IDEA GROUP PUBLISHING
701 E. Chocolate Avenue, Suite 200, Hershey PA 17033-1240, USA
Tel: 717/533-8845; Fax 717/533-8661; URL-http://www.idea-group.com

ITB12723

This paper appears in the book, *Emerging Trends and Challenges in Information Technology Management, Volume 1 and Volume 2* edited by Mehdi Khosrow-Pour © 2006, Idea Group Inc.

Role of Organizational Context on Digital Library's Success Factor

Noornina Dahlan, Noorliza Karia, Muhammad Hasmi Abu Hassan Asaari, T. Ramayah, & Goon Tuck Lee
Universiti Sains Malaysia, 11800 Penang, Malaysia, T 6 04 6533888, F 6 04 6577448
{nina, noorliza, ramayah}@usm.my

ABSTRACT

Organizational context was examined on postgraduate students on their perception on ease of use and the impact in relation to digital library. Moreover success factors of the digital library's usage ware also explored in this study. Upon examining the result, the study indicated that only system relevance was found to have direct impact on the perceive use of digital library. On the other hand, system accessibility and system visibility just had a little impact on the perceived usefulness of digital library.

INTRODUCTION

The proliferations of information resources available through new distribution networks are likely to promote fundamental changes on both institutions and personal habit for other forms of culture and scholarly work especially in Malaysia. Digital library is a computer based system for storing, acquiring, organizing, searching, and distributing digital materials for end user access. It requires less space and the data can be made available through communication networks to anyone anywhere while facilitating searches with speed (Sharma & Vishwanathan, 2001). As organizations rely more on digital technology to produce, process, store, communicate, and use information in their activities, the quantity of records being created in electronically form will increase exponentially (Lim et al., 2003).

Further, digital libraries also can solve some problems facing print-based academic libraries (Dugdale, 1999). Organizations have adopted the use of Internet technology and in particular the adoption of digital libraries in exchange of information and resources, co-operative projects to avoid duplication of efforts and bridging access to information to distant and disadvantaged communities.

Given the above background, digital libraries would facilitate researches in their research works. However based on recent studies, people still prefer to read from paper despite the progress in the technology (Monopoli & Nicholas, 2001; Woodward, 1997; Borghuis et al., 1996; Dijkstra, 1998). Moreover a survey by the Visual Arts Data Service (Groud & Rymer, 1998) discovered that the two most highly reported factors inhibiting the use of digital resources were lack of time and perception that the resources were of poor quality. Therefore, today with many people searching themselves, the Internet is expected to take on board the role of the human intermediary. There is an expectation that people are digitally literate (Monopoli et al., 2002).

The motivation of this paper is to seek the impacts of organizational context on perceive ease of use, and the impact of perceived ease of use on perceived usefulness of digital library. Thus, this paper attempts to examine the relationship between organizational context, perceived ease of use, and perceived usefulness of digital libraries technology among post-graduate students.

LITERATURE REVIEW

As quoted by the American Heritage Dictionary (1983), a library is concluded to be known as a place to keep literary and artistic materials, such as books, periodicals, and prints, for reading, reference, or borrowing. Meanwhile, Wiederhold (1995) stated that a library is an element in the process of creating, storing, calling, accessing, selecting and distributing information to customers. With the advancement of information and communications technology (ICT), readers need not to make them available physically in the library as they can obtain various materials through electronic methods. This is due to the materials being stored in digital forms (Garrett & Lyons, 1993).

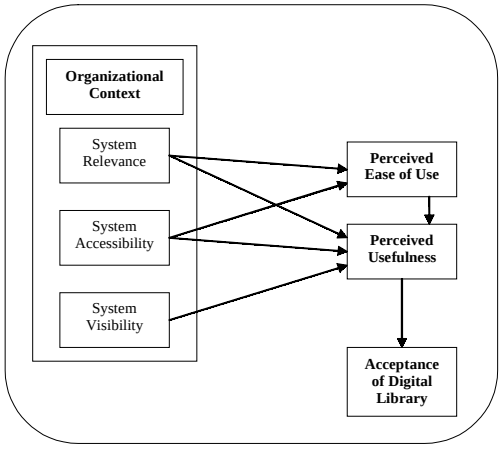
According to Hong et al. (2002), they discovered that perceived usefulness and perceived ease of use are the determinants of user acceptance of digital libraries. Moreover, organizational context variables, relevance and system visibility, can positively influence perceived usefulness of digital libraries. Hong et al. (2002) argued that organizational context variables were found to have significant impact on intention to use digital libraries through both perceived usefulness and perceived ease of use. Organizational context comprise of relevance, system accessibility, and system visibility. Relevance refers to the integrability of the system into work practice, whish is how smoothly the system fits into the person's or a group's work practices (Kling & Elliot, 1994). System accessibility is defined as the ease with which people can locate specific computer system (Kling & Elliot, 1994). Finally, system visibility originates from the concept of system observability, which is one of the key characteristics of technology innovation identified by Rogers (1995).

Among the three organizational context variables, relevance showed the strongest effect on perceived usefulness, and was greater than the effect of perceived ease of use. This is consistent with Venkatesh and Davis (1996) finding of a direct effect from job relevance to perceived usefulness of a number of management information needs, digital library designers should pay more attention to user requirements analysis to discover their expectations and requirements for the content of digital libraries, and then incorporate relevant materials into the systems.

Further, Davis et al. (1989) identified ease of use as an important determinant of system usage through perceived usefulness. Meanwhile, Mathieson (1991) also reported similar findings that perceived ease of use explains significant amount of the variance in perceived usefulness. On the same note, Gluck (1996) argued that there is a strong relationship between relevance and user satisfaction with information systems. Further, Yao (1995) stated that users tend to find useful documents to be relevant. According to O'Riley (1982), Culnan (1983), and Hardy (1982), perceived accessibility was one of the important determinants of the frequency of using information sources and the selection of information channels.

On the other hand, Kraemer et al. (1993) stated that greater accessibility of computer-based information contributes to greater usefulness of the information to the mangers. System accessibility will also enhance user's perception of the ease of using digital libraries. Roger (1995) stated that observability refers to the degree to which the results of an innovation are visible and communicable to others. Meanwhile, Moore and Benbasat (1991) mentioned that a potential adopter is more likely to adopt an innovation if it's more visible.

Figure 1: Theoretical Framework



THEORETICAL FRAMEWORK

Research model by Hong et al. (2002) will be adapted in studying the understanding the user acceptance of digital libraries. The impact of organizational context will be examined. Further based on the literature reviews, the theoretical framework is depicted in Figure 1.

Thus, several hypotheses are generated:

H_1: Perceived ease of use has a direct influence on perceived usefulness of the digital library.

H_2: System relevance to post-graduates' needs will have a positive influence on the perceived ease of using the digital library.

H_3: System relevance to post-graduates' needs will have a positive influence on the perceived usefulness of the digital library.

H_4: System accessibility to post-graduates' needs will have a positive influence on the perceived ease of using the digital library.

H_5: System accessibility to post-graduates' needs will have a positive influence on the perceived usefulness of the digital library.

H_6: System visibility to post-graduates' needs will have a positive influence on the perceived usefulness of the digital library

RESEARCH METHODOLOGY

Convenience sampling method was adopted in conducting this study. The unit of analysis is the individual post-graduate students in Universiti Sains Malaysia in Penang, and Universiti Multimedia in Malacca. Three-hundred questionnaires were distributed to post-graduate students in various places through out both universities. Only 140 useable questionnaires were returned. The questionnaire was divided into sections: Section A: Perception on the ease of using digital library (Hong et al., 2002); Section B: Perception on the usefulness of digital library (Hong et al., 2002); Section C: Organizational context in relation to digital library (Davies, 1997); and Section D: Demographic information.

RESULTS

A total of 300 questionnaires were distributed, and 164 responded to the survey. Majority of the respondents in the survey were male that comprised of 55% as compared to female of 45%. Based on ethnic group of the country, the respondents were divided as Malays, 15%; Chinese, 73.6%; Indians, 5.7%; and others, 5.7%.

Based on the students major, they indicated that business major, 47.1%. Meanwhile the balance was science and engineering, 40%. They also indicated their mode of program that 54.3% were part-time students as compared to 45.7% as full-time. Further, respondents were also asked on their exposure on the Internet, majority of them stated that they were exposed for more than 5 years as 53.6%.

Moreover, summary of the above demographic is depicted in Table 1.

Table 1: Demographic of Respondents

Item	N	%
Gender		
Male	77	55.0
Female	63	45.0
Ethnic		
Malay	21	15.0
Chinese	103	73.6
Indian	8	5.7
Others	8	5.7
Academic Program		
Business	66	47.1
Science & Engineering	56	40.0
Education	2	1.4
Social Sciences	6	4.3
Others	10	7.1
Study Mode		
Full-time	63	45.0
Part-time	77	55.0
Internet Usage		
Less than 1 year	2	1.4
1 – 2 years	4	2.9
2 – 3 years	10	7.1
3 – 4 years	22	15.7
4 – 5 years	27	19.3
More than 5 years	75	53.6

Table 2: Descriptive Statistics and Reliability

Item	Mean	S.D.	Cronbach's Alpha
System relevance	5.07	1.13	.90
System accessibility	4.85	1.24	.72
System visibility	3.79	1.59	.70
Perceived ease of use	5.22	0.96	.88
Perceived usefulness	5.57	0.89	.91

Table 3: Multiple regression analyses

Dependent Variable	Adjusted R^2	Independent Variable	Beta	T	Sig.
Perceived usefulness	.28	H_1: Perceived ease of use	.54**	7.45	.00
	.13	H_{2b}: System relevance	.44**	2.23	.00
		H_{3b}: System accessibility	-.20	1.04	.05
		H_4: System visibility	.14	3.34	.09
Perceived ease of use	.13	H_{2a}: System relevance	.37**	3.71	.00
		H_{3a}: System accessibility	.00	.02	.99

The means and standard deviations of the variables in the theoretical framework are summarized in Table 2. The Cronbach's alpha for the variables was the above recommended level of confidence at .70.

Further, regression analyses were conducted in testing the hypotheses. The results of regression analysis were depicted in Table 3.

Between system relevance and system accessibility in the organizational context, the relevance is good descriptor of perceived ease of use (Beta=.37, $p<.01$). This indicates that relevance is important in organizational context. An adjusted R^2 value of .13 explained that 13% of the dependent variable (i.e. perceived ease of use). Further, perceived ease of use has a positive influence on perceived usefulness (Beta=.54, $p<.01$). Thus the independent variable (i.e. perceived ease of use) explained that 28% of the dependent variable (i.e. perceived usefulness).

Meanwhile, the other three variables (i.e. system relevance, system accessibility, and system visibility) in organizational context, only system relevance was the good descriptor of perceived usefulness (Beta=.44, $p<.01$). This result indicated that system relevance is important in determining perceived usefulness. This can be summarized that independent variables (i.e. system relevance, system accessibility, and system visibility) explained that 13% of the dependent variable (i.e. perceived usefulness).

DISCUSSION AND CONCLUSION

This paper tries to investigate the impact of organizational context on perceived ease of use and perceived usefulness of the digital library. Between the two independent variables under organizational context, only system relevance was found to have a direct impact on the perceived ease of use of digital library. The remaining independent variable (i.e. system accessibility) had little impact on the perceived ease of use of digital library.

System relevance was found to have an impact on the perceived ease of use of the digital library. Users' search effort is more likely to be productive and effective if there is relevant information in the digital library. Thus students are more likely to find digital library easy to use if the resources in the digital library relate well to their study needs. Moreover, this would facilitate the research work of post-graduate students who wish to have an access to electronic journals and books. This finding is also similar to the study of Hong et al. (2002).

On the other hand, system accessibility had little impact on the perceived ease of use of the digital library according to the present study. Although there may be system accessibility, there was no ease of use if the contents of the digital library did not relate to the students' information needs. This finding contradicted the study conducted by Hong et. al. (2002).

Another interesting discovery in this study is that among the three independent variables under organizational context, only system relevance has a direct impact on the perceived usefulness of digital library. The remaining independent variables (i.e. system accessibility and system visibility) had little impact on the perceived usefulness of digital library. On the other hand, system relevance was found to have an impact on the perceived usefulness of digital library. This means that students are more likely to find digital library useful if the resources in the digital library relate well to their study needs. Findings of Eason et al. (2000) suggested that the amount of relevant information provided was the most important factor in whether a user will use the service or not. This finding is also similar to the study of Hong et al. (2002).

System relevance provides relevant contents to suit the students' information needs. This paper revealed that there should be more focus on end-user requirements to find out their expectations and requirements to increase the relevance of library content. This would help post-graduate students in their research work and thus increase the perceived usefulness of the digital library.

However, system accessibility and system visibility had little impact on the perceived usefulness of digital library according to the present study. Although system accessibility and system visibility could be present, there was no usefulness in the contents of the digital library did not relate to the students' information needs. This finding contradicted with the study of Hong et al. (2002).

Finally, perceived ease of used and perceived usefulness indicated a positive correlation between them. This means that most post-graduate students who find it easy to use digital library are also likely to find digital library to be useful. Post-graduate students want to become skilful at using the digital library with the shortest time frame and probably do not want to go through the hassle of reading up manuals. This result is similar to the study of Hong et al. (2002).

REFERENCES

American Heritage Dictionary (1983), Houghton Mifflin Company, New York.

Borghuis, M., Brinckman, H., Fischer, A., Hunter, K., Loo van der, E., Mors ter, R., Mostert, P. & Zijlstra, J. (1996), "TULIP Final Report, Elsevier Science", New York. Available http://www.elsevier.nl/inca/homepage/about/resproj/trmenu.htm

Culnan, M.J. (1983), "Environmental scanning: The effects of task complexity and source accessibility on information gathering behavior", Decision Science, Vol 14, pp. 194-206.

Davis, F.D., Bagozzi, R.P. & Warsaw, P.R. (1989), "User acceptance of computer technology: A comparison of two theoretical methods", Management Science, Vol 35, pp. 982-1003.

Davies,C. (1997), "Organizational influences on the university electronic library," Information Processing and Management, Vol 33, pp. 377-392.

Dijkstra, J. (1998), "Journal in transition: Form paper to electronic access – The DECOMATE Project", Serials Librarian, Vol 33 (3/4), pp. 243-270.

Dugdale, C. (1999), "Managing electronic reserves", Librarian Career Development, Vol 7 No 12, pp. 150-163.

Eason, K., Yu, L.Z., & Harker, S. (2000), "The use and usefulness of functions in electronic journals: The experience of the Super Journal Project", Program, Vol 34 No 1, January, pp. 1-28.

Garrett, J.R. & Lyons, P.A. (1993), "Toward an electronic copyright management system," Journal of American Society for Information Science, Vol 44 No 8, September, pp. 468-473.

Gluck, M. (1996), "Exploring the relationship between user satisfaction and relevance in information systems", Information Processing and Management, Vol 32, pp. 89-104.

Groud, C. & Rymer, J. (1998), VADS User Needs Survey 1998: Report, Survey Section 3: Problems and Solutions.

Hardy, A.P. (1982), "The selection of channels when seeking information: Cost-benefit vs. least-effort", Information Processing and Management, Vol 18, pp. 289-294.

Hong, W., Thong, J.Y.L., & Tam, K.Y. (2002), "Understanding user acceptance of digital libraries: What are the roles of interface characteristics, organizational context, and individual differences? International Journal of Human-Computer Studies, Vol 57, pp. 215-242.

Kling, R. & Elliot, M. (1994), "Digital library design for organizational usability", SIGOIS Bulletin, Vol 15 No 2, pp. 59-69.

Kraemer, K.L., Danziger, J.N., Dunkle, D.E. & King, J.L. (1993), "The usefulness of computer-based information to public managers", MIS Quarterly, Vol 17, pp. 129-148.

Lim, S.L., Ramaiah, C.K. & Pitt, K.W. (2003), "Problems in the preservation of electronic records", Library Review, Vol 52 No 3, pp. 117-125.

Mathieson, K. (1991), "Predicting user intentions: Comparing the technology acceptance model with the theory or planned behavior", Information Systems Research, Vol 2 No 3, pp. 173-191.

Monopoli, M. & Nicholas, D. (2001), "A user evaluation of subject based information gateways: Case study SOSIG", Aslib Proceedings, Vol 53 No1, pp. 39-52.

Monopoli, M., Nicholas, D., Georgiou, P. & Korfiati, M. (2002), "A user-oriented evaluation of digital libraries: Case study the 'electronic journals' service of the library and information services of the University of Patras, Greece", Aslib Proceedings, Vol 54 No 2, pp. 103-117.

Moore, G.C. & Benbasat, I. (1991), "Development of an instrument to measure the perceptions of adopting and information technology innovation", Information System Research, Vol 2, pp. 192-222.

O'Riley, C.A. (1982). "Variations in decision makers' use of information sources: The impact of quality and accessibility of information," Academy of Management Journal, 25, 756-771.

Rogers, E.M. (1995), Diffusion of Innovation, 4e, The Free Press, New York.

Sharma, R.K. & Vishwanathan, K.R. (2001), "Digital libraries: Development and challenges", Library Review, Vol 50 No 1, pp. 10-16.

Venkatesh, V. & Davis, F.D. (1996), "A model of the antecedents of perceive ease of use: Development and test", Decision Science, Vol 27 No 3, pp. 451-481.

Wiederhold, G. (1995), "Digital libraries, value and productivity", Association for Computing Machinery, Communications of the ACM, April, Vol 38 No 4, pp. 85-96.

Woodward, H. (1997), "Café Jus: Commercial and free electronic journals user study", British Library R&D Report No.55, British Library Research & Innovation Centre, London, pp. 10-11.

Yao, Y.Y. (1995), "Measuring retrieval effectiveness based on user preference of documents", Journal of the American Society for Information Science, Vol 46, pp. 133-145.