Information-Seeking Behavior in the ICT Era: A Multi-Disciplinary Study

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Abstract:

Ever growing and ever changing information with multi faceted channels captured the attention of the information seekers and information professionals at large. The study highlights the changing approach to information by the user community in the present Scenario. The article focuses on how electronic information resources influence the information-seeking process in the social sciences and humanities, examines the information-seeking behavior of scholars in these fields, and extends the David Ellis model of information-seeking behavior for social scientists, which includes six characteristics: starting, chaining, browsing, differentiating, monitoring, and extracting. The study is based on the everyday observations on the Users attitude towards use of electronic information resources for research purposes, their perception of electronic and print materials, their opinions concerning the Ellis model, and how the model might apply to them. Users of the Tata Institute of Social Sciences and the National Institute of Fashion Technology, Mumbai are been covered in the present study.

Key words: information,-seeking, behavior. Social, scientists.

Introduction:

The pursuit of knowledge has been revolutionized, mainly through the vast expansion of data accessible via the Internet. Increased knowledge of the information-seeking behaviors of social sciences and humanities researchers is crucial to meeting their information needs.

The electronic information resources examined in this study include: Web sites, FTP (file transfer protocol), Databases, Web portals, Electronic mail, Online catalogs and Electronic journals.

David Ellis proposed a behavior model of information-seeking behavior based on observations of social scientists. The model includes six fundamental characteristics of information-seeking: **starting, chaining, browsing, differentiating, monitoring, and extracting**.[1]

This study seeks to understand how electronic information resources affect the information-seeking processes in the social sciences and humanities. It also endeavors to discover how technology contributes to and perhaps alters the information-seeking process, and explores the applicability of Ellis's model in the digital information environment. The results of this study provide suggestions on how current information Services and systems can be improved to better serve social sciences and humanities researchers as they navigate this new data-rich environment.

Research findings about social scientists and humanists' use of electronic resources are vary. More recent studies show an increase in the use of electronic resources. A study of Brazilian social sciences researchers found that although print resources are still the most frequently used, electronic resources are becoming increasingly popular, with limited access to networked computers being the main obstacle to increased use of databases and other electronic resources.[1] Hannah Francis focused on a study which described the information-seeking behavior of social sciences faculty at the University of the West Indies (UWI).[2] One of the study's findings was that social scientists prefer journal articles in electronic format over print. David Ellis and Hanna Oldman's study explored the information-seeking behavior of researchers in the field of English Literature at British Universities.[3] The article concluded with recommendations for further study of the use of electronic resources in relation to information literacy and browsing. Stephen E.Wiberley, Jr. and William G. Jones revealed that temporal factors have a significant impact on humanists' adoption of electronic information technology and identified and described four types of time that influence humanists' behavior.[4] Three are types of time spent: **anticipated start-up time, actual start-up time, and use time; the fourth is time of life**, that is, the stage of a scholar's project or career. Margaret Stieg Dalton and Laurie Charnigo studied historians' attitudes toward and use of electronic materials, and found that electronic resources have increased historians' use of catalogs and indexes in their efforts to identify appropriate primary and secondary sources of information.[5] Susana Romanos de Tiratel investigated the information-seeking behavior of Argentine humanities and social sciences scholars and found no substantial differences between them, concluding they share similar information-seeking behaviors.[6] Peiling Wang wrote about disciplinary and cultural differences among information seekers in the Internet age, concluding that there are differences across disciplines and cultures in terms of how they rank the importance of these resources and how much they use them.[7] In her most recent paper about the information-seeking behaviors of academic researchers in the Internet age, Wang further discussed the information needs, information-seeking behaviors, and resource use of selected special interest groups.[8] In their review of scholarly information practices in the online environment, Carole L. Palmer, Lauren C.

Teffeau, and Carrie M. Pirmann began to address the problem by reporting on the state of knowledge on scholarly information behavior, focusing on the information-seeking activities involved in the research process and how they differ across disciplines.[9] The report found that information practices may be enhanced or advanced by new information resources and tools. What has changed in the digital environment is not the value of these kinds of sources, but rather how they are searched, accessed and used in the scholarly process. Clara M. Chu studied the information needs of literary critics when producing literary criticism and developed a six-stage model of producing literary criticism, which includes ideas, preparation, elaboration, analysis and writing, dissemination and further writing and dissemination.[10]

The study of electronic information-seeking behavior in the social sciences and humanities dates back to the 1980s, but David Ellis was the first to model the process of information-seeking behavior of social scientists: how they search for and interact with the materials, as opposed to the sources they use and the manner in which the material is obtained.[11] Ellis described six fundamental characteristics of information-seeking used by social scientists: *starting*, *chaining*, *browsing*, *differentiating*, *monitoring* and *extracting*. *Starting* refers to the information-seeking patterns of researchers beginning work in a new area. *Chaining* describes the process of following chains of citations or other forms of referential connection between materials or sources identified during "starting" activities. *Browsing* is defined as "semi-directed or semi-structured searching in an area of potential interest." *Differentiating* involves "identifying different sets of sources in terms of the differing probability of their containing useful material." *Monitoring* is an activity limited to those people following developments in specialized areas. Finally, *extracting* refers to "the activity of going through a particular source and selectively identifying relevant materials from that source".[12] Ellis's comparison of the different activities reported by social scientists led to the conclusion that these six categories were sufficient to represent the different information-seeking patterns of researchers.

Most of the information-seeking behavior categories in Ellis's model are supported by capabilities available in common Web browsers. Thus, an individual could begin surfing the Web from one of a few favorite starting pages or sites (*starting*); follow hyper textual links to related information resources in both backward and forward linking directions (*chaining*); scan the Web pages of the sources selected (*browsing*); bookmark useful sources for future reference and visits (*differentiating*); subscribe to e-mail based services that alert the user of new information or development (*monitoring*); and search a particular source or site for all information on that site on a particular topic . In "Looking for Information," Donald O. Case indicates that the Ellis model makes no claim to consider the many factors and variables generally involved in information seeking: e.g., the type of need and what sort of information or "help" might satisfy it, or the availability of sources and their characteristics.[15] Lokman I. Meho and Stephanie W. Haas's study on information-seeking behavior of social sciences faculty studying stateless nations revealed a frequent use of information technology, with 88% of participants responding that they use electronic resources.[16]Access

problems were a major issue for selected materials, with 83% of faculty reporting they travel to special collections or archives to locate historical documents. In another study, Lokman I. Mehe and Helen R. Tibbo revised Ellis's information-seeking behavior model, using a specialized case study of social sciences faculty researching stateless nations. They developed a model which differs from Ellis's, grouping all information-seeking behavior into four interrelated stages: searching, accessing, processing, and ending.[17]

Population and Sampling:

The study was conducted at TISS and NIFT where the researcher and students works. Tata Institute of Social Sciences subscribed to several hundreds of electronic journals and databases and it is the gateway to access UGC Infonet. The National Institute of Fashion Technology also subscribes to several numbers of electronic Journals and databases apart from hard copies of the journals. Both the Institutes are of National importance and the users are Graduates, Post-Graduates, Industries, Other Institutes and respective Aluminous.

Use of Electronic Information Resources in Research and education:

The data collected by observation provides insight into the role of electronic information resources in information-seeking behaviors. *Use of Electronic Information Resources for Research and academic purpose.* Among the eight types of electronic information resources, it is observed that the Web was used by 96.7% of the users for research and information-gathering, databases were used by 90.0% , e-journals were used by 86.7%, e-mail was used by 83.3%, online catalogs were used by 80.0%, list servers and portals were used by 33.3% and FTP was used by 30.0%.

More than 62% of the Web users use the Web as an information-gathering tool daily or multiple times a day. 45% percent of e-mail users use e-mail as an information-gathering tool daily or multiple times a day. More than 70% of database users use them daily or every alternate day. More than 80% of e-journal users access them daily to weekly.

More than 80% of catalog users use online catalogs weekly or monthly. 74% of portal users use them daily or weekly. More than 78% of FTP users use FTP occasionally.

On a five-point scale (1 being the least important and 5 being the most important), the Web received the highest ranking, with a score of 4.5 on average, thus qualifying as the most important electronic research resource used. Problems associated with Web use reported by participants include information overload, difficulty in conducting precise searches, the mixture of substantive and irrelevant sites, and difficulty in evaluating the credibility and actual sources of data. Databases ranked second in importance. Many participants originally used databases in their traditional index forms, but now use "transformed" databases, which they see as a powerful tool. Many users prefer to search mixed-journal title databases to

find articles, as opposed to searching just one e-journal. Several users had only used the free databases that are available on the Web failing to utilize the library's quality-controlled**,** fee-based databases. Participants reported encountering difficulties stemming from system issues, inadequate search skills, terminological problems, and lack of or unawareness of suitable databases. Many were concerned about the availability of older, current, and full-text journal articles through databases.

Electronic journals were rated as the third most important resource. Some participants use free e-journals on the Web, with paid subscription e-journals from the respective library. Some users are unclear as to the relationships between e-journals and databases and didn't see any differences between them. Some prefer e-journals because they can browse journals by tables of contents and read full-text articles. There are also concerns about the availability for some older, current, and full text articles, as well as rare or lesser-known journals.

Online catalogs were rated as the fourth most important electronic resource. Reader community use library computer catalogs to locate the library's existing print and online resources before resorting to remote access. Many search the online catalogs of other libraries, union catalogs and publisher or vendors' online catalogs.

E-mail was rated as the fifth most important electronic resource, whereas listservs were the sixth most important. E-mail has become a common communication and Networking tool for communication and learning. It is a method for them to make contacts with experts, conduct interviews or surveys, and network with colleagues. Problems mentioned by participants are junk mail and unstable e-mail accounts. Listservs are still fairly new to some participants. Some non-users reported that they are not familiar with the source or haven't been able to find any good listservs in their respective fields. Users use listservs to ask or answer questions, browse current information in their fields, locate information on conferences, discover new publications, and locate relevant calls for papers. Listservs, especially moderated ones, tend to be more focused and relevant to serious research.

Web portals were rated as the seventh most important electronic research resource. About two-thirds of the participants were not familiar with portals. The participants who do use portals like them because they provide shortcuts and are ideal for people working on specific projects and those who want to keep up with special research interests. Problems mentioned by participants are that portals are of varying quality and often quickly become outdated, leading to issues such as dead links.

FTP was rated as the least important electronic research resource in this study. Users only occasionally need to transfer or download files using FTP, since today's browsers can easily handle most of their downloading tasks. FTP is generally viewed as outdated and obsolete (see Table 5).

Importance and their Rankings for Various Types of Electronic Information Resources for Research and Study as shown below:

Rank	Internet Sources	Importance Score	Standard Deviation	Range (Min-Max)
1	Web	4.5	0.9	1-5
2	Databases	4.4	0.8	2-5
3	E-journals	4.2	0.9	2-5
4	Online Catalogs	4.1	0.9	2-5
5	E-mail	3.6	1.4	1-5
6	Listserv	3.2	1.0	2-5
7	Portal	3.2	1.2	2-5
8	FTP	2.4	1.1	1-4

Use of Electronic Resources vs. Use of Print Resources:

It is generally agreed that social scientists tend to rely heavily on journals, periodicals and monographs, while humanities researchers rely more on books. While both types of researchers use a wide range of information sources, their use of electronic sources is increasing. Overall, the use of electronic resources to satisfy 67% of the information needs and print sources to satisfy 33%. Indeed, many users show a marked preference for electronic resources over print.

Reasons for Use of Electronic Resources:

The observation indicate that the electronic information resources have a number of advantages over print.

1. Availability in Electronic Format – The amount of information available in electronic format has vastly increased over recent years. Users appreciate the options provided by this increased availability.

2. Accessibility – Most electronic information resources are accessible anywhere at any time to anyone with a networking, and users appreciate this ease and Convenience.

3. Usability – Many users cited the usability features of electronic information resources. They enjoy the convenience of saving and printing, the frequency of updating, the powerful potential of search functions, and the ease of sharing information and sending papers to other researchers.

4. Source Quality – users indicated the specificity, quality, and reliability of Certain electronic resources, such as government sites and e-journals.

5. Disciplinary and Research Topic Specificity – Majority of the users use electronic information resources for their research to some extent, but some used electronic information resources more, depending on the nature of available information for their disciplines. Many participants would have used more electronic resources if more had been made available in their discipline or area of interest.

Shortcomings:

It is analyzed to derive the reasons for nonuse or low use of electronic information resources for study purpose. Several factors were explored as follows:

1. Lack of Availability – Users feel that some information was not available in electronic format. For example, the amount of electronic information resources available to Fashion Designing is rare, compared to that available to other social sciences. It support the notion that the creation of digital archives for infrequently held materials would be an enormous benefit to certain faculty.

2. Lack of Accessibility – Electronic resource availability varies by institution. The library's services, the individual's awareness of the resources, and the person's research skills also influence accessibility of information. It is observed that many users encounter significant obstructions to information access, such as unavailability of desired sources or unstable or hard-to-use systems.

3. Usability Issues – Content organization, interface, and choice of computer system all affect the usage of electronic information resources. It is observed that a well-designed library homepage, good information literacy skills, and user education are all important.

4. Uneven Source Quality – It is to mention here that many users suffer from information overload and are in search of specific and accurate information for their research. Not all participants are confident that electronic information resources provide accurate, reliable, and high-quality information.

5. Disciplinary and Research Topic Constraints –Researchers' disciplines or research topics may influence their usage of electronic resources. Some disciplines and research projects require less extensive information-gathering from published resources, relying instead on field studies and interviews.

6. Decreased Ease of Use – Users normally like print materials because they are convenient, portable, and comfortable to use. It is observed that the discomfort of reading on a computer screen, preferring the print resources/materials instead.

7. Lack of Awareness – It is observed that users may not be fully aware of all the useful electronic resources available to them through the library.

8. Personal Constraints – Personal constraints are situational. Some users may believe that they are too busy or "too old" to learn to effectively use electronic information resources, or that learning to use them is too difficult.

Conclusion:

The paper explored the degree to which specific electronic resources are significant. The study found that electronic information resources play a significant role in the Researchers' information-seeking pursuits. Among the eight types of Internet information technologies rated, the Web, databases, and e-journals are ranked first, second, and third in importance, followed by online catalogs and e-mail. Social sciences researchers use electronic information resources more often than humanities researchers. Doctoral students and Professors have a higher rate of usage of electronic information resources. All the users surveyed utilize electronic resources for their research at least some of the time, and will continue to use them as a means of gathering information. Easy access to information anytime and anywhere is important to these researchers, making them desire even more electronic information resource availability. In certain disciplines, however, electronic resources are perceived to be less available and/or less vital. The study also explored the degree to which Ellis's model remains relevant in the age of electronic resources, and confirmed that the characteristics proposed by Ellis's model continue to play important roles in research, and these characteristics take place in both traditional research environments and the electronic information environment. Many users indicated that these characteristics do not necessarily occur in the sequence listed, or co-occur with the other characteristics. Researchers move from one activity to another, and their use of the characteristics will depend on their individual needs and situations. In addition to the six original characteristics (starting, chaining, browsing, monitoring, differentiation, and extracting), this study suggests two new characteristics: preparation and planning and information management. These new

characteristics reflect social sciences and humanities researchers' methods for locating relevant information. The two new characteristics identified in this article suggest a need for additional research tools and for more flexible and user-friendly information systems.

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