

## INFLUENTIAL FACTORS IN ADOPTION OF INFORMATION TECHNOLOGY IN FINANCIAL BUSINESS SECTOR IN SAUDI ARABIA

\*Muhammad Asif Khan<sup>1</sup>, Hussein Zedan<sup>2</sup> and Ali Ahmed Al Ghadeer<sup>3</sup>

<sup>1,2</sup>Software Technology Research Laboratory, De Montfort University, Leicester, United Kingdom

<sup>3</sup>Saudi Credit and Savings Bank, Riyadh, Saudi Arabia

### ABSTRACT

The emergence of information technology has changed many aspects of businesses and generated new ways of doing businesses. Organizations are adopting latest technologies to optimize their business processes in order to provide effective services and products to customers. Financial institutions especially banks in Saudi Arabia have adopted information technology in one way or another to providing financial services over internet that is e-banking. E-banking provides opportunities to gain maximum share in marketplace by expanding business, reducing cost of operation and improving customer loyalty. Companies adopt technologies in viewing customers' acceptance and various studies have been reported for customers' acceptance in adoption of technology. This research study presents the various influencing factors that impact the adoption of internet technology in banking sector in Saudi Arabia. A survey instrument has been used in collecting data from various banks. Based on the data this paper presents recommendations for the improvement of e-services in banking sector in Saudi Arabia.

**Keywords:** IT adoption, e-services, e-services in Saudi Arabia, e-banking, internet banking.

### INTRODUCTION

Information technology has revolutionized businesses around the globe and it is becoming a cornerstone for the businesses to be a competitive in the marketplace. For the last few decades financial organizations have been affected by the evolution of technology especially with retail banking services. The emergence of various tools of internet has lured companies to adopt e-business in order to not only expand the businesses but also to provide faster, efficient and customer-centric services to their clients. Financial institutions such as banks and mutual fund companies have also realized the significance of internet and followed the trend sometimes called e-banking referring to all banking transactions through internet applications. Banks provide their services and products online in order to meet customers' needs. Customers have a great influence on the adoption of e-banking as they decide the use of internet banking based on their needs (Pikkarainen *et al.*, 2004). Internet banking heavily depends on information technology to process and deliver information to concerned stakeholders; therefore, it is critical to adopt latest technology to providing reliable, efficient, effective and convenient services to customers. The rapid use of internet has created a new channel for providing banking services and products and now it is considered a strategic weapon in banking sector. Now e-banking services are crucial for the survival of banks and more and more banks are providing their services and products online. Customers always demand high degree of convenience with variety of financial

management tools, products and services (Birch *et al.*, 1997). There are insufficient empirical research efforts that demonstrate the various issues and factors in adoption of information technology in banking sector. In this study we examine different issues and factors that influence the adoption of information technology (i.e. e-banking) in financial sector.

The rapid development of information and communication technology and accessibility of internet have made it possible to make all banking transactions sitting at home or office at remote location. The banking industry is adopting new technology in order to provide efficient and convenient services to customers. Now e-banking is the most prominent in all e-businesses but at times its positive impact was overrated at one hand and its limitation was underrated on the other (Wolfe, 2004). Various studies have been reported to determine the factors for adoption of e-banking but relatively most of them were carried out with consumers acceptance perspectives rather institutions perspectives. Consumer acceptance is important to determine successful e-banking services (Dover, 1993). To derive factors a framework that is based on (Ajzen, 1985) and (Rogers, 1983) adapted from (Taylor *et al.*, 1985) has been presented to determine the influential factors in adoption of e-banking (Tan *et al.*, 2000). A technology acceptance model (TAM) was developed by (Davis, 1985) to evaluate the level of customer acceptance to new information technologies in banking sector. There are different motivational factors and due to those factors banks usually adjust priorities in

---

\*Corresponding author email: asifkhan2k@yahoo.com

the implementation of e-banking services. Large banks are equipped with technologies and finance they adopt e-banking services much earlier as compare to the smaller banks that in general have lack of technological resources and finance (O’Connel, 2000). For a successful e-banking it is important that how customers are served and communicated and what is the ability of saving money (Wade, 2003). Therefore, a friendly user interaction in financial management is one of the important factors for an e-banking to be successful (Hamisah, 2003). A trust is an influential factor on consumers activities and hence success of e-banking services as Ganesan (1994) suggests that trust creates consumers activity. Jarvenpaa *et al.* (2000) describes trust is a critical factor in any business relationship where actions of a trustee are uncontrolled. Hosmer (1995) states trust as the expectation that concerned parties behave with commitment and honestly without taking any advantage. Since customers make transactions on internet they perceive threat and risk, therefore, trust is a basic requirement to customers for taking part in e-banking activities. Lee (2009) presented a model to explaining customers’ intention for using e-banking services in which five specific risk factors have been described. The e-banking services have increased the notion of decentralization which is more effective in providing the services to customers in a fast paced environment. It has been found that e-services are quite slow in replying customers’ queries (Beckett, 2000). Studies on quality of customers in utilizing e-banking services (Hitt *et al.*, 2002) and customers’ attitudes toward using e-banking services (Kaynak *et al.*, 2005) have been reported. Shafi *et al.* (2004) have developed a model adapting TAM and including four new factors such as wireless internet safety, wireless response time, age and qualifications in order to evaluate the acceptance of iPark (free wireless internet in parks) amongst the citizens

of Qatar.

**MATERIALS AND METHODS**

**Methodology**

In order to collect data for this empirical study we developed a survey instrument comprising of 100 questions that were clustered into ten different sections. The questionnaire approach is useful in obtaining quantitative scale and qualitative data (Cronford *et al.*, 1997). The survey method is inexpensive, less time consuming and simple to collect data. To check the validity and comprehension of the questionnaire, initially the survey instrument was delivered as a draft questionnaire to three local banks in order to get feedback. Based on the feedback from the three banks we reviewed some questions, altered wording, order and rephrased the questions. For sending survey questionnaire we browsed a list of financial institutions in Saudi Arabia from a directory and selected banks randomly. This method is an effective way of collecting data that has been employed by Sathye (1999) and Cheng *et al.* (2006). We have adopted the e-commerce model from (www.dfi.wa.gov/cu, 2010) in order to prepare our survey instrument. Figure 1 shows the e-commerce adoption model and its elements.

We considered all the elements of the model and formulated various questions. Following completion of the draft survey we came to know that some specific areas were given more importance than other elements. Therefore we put more focus on system architecture and controls, security controls and infrastructure and personnel in the banks. Table 1 shows the number of questions in each of the parts of the survey instrument.

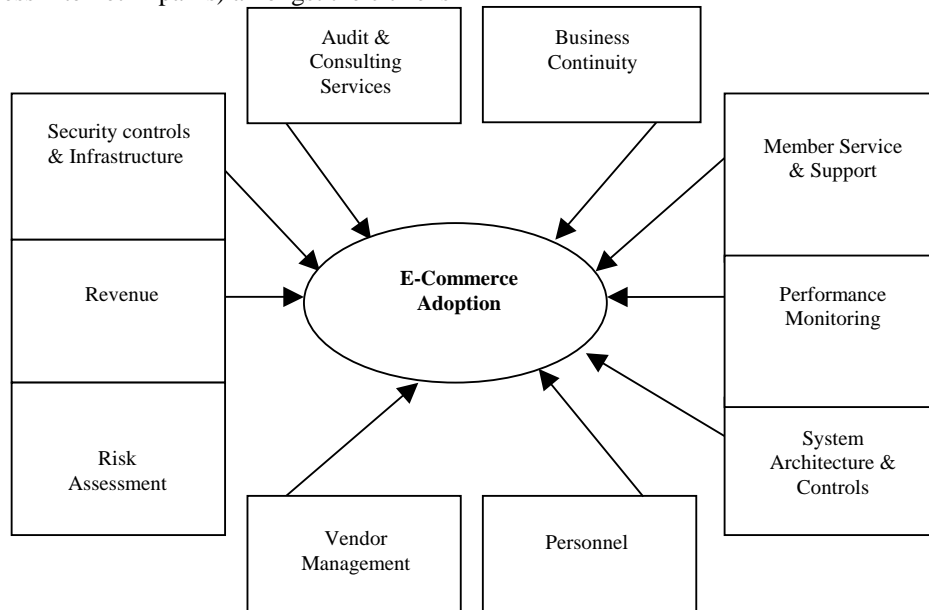


Fig. 1. E-commerce Adoption Model.

Table 1. Structure of the Survey Instrument.

Section	Section name	No. of Questions
1	Risk assessment	6
2	Audit and consulting services	6
3	Vendor management	6
4	Member service and support	6
5	Personnel	15
6	System architecture and controls	23
7	Security controls and infrastructure	15
8	Business continuity	14
9	Performance monitoring	3
10	Revenue	6

The survey instrument was delivered to various banks regardless their size and location in Saudi Arabia. The sole aim was to collect data in order to determine influential factors in adoption of information technology in banks and level of e-banking services they offer to their customers. The survey questions were aimed at managerial staffs and sent by email, mail and facsimile to different banks. We delivered the questionnaires to 23 different large and small banks or financial institutions and after continuous follow-up 15 questionnaires were received in complete form. We considered 11 questionnaires suitable for our study. Table 2 shows the list of participated banks with their market capitalization for banking sector in Saudi Arabia ([www.tadawul.com.sa](http://www.tadawul.com.sa)).

Table 2. Saudi Bank Markets Share.

Banks and Financial Services	% to Sector	% to Market
Al Rajih Bank	32.26	8.94
Samba Financial Group	13.72	3.8
Riyadh Bank	12.18	3.38
Saudi British Bank	9.82	2.72
Bank Saudi Fransi	8.88	2.46
Arab National Bank	8.32	2.31
Alinma Bank	5.75	1.59
Saudi Hollandi Bank	2.99	0.83
The Saudi Investment Bank	2.44	0.68
Bank Al Bilad	1.89	0.52
Bank Al Jazira	1.73	0.48

### Data Tools

The survey questionnaires were delivered to the senior managerial level employees of banks in order to gain firsthand information. The managers however were instructed to gather information from any supportive means to complete the questionnaire. Each questionnaire

was delivered in duplicate to each bank in order to collect data from two different people to maintain consistency. The extent to which the banking sector in Saudi Arabia adopt the e-commerce in an effective way can be measured by finding the strength of the application of the e-services that are provided by the banks with respect to the variables namely: (1) Risk (2) Audit and Consulting services (3) Vendor management (4) Members of the service (5) Personnel (6) System Architecture and Controls (7) Security Controls and Infrastructure (8) Business Continuity (9) Performance Monitoring (10) Revenue. These tools were used in the questionnaire to determine the extent to which banks in Saudi Arabia are applying them.

### Data Analysis

The main aim of the study was to investigate the influential factors in adoption of information technology in banks (i.e. e-banking) and for this we distributed the questionnaire to collect data. Upon receiving the survey instrument we checked the reliability of the questionnaire and used SPSS to determine the Cronbach's alpha value for each section of the questionnaire. In each section we found the value greater than 0.7 that shows the reliability of the questionnaire.

We also found that the questionnaires were completed by the managerial level staff, however, supportive staff also helped in completing the questionnaire. Specifically closed-end questions were replied by the higher managerial staff rather opened-end questions which were completed by lower level staff. Nevertheless, the final completed version of the questionnaires was signed by the concerned highest managerial staff to showing agreement with all answers of the questions.

## RESULTS AND DISCUSSION

The data collected from different banks shows that an average 42.87% of banks do not consider important aspects during hiring of personnel for e-banking such as routine checking of IT background, retention process of e-commerce staff, skilled and experienced staff in e-commerce misplaced, monitoring staff skill level etc. Similarly an average 36.8% banks management do not review their plans to update technology, absence of policies and procedures for cybercrime, periodic test of disaster recovery and business continuity plan etc. However, 79.03% banks have security controls in place and they constantly monitor the security procedures. Likewise, 78.55% banks have benefited from information technology and the revenue growth increased in result of e-banking services. The data shows that a large number of banks do not implement business continuity and disaster plans. We found the variables in questions were in positive relationship with the effective use of information technology in banking services, however, some variables

need to be implemented in more effectively. It was found that less than 45% banks have scarcity of in-house IT personnel and support from outside that causes delay in responding to customers and e-banking services. The data is evident that banking sector needs to monitor risks and prioritize the issues disclosed in the audit or quality review. Vendors need to address the security issues and its procedures. Banks must review their plans, at least annually, based on changes in technology, its infrastructure or e-commerce activities banks must review their plans, at least annually, based on changes in technology, its infrastructure or e-commerce activities. Table 3 shows the strength of variables implementation in banks.

Table 3. Implementation of the Variables in Banks.

Variable	Average	Percentage
	Yes	No
Risk assessment	73.8	26.2
Audit and consulting services	69.03	30.97
Vendor management	66.63	37.33
Member service and support	64.25	35.75
Personnel	57.13	42.87
System architecture and controls	78.86	21.14
Security controls and infrastructure	79.03	20.97
Business continuity	63.72	36.28
Performance monitoring	64.25	35.75
Revenue	78.55	21.45

We observed that a significant number of banks do not have appropriate application of security controls. Since e-banking services are influenced by trust and security it is important that institutions must adopt latest information technology and tools in order to provide secure and reliable service online. For future work we aim to investigate adoption intentions of banks that are interested to implement latest technologies in e-banking services and the impacts of such services on business growth.

## REFERENCES

Ajzen, I. 1985. From Intentions to Actions: A Theory of Planned Behavior. In: Action Control: From Cognition to Behavior. Eds. Kuhl, J. and J. Beckman, J. New York Springer-Verlag. 11-39.

Beckett, A. 2000. Strategic and marketing implications of consumer behavior in financial services. The Services Industries Journal. 191-208.

Birch, D. and Young, A. 1997. Financial Services and the Internet: What does cyberspace mean for the financial

services industry. Internet Research. 7(2):120-128.

Cheng, T., Lam, D. and Yeung, A. 2006. Adoption of Internet Banking: an empirical study in Hong Kong. Decision Support Systems. 42(3):1558-1572.

Cronford, T. and Smithson, S. 1997. Project Research in Information Systems: As Student's Guide. London Macmillan Press.

Davis, D. 1985. A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results. Doctoral Dissertation, MIT Sloan School of Management, Cambridge.

Dover, A. 1993. Why Home banking Bombed in Britain. Journal of Retail Banking. 15(4):30-38

Ganesan, S. 1994. Determinants of long term orientation in buyer-seller relationships. Journal of Marketing. 58:1-19.

Hamisah, H. 2003. Do not overlook e-banking fundamentals, banks told. Business Times. Malaysia.

Hitt, M. and Frei, X. 2002. Do better customers utilize electronic distribution channels? The case of PC banking. Management Sciences. 48(6):732-748.

Hosmer, L. 1995. Trust: the connecting link between organizational behavior and philosophical ethics Academy Management Review. 20(2):370-403

Jarvenpaa, P., Tractinsky, N. and Vitale, M. 2000. Consumer trust in an internet store. Information Technology and Management. 1:45-71.

Kaynak, E. and Harcar, D. 2005. Consumer value creation in mobile banking service. International Journal of Technology Marketing. 1(1):62-78.

Lee, M. 2009. Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit, Electron.Comm. Res. Appl. doi:10.1016/j.elerap.2008.11.006

O'Connell, B. 2000. Community banks go high-tech:want to see technology in action? Visit your neighborhood bank. Bank Technology News. 14(1):1.

Pikkarainen, T., Pikkarainen, K., Karjaluoto, H. and Pahnla, S. 2004. Consumer acceptance of online banking: an extension of the technology acceptance model. Internet research, 14(3):224-235

Rogers, M. 1983. Diffusion of Innovations. Free Press, New York, USA.

Sathye, M. 1999. Adoption of Internet Banking by Australian Consumers: An Empirical Investigation. International Journal of Bank Marketing. 17:324-33.

Shafi, S. and Weerakkody, V. 2008. Adoption of Wireless Internet Parks: An empirical study in Qatar. In European

---

and Mediterranean Conference on Information Systems, Dubai, UAE.

Tan, M. and Teo, T. 2000. Factors Influencing the Adoption of Internet Banking. *Journal of Association for Information Systems*. 1(1):1-41.

Taylor, S. and Todd, A. 1995. Assessing IT Usage: The Role of Prior Experiences. *MIS Quarterly*. 19(3):561-570.

Wade, W. 2003. Prevailing view on e-banking: it's not about profit. *American Banker*. 168(30):11.

Wolfe, D. 2004. E-banking for the masses? Differing expectations. *American Banker*. 169(31):17.

Saudi Stock Exchange (Tadawul). 2009. Annual Statistical Report [<http://www.tadawul.com.sa>].

Washington State Department of Financial Instituion. 2010. Washington State Division of Credit Unions [[www.dfi.wa.gov/cu](http://www.dfi.wa.gov/cu)].

Received: July 11, 2010; Accepted: Nov 18, 2010