

# **A PROPOSED MODEL FOR M-BANKING ADOPTION**

**Nurudeen Abdulkadir**

**Master of Science (ICT)**

**Universiti Utara Malaysia**

**2010**

**©All rights reserved.**

# **A PROPOSED MODEL FOR M-BANKING ADOPTION**

**A Thesis Submitted to the Faculty of Information Technology in Partial Fulfillment of  
the Requirement for the Degree of Master of Science (Information & Communication  
Technology) Universiti Utara Malaysia**

By

**Nurudeen Abdulkadir**

**2010**

©Nurudeen Abdulkadir, 2010. All Rights Reserved.



**KOLEJ SASTERA DAN SAINS  
(College of Arts and Sciences)  
Universiti Utara Malaysia**

**PERAKUAN KERJA KERTAS PROJEK  
(Certificate of Project Paper)**

Saya, yang bertandatangan, memperakukan bahawa  
(I, the undersigned, certify that)

**NURUDEEN ABDULKADIR**  
**(802311)**

calon untuk Ijazah  
(candidate for the degree of) **MSc. (Information Communication Technology)**

telah mengemukakan kertas projek yang bertajuk  
(has presented his/her project paper of the following title)

**A PROPOSED MODEL FOR M-BANKING ADOPTION**

seperti yang tercatat di muka surat tajuk dan kulit kertas projek  
(as it appears on the title page and front cover of project paper)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan  
dan meliputi bidang ilmu dengan memuaskan.  
(that the project paper acceptable in form and content, and that a satisfactory  
knowledge of the field is covered by the project paper).

Nama Penyelia Utama  
(Name of Main Supervisor): **MDM. RAFIDAH ABD RAZAK**

Tandatangan  
(Signature)

: 

Tarikh  
(Date)

: 20/5/2010

## **PERMISSION TO USE**

In presenting this thesis in partial fulfillment of the requirements for the degree of Master of Science (ICT) from Universiti Utara Malaysia, I agree that the University's library may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor or, in his absence, by the Dean of the Graduate School. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Request for permission to copy or make use of materials in this thesis in whole or part should be addressed to:

**Dean of Research and Graduate Studies**

**College of Arts and Science**

**Universiti Utara Malaysia**

**06010 UUM Sintok**

**Kedah, Darul Aman,**

**Malaysia**

## **ABSTRACT**

The evolution of powerful and versatile information systems have altered the way business transactions are made. Millions of dollars are spent by organizations in developing and maintaining these technologies in quest of gaining competitive edge. This cherished goal can only be realized if the target market adopt and use these technologies. Technologies such as Automated Teller Machine (ATM), internet banking, and mobile banking have now become a prerequisite in the banking business. This study extends the applicability of TAM and TPB constructs to investigate the significant factors influencing users' adoption of m-banking services in Universiti Utara Malaysia. The research model was empirically tested through a questionnaire of 125 respondents. Findings showed that perceived usefulness and social influence have significant impact on mobile banking adoption. In contrast with previous studies, perceived ease of use, perceived credibility, image, perceived financial cost, and computer/internet experience were not significant in explaining mobile banking adoption. In summary, perceived usefulness contributed the most in explaining mobile banking adoption. The research findings have both practical and theoretical implications. Practically, the study is hoped to serve as a useful insight for banks and system developers in developing and deploying mobile banking systems that are in consonance with the needs of the target customers. Theoretically, the study extends to the body of literature in mobile banking adoption.

## ACKNOWLEDGEMENT

All Praise is due to Allah my Lord, the One and only, whom by His favors all good works come to perfection. Without Thy grace and mercy, this humble effort of mine will not have become a reality. I laud and glorify Thee for all things and in all things, and specifically for giving me the strength, health, and intellectual capability to accomplish this task.

Next, I express my profound gratitude to my beloved parents, Alhaji Abdulkadir Mohammed, Hajiya Aisha Mohammed, and Hajiya Ladi Abu-Bakr; who have been with me since I knew not anything. They have supported me in all aspects of life; financially, morally, and spiritually. They have gone extra miles to make sure I stand on my feet. Without their selfless and unrelenting support, I would have been nothing but a back stage spectator in the theatre of life.

Furthermore, my immense appreciation goes to my able mentor and supervisor, Madam Rafidah Bt Abd Razak for her intellectual prowess, guidance and good counseling. If not for her counseling effort and intellectual inputs, this work will not have been a success. Additionally, I would like to extend my gratitude to Madam Cik Fazilah, my evaluator, for sparing her precious time to correct this work. If not for her, this work would not have been perfected.

I would like to thank my competent lecturers in the faculty for the guidance and direction they gave me which aid me in harmonizing my chain of thoughts.

Also, I would like to express my deepest appreciation to my beloved brothers and sisters for the moral and financial support they gave me during my sojourn in the academic arena. I express my deepest and warm appreciation to my beloved cousin

Hawa'u for being there for me during my pursuit of academic excellence. I would like to acknowledge and give my special thanks to my friends, colleagues and senior colleagues in Universiti Utara Malaysia for their constant support and encouragement, especially, the persons of: Shehu Inuwa Galoji, Ahmad Hamman Jumba, Ahmad Audu Maiyaki, Abdulateef Aliyu, Nura Mukhtar, Hadiza Hassan Yar'adua, Ayaan Dahir Sheik, Mohammed Zaharaddeen, Yahaya Saleh, and Aliyu M. Dogara.

Last but not the least, I wish to thank all those people who through their time and generous support made this research project a dream come true.

*Nurudeen Abdulkadir*

## TABLE OF CONTENTS

	<b>Page</b>
<b>PERMISSION TO USE</b>	i
<b>ABSTRACT</b>	ii
<b>ACKNOWLEDGEMENT</b>	iii
<b>TABLE OF CONTENTS</b>	v
<b>LIST OF TABLES</b>	viii
<b>LIST OF FIGURES</b>	ix
<b>CHAPTER ONE: INTRODUCTION</b>	
1.1 Overview	1
1.2 Problem Statement	2
1.3 Research Objective	3
1.4 Scope of the Study	4
1.5 Significance of the Study	4
1.6 Organization of Chapters	5
<b>CHAPTER TWO: LITERATURE REVIEW</b>	
2.1 Introduction	6
2.2 Mobile Banking	6
2.3 Information Technology Adoption	8
2.3.1 Technology Acceptance Model (TAM)	11
2.3.2 Theory of Planned Behavior (TPB)	15
2.3.3 Innovation Diffusion Theory (IDT)	18
2.4 Summary of Chapter	19
<b>CHAPTER THREE: METHODOLOGY</b>	
3.1 Introduction	20
3.2 Research Design	20
3.3 Measurement Development	21



3.4 Research Model and Hypotheses	22
3.4.1 Attitudinal Belief	22
3.4.2 Social Influence	25
3.4.3 Computer/Internet Experience	26
3.5 Population of the Study	26
3.6 Sample Size and Sampling Technique	26
3.7 Data collection Procedure	27
3.8 Data Analysis	27
3.9 Summary of Chapter	28

## **CHAPTER FOUR: RESEARCH FINDINGS**

4.1 Introduction	29
4.2 Demographic Profile of Respondents	29
4.2.1 Age Group	29
4.2.2 Gender	30
4.2.3 Educational Background	30
4.2.4 Occupation	31
4.2.5 Income Level	32
4.3 Cronbach's Alpha Reliability Test	32
4.3.1 Reliability of Attitudinal Belief	33
4.3.2 Reliability of Social Influence	34
4.3.3 Reliability of Computer/Internet Experience	34
4.3.4 Reliability of M-Banking Adoption	35
4.3.5 Summary of Reliability Tests	35
4.4 Correlation Analysis	36
4.5 Multiple Regression Analysis	38
4.6 Summary of Chapter	41

## **CHAPTER FIVE: DISCUSSION AND CONCLUSION**

5.1 Introduction	42
5.2 Recapitulation of Study Findings	42

5.2.1 Research Objective 1	43
5.2.2 Research Objective 2	44
5.2.3 Research Objective 3	44
5.3 Discussion	46
5.4 Contributions of the Research Study	48
5.5 Limitations and Recommendation for Future Research	49
5.6 Conclusion	50

## **REFERENCES**

## **APPENDICES**

Appendix A: Questionnaire

Appendix B: Descriptive Statistics

Appendix C: Cronbach's Alpha Reliability Test

Appendix D: Pearson Correlation

Appendix E: Multiple Regression

## LIST OF TABLES

	<b>Page</b>
Table 4.1: Descriptive Statistics of Age Group of Respondent	30
Table 4.2: Descriptive Statistics of Gender of Respondents	31
Table 4.3: Descriptive Statistics of Educational Background of Respondents	31
Table 4.4: Descriptive Statistics of Occupational Background of Respondents	32
Table 4.5: Descriptive Statistics of Income Level of Respondents	33
Table 4.6: Reliability of Attitudinal Belief	34
Table 4.7: Reliability of Social Influence	35
Table 4.8: Reliability of Computer/internet Experience	35
Table 4.9: Reliability of M-banking Adoption	36
Table 4.10: Summary of Reliability Tests	36
Table 4.11: Guideline for Pearson Correlation Strength	37
Table 4.12: Summary of Correlation Analysis	38
Table 4.13: R Square Value ( $R^2$ )	40
Table 4.14: ANOVA	40
Table 4.15: Beta Coefficients	41
Table 5.1: Correlation of M-banking Adoption with the Dependent Variables	44
Table 5.2: Summary of Beta Coefficients	45
Table 5.3: Summary of Hypotheses Tested	46

## LIST OF FIGURES

	<b>Page</b>
Figure 2.1: Original Technology Acceptance Model (TAM)	12
Figure 2.2: Theory of Planned Behavior	17
Figure 2.3: Decomposed Theory of Planned Behavior	18
Figure 3.1: Research Model	23
Figure 5.1: Proposed Model	46

# CHAPTER ONE

## INTRODUCTION

### 1.1 Overview of Study

The rapid advancement in the field of Information Technology (IT), specifically in wireless technology has significantly altered the way and manner financial transactions are conducted. Banks being the central nerve of financial activities have undergone series of transitions and transformations in their life cycle induced majorly by technological break-through. From banking under the mattress to banking: ‘anywhere-anytime’; from fixed, traditional cash-based banking to a mobile, wireless and cashless banking system. The “brick and mortar” system of banking is fast receding. Customers can now perform their banking transactions from the comfort of their beds; pay their bills, transfer funds, check account balance and monitor their finances in a risk free environment. The fear of theft, robbery during the days of hard currency no longer exist now, money now travels in digital space.

The business world today is highly turbulent; waves of change are experienced in high proportion. Consumers of today are highly sophisticated and their need for personalized service is ever increasing by the day. The digital age customers now require banking services to be rendered to them anywhere they are, around the clock.

M-banking (mobile banking) is a technology that has emerged in recent times to augment the shortfalls of e-banking and extend the reach of financial services across all socio-economic groups and geographical boundaries. M-banking is defined as a system used to perform banking (financial) transactions through customers’ handheld

The contents of  
the thesis is for  
internal user  
only

## REFERENCES

- Ajzen, I. (1985). From intentions to actions: a theory of planned behavior. In Kuhl, J. & Beckmann, J. (Eds), *Action control: from cognition to Behavior* (pp. 11-39). New York: Springer-Verlag.
- Al-Somali, S.A., Gholami, R., and Clegg, B. (2009). An investigation into the acceptance of online banking in Saudi Arabia. *Technovation*, 29(2), 130-141.
- Amin, H. (2007). Is the technology acceptance model valid for BIMB mobile banking? *International Journal of e- Business Management*, 1(1), 37-49.
- Amin, H., Baba, R., and Muhammad, M. Z. (2007). An analysis of mobile banking acceptance by Malaysian customers. *Sunway Academic Journal* 4. Retrieved 3<sup>rd</sup> December, 2009 from [http://www.sunway.edu.my/others/vol4/mobile\\_banking.pdf](http://www.sunway.edu.my/others/vol4/mobile_banking.pdf)
- Bagozzi, R.P. (1984). Expectancy value attitude models: An analysis of critical measurement issues. *International Journal of Research in Marketing*, 1, 295-310.
- Chau, P. Y. K., and Hu, P. J.-H. (2001), Information technology acceptance by individual professionals: A model comparison approach. *Decision Sciences*, 32(4), 699–719.
- Cohen, J. W. (1988), *Statistical power analysis for the behavioral sciences* (2<sup>nd</sup> ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Compeau, D.R., Higgins, C.A., and Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS Quarterly*. 23(2), 145-158.
- Creswell, J.W. (2008). *Educational Research: planning, conducting and evaluating quantitative and qualitative research* (3<sup>rd</sup> ed.). US: Pearson Education International.
- Davis, F.D. (1989), Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 318-339.

- Davis, F.D., Bagozzi, R.P., and Warshaw, P.R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35 (8), 982- 1003.
- Deng, Z., Lu, Y., and Chen, Z. (2010). Exploring Chinese user adoption of mobile banking. *International Journal of Information Technology and Management*, 9(3), 289-301.
- Fishbein, M., and Ajzen, I. (1975). *Belief, Attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- George, D., and Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.
- Hair, J.F. Jr, Anderson, R.E., Tatham, R.L., and Black, W.C. (1998). *Multivariate data analysis*. 5<sup>th</sup> ed. New Jersey: Prentice Hall Inc.
- Hu, P.J., Chau, P.Y.K., Sheng, O.R.L., and Tam, K.Y. (1999). Examining technology acceptance model using physician acceptance of telemedicine technology. *Journal of Management Information Systems*, 16(2), 91-112.
- Igbaria, M., Zinatelli, N., Cragg, P., and Cavaye, A. (1997). Personal computing acceptance factors in small firms: A structural equation model. *MIS Quarterly*, 279-302.
- Jones, A.B., and Hubona, G.S. (2006). The mediation of external variables in the technology acceptance model. *Information & Management*, 43(6), 706-717.
- Kerlinger, F.N. (1973). *Foundation of behavioural research*. (2<sup>nd</sup> edition). New York: Holt, Rinehart & Winston.
- Keil, M., Beranek, P.M., and Konsynski, B.R. (1995). Usefulness and ease of use: Field study evidence regarding task considerations. *Decision Support Systems*, 13, 75-91.
- Kleijnen, M., Wetzel, M., and de Ruyter, K. (2004). Consumer acceptance of wireless finance. *Journal of Financial Services Marketing*, 8(3), 206-217.



- Legris, P., Ingham, J., and Colletette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management*, 40(3), 191-204.
- Luarn, P., and Lin, H.-H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior*, 21(6), 873-891.
- Mathieson, K. (1991). Predicting user intentions: comparing technology acceptance model with the theory of planned behavior. *Information Systems Research*, 2(3), 173-191.
- Mathieson, K., Peacock, E., and Chin, W. W. (2001), Extending the technology acceptance model: The influence of perceived user resources. *DATA BASE for Advances in Information Systems*, 32(3), 86–112.
- Mattila, M. (2003). Factors affecting the adoption of mobile banking services. *Journal of Internet Banking and Commerce*. Retrieved 3<sup>rd</sup> December, 2009 from <http://www.arraydev.com/commerce/jibc/0306-04.htm>
- Moore, G.C., and Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3), 192-222.
- Pallant, J. (2001). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows (version 10 and 11)*. USA, Philadelphia: Open University Press.
- Porter, C.E., and Donthu, N. (2006). Using the technology acceptance model to explain how attitudes determine Internet usage: The role of perceived access barriers and demographics. *Journal of Business Research*, 59(9), 999-1007.
- Punch, K.F. (2003). *Survey Research: The basics*. London: SAGE Publications Ltd.
- Punch, K.F. (2006). *Developing effective research proposals, (2<sup>nd</sup> ed.)*. London: SAGE Publications Ltd.

- Riemenschneider, C.K., Harrison, D.A., and Mykytyn, P.P. (2003). Understanding it adoption decisions in small business: integrating current theories. *Information and Management*, 40(4), 269-285.
- Rogers, E.M. (1995). *Diffusion of innovations (4<sup>th</sup> ed.)*. New York: Free Press.
- Sekaran, U. (2000). *Research methods for business: A skill-building approach (3<sup>rd</sup> ed.)*. US: John Wiley & Sons, Inc.
- Shih, H.-P. (2004). Extended technology acceptance model of internet utilization behavior. *Information & Management*, 41(6), 719-729.
- Subramanian, G.H. (1994). A replication of perceived usefulness and perceived ease of use measurement. *Decision Sciences*, 25(5/6), 863-874.
- Tan, M., and Teo, T.S.H. (2000). Factors influencing the adoption of internet banking. *Journal of the Associations for Information Systems*, 1(5), 1-44.
- Taylor, S., and Todd, P.A. (1995a). Understanding information technology usage: A test of competing models. *Information Systems Research*, 6(2), 144-176.
- Taylor, S., and Todd, P.A. (1995b). Decomposition and crossover effects in the theory of planned behavior: A study of consumer adoption intentions. *International Journal of Research in Marketing*, 12(2), 137-155.
- Teo, T.S.H., and Pok, S.H. (2003). Adoption of WAP-enabled mobile phones among internet users. *The International Journal of Management Science*, 31(6), 483-498.
- Tiwari, R. and Buse, S. (2006). *The Mobile Banking Prospects: A Strategic Analysis of Mobile Commerce Opportunities in the Banking Sector*. Hamburg University Press, Hamburg.
- Tiwari, R., Buse, S., and Herstatt, C. (2006a). *Mobile banking as business strategy: Impact of mobile technologies on customer behaviour and its implication for banks*. Working Paper No. 37. Retrieved 3<sup>rd</sup> March, 2010 from: [http://www.tuharburg.de/tim/downloads/arbeitspapiere/Working\\_Paper\\_37.pdf](http://www.tuharburg.de/tim/downloads/arbeitspapiere/Working_Paper_37.pdf),

- Tiwari, R., Buse, S., and Herstatt, C. (2006b). Customer on the Move: Strategic Implications of Mobile Banking for Banks and Financial Enterprises, in *CEC/EEE 2006, Proceedings of The 8th IEEE International Conference on E-Commerce Technology and The 3rd IEEE International Conference on Enterprise Computing, E-Commerce, and E-Services*, 522-529, San Francisco.
- Tiwari, R., Buse, S., and Herstatt, C. (2007). Mobile services in banking sector: The role of innovative business solutions in generating competitive advantage, in: *Proceedings of the International Research Conference on Quality, Innovation and Knowledge Management*. New Delhi, 886-894.
- Tornatzky, L.G., and Klein, K.J. (1982). Innovation characteristics and innovation adoption implementation: A meta-analysis of findings. *IEEE Transactions on Engineering Management*, 29(1).
- 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.
- Venkatesh, V., and Morris, M.G. (2000). Why don't men ever stop to ask for directions: Gender, social influence and their role in technology acceptance and usage behavior. *MIS Quarterly*, 24(1), 115-139.
- Wang, Y.-S., Wang, Y.-M., Lin, H.-H., and Tang, T.-I. (2003). Determinants of user acceptance of internet banking: An empirical study. *International Journal of Service Industry Management*, 14(5), 501-519.