

Online Library Databases Quality and User's Satisfaction

A Case Study at a Malaysian Technical University

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Abstract— Academic libraries are currently facing their greatest challenge in the form of global digital revolution. The digital revolution has transformed the traditional forms of knowledge creation, organization and dissemination using online databases. Although library user satisfaction surveys have been numerous, those focusing on the online databases satisfaction have been lacking. Thus, this research aimed to identify the top five frequently used online databases, the quality of the databases and how it impacted user's satisfaction and their future intention to continue using the online databases and the relationship between user satisfaction and continuance to use the online databases. This study is descriptive in nature and employed a cross sectional survey to collect the data. A total of 80 users participated to yield a return rate of 29%. It is found that online databases quality dimensions are significantly related with user's satisfaction and continuance. However, only Perceived Usefulness and Service Quality significantly related to user satisfaction while only Perceived Usefulness and Information Quality. User satisfaction explained 46.5% variance in user continuance. This indicates the escalating importance to improve service quality of online databases among MTUN universities especially to encourage quality publications and research.

Keywords— Online Library Databases, User's Satisfaction, Continuance to Use

I. INTRODUCTION

The introduction of ICT in the field of Libraries and Information Sciences has transformed ways of accessing, storing, retrieving and disseminating information among library users[1]. There is no longer a need for large cataloging facilities and extensive manual labour to ensure all library resources are properly indexed and accessible. In the context Malaysian Technical Universities or MTUN, the increasing number of post graduate students and the demand for high quality publications and research have made the use of online databases indispensable. As a matter of fact, even undergraduate students are expected to retrieve, use and apply information in their respective field of study effectively via the use of these databases.

However, the investment in these databases is high. For example, University Tun Hussien Onn Malaysia (UTHM)

invested more than one million Malaysian Ringgit in 2013 to subscribe to only twenty-nine databases. Such high investment requires high accountability especially in the light of current government budgeting policy called Outcome Based Budgeting (OBB) [2]. Thus, to justify the university investment in the online library databases, the outcome measure or effectiveness in the form of user satisfaction need to be measured [3].

However, majority of studies have been focusing library circulation services, infrastructure, place and services [4] [5] among established universities[6][7]. At present, there is a limited study focusing on library online databases user satisfaction especially in MTUN libraries. For example, Abdullah [8] had embarked a comparative study on the use of academic libraries websites. In his study, he focused only on selected Malaysian premier universities and their respective library websites and not the library online databases per se. Considering these gaps, this study aimed to identify the top five frequently used online databases, and the relationships between online database quality with user's satisfaction and continuance.

II. LITERATURE REVIEW

A. User Satisfaction and Continuance

According to [9], user satisfaction studies flourish in the literature of libraries and information science as early as in 1967 due to increased awareness of user requirements. The library data are gathered to identify the patterns of library use, to evaluate users' attitudes to the library, and assessing the degree of satisfaction being achieved. However, in the recent years, with increase sophistication of wide range of library services provided, the concept has evolved to include a broader focus on users' perspective of the library [4]. As user satisfaction has been recognized as one method to evaluate the library effectiveness [1], measuring it becomes a requisite. Moreover, substantial evidence indicates that user satisfaction is strongly linked with continuance to use in the future. This would help the decision-maker to decide whether to continue the subscription or not.

User satisfaction are affected by various factors. One of the frequently cited factor is service quality [10][11][1], Perceived Ease of Use [12], Perceived Usefulness [12][13], user characteristics [12][14], and system quality [14] [13].

One of the most influential model on assessing information system success is DeLone and McLean Information Success Model (D&M IS). A meta model analysis done by Petter and McLean [15] found that this model has been well-validated across various contexts and types of information systems. D&M IS identified six dimensions of system success which include System Quality, Information Quality, Use, User Satisfaction, Individual Impact and Organizational Impact. Nonetheless, this study adopted only three dimensions namely System Quality, Service Quality and Information Quality. System quality refers to the desirable characteristics of an information system such as ease of use, system flexibility, system reliability, and ease of learning, and system features. Information quality refers to relevance, understandability, accuracy, conciseness, completeness, understandability, currency, timeliness, and usability of the system. On the other hand, Service quality, which is very similar with SERVQUAL concept, refers to the quality of the support that system users receive from the IS department and IT support personnel in terms of responsiveness, accuracy, reliability, technical competence, and empathy of the personnel staff.

Another influential model in further understanding factors affecting user satisfaction is the Technology Acceptance Model (TAM) [16]. Derived initially from Theory of Reasoned Action and Theory of Planned Behavior, TAM proposes two important constructs that affect intention to use and quality of the information system which are Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Literatures so far has confirmed that PU has a positive relationship with both adoption intention [17] and continuance intention [18], [19]. In retrospect, PEOU has been found to influence both PU and adoption intention [16], satisfaction [20][21] and continuance intention [22] and actual continuance usage. Based on these empirical support, this study included PU and PEOU to the research framework.

B. Previous Studies

Majid et al. [23] investigated factors shaping users' perception on effectiveness of agricultural libraries in Malaysia. Their study focuses not only on the adequacy of collection, services and facilities but also the promotion and location of libraries. They argues that library effectiveness is very much depended on how much users are satisfied with the services rendered. Kassim [4] conducted similar study among university academic staff in Malaysia and found that satisfaction on online databases is only moderate at 3.29 out of five. Kiran [10] used SERVQUAL to measure service quality and customer satisfaction in one of Malaysia university. Consistent with other library studies conducted in Malaysia, the satisfaction level is reported slightly above average. However, she does not reported the impact of the service quality on user satisfaction. In India, Gohain and Saikia [24] studied the use and user satisfaction on Online Public Access Catalogues (OPAC) services at Tezpur University. Their study has been descriptive in terms of identifying the frequency of OPAC use and the level of user satisfaction. Despite moderate level of satisfaction among users, the performance and quality of the OPAC system is rated as very satisfactory. All these study have used descriptive analyses to conclude their findings and no inference on the relationship between factors affecting user satisfaction and continuance could be deduced.

Yusoff et al. [12] examine the usage of e-library among students in a public university in Malaysia using the TAM. They found that PEOU is significantly related to PU and PU is significantly related to actual usage. However, this study does not measure user satisfaction or continuance.

Based on the discussion of various models and previous studies, this study research framework is presented in Figure I below;

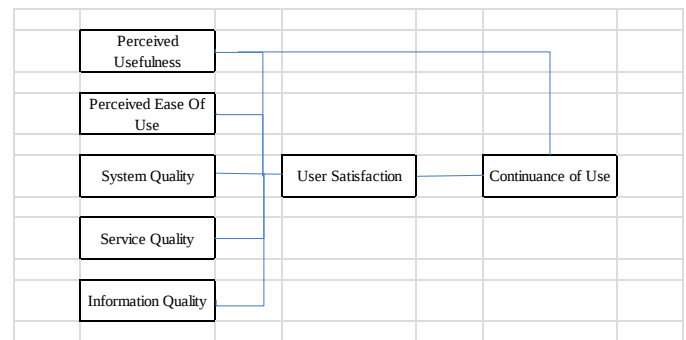


Figure I: Research Framework

III. METHODOLOGY

This study used a case study approach via the use of survey to collect data among users of online library databases. The case selected had a library that is claimed to be the one of the largest libraries in Malaysia with floor area of 16,000 square meters [25]. It can accommodate almost 3,000 users at one time and had vast collections of 200,000 copies of books, 10,000 titles of thesis, 40 titles of printed journal, 50 titles of magazine and 20,000 items of audio-visual materials. The technical university itself has about 10,000 students comprising both at undergraduate and post graduate level.

The sampling frame included academic staffs and post graduate students only since they are the most frequent users based on user logs in the library system. Thus, there was a total

of 1059 users identified with sampling size of 272 users [26]. However, taking into account of low return rate among research conducted in Malaysia [27], we distributed a total of 400 questionnaires stratified by faculty. A total of 80 responses received to yield a return rate of 29%. The questionnaires had been pilot tested and had acceptable reliability (Alpha= 0.959) [28]. Final version contained 29 items with a good actual Alpha Cronbach value of 0.989. The 5 likert-scaled items were adopted from Delone and McLean Information System success model [29], a well-validated instrument to measure information system success. Seven dimensions of system quality which includes Perceived Usefulness, Perceived Ease of Use, System Quality, Service Quality, Information Quality, User Satisfaction and Continuance were measured.

IV. RESULTS

Majority of respondents were students (n=56, 71%), males (n=43, 54%) and from engineering faculties (n=38, 47.5%). The top five online databases frequently used are Science Direct followed by SCOPUS, IEEE Xplore, ASTM and ProQuest Education Journal as shown in Table I

TABLE I MOST FREQUENT ONLINE DATABASES USAGE

	Never	Once in While	Seldom	Sometimes	often	Frequently	Extremely Frequent
Science Direct	10%	4%	5%	11%	20%	11%	30%
SCOPUS	19%	4%	5%	11%	20%	11%	30%
IEEE Xplore	23%	6%	1%	13%	16%	25%	16%
ASTM - American Society for Testing and Materials	50%	4%	11%	11%	9%	6%	9%
ProQuest Education Journal	38%	6%	9%	13%	18%	10%	8%
Emerald Management Xtra	45%	5%	9%	13%	8%	15%	6%
Ei Engineering Village2	50%	1%	11%	6%	10%	15%	6%
360 Serial Solution	55%	5%	6%	10%	10%	8%	6%
E-brary	46%	6%	11%	13%	15%	3%	6%
British Standard Online (BSOL)	53%	4%	11%	9%	11%	8%	5%
ASCE (American Society of Civil Engineers)	63%	4%	6%	8%	9%	8%	4%
Academic Search Premier: EbscoHost	55%	4%	10%	6%	13%	10%	3%
INSPEC	58%	8%	8%	6%	8%	10%	3%
IOP (Institute of Physics) Electronic Journal	60%	6%	8%	6%	8%	10%	3%
American Physical Society (APS)	56%	8%	13%	5%	13%	4%	3%
Delphion and Delwent	66%	6%	6%	8%	8%	4%	3%
OCLC WorldCat	64%	3%	8%	9%	13%	3%	3%
Bernama BLIS	54%	8%	13%	8%	15%	1%	3%
ACM Digital Library	38%	11%	13%	16%	13%	9%	1%
Turnitin Plagiarism	63%	4%	10%	8%	6%	9%	1%
H.W Wilson Applied Science & Technology Full Text	59%	8%	15%	6%	9%	3%	1%
Knovel	50%	8%	9%	18%	13%	3%	1%
PNMB LawNet	70%	4%	9%	8%	6%	3%	1%
Malaysian Standard Online (MS Online)	48%	9%	10%	14%	11%	10%	0%
LabourLawBox	70%	3%	6%	5%	6%	10%	0%
SAE International Scholarly Journals	51%	8%	10%	9%	14%	9%	0%
AVS - Science & Technology of Materials, Interfaces and Processing	51%	8%	8%	15%	11%	8%	0%
EngnetBase	63%	5%	6%	11%	11%	4%	0%
OCLC Netlibrary	61%	5%	13%	9%	9%	4%	0%

However, based on weighted values where each responses were scored (Never = 0 to Extremely Frequent = 6) and summed up total, the top five most frequently used was Science Direct, SCOPUS, IEEE Xplore, ProQuest Education Journal and Emerald Management Xtra as depicted in Table II. This indicates a balance responses in terms of non engineering respondents and engineering respondents.

TABLE II WEIGHTED VALUES

	Weighted Values
Science Direct	291
SCOPUS	291
IEEE Xplore	267
ProQuest Education Journal	181
Emerald Management Xtra	162
Ei Engineering Village2	156
ACM Digital Library	149
ASTM - American Society for Testing and Materials	143
E-brary	141
British Standard Online (BSOL)	132
Malaysian Standard Online (MS Online)	131
360 Serial Solution	130
Academic Search Premier: EbscoHost	126
SAE International Scholarly Journals	122
AVS - Science & Technology of Materials, Interfaces and Processing	120
Knovel	118
INSPEC	109
Bernama BLIS	109
IOP (Institute of Physics) Electronic Journal	108
ASCE (American Society of Civil Engineers)	107
American Physical Society (APS)	105
Turnitin Plagiarism	98
OCLC WorldCat	97
EngnetBase	92
H.W Wilson Applied Science & Technology Full Text	89
OCLC Netlibrary	88
Delphion and Delwent	84
LabourLawBox	84
PNMB LawNet	71

Descriptive statistics for each dimensions of system quality is shown in Table III.

TABLE III DESCRIPTIVE STATISTICS

	Mean	Std. Deviation	Skewness	Kurtosis
Continuance	4.104	.833	-1.021	1.395
Perceived Usefulness	4.102	.804	-.934	1.378
Perceived Ease of Use	3.977	.860	-.759	.495
Information Quality	3.915	.787	-.759	1.353
Satisfaction	3.796	.883	-.850	.839
Service Quality	3.782	.736	-.763	1.769
System Quality	3.774	.719	-.697	1.581

Highest mean belongs to Continuance followed by Perceived Usefulness, Perceived Ease of Use, Information Quality, Satisfaction, Service Quality and System Quality. All dimensions except for Continuance are normally distributed (univariate) based on skewness and kurtosis values (<1 and <3 respectively). However, upon scanning the histogram, the univariate normally was achieved.

Prior to performing multiple regressions, assumptions of normality, linearity, normality of errors, multicollinearity, constant variance, outliers and autocorrelations were tested. Upon satisfying all these assumptions, the multiple regressions were performed to yield the results shown in Table IV. It is found that online database quality explained 67.1% variance in user satisfaction. However, only Perceived Usefulness and Service Quality significantly related to user satisfaction. In

terms of continuance to use the online databases, system quality significantly predicted continuance at 61.9%. However, only Perceived Usefulness and Information Quality are significant predictors among the dimensions.

TABLE IV MULTIPLE REGRESSIONS RESULTS

	Satisfaction		Continuance	
Variable	<i>B</i>	β	<i>B</i>	β
Perceived Usefulness	0.222	0.204*	0.262	0.254*
Perceived Ease Of Use	0.099	0.097	0.043	0.044
System Quality	-0.111	-0.090	0.290	0.248
Service Quality	0.728	0.603*	-0.106	-0.092
Information Quality	0.146	0.130	0.467	0.439**
<i>R</i> ²	0.671**		0.619**	
<i>Note:</i> Age and depression were centered at their means.				
* <i>p</i> < .05. ,** <i>p</i> < .01				

Lastly, user satisfaction was regressed against the continuance to use. It is found that user satisfaction significantly predicted continuance $F(1,76) = 66.1624$, $p < .01$. Approximately 46.5% of the variance of the continuance to use in the sample can be accounted for by user user satisfaction.

V. DISCUSSION AND CONCLUSIONS

These findings have several implications. Empirically, these results, to certain extent, substantiate previous studies which found similar results [14][12]. Practically, this shows the importance of online databases quality to enhance user satisfaction and their future intention to use. Among the dimensions of online database quality, Perceived Usefulness have been consistently shown to be significant predictors of both satisfaction and continuance. This result is expected since both post graduate students and academicians need the online databases to complete their studies and work respectively. Nonetheless, service quality is important to ensure user satisfaction while intention to use in the future is very much dependent on information quality. This might be explained by the fact that service quality is the what the users currently experiencing while information quality is their future expectation from the online databases. It should be noted also that the mean for user satisfaction is only moderate while the mean for continuance is high. This indicates the present of some issues with regards to the service quality rendered by the online databases.

In essence, this study has shown the importance of online databases quality as significant predictors to user satisfaction and intention to use. However, naturally, the case study generalization should be limited to the context of the participating MTUN. Therefore, further replication of this study is not only necessary but also imperative to ensure that prudent decisions to further invest in online databases can be made.

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