullo, 1997). Despite the many potential benefits, many teething problems will need to be addressed before Internet banking can become widely adopted. It is believed that, in the future, Internet banking will recede in importance as a strategic application to become a competitive necessity that must be adopted by most if not all banking and financial institutions.

This study examines the factors influencing the adoption of internet banking services by commercial banks in the South Eastern region in Sri Lanka. This study will be limited only to quantitative research, which specifically would be the survey method. This study tries to determine factors influencing the adoption of internet banking by the banking consumers in the south east region part of Sri Lanka. More accurately, adoption internet banking will be studied using the factors that are important from the success point of view, referring to the idea that consumers are using internet banking directly. Hence, more knowledge on the factors that affect internet banking adoption is needed in order to better understand and facilitate the adoption.

Literature Review

The need to understand what the factors are influencing the adoption of internet banking is important for managers, providers and researchers. In the technologically developed world, IT adoption is faced by barriers, such as the lack of top management support, poor quality IS design and inadequately motivated and capable users. In the developing world, the same barriers appear to be often impenetrable. In addition, problems found in developing countries are attributed to a lack of national infrastructure (Odedra et al., 1993), capital resources or government policies set in place to prevent technology transfer (Goodman and Green, 1992). Although there are isolated reports of countries where sufficient resources and government support exist, the technology has failed to be effectively transferred (Atiyyah, 1989; Goodman and Green, 1992). While the uses of IT are varied, the common tie of computer use in the

developing countries is one of limited diffusion (Goodman and Green, 1992). Consequently, there will be some beneficial applications of this research to Sri Lankan banks and researchers in Sri Lanka.

This research develops and tests a theoretical extension of the Technology Acceptance Model (TAM) (Davis, 1989), Theory of Planned Behavior (TPB) (Ajzen, 1991) and Trust and examines the factors that influence the adoption of Internet banking. The spatial and temporal separation of e-commerce between customers and e-vendors as well as the unpredictability of the Internet infrastructure generate an implicit uncertainty around the initial adoption of on-line service (Pavlou, 2002). Accordingly, the initial adoption of e-service like Internet banking, basically involves the acceptance of both the Internet technology and on-line service providers. As technology acceptance model (TAM) is mainly proposed for technology-based perspective through two system features of perceived usefulness (PU) and perceived ease of use (PEOU) (Davis et al., 1989), it is incomplete in the context of on-line services. Issues of consumer acceptance of information technology have continuing interest in areas of academic research. To address these issues, we have Extended TAM and TPB with Trust. In fact, theoretical contribution is to enhance existing models through better conceptualization of effect of the Trust.

The Technology Acceptance Model introduced by Davis (1985) is one of the most cited frameworks to predict the adoption of innovation. This model derives from the TRA. The Technology Acceptance Model hypothesizes that system use is directly determined by behavioral intention to use, which is in turn influenced by customers' attitudes toward using the system and the perceived usefulness of the internet banking. Perceived usefulness was defined as the degree to which individuals believe that using a particular system would enhance their job performance (Davis, 1989), whereas perceived ease of use relates to the degree to which individuals believe that using a particular system would require no effort (Davis, 1989). These two factors have been empirically justified as important factors determining the adoption and use of new information technology, including the adoption of Internet banking (Vijayasathy, 2004).

From the practical perspective bank managers and other decision makers in the banking sector want information about how their customers act and react. Consumer acceptance models are valuable to managers as they help them to organize their learning about consumers and their behaviors, banks are able to acquire a better understanding and build a stronger relationship with them. The battle for

customers has never been fiercer than it is today. Therefore, banks must understand who their customers are and how they behave. It is only through this knowledge of consumer that banks can satisfy the demands of consumers today and achieve a competitive edge over their competitors. These different theories helped to understand the factors influencing consumer adoption of internet banking. The researcher derived the factors which are hypothesised to influence the individual's decision to adopt internet banking. The identified factors are attitude toward change, perceived benefits, perceived risks, age, gender, occupation, users' IT knowledge, information on online banking.

Importance of Internet Banking

Internet banking concerns doing banking activities via the Internet. Internet banking allows customers of commercial banks to check the balances of their accounts, transfer funds and pay utility bill payments. The facilities available for Internet banking differ from bank to bank. Nowadays the Internet is the main channel for Internet banking. Internet banking offers many benefits to banks and their customers (Karjaluto, 2002). The main benefits to commercial banks are cost savings, convenience, easy access, reaching new segments of the market, efficiency, enhancement of commercial bank's reputation and better customer service and satisfaction (Jayawardhena and Foley, 2000). On the other hand Internet banking provide also new value to customers of commercial banks. Internet banking has no limitation to time or geography. Customers of commercial banks all over the world have access 24 hours per day, seven days a week. It makes available to customers a full range of services including some services not offered at branches. Internet banking saves time and money provides convenience and accessibility (Karjaluto, 2003). It has been claimed that Internet banking offers the customer more benefits at lower costs (Mols, 1998). Turban et al. (2000) indicated that Internet banking is extremely beneficial to customers because of the savings in costs, time and space it offers, its quick response to complaints, and its delivery of improved services, all of which benefits make for easier banking. To summarize, Internet banking provides many benefits to customers of commercial banks.

Internet Banking in Sri Lanka

Internet banking have become more popular features of the banking industry with the growing popularity of modern telecommunication technology among Sri Lankans. There are 24 listed commercial banks in Sri Lanka most of the commercial banks have the facilities of Internet banking but it seems customers of commercial bank still using traditional way to get their service

from bank. Further most of the customers aware about the Internet banking they just own or have the facilities to access Internet banking but not ready to access or use Internet banking services. It is good opportunity to increase the usage of Internet banking since most of the customers are using smart phones comfortably. The managers of commercial banks have the duty to make understand the benefits of Internet banking to their customers.

Formulation of Hypothesis

Attitude toward change

Earlier adopters of business information technology have more favorable attitude toward change than later adopters. Previous empirical research results show that attitude of the decision maker toward change has an effect on the adoption of innovations further researchers found that the decision maker's attitude toward change has a significant positive impact on innovation adoption.

H₁: User's attitude toward change will be related to the adoption of internet banking.

Perceived benefits

Perceived benefits of e-banking cover savings on operational cost, improved organizational functionality, productivity gain, improved efficiency, increased profitability, improved customer's satisfaction through improved services, improved banking experience and fulfilment of their changing needs and lifestyle (Kuan, K.K.Y. and P.Y.K. Chau, 2001)

H₂: Higher perceived benefits of using internet will be positively related to the adoption of internet banking.

Perceived risks

Issues related to security have always been a concern when dealing with technologies related to online transactions such as e-banking (Chang, I.-C., et al, 2007)

Bauer (1960) defined risk in terms of uncertainty and consequences associated with consumer's actions. Perceived risk increase with uncertainty and/or the magnitude of associated negative consequence (Hsi-Peng et al, 2005).

H₃: Lower perceived benefits of using internet will be positively related to the adoption of internet banking.

Age

Akinci et al.'s (2004) findings in Turkey show that mid-aged consumers are more likely than younger or older consumers to use internet banking.

H₄: User's age will be related to the adoption of internet banking.

Gender

The results reported in Flavia'n et al. (2006) indicated that women were also less likely to conduct their banking activities online.

H₅: User's gender will be related to the adoption of internet banking.

Occupation

Those who belong to upper middle class and have high-level occupations are more likely to use Internet banking (Karjaluoto et al., 2002).

H₆: User's occupation will be related to the adoption of internet banking.

Users' IT knowledge

Karjaluoto et al. (2002) showed that prior experience with computers and technologies and attitudes towards computers influence both attitudes towards online banking and actual behaviors. Studies show a significant positive relationship between IT knowledge adoption.

H₇: User's information technology knowledge will be positively related to the adoption of internet banking.

Information on online banking

Guiltinanand Donnelly (1983) identify "information about the benefits of using a product/service" as an essential service/product promotion strategy. Radio and TV advertisements, Web site, Marketing effort, and other promotional strategies will have a positive influence on consumer adoption of Internet banking.

H₈: User's information technology knowledge will be positively related to the adoption of internet banking.

Research methodology

This study aims to examine what motivated commercial banks in south east part of Sri Lanka to adopt internet banking services where the number of customers who use internet banking services appear to be too small to justify the cost of adopting internet banking services based on the additional charges that the commercial bank may charge for the services. The researcher used case study to analyze the expectations and perceptions of banks in adopting internet banking services. This

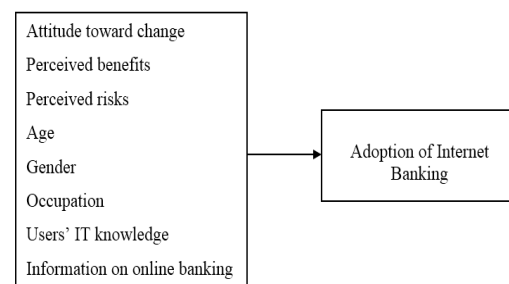
research used interviews and questionnaires to collect primary data from a population of 184 customers of commercial banks. The interviews were conducted to attain two main objectives. First, to identify the level of adoption of internet banking in the banking sector. Second, to identify the factors that influencing the bank management to adopt internet banking services.

The study approach will be descriptive. By that, it means that it intends to present facts concerning the nature and status of a situation, as it exists at the time of the study. It is also concerned with relationships and practices that exist, beliefs and processes that are ongoing, effects that are being felt, or trends that are developing. In addition, such approach tries to describe present conditions, events or systems based on the impressions or reactions of the respondents of the research.

Survey will be used to collect data from the respondents. Quantitative research is chosen for this study to make results descriptive. It also follows resolutely the original set of research goals, arriving at more objective conclusions, testing hypothesis, determining the issues of causality and eliminates or minimizes subjectivity of judgment.

The constructs in the model are operationalized from existing measures developed and employed in earlier research. Five-point Likert scales with end points of "strongly disagree" and "strongly agree" were used to examine respondent's ideas. The questionnaire was used to gather data from respondents. The respondents involved in this research had at least one bank account at the time of the survey. They were sampled by convenience and approached close to bank branches at several locations in south eastern part of Sri Lanka. 350 questionnaires were distributed and 255 received from respondents. Out of 255 questionnaires 28 questionnaires were rejected for several reasons including illegible questionnaires, inconsistent responses and incorrect information. Finally 227 questionnaires were entered into SPSS 16.0 package for data analysis.

Figure 1 Research Framework



Result and Discussion

This section provides a general overview of the sample in terms of characteristics of survey respondents through frequencies analysis in order to meet the objectives. Factor analysis is a data reduction technique and underlying assumption of factor analysis is that a number of factors exist to explain the correlations or inter-relationships among observed variables (Chatfield and Collins, 1992). A Cronbach's Alpha coefficient close to 1.0 means that the questions are measuring similar dimensions of a factor. Although the general limit is > 0.7 , a score > 0.6 would be acceptable because of the exploratory nature of this research. By this standard, any factor with a Cronbach's Alpha coefficient less than 0.6 should be eliminated.

General Overview of the Cases - Adopters versus Non-adopters

The adoption of internet banking by commercial banks is measured in different ways. First measuring simple adopters who have internet banking facilities. Second, measuring sophisticated adopters who actually use internet banking.

The 227 collected cases include 51 adopters representing 22.47% of the cases and 176 non-adopters representing 77.53% as shown in the following table.

Table 1 Representation of Adoption Status

	Adoption Status		Total
	Adopters	Non-adopters	
Count	51	176	227
Percent	22.47	77.53	100

Use of internet banking

In order to determine the level of internet banking adoption by commercial banks in south east region, Sri Lanka, a question was asked to differentiate between those who only have an internet banking access such as own mobile apps but do not actually use the internet banking. Further out of 51 adopters those who use the internet banking classified as sophisticated adopters and others classified as simple adopters. Table 2 shows that, the 51 adopters include 29 simple adopters representing 56.86% and 22 sophisticated adopters representing 43.14% within adopters. Table 3 shows that, 29 simple adopters representing 12.78%, 22 sophisticated adopters representing 9.69% and 148 non adopters who never use business information technology representing 77.53% within sample. This indicated 77.53 percent of the account holders of commercial banks are non-adopters in south east region part of Sri Lanka.

Table 2 Use of Business Information Technology within Adopters

	Adopters Status		Total
	Simple Adopters	Sophisticated Adopters	
Count	29	22	75
Percent	56.86	43.14	100

Table 3 Use of Business Information Technology within Sample

	Adoption Status			Total
	Simple Adopters	Sophisticated Adopters	Non-adopters	
Count	29	22	176	227
Percent	12.78	9.69	77.53	100

Gender

Table 4 indicates that 75.86 percent of internet banking users was male. This represents a more balanced sample than that of Tan and Teo (2000) in which the number of male respondents was as high as 80%.

Table 4 Adopters versus Non-adopters, (gender wise)

		Adoption Status			Total
		Simple Adopters	Sophisticated Adopters	Non-adopters	
Male	Count	19	22	113	154
	Percent	86.36	75.86	64.20	67.84
Female	Count	3	7	63	73
	Percent	13.64	24.14	35.80	32.16
Total	Count	22	29	176	227
	Percent	9.69	12.78	77.53	100

Age

Table 5 indicates that 72.41 percent of internet banking users those who are use internet banking in their day to day life being between the ages of 25-45 and 90.91 percent of the customers being between the ages of has just have facilities but not use the internet bating.

Table 5 Adopters versus Non-adopters, (Agewise)

		Adoption Status			Total
		Simpl e Adopters	Sophisticat ed Adopters	Non-adopters	
>25	Count	2	3	75	80
	Percent	9.09	10.34	42.61	35.24
25-45	Count	20	21	69	110
	Percent	90.91	72.41	39.20	48.46
45-65	Count	0	5	26	31
	Percent	0.00	17.24	14.77	13.66
>65	Count	0	0	6	6
	Percent	0.00	0.00	3.41	2.64
Total	Count	22	29	176	227
	Percent	9.69	12.78	77.53	100

Non- Adopters Perspectives

In order to analysis the future internet banking adoption by non-adopters, a question was asked that user have an idea to any use internet banking in future. All the non-adopters have answered this question. Table 5 shows that, 115 non adopters representing 65.35% have an idea to use internet banking in future in future and 61 non adopters representing 34.66% have no idea to use internet banking in future in future.

Table 6 Non- Adopters Perspectives

	Non- Adopters Perspectives (Expected Future Adopters)		Total
	Yes	No	
Count	115	61	176
Percent	65.34	34.66	100.00

Linear Regression

The hypothesized effects of the independent variables were tested using SPSS multiple linear regression model. Output of the questionnaires were put on a table in order to determine whether a linear relationship existed between variables. T-test was also conducted in order to ensure that coefficients differ from zero in order to determine whether the findings are statistically significant the fit of the model was assessed. ANOVA was used to test whether the groups are clearly different. Significance test is used to determine the probability of a relationship between variables. Results show that instruction and occupation are having significant relationships with the usage of internet banking. Results show that instruction is significant factor to explain internet banking adoption. This finding is reliable with the studies done by Karjaluoto et al., (2002).

Table 7 Adoption Linear Regression

Model Summary			
R Square = 0.699 Adjusted R Square = 0.681 F = 39.421 p= 0.000			
Variables	Beta	t-value	Sig.
Attitude toward change	0.30	5.86	0.000
Perceived benefits	0.22	4.73	0.000
Perceived risks	0.17	2.45	0.016
Occupation	0.26	2.67	0.009
Users' IT knowledge	0.21	4.70	0.000
Information on online banking	0.03	0.39	0.699

The above table shows that over all model is significant with a p-value of zero to three decimal places, the model is statistically significant and The R-squared is 0.699 meaning that approximately 66.9% of the variability can be explained by the variables (Attitude toward Change, Perceived benefits, Perceived risks, Occupation, Users' IT knowledge, Information on online banking) in the model. The magnitude of the relations is presented by the beta coefficients. Attitude toward change is significant with a beta value of 0.30 (p=0.000), perceived benefits with a beta value of 0.22 (p=0.000), perceived risks with a beta value of 0.17 (p=0.016), occupation with a beta value 0.26(p=0.009) and Users' IT knowledge with a beta value of 0.21 (p=0.000). Information on online banking is not significantly relate with the adoption of internet banking. Again these results indicate that the adoption/ non-adoption decision is highly influenced by attitude toward Change, Perceived benefits, perceived risks, Occupation, Users' IT knowledge except Information on online banking. These are the most important factors when it comes to deciding whether to adopt or not adopt the internet baking. Thus it is obvious that characteristics of users and awareness and support to the internet banking as well as its attitude toward the change created by the internet banking are fundamental to the adopt/non-adopt decision. Additionally awareness of the perceived risk and benefits of the internet banking is important in taking the decision to adopt the internet banking. Further Occupation, Users' IT knowledge also contributes to the adoption of the internet banking.

Conclusion

This study analyzes the factors affecting customers of commercial banks decisions to adopt Internet banking. This study examines certain factors that

are more significant than others in adoption of Internet banking in the south eastern region, Sri Lanka. The adoption/ non-adoption decision is highly influenced by attitude toward Change, Perceived benefits, perceived risks, Occupation, Users' IT knowledge except Information on online banking. These are the most important factors when it comes to deciding whether to adopt or not adopt the internet banking. Further gender factor shows that 75.86 percent of internet banking users was male and age factor shows that 72.41 percent of internet banking users those who are use internet banking in their day to day life being between the ages of 25-45 and 90.91 percent of the customers being between the ages of has just have facilities but not use the internet banking. Bank managers can make use of these information to advance appropriate strategies to attract new customers to use Internet banking in future. Bank management can get a good knowledge to develop their future strategies by understanding the factors influencing and leading to the adoption of internet banking.

Limitations and Recommendations for Future Research

As any social science research, this research has a number of limitations. This study identified certain factors that may influence adoption of Internet banking by customers of commercial bank. However, there may be some additional factors that can influence on adoption of Internet banking but are not included in this study. adoption of Internet banking was measured in two different ways being; a simple measure of do you adopt or not adopt the Internet banking sophisticated measure of how much do you use the business with the Internet banking. Both of these measures have their weaknesses and it is not clear. Additional empirical research is required to identify and examine other factors that can impact on customers' adoption of Internet banking services, such as way of Internet connection used, user friendly, culture, and convenience. Sample size as only 255 completed questionnaires could be secured out of the 350 entrepreneurs available. The problems encountered by the researcher during data collection including the difficulty of booking an appointment and the unhelpful attitude and a lack of interest in participating in the research by respondents largely affected the sample size of this research. This has an effect on the generalization of the findings. These limitations cover the way to future studies. Furthermore, another interesting area for further research could be a mobile banking usage in south eastern region part of Sri Lanka such as other variables which may have an effect on the decision of the banks to adopt internet banking.

References

- 1) Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50, pp.179-211.
- 2) Akinci, S., Aksoy, S., and Atilgan, E. (2004). Adoption of internet banking among sophisticated consumer segments in an advanced developing country. *International Journal of Bank Marketing*, Vol. 22 No. 3, pp. 212-32.
- 3) Al-sukkar, A., Hasan, H. (2004a.), "Internet banking in the Middle East: A Jordanian study", *Proceeding of CISTM conference. Transforming business performance through knowledge management. Alexandria, Egypt 2004.*
- 4) Attiyah, H.S. (1989) "Determinants of Computer System Effectiveness in Saudi Arabian Public Organizations", *International studies of management and organization*, Vol. 19, No. 2, pp. 85-103
- 5) Barbara C. McNurlin, Ralph H. Sprague. JR, *Information System Management in Practice* (5th edition) 2003, Pearson Prentice Hall.
- 6) Bennet. P. Lientz, Lee Lassen, *Manage IT as a Business* (2007)
- 7) Birch, D., and Young, M.A. (1997), "Financial Services and the Internet: What Does Cyberspace Mean for the Financial Services Industry," *Internet Research* Vol. 7, No. 2, pp. 120-128
- 8) Black, N.J., Lockett, A., Winklhofer, H. and McKechnie, S. (2002), "Modelling consumer choice of distribution channels: an illustration from financial services", *The International Journal of Bank Marketing*, Vol. 20 No. 4, pp. 161-73.
- 9) Chang, I.-C., et al., Factors affecting the adoption of electronic signature: Executives' perspective of hospital information department. *Decision Support Systems*, 2007. 44: p. 350-359.
- 10) Chang, M.K. and Cheung, W. (2001), Determinants of the intention to use Internet/WWW at work: a confirmatory study, *Information & Management*, 39, 2001, pp. 1-14.
- 11) Crede, A. (1995). "Electronic Commerce and the Banking Industry: The Requirement and Opportunities for New Payment Systems Using the Internet," *Journal of Computer-Mediated Communication*, Vol. 1, No. 3
- 12) Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, Vol. 13, No. 3, pp. 318-339.
- 13) Ellen F. Monk, Bret J. Wagner. *Concept in Enterprise Resource Planning* (3rd edition), 2008, Course Technology Cengage Learning,

- pp 18-21.
- 14) Flavian, C., Guinaliu, M., Torres, E. (2006), "How bricks-and mortar attributes affect online banking adoption", *International Journal of Bank Marketing*, 24(6): 406-423.
 - 15) Gefen, D., Karahanna, E., Straub, D., (2003b). Inexperience and experience with online stores: the importance of TAM and Trust. *IEEE Transactions on Engineering Management*, Vol50, No. 3, pp. 307–321.
 - 16) Goodman, S.E and Green, J.D (1992) "Computer in the Middle East", *Communication of ACM* Vol.35, No. 8, pp. 21-25.
 - 17) Guiltinand, J. P., and Donnelly, J.H. (1983). The use of product portfolio analysis in bank marketing planning, in Shanmugam and Burke (Eds), *Management Issues for Financial Institutions*, p.50
 - 18) Hsi-Peng Lu; Chin-Lung Hsu & Hsiu-Ying Hsu. (2005). An empirical study of the effect of perceived risk upon intention to use online applications. *Information Management & Computer Security*, 2005; 13, 2/3.
 - 19) Jayawardhena, C. & Foley, P. (2000). "Changes in the banking sector – the case of Internet banking in the UK", *Internet Research: Electronic Networking Applications and Policy*, Vol. 10, No. 1, pp. 19-30.
 - 20) Karahanna, E., Straub, D.W., Chervany, N.L., 1999. Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs. *MIS Quarterly* 23 (2), 183–213.
 - 21) Karjaluoto, H., Mattila, M., and Pentto, T. (2002). Factors underlying attitude formation towards online banking in Finland. *International Journal of Bank Marketing*, Vol. 20 No. 6, pp. 261-72.
 - 22) Khalifa, M., Limayam, M., 2003 'Driver of internet shopping', *Communication of ACM*, Vol.46, No.12, pp.233-239.
 - 23) Kuan, K.K.Y. and P.Y.K. Chau, A Perception-based model for EDI adoption in small business using a Technology-Organisation-Environment Framework. *Information and Management*, 2001. 35: p. 507-512.
 - 24) Liao S.; Shao, Y.P.; Wang, H.; and Chen, A. (1999). "The adoption of virtual banking: an empirical study", *International Journal of Information Management*, Vol.19, No.1, PP.63-74.
 - 25) Mols, Niels. (1998). The Behavioural Consequences of PC banking. *International Journal of Bank Marketing*, 16, 5, pp. 195–201.
 - 26) Nehmzow, C. (1997). "The Internet will Shake Banking Medieval Foundations," *Journal of Internet Banking and Commerce*, Vol2, No.2
 - 27) Odedra, M., Bennett, M., Goodman, S., and Lawrie, M. (1993) "Sub-Saharan Africa: a Technological Desert", *Communications of the ACM*, Vol.36, No.2, pp.25-29.
 - 28) Pavlou, P.A., (2002). What drives electronic commerce? A theory of planned behavior perspective. *Best Paper Proceedings of the Academy of Management Conference*, Denver, CO, pp.9–14.
 - 29) Tan, M., and Teo, T.S.H. (2000). Factors influencing the adoption of Internet banking. *Journal of the Association for Information Systems*, Vol. 1 No. 5, pp. 1-42.
 - 30) Ternullo, G. (1997) "Banking on the Internet: New Technologies, New Opportunities and New Risks," *Boston Regional Outlook*, Second Quarter (<http://www.fdic.gov/index.html>).
 - 31) Vijayarathy, L. R. (2004). Predicting consumer intentions to use on-line shopping: The case for an augmented technology acceptance model. *Information & Management*, 41(6), 747–762.
 - 32) Warner, J. (1996) "Internet Waits in Wings for Banking Dinosaurs," *The Independent*, August 17, pp.17.