

**THE ACCEPTANCE DESIGN MODEL FOR LIBRARY WEB  
SERVICES: ENHANCED FEATURES OF THE UUM WEB ONLINE  
PUBLIC ACCESS CATALOG**

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**The Acceptance Design Model for Library Web Services: Enhanced  
Features of the UUM Web Online Public Access Catalog**

A Project Submitted to the Academic Dean of Awang Had Salleh Graduate School in Partial  
Fulfillment of the Requirement for the Degree of Masters of Science  
(Information and Communication technology)

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**Dedicated to**  
**God Almighty and my Family**

## **ABSTRACT**

Over the years, there has been a huge investment into the digital library. Online Public Access Catalog (OPAC) is a way through which the materials and information of the library can be availed but was recently viewed to be undergoing reconstruction due to the change in users' expectation. Despite the reconstruction and the huge investment in the library web OPAC. Users are however restricted from making collections and having access to their collection which thereby limits its usefulness and acceptance. This study therefore used the general methodology for design research to determine the factors that enhance the acceptance of library web OPAC and developed a library web OPAC prototype that will enhance the acceptance of library services, increases the usefulness, ease of use and the interactivity of the library services and the users. The evaluation of the developed prototype was conducted using a Technology Acceptance Model to determine its usefulness, ease of use and its acceptance among the users.

## **ACKNOWLEDGEMENTS**

Firstly, I thank almighty Allah for his guidance, blessing, protection and making this project a reality. My sincere appreciation goes to my dearest parents, my brothers and sister for their patience, prayers and the support given to me during the process of completing this project. They really encouraged me to believe there will always be a way when it seems there is no way.

A big thank you to my supervisor, Dr. Haslina Binti Mohd for her guidance and constant motivation that enabled me complete this project. She gave me full support, encouragement and pushed me to learn new things.

I also appreciate the effort of the Odukoyas, Alademerins, Lawals, Odufejos, Muses, Awodipes, friends and others which could not get my attention during this project work. Lastly, I say thank you to the staffs of Information and Communication Technology, College of Arts and Science, Universiti Utara Malaysia and those that contributed indirectly towards the success of my studies.

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June 2011.

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Introduction**

This chapter briefly explained the main idea of this study, it answers the question of why this study was conducted and explained the major elements revolving around the study. The total idea in this study is described by the first sub-topic through the scenario and the background of the study that leads to the implementation of the whole project. This is followed by the problem statement, research objectives, scope, and significant of the study and the last sub-topic which elaborates the organization of the project.

#### **1.1 Background of the study**

Irrespective of the huge investments in information technology over the recent decades, there still exists a concerns to the extent to which such investments yield the desired goals and benefits. One of the issues of this concern is whether the technology will be accepted or rejected by the potential users. However, the factors that determine the acceptance and rejection of technologies have to be determined and understood which will thereby help the designers to design and implement in order to reduce the risk of rejection.

Acceptance is operationally defined as the willingness of the users to employ the use of a technology in achieving the task for which it is designed to do (Dillon & Morris, 1996). Hence, technology acceptance theories are more concern with the potential users and the

The contents of  
the thesis is for  
internal user  
only

## REFERENCES

- Ajzen, I. (1985). From Intentions to Actions: A Theory of Planned Behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg: Springer.
- Antelman, K., Lynema, E. & Pace A. K. (2006). Toward A 21st century Library Catalog. *Journal of Information Technology and Libraries*. 25(3):128-39
- Armitage, C. & Christian, C. R. (2004). *Planned Behavior: The Relationship Between Human Thought and Action*. Transaction Publications: New Brunswick, NJ).
- Aubert, B. A. & Hamel, G. (2001). Adoption of Smart Cards in the Medical Sector: The Canadian Experience, *Social Science & Medicine*, 53(7), 879-894.
- Chalon, X., Dipretoro, E. & Kohn, L (2008). OPAC 2.0: Opportunities, Development and Analysis. 11th European Conference of Medical and Health Libraries, Helsinki, Finland.
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319-340.
- Dillon, A. (2001). User Acceptance of Information Technology. In W. Karwowski (Ed.), *Encyclopedia of Human Factors and Ergonomics*. London: Taylor & Francis.
- Dillon, A., & Morris, M. G. (1996). User Acceptance of Information Technology: Theories and Models. *Annual Review of Information Science and Technology*, 31, 3-32.
- Eason, K. D. (1984). Towards the Experimental Study of Usability. *Behavior and Information Technology*, 3(2), 133-143.
- Eden, B. (2005). Current Issues and Developments Related to Metadata: Thoughts and Opinions. *Library Technology Reports* 41 (6), 45-57.
- Folorunso, O., Ogunseye, O.S., & Sharma, S.K. (2006). An exploratory study of the critical factors affecting the acceptability of e-learning in Nigerian universities. *Information Management and Computer Security*, 14(5), 496-505.
- Furner J. (2007). User Tagging of Library Resources: Toward a Framework For System Evaluation. *World Library and Information Congress: 73rd IFLA General Conference and Council*. Durban, South-africa.
- Gefen, D. & Straub, D. (1997). Gender Differences in the Perception and Use Of E-Mail: An Extension to The Technology Acceptance Model. *MIS Quarterly*, 21(4), 389-400.
- Grandon, E., Alshare, O., & Kwan, O. (2005). Factors influencing student intention to adopt online classes: A cross-cultural study. *Journal of Computing Sciences in Colleges*, 20(4), 46-56.

Hildreth, C. R. (1997). The Use and Understanding of Keyword Searching in a University Online Catalog. *Information Technology and Libraries* 16 (6).

[http://www.carl.acrl.org/ig/carlitn/9\\_07/LTFL.pdf](http://www.carl.acrl.org/ig/carlitn/9_07/LTFL.pdf)

Igbaria, M. & Parasuraman, S. (1989). A Path Analytic Study of Individual Characteristics, Computer Anxiety, and Attitudes Toward Microcomputers. *Journal of Management*, 15(3), 373-388.

Larson, R. (1991). The Decline of Subject Searching: Long-Term Trends and Patterns of Index Use in an Online Catalog. *Journal of the American Society for Information Science and Technology* 42 (3), 210.

Latifah, A.L., & Ramli, B. (2005). *Priority-satisfaction survey: A tool in developing effective retention strategies*. Paper presented at the Conference on Research in Distance and Adult Learning in Asia. Retrieved April 9, 2011, from [http://www.ouhk.edu.hk/cridal/cridala2005/latif\\_bahroom.pdf](http://www.ouhk.edu.hk/cridal/cridala2005/latif_bahroom.pdf).

Laudon, K. C., & Laudon, J. P. (2000). *Management Information Systems*: Prentice Hall PTR Upper Saddle River, NJ, USA.

Lee, M. K., Gheung, C.M. & Chen, Z. (2005). Acceptance of internet based Learning Medium: The Role of Extrinsic and Intrinsic Motivation. *Journal of Information and Management*, 42(8), 1095-1104.

Mungania, P., & Reio, Jr. T. G. (2005). If e-learners get there, will they stay? The role of e learning self-efficacy. Eric ed492287.

Nielsen, J. (1994). *Heuristic Evaluation: Usability Inspection Methods*. John Wiley, pp. 2562. New York

Nielson, J. & Tahir M. (2001). *Homepage Usability 50 Website Deconstructed*. New Riders, p. 69.

Paper Presented at the Academy of Human Resource Development International Conference (AHRD), Estes Park, CO, Feb 24–27, 2005, p. 1110–1117 (Symp. 48–2)

Peters, A. T. (1989). “When Smart People Fail: An Analysis of the Transaction Log of an Online Public-Access Catalog,” *Journal of Academic Librarianship* 15(5), 267.

Pituch, K.A. & Lee, Y. (2006). The Influence of System Characteristics on E-learning use. *Computer & Education*, 47(2), 222-244.

Rivier, A. (2007). *Aide-Mémoire D'informatique Documentaire*. Paris: Editions Du Cercle de la Librairie.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York, NY: Free Press.



- Rowley, J. & Hartley, R. (2008). *Organizing Knowledge: An Introduction to Managing Access to Information*. 4th ed. Burlington, VT: Ashgate.
- Schneiderman, B. & Plaisant, C. (2005). *Designing the user interface: strategies for effective Human Computer interaction*, (4th ed.). Boston: Pearson Education.
- Shackel, B. (1986). Ergonomics in Design for Usability. Proceedings of the HCI 86 Conference on People and Computers II 1986, Cambridge, UK: Cambridge University Press, 44-64.
- Sierra, T. & Ryan, J. (2007). Beyond OPAC 2.0: Library catalog as versatile discovery platform. *The Code4Lib Journal*, 1(10).
- Sonnenwald, D. H., Maglaughlin, K. L. & Whitton, M. C. (2003). Using Innovation Diffusion Theory to Guide Collaboration Technology Evaluation: Proceedings of the IEEE 10th International Workshop on Enabling Technologies: Infrastructure for Collaborative Enterprises (WETICE'01). Retrieved from: <http://www.adm.hb.se/personal/dis/wetice2011.pdf>.
- Spiteri, L. F. (2007). The Structure and Form of Folksonomy Tags: The Road to the Public Library Catalog. *Information Technology and Libraries* 26 (3), 13-25.
- Steven, G. C. (1983). User Friendly Computer System? A critical examination of the concept behavior and information technology, 2(1), 3-16.
- Taherdoost, H., Ismael, Z. & Masrom, M. (2009). Adoption Model to Assess the Users Acceptance of Smart Card Technology. *Journal of the US-China Public Administration*, 6(3),
- Taylor, S. & Todd, P. (1995). Assessing IT Usage: The Role of Prior Experience, *MIS Quarterly*, 12, 561-570.
- Tibenderana, P., Ogao, P., Ikoja-Odongo, J. & Wokadala, J. (2010). Measuring Level of End Users' Acceptance of Hybrid Library Services. *International Journal of Education and Development using Information and Communication Technology*, 6(2).
- Tolle, E. J. & Hah, S. (1985). Online Search Patterns: NLM CATLINE Database. *Journal of the American Society for Information Science* 36, 82-9.
- Vaishnavi, V., & Kuechler, W. (2004). Design Research in Information Systems, retrieved on the 17th of February 2011, by 2.00pm, <http://www.isworld.org/Researchdesign/drisISworld.htm>
- Vaishnavi, V., and Kuechler, W. (2004). Design Research in Information Systems, retrieved on the 17th of February 2011, by 2.00pm <http://www.isworld.org/Researchdesign/drisISworld.htm>
- Wenzler, J. (2007). LibraryThing and the Library Catalog: Adding Collective Intelligence to the OPAC. A Workshop on Next Generation Libraries John Wenzler, San

Francisco State CARL NITIG; September 7, 2007. Retrieved on the 14th of February, 2011 by 11.41pm,  
<http://www.carl-acrl.org/ig/carlitn/9.07.2007/LTFL.pd>

- Wetterstrom, M. (2008). The Complementarity of Tags and LCSH: A Tagging Experiment and Investigation Into Added Value In a New Zealand Library Context. *The New Zealand Library and Information Management Journal* 50 (4), 292-310.
- Wu, P. F. (2009). User Acceptance of Emergency Alert technology: A Case Study. *Proceedings of the 6th International Conference on Information Systems for Crisis Response.*
- Wu, Y., Tao, Y. & Yang, P. (2008). The Use of Unified Theory of Acceptance And Use of Technology to Confer the Behavioral Model of 3G Mobile Telecommunications Users. *Journal of Statistics & Management Systems.* 11(5), 919-949.
- Yu, H. & Young, M. (2004). The Impact of Web Search Engines on Subject Searching in OPAC. *Information Technology and Libraries*, 23(4), 168- 180