# MMS (MULTIMEDIA MESSAGE SERVICE) SERVICE ADOPTION RATES IN ALGERIA

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UNIVERSITI UTARA MALAYSIA 2010

## MMS (MULTIMEDIA MESSAGE SERVICE) SERVICE ADOPTION RATES IN ALGERIA

# A Thesis Submitted to College Business in Partial Fulfillment of the Requirement for the Degree Master Science of Management Universiti Utara Malaysia

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### **ABSTRACT**

This thesis tries to analyze the factors that affect the intention to adopt Multimedia message service (MMS) among users in Algeria. Innovation diffusion theory was chosen as the basis of framework to better explain customer's acceptance of this new mobile service. MMS provides more multimedia communication with entertainment effects than current text base short message service (SMS). The main purpose of this thesis is to investigate the occurrence of MMS from a user's perspective, to present a definition of this new message service and provide a deeper understanding of the phenomenon. The main objective is to present a theoretical framework regarding MMS usage and to empirically investigate which user related factors to consider, when developing services adapted for mobile message use. Survey was chosen to gather the data. The measures and hypotheses were analyzed using SPSS. Results show that Ease of use, perceived enjoyment and perceived media richness significantly influence passenger's intention towards adopting MMS in Algeria. At last, the implications of the findings are discussed.

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### LIST OF ABBREVIATIONS

(MMS): Multimedia Messaging Service

(SMS): Short Message Service

(GSM): Global System for Mobile Communications

(GPRS): General packet radio service

(ITU): International Telecommunication Union

(IT): Information Technology

(IS): Information System

(ATM): Automatic Trailer Machine

(TPB): Theory of Planned Behavior

(ICT): Information and Communication Technology

(TAM): Technology Acceptance Model

(TRA): Theory of Reasoned Action

(PBC): Perceived Behavioral Control

(BI): Behavioral Intention

(EOU): Ease of Use

(USE): Usefulness

(COM): Compatibility

(PMR): Perceived Media richness

(PENJOY): Perceived enjoyment

### **CHAPTER ONE**

### INTRODUCTION

### 1.1 Introduction

Mobile phones have become an integral part of our lives. Nowadays, they come integrated with multimedia devices such as a camera, speaker, radio, and microphone. While primarily facilitating teleconversations, they also offer additional services such as text communication, games, audio/video playing, radio, image/video capture and transmission, alarm, calculator, and calendar. More recently, the sending and receiving of MMS (multimedia messaging service) messages, which have substantially higher.

### 1.1.1 The importance of mobile technology and services

The mobile phone has become an integral part of many people's everyday life all over the world. Until recently, it has been mostly used for phone calls and messaging, but this is now changing. Services, in particular, challenge established ways of using phones. The study of how and why consumers adopt (new) technology and mobile services and specially messaging services may be relevant and important for both providers and

# The contents of the thesis is for internal user only

### 7 References

- AGARWAL R, A. M., CATER PE, GANS M. (1998) Early and late adopters of IT innovations: extensions to innovation diffusion theory. Diffusion interest group in information technology (DIGIT) conference.
- AGARWAL R, P. J. (1997) The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. Decision Sciences, 28, 557-582.
- AJZEN, I., & MADDEN, T. J. (1986) Prediction of goal- directed behavior from attitudinal and normative variables. J.Experimental Social Psychology, 22, 453-474.
- AJZEN, I. (1988) Attitudes, personality and behavior. Dorsey Press, Chicago, IL.
- AJZEN, I. (1991) Theory of planned behavior. Organizational Behavior and Human Decision Processes, 50, 179-211.
- BAGOZZI, R. & YI, Y. (1988) on the evaluation of structural equation models', journal of academy of marketing science, 16(1), pp. 74-94.
- BEATTY RC, S. J., JONES MC. (2001) Factors influencing corporate web site adoption: a time-based assessment. Information & Management, 38, 337-354.
- BRWON I, C. Z., DAVIES D, STROEBEL S. & . (2003) Cell phone banking: predictors of adoption in South Africa-an exploratory study. International Journal of Information Management, 23, 381–94.
- CARLSSON, C., HYVNEN, K., REPO, P., WALDEN, P., (2005) Asynchronous Adoption Patterns of Mobile Services. Proceedings of the 38th Hawaii International Conference on System Sciences, Island of Hawaii, USA, 6.
- CARMINES, E. G. & ZELLER, R. A. (1979) Reliability and validity assessment, Beverly Hills/London: Sage Publications.
- CEPT(1982), European Posts and Telecommunications.
- CHEN L, G. M., SHERRELL DL. (2002) Enticing online consumers: An extended technology acceptance perspective. Information & Management, 39, 5-19.
- CHIN-LUNG HSU, H.-P. L., HUEI-HSI HSU (2007) Adoption of the mobile Internet: An empirical study of multimedia message service (MMS). Omega, 35, 715-726.

- CHRISTENSEN, L., ANDERSSON, N., CARLSSON, C. & HAGLUND, L. (1998) Marknadsundersökning en handbook, Studentlitteratur, Lund.
- DATAMONITOR(2003)
  http://www.find.org.tw/0105/news/0105news\_disp.asp?news\_id = 2524.
- DAVIS, F. D. (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, September, 319-340.
- DAVIS, F. D. (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, September, 319-340.
- DAVIS, F. D., BAGOZZI, R. P. & WARSHAW, P. R. (1989) User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35, 982-1002.
- DAVIS, F. D., BAGOZZI, R. P. & WARSHAW, P. R. (1989) User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35, 982-1002.
- EDSTRöM, T. (2003) Adopting Mobile Internet? Findings from a study on Mobile Internet services using a user centred perspective. Department of Software Engineering and Computer Science Blekinge Institute of Technology, Sweden.
- ERIKSSON, L. & WIEDERSHEIM-PAUL (2001) Att utreda, forska och rapportera, Liber ekonomi, Malmö.
- FELL DR, H. E., BECKER BW. (2003) Measuring innovativeness for the adoption of industrial products. Industrial Marketing Management, 32, 347-353.
- FISHBEIN, M., & AJZEN, I. (1975) Belief, attitude, intention, behavior: An introduction to theory and research. Addison- Wesley, reading, MA.
- FUNK, J. L. (2005) The Future of the Mobile Phone Internet: An Analysis of Technological Trajectories and Lead Users in the Japanese Market. Technology in Society, 27, 69-83.
- GEFEN, D., DETMAR, S. & BOUDREAN, M. (2000) Structural Equation modeling :guidelines for research practice', communications of AIS, 7(7),pp.1-78.
- HARRISON, D. A., MYKYTYN JR, P. P. & RIEMENSCHNEIDER, C. K. (1997) Executive decisions about adoption of information technology in small business: Theory and empirical tests. Information Systems Research, 8(2), 171-195.

- HOLME, I. & SOLVANG, B. (1997) Forskningsmetodik: om kvalitativa och kvantitativa metoder, Studentlitteratur, Lund.
- ITU (2002) Internet for a mobile generation. ITU Internet reports. Revised edition, 19 September 2002. International Telecommunication Union (ITU). ISBN 92-61-09851-7.
- KARAHANNA E, S. D., CHERVANY NL. (1999) Information technology adoption across time: a cross-sectional comparison of pre-adoption and post-adoption beliefs. MIS Quarterly, 23, 183-213.
- KARNOUSKOS, S. & FOKUS, F. (2004) Mobile payment: A journey through existing procedures and standarization initiatives. Fourth Quarter, 6(4), 44-66.
- KASSARJIAN, H. H. & ROBERTSON, T. S. (1991) Perspectives in Consumer Behaviour (4th edition). Prentice Hall, New Jersey.
- KIM, J., LEE, I., LEE, Y., CHOI, B., (2004) Exploring E-Business Implications of the Mobile Internet: A Cross-National Survey in Hong Kong, Japan and Korea. International Journal of Mobile Communications, 2, 1-21.
- KINNEAR, T. & TAYLOR, J. (1996) Marketing research an applied approach: fifth edition, McGraw-Hill, New York.
- KLINE, R. B. (1998) Principles and Practice of Structural Equation Modeling. The Guilford Press, New York, London.
- MA, Q., & LIU, L. (2004) The technology acceptance model: A meta analysis of empirical findings. Journal of Organizational and End User Computing, 16(1), 59-72.
- MATHIESON, K. (1991) Predicting user intentions: Comparing the technology acceptance model with the theory of planned behaviour. Information Systems Research, 2, 173-191.
- MOORE GC, B. I. (1991) Development of an instrument to measure the perceptions of adopting an information technology innovation. Information Systems Research, 2, 192-222.
- MPT (2007) Ministry of Posts and Telecommunication. www.postelecom.dz.
- MYLONOPOULOS, N. A., DOUKIDIS, G. I., (2003) Introduction to the Special Issue: Mobile Business: Technological Pluralism. Social Assimilation, and Growth, International Journal of Electronic Commerce, 8, 5-22.

- NORMAN, D. A. (1998) The Invisible Computer: why good products can fail, the personal computer is so complex, and information appliances are the solution. The MIT Press, Cambridge.
- NYSVEEN, H., PEDERSEN, P. E. & THORBJØRNSEN, H. (2005) Intentions to use mobile services: Antecedents and cross- service comparisons. Journal of the Academy of Marketing Science, 33(3), 330-346.
- OVUM (2003) http://www.find:org.tw/0105/news/0105 news disp.asp?news id = 2520:
- OTA (2009), Orascom Telecom Algeria (Djezzy), www.djezzygsm.com.
- ROGER (2003) Diffusion of innovations. 5th ed., New York: Free Press.
- ROGERS EM (1983) Diffusion of innovations. New York: Free Press.
- RYAN, M. J., & BONFIELD, E. H. (1980) Fishbein's intention model: A test of external and pragmatic validity. Journal of Marketing, 44(spring), 82-95.
- SCHIFTER, D. E. (1984) Attempts, control and weight reduction: An application of a theory of planned behavior. Master Thesis, University of Massachusetts at Amherst, Amherst, MA.
- SENDECKA, L. (2006) Adoption of mobile services Moderating effects of service's information intensity. NORGES HANDELSHOY University, Norway.
- SHEPPARD, B. H., HARTWICK, J., & WARSHAW, P. R. (1988) The theory of reasoned action: A meta analysis of past research with recommendations for modifications and future research. Journal of Consumer Research, 15(3), 325-343.
- SLYKE CV, L. H., DAY J. (2002) The impact of perceived innovation characteristics on intention to use groupware. Information Resource Management Journal, 15, 5-12.
- SRIVASTAVA, L. (2004) Japan's Ubiquitous Mobile. Information Society, 6, 234-251.
- TAYLOR, S., & TODD, P. A. (1995) Understanding information technology usage: A test of competing models. Information Systems Research, 6(2), 144-176.
- TORNATZKY, J. G., & KLEIN, K. J. (1982) Innovation characteristics and innovation adoption implementation: A Meta analysis of findings. IEEE Transactions on Engineering and Management, 29(1), 28-45.

- VENKATESH, V. (2000) Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model Information Systems Research, 11(4), 342-365.
- VENKATESH, V., & DAVIS, F. D. (2000) A theoretical extension of the technology acceptance model: Four longitudinal field studies. Management Science, 46(2), 186-204.
- VENKATESH, V., MORRIS, M. G., DAVIS, G. B., & DAVIS; F. D. (2003) ser acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425-478.
- WALLEN, G. (1996) Vetenskapsteori och forskningsmetodik, Studentlitteratur, Lund.
- WALLSTROM, A. (2002) Industrial Buying Behaviour of Large Swedish Firms-Case Studies of the Purchase of Educational Services. Department of Business Administration and Social.
- WANG, J. & NAMEN, J. (2004) Customer Adoption of Technology-Based Self-Service, Master thesis, Department of Business Administration and Social Sciences, Division of Industrial Marketing and e-Commerce, Lulea university of technology, 84, pp. 33-35.
- WERTS, C., R, L. & JORESKOG, K. (1974) interclass reliability estimates: testing structural assumptions. Educational and Psychological measurement, vol.34, pp.25-33.
- WTA(2009), Wataniya Telecom Algeria (Nedjma), www.nedjma.dz.
- YIN, R. K. (1994) Case Study research: design and methods, sage Publication,.
  Thousands Oak, 2nd edition.
- ZIKMUND, W. G. (1994) Business Research Methods. (4th. Ed.). Orlando, FL.: The Dryden Press.