User Acceptance Of Digital Library In Higher Education

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ABSTRACT
The Library plays an important role in education as a learning resource and power of knowledge. The library is facing a fundamental change due to the advancement of technology. Potential users of digital library may not use the system in spite of digitalization efforts being popular. This study investigated a sample of students to assess how university students adopt and use digital library. The technology Acceptance Model (TAM) was used as a framework to determine intentions of using digital library. In this study, individual and system components are used to explore individual user acceptance of digital library. The study indicated that system characteristics and individual characteristics have significant effects on perceived ease of use and perceived usefulness which in turn have significant effect on individual user acceptance.

Keywords
Digital library, Technology Acceptance Model

1. INTRODUCTION
The library has been considered to be the source of knowledge and also knowledge base (Khan et al, 2006). In higher education and research, the library has specific function to facilitate the extensive use of learning resource by students and teachers. In a conventional library, information seekers spent most time pouring through card catalogues and searching rows of stacks for material that may have been checked out by someone else. This process was time consuming (Lee, 1993). The introduction of information communication technology in the library during the last twenty years has altered the concept of a library (Rosenberg, 2005). Library management has changed from the traditional library to digital library. Therefore library experienced fundamental change in the process of acquiring, storing and retrieving information due to the information development.

According to Chowdhury G.G (2003) the term digital library or e-library can be defined as an assembly of digital computing, storage, and communications machinery together with the content and software needed to reproduce, emulate and extend the service provided by conventional library. Digital libraries are suitable tools to manage coursework and additional reference items used in teaching learning process. The main reason for developing digital library is belief that it will provide better delivery of information than was not possible in the past (Arms, 2000).

Widyatama University as one of private universities in Indonesia adopts ICT development in its activities. One of the important issues in Widyatama development program is the development of digital library. The use of Digital library has enhanced efficiency in all aspect of information acquisition, storage and transfer (Khan, Uddin and Chowdory, 2006), though building digital library is expensive and resource-intensive (Vaidyanathan et al, 2005).

Despite the significant investment on ICT the most important issue on the implementation of digital library is whether such expenditures have produced the intended benefits. At least part of this concern is based around the issue of digital library acceptance by the students and the teaching staff. Many universities that provide digital library face enormous difficulties in achieving successful acceptance of the program. Brown (2002) indicated that web-based learning technology in developing countries is under utilized due to the lack of ICT competency and English competency among the higher education’s students. Darsono (2005) argued that the success of ICT adoption depend on the human resource not on the advancement of the ICT. Consequently, understanding on how students perceive and react to digital library is needed. Further, knowing students’ intentions and understanding the factors that influence student to adopt digital library is crucial for library

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manager to motivate students (Grandon et al, 2005). Therefore it is necessary to conduct research that deals with the students’ perception of attitude towards, and usage of digital library. The objective of this study was to analyze students’ digital library acceptance and intention to use based mainly on Technology Acceptance Model (TAM).

2. LITERATURE REVIEW

The Technology Acceptance Model (TAM) developed by Davis is one of the established models in explaining ICT acceptance behavior. TAM is an adapted model from The Theory of Reasoned Action which was developed by Fishbein and Ajzen (1975) and is specifically developed for modeling information technology adoption by users (Darsono, 2005). Among the models, the Technology Acceptance Model (Davis, 1989) is arguably the most popular in technology acceptance studies (Hong et al, 2002, McCoy, Ingham, King, 2007). Many researchers have conducted empirical studies to examine the explanatory power of TAM, and these yielded relatively consistent results. TAM has been used in education to investigate issues such as students’ satisfaction with online learning, digital library, web-based learning and e-books (Lina, 2007, Hong et al, 2002, Tao, T, 2009, Darsono, L, 2005).

![TAM Model]

TAM predicts user acceptance of new technology is determined by two factors: perceived usefulness and perceived ease of use. Perceived ease of use is defined as the degree to which the user believes that using the system will save time and effort (Davis, 1989). The easier it is for users to interact with the system, the more likely they will use the system. It is possible that while users think that digital library is useful for them their study but if they perceived that the system to be difficult and complicated to use and that the benefit are over weight by the effort of using the application (Davis, 1998).

Perceived usefulness is defined as the degree to which a person believes that using a particular technology will enhance his or her job performance. People tend to use or not to use an application of technology to the extent that they believe it will enhance their job performance (Davis et al, 1989). If users perceived that the use of technology will reduce the time of doing the job, achieving more productive results, increase accuracy and efficiency, the more likely they will adopt the technology. Lina (2007) reported that there is positive relationship between perceived ease of use and perceived usefulness.

According to TAM, both perceived usefulness and perceived ease of use had significant impact on a user’s attitude toward using IT. Furthermore, both types of beliefs are subject to the influence of external variables (Hong et al, 2002; Khan, 2005, Darsono, 2005). Previous research had identified two main external variables, namely individual differences and system characteristics.

Darsono (2005) proposed that individual differences were believed to be critically relevant to information technology adoption. Yusoff (2009) also found that individual differences are important variables in affecting technology acceptance. Previous research have examined various individual differences such as computer self efficacy (Chau, 2001; Lina, 2007, Hong et al, 2002), domain of knowledge search (Ramayah, 2006, Darsono, 2005), computer anxiety (Petrand & Bouchard, 2008, Saade & Kira, 2008, Brunei & Havelka, 2001). This study will examine computer self efficacy and computer anxiety as individual differences in the context of digital library usage.

Technology characteristics, that is reflected by the System characteristics are known as another category of external variables that influence user adoption of technology. Vaidyanathan, et al (2004) argued that system characteristics have direct effects on perceived usefulness and affect the usage of information technology. Kline & Elliot (1994) also believed that system features have significant effect on the use of IT. Lengner (2000) proposed two constructs that significantly predict perceived ease of use of information technology: ease of finding and ease of understanding. Ease of finding encompasses the notion that information technology should be easy to navigate and allow easy return to previous display pages. Ease of understanding reflects the need for information technology to be understandable and consistent graphics and terms. It also should be visually appealing and readable.

3. HYPOTHESES

Based on the literature review, the hypotheses of the study are:

1. H1: Technology characteristics will have positive effect on perceived usefulness of digital library
2. H2: User characteristics will have positive effect on perceived usefulness of digital library
3. H3: Technology characteristic will have positive effect on perceived ease of use
4. H4: User characteristic will have positive effect on perceived ease of use
5. H5: Perceived ease of use will have positive effect on perceived usefulness of digital library
6. H6: Perceived usefulness will have positive effect on usage of digital library
7. H7: Perceived ease of use will have positive effect on usage of digital library

4. RESEARCH DESIGN

The purpose of this study is to investigate the adoption of digital library among students at Widyanata University. A survey was conducted to collect data and correlation and co variances were
analyzed to determine the extent to which the proposed variables relate to each others.

5. RESEARCH PARTICIPANTS
The participants for this study comprised of 282 students of Business and Management faculty who are selected randomly.

6. INSTRUMENTATION
The questionnaire in this study contained multiple measurement items that relate to each constructs in the research framework. The questionnaire includes the following: Technology Characteristics consist of 8 items that describe the ease of finding and ease of understanding of the technology. User characteristics consist of 7 items that describe computer efficacy and computer anxiety. Perceived of usefulness consists of 3 item and 4 items were used to measure perceived ease of use (PEOU) The usage used 2 items. All the items use 5 scale of Likert ranging from 1 strongly disagree to 5 strongly agree.

7. RESULTS AND DISCUSSION
7.1. Reliability and Validity
The construct were assessed for reliability using Cronbach’s alpha. The alpha measured was 0.87 this value is greater than the minimum of 0.7 required for constructs to be deemed reliable (as suggested by Nazir, 2006). Validity of the construct was measured by checking the square root of the average variance for each construct. The value of all construct is above 0.3 as suggested by Nasir (2006)

7.2. Demographic data
The respondents of this study were the students of Business and Management faculty, Widyaatama University. The composition of the students based on gender: 53% male and 47 % female, 25% first year students, 30% second year student, 28% third year student and 27% are fourth year students.

7.3. The Effect of User Characteristics and Technology Characteristics on Digital Library usage
In analyzing the data, AMOS software was used, table 1 describes the result of the study.

<table>
<thead>
<tr>
<th>Table 1. Path coefficient</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived usefulness ← Technology Characteristics</td>
<td>0.192</td>
</tr>
<tr>
<td>Perceived usefulness ← User Characteristics</td>
<td>0.279</td>
</tr>
</tbody>
</table>

Figure 2: The Effect of Technology Characteristics and User Characteristics on Digital Library Usage

The majority of the hypotheses pertaining to the relationships between items in the external factors and digital library acceptance were supported by the data. This study indicated that technological characteristics have positive effects on perceived usefulness with the path coefficient 0.19. User characteristics have positive effect on perceived usefulness and the path coefficient is 0.28 respectively. This finding was inline with other research findings. Lederer (2000) argues that ease of understanding and ease of finding were significant influences on perceive of usefulness.

Perceived ease of use has strong effect on perceived usefulness with a path coefficient of 0.39. Technology characteristics and user characteristics also have positive effect on perceived ease of use. The path coefficients are 0.26 and 0.54. Further, perceived ease of use has significant effect on usage of digital library (path coefficient 0.46). Perceived usefulness has also has significant effect on digital library usage with coefficient of 0.40.

From this study, it is found that technology characteristics and user characteristics may effect how user perceived the usefulness and ease of use of digital library. The effect of technology characteristics, User characteristics and perceived
ease of use on perceived usefulness of digital library is 0.566. This indicates that 56.6% of perceived usefulness is affected by technology characteristics, user characteristics and perceived ease of use.

The effect of technology characteristic, and user characteristics on perceived ease of use is 0.53. This value suggests that 53% perceived ease of use is affected by technology characteristics and user characteristics. Further, the effect of perceived usefulness and perceived ease of use on library usage is 0.62 which mean that 62% of library usage is affected by perceived usefulness and perceived ease of use.

The hypothesis testing suggested that simultaneously technology characteristics, user characteristics and Perceived ease of use influenced perceived usefulness of digital library. This study also examined the significant test of each coefficient path. The results is depicted on table 2.

<table>
<thead>
<tr>
<th>No</th>
<th>Hypotheses</th>
<th>Path Coefficient</th>
<th>t value</th>
<th>Significant</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technology characteristics influenced perceived usefulness of digital library</td>
<td>0.192</td>
<td>3.711</td>
<td>0.000</td>
<td>Ha is Supported</td>
</tr>
<tr>
<td>2</td>
<td>User characteristics influenced perceived usefulness of digital library</td>
<td>0.279</td>
<td>4.766</td>
<td>0.000</td>
<td>Hb is Supported</td>
</tr>
<tr>
<td>3</td>
<td>Perceived ease of use influenced perceived usefulness of digital library</td>
<td>0.385</td>
<td>6.85</td>
<td>0.000</td>
<td>He is Supported</td>
</tr>
</tbody>
</table>

Further, the test also found that simultaneously perceived usefulness and perceived ease of use have positive effect on the usage of the digital library. Partially perceived usefulness influenced the usage of digital library and perceived ease of use influenced the usage of the digital library (see table 4).

<table>
<thead>
<tr>
<th>No</th>
<th>Hypotheses</th>
<th>Path Coefficient</th>
<th>t value</th>
<th>Significant</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Perceived usefulness influenced usage digital library</td>
<td>0.456</td>
<td>8.959</td>
<td>0.000</td>
<td>Hf is supported</td>
</tr>
<tr>
<td>2</td>
<td>Perceived ease of use influenced usage digital library</td>
<td>0.401</td>
<td>7.889</td>
<td>0.000</td>
<td>Hg is supported</td>
</tr>
</tbody>
</table>

Based on this fact, the library manager should focus on procuring tools that are not perceived to be complicated in order to ensure success for the digital library usage. It also important to provide technology that is relevant to the users’ needs. As research by Lina (2007) suggested that system or technology characteristics affect perceived usefulness. Further, the success of digital library usage will increase when user characteristics are taken into account as such the introduction of digital library to the students. Venkatesh (2000) argues that computer ability has significant direct relationship to perceived ease of use. Users who have higher levels of confidence in using computers in general are more likely to find the digital library easy to use. In order to enhance users’ ability on computers university can conduct training course for the students and library manager can provide short course on the utilization of digital library for the students.

### 8. CONCLUSION

In encouraging students to use the digital library, it has been shown that both technology characteristics and user or individual characteristics influence perceived ease of use and perceived usefulness of digital library. It is important to consider that the technology characteristics should be easy to understand.
and to use, especially where the language of instruction in information technology is not the mother tongue. It also indicated that computer ability and self-confidence in using it influence ease of use and the usefulness of the digital library. Library manager could provide short training course for students to introduce the utilization of the digital library.

9. REFERENCES


