

Applying UTAUT Model to understand Malaysian authors' readiness to self-archive in Open Access repositories: a study in progress

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ABSTRACT

Self archiving in Open Access repositories is seen as an easy and cheap approach to disseminate scholarly information to the society at large. This paper reports the progress of a research aimed at determining university lecturers and academicians' readiness to self archive in digital/ Institutional repositories via the green route to open access. The sample for the survey is five research universities in Malaysia. This is a quantitative empirical study guided by the Unified Theory of Acceptance and Use of Technology (UTAUT), the model to be used in investigating researcher's level of awareness, adoption and readiness to self archive in institutional repositories. The four constructs of the model are used as direct determinants of behavioral intention and use behaviour. The benefits of self archiving will depict the perception of researchers towards its adoption. The study will investigate on their current practices, perceived usefulness, a need to promote self archiving among researchers and on who should be responsible for the management of the repository. Barriers inhibiting researchers from self archiving will suggest ideas on improved ways to boost self archiving. It should be noted that interoperability between researchers, academicians and the library is quite essential for the future of Malaysian research.

Keywords: *Institutional repositories; Digital repositories, Green route to open access; Academic authors; Open access publishing; Malaysia*

INTRODUCTION

The growing body of literature associated with information technology readiness has examined numerous variables and interrelationships in order to gain a better understanding of technological beliefs and use of ICTs in research and teaching. The behavioral intention of an individual determines the readiness to adopt new technology which is normally done consciously. After the initial decision to interact with the technology, adoption then comes after the user has had a direct experience with the technology and after an individual has decided to accept the technology. This has also been the case of authors' readiness to self-archive, in the form of putting their scholarly output in open access repositories. Enhancing self archiving remains a sizzling matter in the functioning and operation of repositories, especially institutional repositories. This is

because a great determinant of usability rests on the amount of content that is available in the institutional repositories. An institutional repository becomes more useful when it contains constructive content. This is one reason why the Open Access Initiative (OAI) is typified by two strategies: namely; the promotion of self archiving as well as the publishing of research articles in open access journals. Librarians have a bigger task in archiving as they have the expertise in running the institutional repository to promote the use of repositories. After acquisition, there is a need for supervision, which should be the responsibility of librarians as history shows that librarians have excelled in using and designing technologies. Librarians upgrade their knowledge frequently with the information environment and can easily adapt with new roles as collection administrators of digital materials (Pettijohn and Neville 2003) Librarians are the stewards for content (Genoni 2004), migrating content to new format as they evolve over time (Lynch 2003), promoting repositories by explaining concepts and marketing (Jenkins, Breakstone and Hixson 2005) and preserving repositories (Wheatley, 2004). This explains a need for authors to work together with the library.

Although authors contribution to institutional repositories has been quite slow, their contribution to institutional repositories is very vital and that is why Shearer (2003) suggests that the success of institutional repositories will be determined eventually by "the uptake and use by researchers". She further relays that the success of an institutional repository should be determined by its use, and one of the measures of usefulness is contribution of content. This is supported by Chan (2004) who states that as research becomes more data intensive, a scholar's ability to store, access and share primary data will be crucial to the advancement of scholarship. A Successful Institutional Repository = Input of Documents + Access/Use of Documents; these are the attributes of a successful institutional repository in a simple equation demonstrated by James and Dorner (2009).

Academic institutions and research intensive universities are often regarded as producers of primary research, it is as such imperative for these institutions to develop and acquire a better means of collecting, preserving and disseminating scholarly content. Jones et al (2006) argue that institutional repositories have a greater potential than other types of information resources for disseminating research. Crow (2002) views the Open Access model as a way to reduce costs and increase access, meanwhile, Bauer (2005) points out that IRs can gather and provide access to a wide range of grey resources, i.e., material not in a journal article format, such as theses, datasets, presentations, archive documents and images.

Institutional repositories have not only become a means of collecting, capturing and preserving the intellectual output of the university but also a means of promoting the university's research output. Over the past years, a growing number of research universities have implemented or plan to implement an IR (Markey et al. 2007). Lynch and Lippincott (2005) found that out that in the USA, of 97 universities categorized as "doctoral universities", 40% has already operated institutional repositories. Among non-implementers, 88% were found to be in the planning stage of institutional repository implementation. By mid 2006, all Australian universities had established institutional repositories, for the purpose of giving researchers a vehicle to enhance the availability of their publications by making them available via open access (Henty 2007). Kim (2006) notes that authors, with an experience of depositing scholarly content in web sites, personal homepages, or disciplinary repositories are also more likely to contribute to institutional repositories. It should be noted that self archiving is not an alternative to publishing in learned journals; rather, it is a corresponding activity whereby scholars

deposit copies of their research papers in electronic repositories or 'open archives'. Metadata and full text items of researcher's publications are being submitted by them into a database.

Even though researchers are interested in making their work open access, enhancing citations and therefore impact, there have been some impeding factors to the contribution and use of institutional repositories. After investigating on those factors that motivate or impede faculty contribution to institutional repositories, Kim suggested the following benefits relating to institutional repository contribution: accessibility, publicity and trustworthiness of documents in institutional repositories, professional recognition, institutional recognition, academic reward, and cost factors relate to copyright concerns, additional time and effort required to make the institutional repository contribution. Swan and Brown (2005) point out some of these hindrances to self archiving the first of which is; Copyright, authors are afraid of contravening agreements they have signed with publishers of journals, in case they self archive the article. After interviewing 25 professors at the University of Rochester in order to investigate the factors affecting contribution, Foster and Gibbons (2005) identified reasons why faculty did not submit their content; such as copyright infringement worries and disciplinary work practices (e.g., co-authoring or versioning). Another stumbling block to self archiving is cost which is often borne by the institutions in charge not the authors; finally faculty members perceived that IR contribution involved additional work, such as metadata creation for contributed objects. Jones et al. (2006) also pointed out that "institutional digital library services face a tough battle in being accepted on campuses because alternative systems usually exist" (p. 17).

In 2007 it was found that few research universities in Malaysia have established, or are partway to establishing IR services with the aim to enhance the visibility and the impact of the research generated within their institutions. The development of the institutional repository services is related to the open access movement in Malaysia, which seeks to make valued research outputs openly available by encouraging academics to place their publications into repositories, enhancing their availability and visibility to the global academic community and increase the chances for use and exchange of ideas among scholars within similar disciplines (Abrizah et al 2007). At the same time, university research increasingly involves the use, generation, manipulation, sharing and analysis of digital resources. However, not every institutional repository adopts the principle of open access and it is possible for the institution to restrict the access to its members (www.opendoar.org). The University of Technology Malaysia (UTM) and the National University (UKM) for example allows access to some theses, dissertations and programme to members of the institution only. Though the concept of open access is quite known among academic researchers, their self archiving practices as well as attitude towards self archiving is in need of a fundamental change. Thus, the question to ask is; Why the non-use of institutional repositories and why are researchers not ready to self archive in institutional repositories? Abrizah (2009) reports on the low awareness by faculties on institutional repositories as, almost two-third does not know if their institution has one. Kiran and Chia (2009) convey that there is a need for raising awareness on institutional repositories and called for a wider contribution of content to the institutional repositories. Therefore it is essential to seek a deeper understanding as to what extent self archiving practices have spread among academics, or referred to authors in this study, and to determine the main motivators and barriers to acceptance and use of Institutional repositories for self archiving by academicians.

OBJECTIVES AND METHOD

The *raison d'être* of this study is to determine authors' awareness of the meticulous issues relating to self archiving and those managed activities that address Open Access as well as the behavioural intention and plan to self archive in a digital and institutional repository. Researchers are normally faced with two challenges: (a) to input material into the repository and (b) to utilize the materials already input in the repository for research. The major concern here is to determine if researchers in research intensive universities in Malaysia are aware of the existence of institutional repositories within their institutions and if they are ready to input material into these repositories. The second concern is to find out what should be done to encourage and promote self archiving among researchers. Institutional repositories will only become a successful innovation if researchers view it as a valuable infrastructure to store/disseminate information and a valuable source to obtain information by information seekers.

The study samples academicians cum researchers in the five research intensive universities in Malaysia. The Unified Theory of Acceptance and Use of Technology (UTAUT) is used as the basis for the study and is conducted with the aim of generating new knowledge about the adoption of institutional repositories as an information source in order to assist Malaysian researchers increase their self archiving practices in institutional repositories. The study explores on the acceptance level of researchers towards self archiving to disseminate information and to increase the visibility of Malaysian research and their readiness to adapt. It should be noted that authors' views and perspectives on self archiving are very essential because they are the primary producers of the knowledge that is archived. As such, a close cooperation with the researchers is pertinent especially as these Malaysian Universities seek to make Malaysian a better knowledge society.

The study is aimed at addressing the following objectives:

- a) To examine authors' awareness of institutional repositories as an information source for research;
- b) To investigate the barriers that inhibit authors from contributing to institutional repositories;
- c) To investigate the effectiveness of self archiving in institutional repositories and its perceived usefulness from the authors' perspective.
- d) To explore authors' perceptions on making their intellectual output available through an institutional repository;
- e) To identify the roles played by authors to promote self-archiving.

The study has adopted a quantitative research design and a web based survey method was used for data-gathering. The five universities are chosen for the following reasons:

- (a) They are designated as research universities by the Malaysian government.
- (b) Institutional repository is an infrastructure in these research universities, a tool to disseminate information developed and managed by the academic libraries.
- (c) It is assumed that academicians within these institutions are either familiar with this infrastructure, or have used it before.

This study uses the investigative quantitative type of research especially as there is limited knowledge on researcher's attitude towards self archiving in Malaysia. Self archiving is still very new in the Malaysian society. The study will explicate on the researchers' willingness and readiness to embrace self archiving through a web-based survey. Quantitative research is best suited for this study since it will enable information from the target

population through structured procedures; survey normally requires standardized information to define and describe variables and to study the relationship between variables. Surveys are also an easier and a cheaper means to study a greater number of variables making it possible to study a variety of viewpoints and make logical accurate descriptions and appropriate generalizations of real situations. Though surveys do not normally bring forth a cause –effect relationship, they do make it possible for problematic areas to be identified. The e-survey method is utilized because it is perceived as the quickest and easier means to collect data, easy to return and reach a large number of potential respondents within the possible short time, using multiple question formats, ensuring confidentiality and capturing data directly into the database Karen J. Kevin G. & Bernard J. (2007)

An e-mail invitation to participate in the survey was sent out to 1000 academics from five universities, which has already deployed an institutional repository (Table 1). This is termed the randomly-selected population. The email, with a brief introduction for the survey which is hoped to bring cooperation from participants and contained a hypertext link, enables the participants to link to the survey database hosted by SurveysPro (<http://esurveyspro.com>). The survey instrument consisted of 7 sections: (a) demographic/ICT knowledge and self archiving experience; (b) awareness; (c) institutional/digital repository acceptance; (d) current practices/actual self archiving; (e) promotion; (f) barriers and (g) behavioural intention. The questionnaire is designed for those who self archive and those who do not. If surveyed faculty members indicate that they have awareness of the institutional repository, and do other self-archiving practices, they are administered every section of the questionnaire. Otherwise, they will skip one or more sections depending on their awareness and experience of self-archiving. UTAUT questions will be presented as statements to which participants will indicate their agreement on a 7-point scale ranging from (1) strongly disagree to (7) strongly agree.

Table 1: The Universities Involved in this Study and their Institutional Repositories ¹

Universities	Institutional Repository	URL	Birth Date
Universiti Kebangsaan Malaysia (UKM)	PTSL UKM Repository	http://eprints.ukm.my/	29 Aug 2007
Universiti Putra Malaysia (UPM)	Universiti Putra Malaysia Institutional Repository (PSAS IR)	http://psasir.upm.edu.my/	23 April 2008
Universiti Sains Malaysia (USM)	ePrints@USM	http://eprints.usm.my/	17 April 2008
Universiti Teknologi Malaysia (UTM)	UTM Institutional Repository	http://eprints.utm.my/	11 March 2009
University of Malaya (UM)	UM Digital Repository	http://eprints.um.edu.my/	25 Feb 2008

RESEARCH FRAMEWORK

The process of adopting new technological innovations has been studied for over 30 years, and one of the models used is the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al (2003). This study, which aims to explore authors’ readiness to self archive in digital and institutional repositories, uses Venkatesh’s et al (2003)

¹ Birth Date is either when the repository was first registered in the Registry of Open Access Repositories (ROAR) or the earliest record found via the OAI-PMH interface.

theoretical framework (Figure 1). The model identifies certain constructs as direct determinants of behavioral intention and use behavior, namely, performance expectancy, effort expectancy, social influence and facilitating conditions. These four predictors or constructs are defined in brief as indicated below:

Performance Expectancy (PE): the degree to which an individual believes that using the system will help him or her to attain gains in job performance."

Effort Expectancy (EE): the degree of ease associated with use of the system

Social Influence (SI): the degree to which an individual perceives that important others believe he or she should use the new system.

Facilitating Conditions (FC): the degree to which an individual believes that an organizational and technical infrastructure exist to support use of the system.

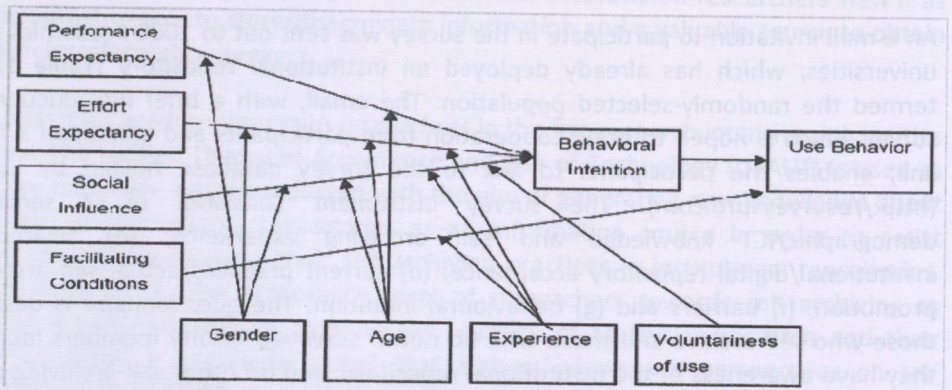


Figure 1: The UTAUT model by Venkatesh et al. (2003)

The constructs in the UTAUT model have been used in many studies especially in research on acceptance and intention to use of information systems. This theory has been adopted by various studies in library and information systems ; For example Prisca Tibenderana et al. (2010), in their study on “ *measuring levels of end-users’ acceptance and use of hybrid library services*” opined that ‘relevance’ and ‘social influence’ have significant effects on intentions to use electronic library services as well as social demands. Relevance of service available facilitating conditions and expected benefits from using e-services are the reasons to why university communities in Uganda are tending to use electronic library services. Marchewka, Liu & Kostiwa (2007) used the model in their study on student perceptions in terms of applying the Unified Theory of Acceptance and Use of Technology (UTAUT) model. Hedlund (2008) uses the model in his study on researcher’s attitudes towards open access and institutional repositories, as an explanatory model for developing a survey form for a quantitative empirical research on user attitudes and preferences. The constructs are used to study acceptance and use and eventually non-use of open access publishing. This framework is considered to be the best suit for this type of study since its constructs do have a direct effect on behavioural intentions and usage. Mann et al (2008) also used the UTAUT theory in their study on open access publishing in science, why it is most often appreciated but few people use it. According to the study, though open access is slow, it will become very popular in the long run. While focusing on performance, respondents chose open access over traditional publication media, citing that open access wide and rapid dissemination of knowledge and a broad readership was more beneficial. The study found a need for *performance* and *peer issues* to be addressed first as far as promoting open access is concerned before *attitude* towards open access which is not a great problem because researcher’s attitude is quite positive

The UTAUT model identifies certain predictors as direct determinants of behavioral intention and use behaviour, namely, performance expectancy, effort expectancy, social influence and facilitating conditions as discussed above. These constructs have been adjusted to suit the study at hand on researcher's readiness to self archive in open access repositories. Figure 2 illustrates the conceptual framework of this study. As such the constructs refer to:

- a) Performance expectancy: the degree to which the author expects gains with self archiving in research performance and thus increasing his/her personal merits;
- b) Effort expectancy: the degree to which the author expects ease of use of an institutional repository system and dissemination of the research output through an institutional repository.
- c) Social influence: The degree to which author is influenced by peers or fellow researchers and the university to self archive; as well as the degree to which author may influence his/her peers to self archive.
- d) Facilitating conditions: This is the degree to which technical infrastructure is provided to support self archiving and institutional repository usage which lead to the information and system quality.

Applying the UTAUT model in this study, "performance expectancy", "effort expectancy", "social influence", and "facilitating conditions" are the independent variables (or exogenous variables), whereas "behavioral intention" and "current practices" are the dependent variables or (endogenous variables), and the "behavioral intention" is also the intermediary variable. The UTAUT model sees "behavioural intention" as "the person's subjective probability that he or she will perform the behaviour in question" Venkatesh's et al (2003). The measurement of behavioral intention includes the intention, prediction and planned use of Open Access repositories. The validity, reliability and depth of the UTAUT model are a great determinant to why the model has been implemented in studying researcher's adoption of self archiving in Open Access Repositories. The research uses this model to generate information about the importance of institutional repository as an information source in order to assist researchers in their usage of this research infrastructure. Readiness is seen as the researcher's awareness of those particular issues relating to self archiving and those managed activities that address open access as well as the behavioural intention and plan to self archive in an institutional repository; researcher's level of awareness, use behaviour or current practices, behavioural intention and barriers to self archiving will determine their level of readiness towards self archive.

As such, this study postulates that:

- H1: Malaysian authors think that performance expectancy will lift the behavioural intention to self-archive in Open Access repositories
- H2: Malaysian authors think effort expectancy will lift the behavioural intention to self-archive in Open Access repositories
- H3: Malaysian authors think social influence will lift the behavioural intention to self-archive in Open Access repositories
- H4: Malaysian authors think facilitating condition will lift the behavioural intention to self-archive in Open Access repositories

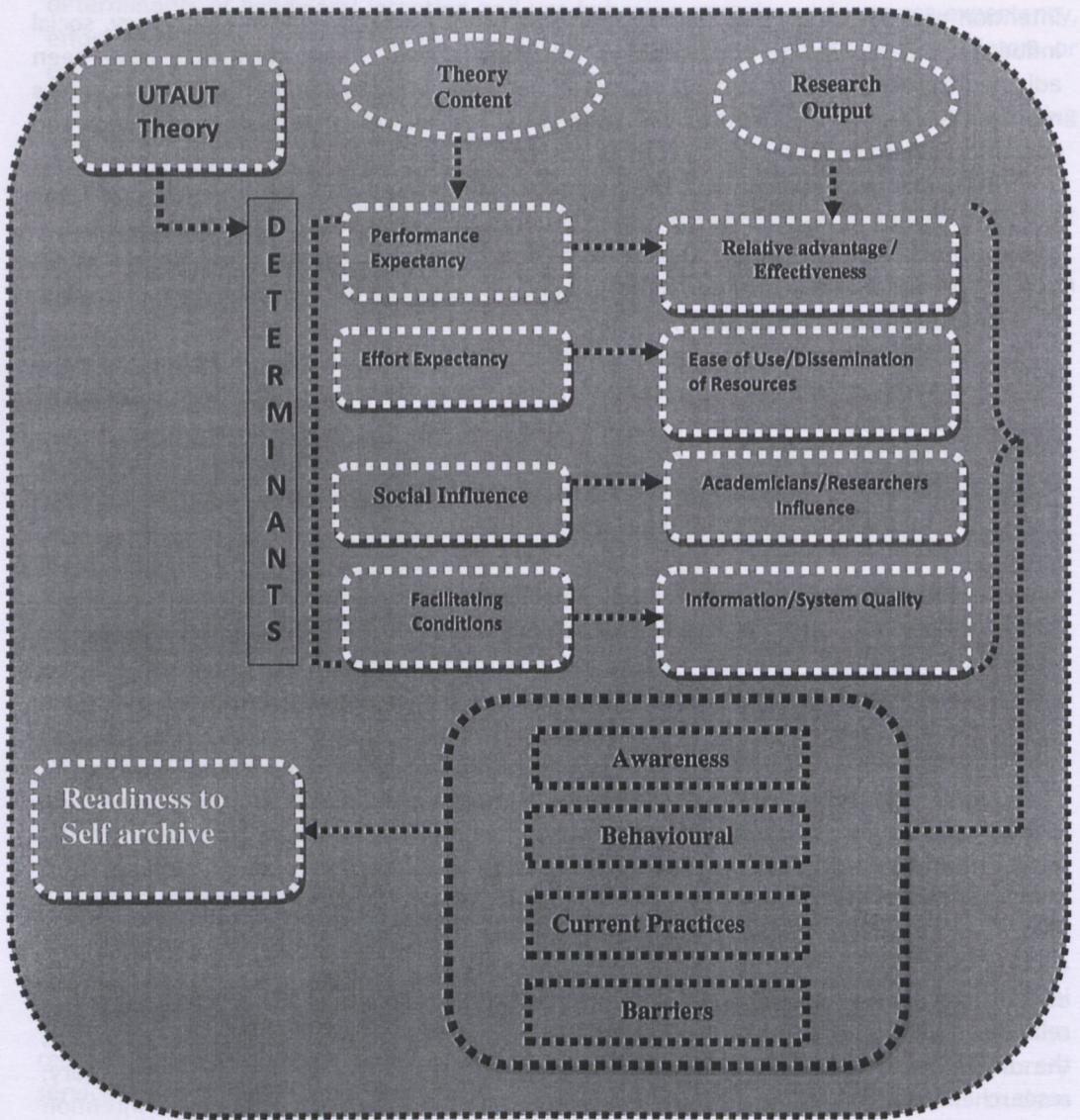


Figure 2: Diagrammatic Representation of the Research

INSTRUMENT PRE-TESTING

Reliability and efficiency of the questionnaire are very important in carrying out any study. Cohen et al. (2000) suggested that a pilot test is important because it makes it possible for necessary changes and a revision to the instrument before it is finally sent out. The instrument was first thoroughly discussed among researchers² conducting studies on Open Access repositories to ensure clarity of statements and comprehension of construct measurement. Two stages of pre-test then took place for the research instrument. In the first stage a test was carried out at the Faculty of Computer Science and Information Technology (FCSIT) University of Malaya, among lecturers teaching the Masters in Library and Information Science (MLIS) programme. MLIS lecturers at FCSIT were chosen in

² Postgraduate research students at the Faculty of Computer Science & Information Technology, University of Malaya.

particular because they are not only familiar with the concept of self archiving, but are also involved in self archiving practices. Out of the nine (9) questionnaires distributed, there were only four respondents, hence an overall response rate of only 44.4%. Each of the four respondents completed a first version of the questionnaire and provided feedback about the process (e.g., time, clarity of direction and wording of measures). In general, the respondents indicated that the questionnaire was clear and easy to complete. A few questions were rephrased due to grammatical errors and duplicate statements. Following the pre-test, minor modifications to the instrument were made. A second pilot test was carried among one hundred randomly selected academicians from four research universities with a 12% response rate. The results showed that the respondents understood most of the questions. However, it was then decided to include a definition of self archiving in the final questionnaire to facilitate understanding of the concept. The questionnaire was also redesigned; this is because the former questionnaire was only directed to those who actually self archive, but with advice from some of the respondents (For example one of the respondents wrote: "*The questions assume that the respondents actually did archive something before. There is no option for 'never did it before', or 'none per year'. In that case your respondent pool will be really small. I decided to quit the survey because of such questions*") and fear of a poor response rate it was redesigned to suit those who self archive and those who do not self archive (to determine barriers to why they do not self archive). The results of the pilot test were used to revise the questionnaire, thus the data collection was preceded.

METHODOLOGICAL ISSUES IN CONDUCTING THE STUDY

Piloting the study has identified the following methodological issues in conducting the study:

- a) **Awareness problems on what an institutional repository is:** A few respondents are willing to answer the questions but do not even know what the concept of digital/institutional repository. Through email they asked questions as such "Please can you explain what the concept of institutional repository is". Some are not even aware of the existence of the Digital/Institutional Repository within their institution. As such there is a great need for promotion of repositories to the academicians.
- b) **Difficulty in understanding what self-archiving is:** For example a number of the researchers are aware of the existence of a digital/institutional repository but do not know what self archiving is all about.
- c) **Hesitant/Irresponsive Respondents:** A number of the researchers are hesitant to answer the questionnaire. During the second pilot test which was carried among a selected number of 100 researchers within the four universities, there was only a 12% response rate. Most of them left the questionnaires uncompleted. Finally, there is a great difficulty encountered in getting academicians to fill up the questionnaire.

As with all types of data collection techniques, the web-based questionnaire too has its share of shortcomings. Failure to complete a questionnaire or abandonment is a major concern in Web surveys. As it is expected that the response rate for the web-based survey will be low, efforts would be made to identify the distinct response types for Web-based surveys in order to give a more detailed analysis of respondents than the traditional categories of non-response, unit non-response, and complete response. As such the responses in the actual survey will be categorized into unit non-responders, complete

responders, answering dropouts, lurkers, lurking dropouts, item non-responders and item non-responding dropouts (Bornjak and Tuten 2001). Bornjak and Tuten (2001) described lurkers as people who viewed all the questions, but answer none. Complete responders were the survey participants who viewed all questions and answered all questions. Unit non-responders did not participate in the survey. Unit non-responders may have viewed the welcome screen and went no further, or, for technical reasons, were unable to participate. Answering dropouts provided answers to all questions viewed, but they did not view all the questions, and quit before looking at all the questions. Item non-responders viewed the entire questionnaire, but answered only some of the questions.

CONCLUSION

This paper discusses part of the research on authors' readiness to self archive in open access institutional repositories within the five research universities in Malaysia. After a review of literature, the UTAUT model has been chosen as the framework for the research because of its constructs which have assisted in structuring the survey form. The main objective of the research is to do a quantitative empirical research and in fact a web survey directed towards academicians and lecturers who are involved in self archiving. A pilot test was done among lecturers at FCSIT, University of Malaya. A second pilot test was directed to randomly selected academicians from the four research universities. The purpose of these pilot tests was to see how relevant the questions were and to revise the questionnaire. It was also aimed at observing how effective the constructs of the model are interpreted, to make sure that the questionnaire was clear and understandable and to get feedback on any inconsistencies and difficulties encountered in answering the questionnaire. The concept of self archiving was not so clear or rather it was not familiar to some researchers and that is why the questionnaire was amended and a definition of self archiving included. Also the questionnaire was primarily targeted towards "self archivers" and because of suggestions it was reorganized and updated to suit both self-archivers and non-self archivers. Those who agree to self archiving will have to answer the whole questionnaire; meanwhile those who are not yet involved are directed to Section F of the question, which is on barriers to self archiving. From the pilot test, one could conclude that though most researchers are aware that they can deposit their work in the Institutional repository some are not even aware of its existence. Academicians view self archiving as a means to disseminate their research and increase their profile. The researchers have the intention to self archive at least in the next five years though their main barrier to self archiving is concern over copyright and the fear that their work may be altered by others without their permission. Many of them do not even know what the concept of self archiving is and many are quite reluctant in responding to the questionnaire. Therefore, there is a need for universities to reach out to the academicians and lecturers to promote self archiving and make them understand the concept and why they should adopt the practice. Marketing of digital/institutional repositories is necessary to increase researcher's adoption. The library will play a better role to maintain, manage and market the institutional repository. That is why the role of the library as the major mediator to IR success cannot be undermined. Institutional repositories will only become a successful innovation if researchers view it as a valued infrastructure to store/disseminate information and a valuable source to obtain information by information seekers. This can be achievable if the University works collectively with the library since librarians are better skilled in digital preservation activities essential in building and maintaining the institutional repository infrastructure. Swan (2008) in his study on open access for Indian scholarship notes that the more libraries become the mediators of self-deposit, the more

chance it is for metadata quality and digital preservation standards to be raised. Based on all the comments and suggestions, from the pilot test, the questionnaire was restructured and updated. The final version has been sent out to researchers in the five research universities in Malaysia and the results will be collected and analysed.

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ABSTRACT

Postgraduate students of computer science have received little empirical attention from researchers in the field of library-informated science. Their information seeking behaviors often resembles those of other other faculties or undergraduates. With higher level of computer and information technology background, postgraduate students of computer science ought to have a different information seeking behavior. Therefore it is interesting to explore their information seeking behaviors and to investigate to what extent they might constitute a unique user group. The objective of this research is to explore and analyze computer science postgraduate student's information seeking behaviors. A survey was conducted at Faculty of Science Computer and Information Technology, University of Malaya. The sample consists of 140 postgraduate students. The quantitative data were analyzed using the statistical program SPSS. The results provide an insight into how computer science postgraduate students seek for information, with their IT skills and experience in seeking information, they can find a lot of information but they have problem with information overload and how to evaluate the information that they find.

Keywords: Information Seeking Behavior; Survey; Postgraduate

INTRODUCTION

Students face a lot of problem in seeking information. Students may seek information for various reasons such as to understand a specific subject or to conduct research. Information seeking is one of the most important activities in the learning process. According to Wilson (1999), information seeking is the purposive seeking for information as a consequence of a need to satisfy some goals. There are a lot of research have been carried out to identify students information seeking skill or behavior in different environments. There are research in various level like in high school children (Julian and Barker 2009), undergraduate students (Brown & Nahl 2001; Kukul et al. 2004; Unparat et al. 2005; Ercice 2005) and postgraduate students (Barrett 2003; Jari and Brokopiedu 2008). There are also research of information seeking skill in various field such as social science (Unparat et al. 2005) and natural sciences like medicine and biology (Brown and Nahl 2001; Eskola 2005; Julian and Barker 2009) but little is known about how postgraduate students of computer science seek for information. The reason is because most researchers are more interested in studying novice users (Marchionini 1994) compare to users that have a background in IT or have more experience in seeking information like computer science postgraduate students.