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Coping with Information Resources: Identifying, Searching, Accessing, Evaluating and Using Information in Academic Libraries

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Abstract

This paper is aimed at investigating the current status of coping with Information Resources: Identifying, Searching, Accessing, Evaluating and Using Information in Academic Libraries. In order to fulfill the aim of the study, 241 Graduate Students from 7 academic schools of Islamic Azad University, Shiraz Unit: Faculty of Humanities, Economics and Management, Science, Engineering, Art and Architecture, Agriculture, and Dental collage participated in this study.They were supposed to answer the questionnaire developed by Salajegheh (2009) on the "Needs to cope with information resources". The data collected from the administration of the above mentioned test were then analyzed by SPSS for windows and the descriptive statistics mean. The results showed that for identifying, Searching, Accessing, Evaluating and Using Information, graduate students used methods and media such as 'reviewing of information resources', 'sites on the Internet related to subjects', 'using electronic citations', and 'the Internet and search engines'.

Keywords: Information Resources, Graduate Students, Information Seeking, Iran, Academic Libraries.

Introduction

Information seeking behaviours are derived from information need. When users feel a need for information, they fall within a process called the information seeking behaviour which is common for everyone, and includes some stages that users should follow to satisfy their information needs. The information seeking behaviour models drawn up by different researchers (Wilson 1981; Ellis 1989, 1997; Ellis et al. 1993; Meho 2001; Wilson 1999) have different stages. Krikelas (1983), in presenting a model of information seeking behaviour, stated that information seeking begins when someone perceives that his or her current knowledge is less than that needed to deal with some issue (or problem). The process ends when that perception no longer exists. Ellis's (1989) information seeking behaviour model included six elements that he called stages. These stages are: starting, chaining, browsing, differentiating, monitoring and extracting. According to Ellis (1989), the first step in information seeking behaviours is selecting subjects and identifying information needs Process. The aim of this research is to cope with information resources: identifying,

searching, accessing, evaluating and using information in academic libraries of graduate students in Shiraz Islamic Azad University.

Literature Review

"Information seeking behaviour of scholars and researchers" has been used in the literature of library and information science since the 1950s. Science then, the number of studies on information behaviour, especially on information seeking behaviour and information seeking behaviour models has increased (Salajegheh 2009). The models which have been presented on information behavior, information seeking behavior, and information searching are summarized in the following sections.

Information Behavior

Wilson (1981) introduced the first information behavior model called "general information behavior". In this model, he located the concepts of information need, information seeking, information exchange and information use. Later, in 1997, based on his investigations in a number of fields other than information science such as decision making, psychology, creativity, and communication, Wilson expanded his model which has been regarded as a macro model that covered other theoretical models of information behaviour like Dervin (1983), Ellis (1989), and Kuhlthau (1993). However, in (1999) Wilson presented a new model which introduced problem solving as the overall framework for information seeking, and showed that Kuhlthau's model (1991) might have conformity with various stages of the information seeking process of Ellis's (1989) model. He also maintained that Ellis's (1989) model might include a set of activities which Kuhlthau (1991, 1993) named as "Collection". In general, all information models that are mentioned above were nested within Wilson's (1997) model of information behaviour. This model was called a "nested model" because Wilson pointed out that information searching behaviour is a subset of information seeking behaviour and that information seeking behaviour is, in turn, only a subset of all possible information behavior (Wilson 1981, 2000; Whitmire 2001).

Information Seeking Behavior Models

In their study on information searching and assessments, Rowlands, Nicholas, Williams, Huntington, and Fieldhouse (2008) showed that young people rely heavily on search engines, and do not possess the critical and analytical skills to assess the information they find on the Web. On the topic of need as a basis for information seeking behaviour and determining the needs, Wilson's (2006) research showed that before starting seeking for information, the context of research must be narrowed or the research subject must be limited and the real need determined. investigating different information needs and consequently different information seeking behaviour, Nicholas and Cosgrave (1996) found that there were similarities and differences in the ways of providing and taking up information among councillors.

Regarding information needs and information seeking behaviour, Silvio (2006) found that information needs of immigrant Southern Sudanese youths in the city of London, Ontario are academic and they tend to seek information that is easily accessible. Their sources are colleagues, friends and so on, and they stated that their problem is lack of awareness about

where to obtain information.

With respect to the types of needs, Wallis' (2006) research results showed that Faculty in a School of Public Health regularly sought out information to support their research, teaching, and service. Their efforts were mostly made on needed basis, indicating the need for increasing librarian visibility and availability. Their responses indicated either a lack of awareness of or frustration with methods for accessing the library's holdings, both of which resulted in greater time spent searching for needed information.

Leckie, Pettigrew, and Sylvain (1996) investigated the information seeking behaviour of several professional groups and posited a model of information seeking that is professional applications. Their model has six components: three relating to information needs, (1) work roles, (2) associated tasks, and (3) characteristics of information needs, and three factors affecting information seeking: (4) awareness, (5) sources, and (6) outcomes.

Zawawi and Majid's (2001) research on information needs and seeking behaviour revealed that in spite of having access to modern and up to date digital information resources, most respondents still preferred using printed materials. In 1993, Ellis, Cox and Hall compared information seeking behaviour patterns of research in physics and socials sciences and found that they were identical. However, they also found new elements, verifying and ending, which were added to the model. In 1997, Ellis introduced a new model for information seeking behaviour which was not so different from his 1993 model.

Meho and Tibbo (2003) replicated Ellis's information seeking behaviour model of social scientists on another research communities;their findings supported the six stages of Ellis's model were supported. However, their model included features not in Ellis's model such as accessing, networking, verifying, and information managing. As a result of their study, a new model was developed by them which, unlike Ellis's model, had four interrelated stages: searching, accessing, processing, and ending.

Information Searching and Retrieval Models

Kuhlthau, Spink, and Cool (1992) defined a strategy as "a tactic used to seek information or to work through a stage of the search process." This model, which provided a theoretical framework for information seeking, had the following stages: initiation, selection, exploration, formulation, collection, and presentation. Belkin, Cool, Stein, and Theil (1995) proposed a model known as the "episode model". This model's focus is on the actions carried out in an information search, from scanning to searching, within the framework of three other dimensions goal of interaction (learning - selecting), mode of retrieval (recognition - specification) and resource considered (information - meta - information).

Ingwersen's (1996) model, to some extent, integrated ideas relating to information behaviour and information needs with issues of information retrieval system design. The elements of Ingwersen's model included:

1) The users' functions, author of the document, the intermediary, the interface and the information retrieval system;

2) A comprehensive model of information-seeking behaviour must include the system which points to the information objects that are of interest to the users;

3) various cognitive transformations which took place for users to identify their needs

and the goals of searching information; and the last element was, and the last element was,

4) the need for cognitive structures and their transformations (Ingwersen, 1996; Hayden, 1997; Whitmire, 2001).

Spink (1997) proposed a model for the search process derived from empirical research. This model defined user judgments, search tactics or moves, interactive feedback loops, and cycles as constituting parts of the search process of a person's interaction with an information retrieval system.

Pharo (2004) introduced a conceptual model of information behaviour as part of the search situation transition method schema. His model had five categories, namely, the work task, the searcher, the social/organizational environment, the search task, and the search process.

The findings revealed a strong relationship between the goals of the work/ task and the level of relevance used for judging resources during the process of the study.

Information-seeking behavior research has caused developments in information literacy and skills training, electronic resources, virtual libraries, and traditional resources. In interdisciplinary information-seeking, the prevalence of models based on single-discipline researchers, and the assumptions that arise from them, may act to inhibit the development of further understanding and development. This paper describes research leading to a Coping with Information Resources for studies of information behavior.

Methodology

The research method used in this study is a Quantitative method. Purposefuliy, students in Shiraz Islamic Azad University who had information-seeking experience and were able to express their views and information needs were randomly selected with Cochran formula from 2538 students in seven colleges namely, Faculty of Humanities, Economics and Management, Science, Engineering, Art and Architecture, Agriculture, and Dental collage. Finally, the 241 Graduate Students who participated in this study were 231 with masters degree and 10 Ph.D holders in 1391-1392 Academic year at Shiraz Islamic Azad University.

Findings

Identifying Information Resources

The first concept or category under study was Identifying information resources. As it is shown in Table 1, the five subcategories of Identifying information resources are Browsing table of contents, Browsing journals, Sites in the Internet related to subjects, Using abstracts in printed forms, and Using abstracts in electronic forms.

Table 1

Mean between variable of identifying information resources

Identifying information resources	Mean	rank mean	Browsing table of contents	Browsing journals	Sites in the Internet related to subjects	Using abstracts in printed forms	Using abstracts in electronic forms
Browsing table of contents	3/36	2/72	-----	* 0/000	* 0/000	0/09	* 0/000
Browsing journals	3/07	2/41	* - 3/25	-----	* 0/000	* 0/000	* 0/000
Sites in the Internet related to subjects	4/08	3/69	* - 6/64	* - 8/47	-----	* 0/000	* 0/000
Using abstracts in printed forms	3/51	2/93	* - 1/68	* - 4/4	* - 6	-----	* 0/003
Using abstracts in electronic forms	3/75	3/25	* - 3/52	* - 5/8	* - 3/89	* - 2/9	----

*= sig X^2= 121/8 df= 4 sig= /000

Searching Information Resources

The Second concept or category was Searching information resources. According to Table 2, its subcategories are Using printed citations, Referencing of first article read by them, Printing indexes and abstracts, Using indexes and abstracts database, Using online databases, and Using electronic citations.

Table 2

Mean between variable of searching information resources

Searching information resources	Mean	rank mean	Using printed citations	Referencing of first article read by them	Printing indexes and abstracts	Using indexes and abstracts database	Using online databases	Using electronic citations
Using printed citations	3/04	2/96	-----	0/51	0/19	* 0/000	* 0/000	* 0/000
Referencing of first article read by them	3/07	3/04	- 0/66	-----	0/52	* 0/000	* 0/000	* 0/000
Printing indexes and abstracts	3/13	3/04	- 1/3	- 0/65	-----	* 0/000	* 0/000	* 0/000
Using indexes and abstracts database	3/44	3/55	* - 3/3	* - 4/1	* - 3/8	-----	* 0/000	* 0/000
Using online databases	3/78	4/08	* - 6/7	* - 6/6	* - 6/8	* - 3/9	-----	* 0/017
Using electronic citations	3/93	4/34	- 8	* - 7/9	* - 7/7	* - 5/5	* - 2/4	-----

*= sig X^2= 160/98 df= 5 sig= /000

Accessing Information Resources

The third examined concept or category was Accessing information resources. As Table 3 shows, its subcategories OPAC are Internet and search engines**,** Databases**,** Interlibrary loan**,** Library in university**,** Other universities library**,** and Private library.

Table 3

Mean between variable of accessing information resources

Accessing information resources	Mean	rank mean	OPAC	Internet and search engines	Databases	Interlibrary loan	Library in university	Other universities library	Private library
OPAC	2/68	3/17	-----	* 0/000	* 0/000	* 0/000	* 0/000	0/08	* 0/008
Internet and search engines	4/1	5/43	*- 10/2	-----	* 0/000	* 0/000	* 0/000	* 0/000	* 0/000
Databases	3/94	4/75	*- 8/3	*- 5/7	-----	* 0/000	* 0/000	* 0/000	* 0/000
Interlibrary loan	3/2	3/71	*- 4/3	*- 8/9	*- 6/2	-----	0/36	0/07	0/34
Library in university	3/1	3/88	*- 4/4	*- 8/3	*- 5/1	*- 1/14	-----	0/15	0/11
Other universities library	2/85	3/4	- 1/7	*- 9/5	- 7	- 1/8	- 1/49	-----	0/5
Private library	2/92	3/65	*- 2/64	*- 9/1	*- 6/1	- 0/96	- 1/6	- 0/68	-----

*= sig X^2= 243/5 df= 6 sig= /000

Evaluating Information Resources

The Fourth concept or category was Evaluating information resources. According to Table 4, its subcategories are Relativity to research interest, Up databases, Easy access to content**,** Easy access to resources, Authority, Easy to understand**, and** Available in library.

Table 4

Mean between variable of evaluating information resources

Evaluating information resources	Mean	rank mean	Relativity to research interest	Up databases	Easy access to content	Easy access to resources	Authority	Easy to understand	Available in library
Relativity to research interest	3/73	3/88	-----	0/4	* 0/01	0/07	* 0/000	* 0/000	* 0/000
Up databases	3/67	3/65	- 0/8	-----	* 0/001	* 0/008	* 0/000	* 0/000	* 0/000
Easy access to content	3/93	4/17	*- 2/49	*- 3/47	-----	0/53	0/08	0/07	* 0/000

Evaluating information resources	Mean	rank mean	Relativity to research interest	Up databases	Easy access to content	Easy access to resources	Authority	Easy to understand	Available in library
Easy access to resources	3/9	4/11	- 1/8	*- 2/63	- 0/6	-----	* 0/04	* 0/03	* 0/000
Authority	4/1	4/54	*- 4	*- 5/1	- 1/78	*- ۲/۱	-----	0/84	* 0/000
Easy to understand	4/07	4/49	*- 4/1	*- 4/95	- 1/8	*- 2/2	- 0/2	-----	* 0/000
Available in library	3/29	3/16	*- 4/1	*- 3/58	*- 6/2	*- 5/9	*- 7/2	*- 7/5	-----

*= sig X^2= 101/5 df= 6 sig= /000

Using Information Resources

The Fifth concept or category was using information resources. According to Table 5, its subcategories Using the book indexes, Using the Table of Contents, and Studying abstract.

Table 5

Mean between variable of using information resources

Using information resources	Mean	rank mean	Using the book indexes	Using the Table of Contents	Studying abstract
Using the book indexes	3/15	1/64	-----	* 0/000	* 0/000
Using the Table of Contents	3/67	2/11	*- 6/2	-----	* 0/05
Studying abstract	3/84	2/25	*- 7/1	*- 1/96	----

*= sig X^2= 69/8 df= 2 sig= /000

Discussion

As shown in Table 1, Identifying information resources of Graduate Students starts with a need which provides a motivation to seeking information. Krikelas (1983) stated, "information seeking begins when someone perceives that his or her current knowledge is less than that needed to deal with some issue (or problem)" (p.6). Different people have different needs like educational, research, and professional needs.

Wilson (1981, 2006) showed that need is a starting point for information- seeking behaviour. Coping with Information Resources model of Graduate Students is somehow different from other models which are presented in this article (Meho & Haas 2001) because of their academic career in the different fields and various other different needs that they have.

In addition to Wilson (1981), other researchers such as Ellis (1989, 1993, 1997), and Wallis (2006) pointed out that different needs caused different information behaviour. Leckie, Pettigrew and Christian (1996), and Pharo (2004) added other factors like work task and organizational environment.

Today, the Internet provides not only a great variety of books on sale, but also free ones, which allow great advancement of cultural dissemination.

Academic literature uses abstracts to succinctly communicate complex research. An abstract may act as a stand-alone entity instead of a full paper. As such, an abstract is used by many organizations as the basis for selecting research that is proposed for presentation in the form of a poster, platform/oral presentation or workshop presentation at an academic conference. Most database search engines index only abstracts rather than providing the entire text of the paper.

After determining needs and limiting subjects for Identifying Information Resources, information-seeking behaviour starts with searching (Table 2). Wilson (2006) also stated, "before a generally applicable theory of information-seeking behaviour can be evolved, the context of the research must be narrowed so that crucial determining factors can be analyzed" (p. 666). Spink (1997) and Kuhlthau (1992) also emphasized the same idea.

Table 2 shows that graduate Students Searching information resources through Using printed citations, Referencing of first article read by them, Printing indexes and abstracts Using indexes and abstracts database and so on. Among these resources, Using electronic citations and Using online databases were used more than others.

Some respondents used print resources and their reasons were their lack of expertise in using new search systems and informal learning. Zawawi and Majid (2001) also showed that "in spite of having access to modern and up-to-date digital information resources, most respondents still preferred using printed materials."(p. 36).

This process is called browsing. It is also one of Ellis' (1989, 1993) and Meho and Haas's (2001) stages.

This stage also existed in Ellis' (1989, 2003) and Meho and Haas's (2001) models.

Using information is a stage that does not exist in other models like Meho and Haas (2001) and Ellis (1989, 1993).

The combination of users connected to the Internet and a growing emphasis on distance learning places a demand on reference services to expand aggressively beyond the walls of the library.

When Accessing, as shown in Table 3, Graduate Students Accessing information resources, either went to the next step or followed up the search until finding their needed information. And this became a loop until they found their needed information.

When they could not find anything, they stop searching. While in Ellis's information-seeking behaviour model (1989, 1993) follow-up searching is a stage that was named "chaining".

A web search engine is a software system that is designed to search and access for information on the World Wide Web. The search results are generally presented in a line of results often referred to as search engine results pages (SERPs). The information may be as a specialist in web pages, images, information and other types of files. Some search engines also mine data available in databases or open directories. Unlike web directories, which are maintained only by human editors, search engines also maintain real-time information by running an algorithm on a web crawler.

Graduate Students criteria for Evaluating information resources are: Authority, Easy to

understand and etc (Table 4).

Authority and Easy to understand in information resources that are able to dynamically adapt their own behavior in order to optimize and improve the quality of end-user interaction, often used to support teaching and learning activities.

So this information resources offer advantages to libraries in terms of savings in time, convenient and flexible delivery to users.

Respondents used information from Using the book indexes, Using the Table of Contents, and Studying abstract (Table 5).

Different needs lead to different uses. Some uses are common among all the participants like teaching, research, participation in conferences and giving lectures but some others are different like, curing patients.

An abstract is often used to help the reader quickly ascertain the paper's purpose. Full-texts of scientific papers must often be purchased because of copyright and/or publisher fees and therefore the abstract is a significant selling point for the reprint or electronic form of the full text.

Concluding Remark Suggestions

The results in this study showed that the graduate students' information seeking behavior follow Salajeghe's (2009) model of information seeking which is based on Ellis' information seeing behaviours model. This study showed the graduate students applied methods for identifying, searching, accessing, and using information resources which looked very favorable. Regarding to the findings of this study and other surveys makes it clear that further studies are needed to understand how new technologies and resources can meet and best support user needs in different social and special contexts.

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