

AN ABSTRACT OF THE DISSERTATION  
DEGREE DOCTOR OF PHILOSOPHY IN THE  
SCHOOL OF LIBRARY AND INFORMATION MANAGEMENT

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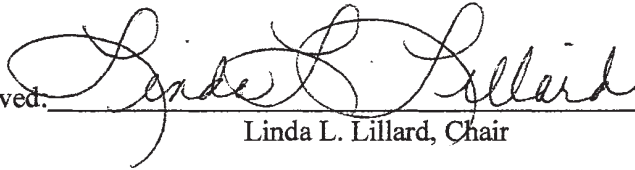
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(Name of Student)

Presented on November 13, 2007

Title: Information Needs and Seeking Behavior of Social Science Scholars  
At Sultan Qaboos University in Oman: A Mixed-Method Approach

Abstract approved.



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Linda L. Lillard, Chair

This study investigates information needs and information-seeking behaviors of social science scholars at Sultan Qaboos University in the Sultanate of Oman, as an example of a developing country in the Middle East. Its ultimate objective was to produce a model that is applicable to social science scholars in developing countries in general and Oman in particular. The study addresses the questions of (a) how social science scholars at this university locate and use relevant information, particularly electronic resources and other emerging technologies, for their specific research and teaching needs; and (b) whether these patterns vary in relation to gender, age, academic rank, academic department or college, or preferred search language. Formal and informal sources of information and electronic resources utilized by social science scholars, as well as barriers to information seeking, are discussed. Additionally, barriers affecting scholars' information-seeking behavior are identified.

The study is conducted within a conceptual framework based on a synthesis of existing models of information-seeking behavior of Wilson (1996), Ellis (1989), and Kuhlthau (1991), along with additional elements representing the information environment, specifically the location and format of information resources. The model describes a pattern of social scientists' information-seeking behavior that includes eight generic stages: Initiation, Exploration, Monitoring, Categorization, Sifting, Selecting Resources, Collecting, and Ending. The data collected through mixed-method approach consisting of both quantitative and qualitative methods. The quantitative method consisted of a structured survey questionnaire sent to all social science scholars based at the university during the 2006-2007 academic year, and the qualitative approach consisted of 21 e-mail interviews, 16 face-to-face interviews, and four focus groups with social science scholars selected purposively.

Similar to social scientists elsewhere, participants make increasing use of electronic resources but retain a preference for print materials and informal sources of information. The research process used by participants was generally similar to those of social scientists elsewhere. Findings also showed that social science scholars at SQU in Oman face three main types of barriers to information seeking which may be different than those faced by their counterparts in Western countries: (a) limited availability of resources, especially full text resources; (b) poor Internet connection speeds or Internet availability; and (c) a lack of sufficient Arabic language sources. In addition, information needs and information-seeking practices are found to vary with age, academic rank, and academic department or college.

Finally, the applicability of the model developed in this study was successfully tested and it was found that the information seeking practices of social science scholars could be readily matched to the stages of the model, suggesting that, in general terms, information-seeking behavior follows universally applicable stages and patterns and that a model developed on the basis of research in one region of the world can be transferred of use to other regions.



INFORMATION NEEDS AND SEEKING BEHAVIOR OF SOCIAL SCIENCE  
SCHOLARS AT SULTAN QABOOS UNIVERSITY IN OMAN:  
A MIXED-METHOD APPROACH

by

Mohammed Nasser Al-Suqri

Emporia, Kansas

November 13, 2007

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A Dissertation

Presented to

EMPORIA STATE UNIVERSITY

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In Partial Fulfillment

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Doctor of Philosophy

The School of Library and Information Management

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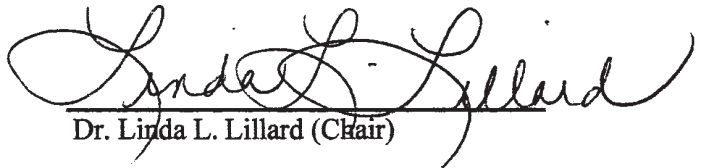
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My mother also deserves special mention. Throughout my life, she has encouraged me to excel and to follow my dreams. Her supplication, unwavering faith, love, and support have been like a lamp lighting my way.

To the special person in my life, my beloved wife Majda, go special thanks. She has been with me, literally, every step of the way. It cannot have been easy for her to leave our home in Oman for a distant and unfamiliar land; that she did so willingly has been the greatest joy to me. Without her companionship, love, supplication, and unwavering faith, I could not have accomplished this work. Truly, she is the best wife

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Finally, to the many people who helped me during these years, and whom I do not mention by name, I extend heartfelt thanks. You are not forgotten.

## DEDICATION

To the memory of my father whose soul has been omnipresent in every line I wrote.  
May this work be dedicated to him as a humble expression of my love and respect.

Miss You,  
Mohammed Al-Suqri

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## CHAPTER 1

### INTRODUCTION TO THE STUDY

#### Introduction

This study intends to contribute to the field of research in Library and Information Science (LIS), by investigating the information needs and information-seeking behavior of social science scholars at Sultan Qaboos University in Oman, an example of an Arab country in the Middle East. This study seeks to address the question of how social science scholars at this university locate and use relevant information, particularly electronic resources and other emerging technologies, for their specific research and teaching needs. Formal and informal sources of information and electronic resources utilized by social science scholars, as well as barriers to information-seeking are discussed, and barriers affecting scholars' information-seeking behavior are identified.

Many researchers have studied information-related behavior among various groups of scholars and have produced theories and models of information-seeking, which have identified generic features of information-seeking. These have been useful in the ongoing development of LIS and have helped to inform the content and the delivery of information services, especially in the university context. Although the majority of early studies on information-seeking were based on groups such as scientists and engineers, a number of these studies have investigated information-seeking among social scientists and have identified particular characteristics of information-seeking behavior, which to some extent differentiate social science scholars from those of other disciplines.

However, virtually all of the major research studies, which have been used to develop models of information-seeking, have been conducted in developed, English-

speaking countries. Relatively few studies have investigated information-seeking behavior in other parts of the world, especially the developing Arab nations of the Middle East. It can be expected that there might be significant differences in information-seeking behavior between these societies and the developed English-speaking world as a result. For example, factors including language, culture, educational traditions, and available information resources and technology may account for such differences.

More generally, many of the major studies of information needs and information-seeking are now out of date, since the LIS environment has changed dramatically in recent years with the increased availability of electronic information resources, particularly the Internet. It can be expected that these developments may have resulted in significantly changed patterns of information needs and information-seeking behavior among academic scholars generally.

A further limitation of many existing studies of information-seeking among social scientists and other scholars is that they are primarily descriptive, or focus only on investigating the relationship between information-seeking and different disciplinary backgrounds. Very little research, which investigates the impact of other socio-demographic factors on information-seeking behavior, such as age, length of service, rank, college, or gender, has been conducted in this area.

There is a pressing need, therefore, for new research into information needs and information-seeking behavior in the early 21st century, and for studies of information needs and information-seeking studies, which are conducted in developing, non-English speaking countries, such as those of the Middle East. Such research will provide an opportunity to investigate the present-day relevance and cross-cultural applicability of established theories and models of information-seeking,



and to identify ways in which they need to be updated or refined. It will also provide more detailed information on information-seeking practices in developing societies in the non-English speaking world, which will be of practical value and relevance to the ongoing development of library and information services in these societies.

This study has contributed to knowledge about information needs and information-seeking in developing societies by investigating the information needs and information-seeking behavior of social science scholars at Sultan Qaboos University in the Sultanate of Oman, an example of an Arab country in the Middle East.

Social science scholars have been selected for study since this group, being interdisciplinary, is likely to have a more diverse range of information needs than those in other academic areas, and because the social sciences are a relatively young academic domain, particularly in the societies of developing countries. This means that the research is not too tightly focused on any one specialist area of study, and that the study will be able to investigate an area in which there might be particular challenges in information-seeking due to a possible scarcity of relevant resources at the local level.

The study explored, in particular, the ways in which social science scholars at this university locate and use relevant information for their research and teaching needs, particularly electronic resources and other emerging technologies. It identified the formal and informal sources of information and electronic resources utilized by social science scholars in this university, as well as the perceived and actual barriers to their effective information-seeking.

The research was conducted within a conceptual framework, outlined in Chapter 2, which is based on a synthesis of existing models of information-seeking as

well as the incorporation of various contextual factors that can be expected to affect information-seeking behavior among social scientists generally and scholars in Oman and other non-Western countries in particular. The use of this framework enabled the researcher to develop a research instrument and methodology that would enable him to test various elements of existing information-seeking models, as well as investigate the impact of contextual factors specific to the study population, such as location and format of information resources.

By using a generic model as a framework to study information-seeking behavior among social scientists in Oman, the study is able to demonstrate that the information seeking behaviors of social science scholars in the Middle East, and in Oman in particular, either parallel those of scholars in the West, and therefore can largely be explained in terms of existing theories and models, or diverge from the model and therefore from the behavior of scholars in Western countries, in which case the local contextual factors influencing information-seeking behavior can be investigated.

Although focused on the Sultanate of Oman, it is expected that many of the study's findings will be applicable, in broad terms, to similar developing countries, especially other Arab nations. In addition, the study will provide an example of a methodology and research instrument for studying information-seeking among social science scholars in developing countries, which might be adopted, for use in research with similar populations in other developing countries.

#### Background

The numerous models of information-seeking that have been proffered by information science scholars, while useful as general process models, do not focus on the content of the information search or on the sources of information used by the

seeker. Among such sources, electronic resources are relatively new and have added a new dimension to information-seeking and to the way research is carried out. For this reason, electronic resources are of great interest to library managers who wish to streamline information delivery to researchers who no longer need to go to a physical library. The ease with which electronic information can be located and retrieved has a profound effect on the way people interact with information. It has made possible innovations in teaching, increased the speed with which research is conducted and disseminated, and precipitated the development of new fields of inquiry (Renwick, 2005). Indeed, most people prefer the up-to-the-minute information that electronic resources and the Web provide (Dalglish & Hall 2000). Owing to its growing importance, electronic resources used by social science scholars is also a focus of the present research.

Many earlier studies found that although there were some differences between researchers of different disciplines in their information-seeking behavior, there were also many similarities (APA, INFROSS, cited in Brittain, 1984; Ellis, Cox & Hall, 1993; Folster, 1989; Ellis & Haugan, 1997; Romanos de Tiratel, 2000; Tenopir, 2003). Ellis and Haugan (1997), who conducted a study of the research activities of engineers and research scientists at Statoil's Research Centre in Norway, were able to readily map the engineers' and scientists' information-seeking activities to the eight generic stages of research already identified by Ellis for social scientists: surveying, chaining, monitoring, browsing, distinguishing, filtering, extracting, and ending. Ellis and Haugan (1997) concluded that Ellis' information-seeking model was robust in relation to the information-seeking patterns of scientists, engineers and social scientists in both an academic and an industrial research environment and over a

period of time in which there had been considerable developments in the information environment as a result of rapid technological change.

However, there is a growing body of research evidence indicating that there are indeed significant differences in the information-seeking behavior of researchers in different disciplines, which can be related largely to the research traditions and the dominant publication patterns and formats in their domain of study. This evidence has significant implications for the delivery of library and information services and for the advancement of models and theories of information-seeking.

### *Social Sciences*

*Definition.* Émile Durkheim (1982) defined social sciences as those that focus on what he calls a social fact. In *Rules of Sociological Method*, Durkheim (1982) wrote that a social fact can be identified by “the power of external coercion which it exercises or is capable of exercising over individuals, and the presence of this power may be recognized in its turn either by the existence of some specific sanction or by the resistance offered against every individual effort to violate it” (p. 56).

Another definition of the social sciences was that of Charles Beard. In *The Nature of the Social Sciences* (1934), Beard defines the social science as the science that is “primarily concerned with those manifestations of human nature and those activities occurring within society which involve social consequences and relations-called for convenience political, economic, and cultural, and with the inter-relationships which accompany the functioning of society as a whole in its world setting” (p. 11).

Social sciences, according to Michaelis and Johnston (1965, p. 7-8), are focused on the study of:

1. The nature of sciences and cultures, and the interactions of people with each other and their social and physical environment.
2. Changes in human relationships, and reinterpretation of relationships between present and past events.
3. Human activities in spatial distributions and the interaction of cultural, biotic, and physical elements.
4. Basic social systems, institutions, and processes.
5. Relationships between individuals and institutions, and among political, economic, and social institutions.

*Branches of social sciences.* The interdisciplinary origins of the social sciences have given rise to numerous branches from the main stalk. For example, chapter headings for the modern social science disciplines in Porter and Ross' (2003a) *History of the Social Sciences* include: statistical methods, psychology, economics, political science, sociology, anthropology, geography, and history. Preschel and Woods (1989, p. 267) purport that social sciences "embrace the disciplines of anthropology, economics, geography, political science, psychology, and sociology. Other disciplines that are often included are business and finance, education, history, [communication] and law. Interdisciplinary studies of ethnic and minority groups, demographics, women's studies, library and information science, gerontology, social work, criminology, and oral history also can be included." From this division it can be seen that social scientists are a diverse group who are likely to have differing as well as similar information needs and information-seeking behaviors.

*History of the social sciences.* Social science as a discipline aims to "understand human relationships in organized group life by the study of verifiable factual material" (Walter, 1949, p.14), and enable human being to control their

behaviors in such manner that the good of the society could be promoted (Halayya, 1961). It has been known by several names: “sciences of man,” “moral sciences,” “moral and political sciences,” “behavioral sciences,” and “human sciences.” It has first existed as a discipline since the French Enlightenment in the 17<sup>th</sup> century, when it was called “*sciences morales et politiques*” (Porter & Ross, 2003b, p. 1). In the United States, social sciences arose during the 19<sup>th</sup> century. It has since gained wide attention and acceptance and is appreciated for its contribution to the art of governing. In the 20<sup>th</sup> century, however, the term “science” came to indicate “some fundamental resemblance to natural science” (Porter & Ross, 2003b, p. 3). Porter (2003) notes that early modern social science focuses on the study of “man”: populations, economies, states, bodies, minds, and customs” (p. 15). Each of these areas is closely related to one or several topics of natural philosophy, and none of these areas is sharply marked off from politics, from religion, or from moral reasoning (Porter, 2003). As an example, Porter stated, “One could scarcely write on population in the eighteenth and nineteenth centuries without considering economies, governments, and customs” (p. 15).

Further, the birth of social science as a discipline “has much to do with liberalizing political moves and the growth of a public sphere during the Enlightenment, which depended on increasingly free public discussion and on mechanisms for circulation of ideas” (Porter, 2003, p. 16). The connection between the social sciences and these liberalizing tendencies and discourses also helps to explain why social science scholars outside of democratic countries sometimes labor under the burdens of political repression (Meho & Tibbo, 2003). In fact, a major obstacle faced by social scientists in some countries is a lack of academic structure and research support because of their governments (Meho & Tibbo, 2003, p. 577).

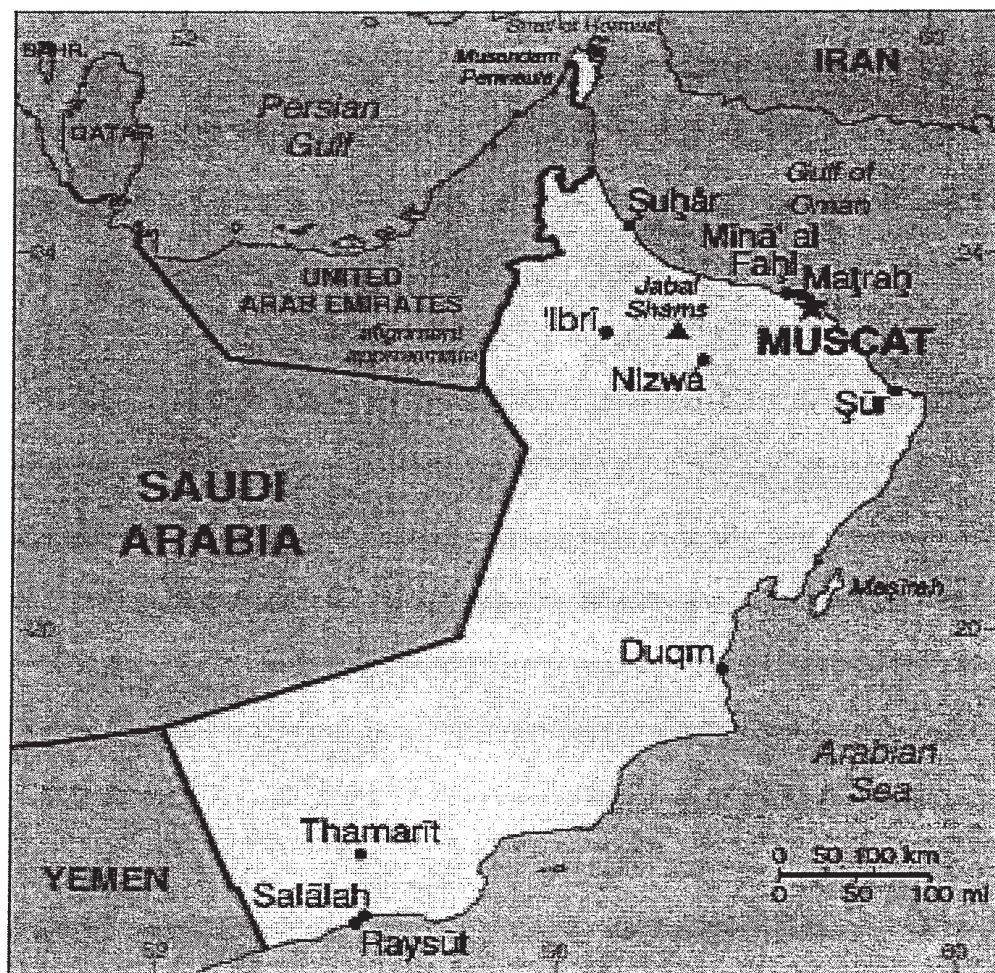


### *The Country of Oman*

The Sultanate of Oman is located on the east coast of the Arabian Peninsula, and has borders with Saudi Arabia, the United Arab Emirates, and Yemen. It has 1,700 km of coastline, starting from the Strait of Hormuz in the north and extending around the peninsula to the border with Yemen. Thus, Oman has access to three seas: the Persian Gulf, the Gulf of Oman, and the Arabian Sea (see Figure 1). Oman's climate is hot and dry in the interior and humid along the coast (CIA, 2006).

Figure 1

*Location of the Sultanate of Oman* (Source: CIA, 2006, World Factbook)





Oman has a population of around 3 million (CIA, 2006). Until the 1970s, Oman was an extremely under-developed country, where a large proportion of the population lived as desert nomads, fishermen, or subsistence farmers. In 1970, there were just three primary schools in the whole country, and no proper educational system. Oman has undergone an extremely rapid economic and social transformation since 1970, when Sultan Qaboos bin Sa'id came to power and embarked on a series of far-reaching reforms, including the development of an extensive educational system. Sultan Qaboos bin Sa'id established a modern governmental structure and launched a development program to improve educational and health facilities, build a modern infrastructure, and develop the country's natural resources and industries (Ministry of Information, 2006; US Dept. of State, 2006). Oman is now one of the most modern and technologically advanced countries in the Middle East.

Today, Oman is a middle-income economy with considerable oil and gas resources and mineral resources such as copper, asbestos, marble, limestone, chromium, and gypsum. The country, which has a large trade surplus and a low rate of inflation, has pursued a policy of market liberalization, joined the World Trade Organization (WTO) in November 2000. To reduce unemployment and limit Oman's dependence on foreign expatriate workers, the government is encouraging training of Omanis in information technology, business management, and the English language. Plans for industrial development include exploitation of natural gas resources, establishment of metal and petrochemical manufacturing, and international ports (CIA, 2006).

#### *Sultan Qaboos University*

Sultan Qaboos University, near Oman's capital of Muscat, was opened in 1986 and by 2006-2007 had around 14,029 students. These students are highly

qualified, since there are only enough university places for the highest achievers in the secondary school system. In general, Omani women have equal access with men to higher education, and approximately half of the University students are female.

The development of higher education in Oman, like that of other countries in the region, has focused mainly on providing vocational training in business, industry, technology and health. The 'academic' domains such as the humanities and social sciences are relatively under-developed. Sultan Qaboos University currently has eight colleges: Engineering, Medicine, Arts and Social Sciences, Commerce and Economics, Education, Science, Agriculture, and Law. The University's 437 social science faculty are distributed throughout the College of Arts and Social Sciences, the College of Education, the College of Commerce and Economics, and the Law College (Statistical Year Book, 2007).

For the majority of social science faculty at Sultan Qaboos University, English is a second language, and some can only speak Arabic. However, the vast majority of social science material is published in the English language; only a small minority of texts have been published in or translated into Arabic. This may present a potential barrier to effective information seeking, and the study may reveal an impact on patterns of information-seeking behavior and their outcomes.

#### *Sultan Qaboos University Library System*

The library system of the Sultan Qaboos University includes four libraries: the main library, the medical library, the Economic and Business Information Center library, and the library of the Mosque. All four seek to build a group of diverse information resources for the purpose of fostering the educational and research activities of the different colleges of Sultan Qaboos University.

The main library, which was set up along with the university in 1986, is the central repository. Its objective is to 1) develop and maintain a balanced collection of materials in various media to support the teaching programs and research activities of the University; 2) provide professional expertise to users by accessing both local reference sources and those available from other countries through postal media and modern telecommunication links; and 3) enhance the students' learning ability by providing them with instruction in research methodology and use of contemporary information sources (SQU, 2007).

The library resources are estimated at 233,695 books, 8,096 audio-visual resources, and around 3,342 titles of periodicals and journals (481 in Arabic and 2,861 in English), of which 1,398 are current (235 in Arabic and 1,163 in English). Indexing of all materials is according to the Anglo-Saxon norms, using the Library of Congress classification scheme. The library uses the open-shelf system, which provides readers easy access to the different resources (SQU, 2007).

#### *Cultural and Other Contextual Factors*

This brief overview of the Sultanate of Oman and its educational system highlights a number of cultural and other contextual factors, which might have an impact on the information needs and information-seeking behavior of social science scholars at Sultan Qaboos University.

The first cultural trait, which Oman shares with many other developing societies, and which might influence patterns and outcomes of information-seeking, is that the concept of time is much less fixed than in most developed societies. This may have implications for information-seeking and its outcomes. It is possibly the case that scholars in Oman will use less structured or systematic methods of information-seeking, since they may be relatively unconcerned about the need to achieve

particular outcomes within a defined period of time. There are potentially advantages and disadvantages to more unstructured forms of information-seeking, as these arguably might be less likely than more focused, systematic searches to result in successful outcomes, but, on the other hand, being less rigid and more flexible, unstructured approaches may facilitate the discovery of information from a wider range of sources. This flexible concept of time might also have significant implications for the effective retrieval and interpretation of information in the social sciences, in which chronology and dates of publication are often important contextual factors crucial to understanding.

Another possible factor is language. For the majority of social science faculty at Sultan Qaboos University, English is a second language, and some can only speak Arabic. However, the vast majority of social science material is published in the English language; only a small minority of texts have been published in or translated into Arabic. This is likely to present a potential barrier to effective information seeking, to have an impact on patterns of information-seeking behavior, and to influence the outcomes of such behavior. For example, scholars who have only a limited command of the English language may be inclined to disregard English-language sources, which they cannot understand, leading to biases in the types of information they use in their work. Social scientists in Oman may also be more inclined to use electronic search engines or databases which are in Arabic and which might, as a result, have inherent biases in terms of the types of material available for access.

The availability of information-seeking tools and support services are also likely to influence patterns and outcomes of information-seeking. Oman is now a technologically advanced society, and Sultan Qaboos University has a good standard

of information technology (IT) systems in its libraries, with access to electronic databases and the Internet. Since Oman's educational system is still very young, however, it is possible that the standard of specialist expertise among library and information service providers in the University might not be at the same standard as in more developed countries, and this could potentially have an adverse impact on the effectiveness of information-seeking behavior among library users. Moreover, the relative lack of previous research into information needs and information-seeking behavior among social scientists and other scholars in Oman has prevented its librarians from understanding and developing the types of resources and services which are needed there, so the availability of relevant materials and appropriate support services might be lacking. The availability of printed material in the library system will also influence patterns and outcomes of information-seeking, perhaps leading to a greater dependence on resources, which can be accessed in electronic format, if printed copies of books and journals are unavailable.

#### *Information-seeking Among Social Scientists*

Although there have been relatively few studies of information-seeking among social scientists compared with other academic groups, the research that has been conducted with social scientists has indicated that this group exhibits patterns of information-seeking which differ somewhat from those of scholars in other academic domains, such as science and the humanities. There are some overlaps in the information-seeking behaviors of different categories of academics, but, despite this, it has been established that social scientists have a tendency to rely more on informal rather than formal sources of information and to be somewhat less likely to use electronic technology in their information-seeking than some other groups of academics (Hobohm, 1999). More recent studies have indicated that there may have

been an increase in the use of technology in information-seeking by social scientists (Meho & Haas, 2001), but there has been very little up-to-date research in this area, and studies have not kept pace with the rapid development of new technology and its adoption within library and information services. Relatively little is known, as a result, about current information-seeking practices among social scientists generally. Even less is known about their information-seeking practices in developing societies such as Oman, which are often technologically advanced but may remain less developed than many Western societies in the improvement of their educational systems and in the availability of academic resources.

#### Statement of the Problem

Relatively little is known about the information needs and information-seeking practices of social science scholars compared with scholars in other academic domains. Even less is known about the information needs and information-seeking behavior of social science scholars in developing countries, especially those of the Arab countries of the Middle East. According to Francis (2005), "there have been fewer studies of social scientists than of their counterparts in the sciences" (p. 67). This lack of research prevents libraries in developing countries from fully understanding and supporting social science scholars and their particular needs.

More generally, there is a lack of up-to-date international research on the information needs and information-seeking behavior of academic scholars that takes into account recent rapid increases in the availability of electronic search systems, especially the Internet. At present, the field of Library and Information Science still has a theoretical and conceptual base in models of information-seeking which were developed in developed Western countries and some of them were developed several

decades ago when electronic methods of information-seeking were still relatively uncommon.

Although a number of models of information seeking currently underpin the current field of Library and Information Science, these have significant limitations. They are based almost entirely on research carried out with information-seekers in the developed Western world; they do not reflect recent changes in the information environment with the increased availability of electronic information sources, and they do not adequately examine the relationship between information-seeking and socio-demographic factors such as preferred search language, age, length of service, or gender. There are major information gaps, therefore, in our understanding of information-seeking behavior which must be addressed in order to improve the knowledge base which underpins Library and Information Science.

There is, therefore, a pressing need for new research in information needs and information-seeking behavior among social scientists and other academics generally and for studies of information needs and information-seeking behavior in developing countries in particular. This will contribute to the refinement of existing models of information-seeking or inform the development of new models which reflect the present day information environment and are applicable to developing societies as well as the major developed countries of the Western world.

#### Purpose of the Study

The primary purpose of the present study is to investigate the information needs and information-seeking behaviors of social science scholars at Sultan Qaboos University in Oman, with the intention of generalizing the findings to other Arab countries. The study addresses the question of how social science scholars at this university locate and use relevant information, particularly electronic resources and



other emerging technologies, for their specific research and teaching needs. Formal and informal sources of information and electronic resources utilized by social science scholars, as well as barriers to information-seeking, are discussed, and barriers affecting scholars' information-seeking behavior are identified.

The ultimate objective of this study is, therefore, to produce a generic model which is equally applicable to social science scholars in developing and developed countries or, if this is not found to be possible, to produce an alternative generic model of information seeking among social science scholars in developing countries.

Identification of social science scholars' information needs and information-seeking behaviors will lead to a better structure of information resources by expanding and enhancing different formats and types of materials and improving the methods of delivery of library and information services at Sultan Qaboos University and similar universities in the Middle East. Not only will this help to improve the efficiency and outcomes of the scholars' work, but it will also help libraries to operate more cost-efficiently by reducing infrequently used sources of information retrieval, and by providing sources and materials tailored to the needs and information-seeking practices of the users. Moreover, the information from this study can provide library managers with a better understanding of the way in which they can support social science scholars from an administrative perspective. For example, library managers can construct a comprehensive program targeting social science scholars' specific strengths and weaknesses in the searching process. With such an understanding, libraries may implement training programs, increase marketing of certain resources, and offer in-class research demonstrations to both faculty and students that target the needs of the social sciences discipline.



The present study provides a good foundation for further research on the information needs and information-seeking behaviors among scholars in Oman and other Arab countries. It is the researcher's hope that Sultan Qaboos University will be able to use the results to enhance its current collection of information resources and to streamline information delivery through traditional printed resources, as well as electronic resources.

This study is also expected to make a contribution to the understanding of information-seeking among social science scholars, both generally and in a developing-country context. In this way it will enable the ongoing development and refinement of theories and models of information-seeking to inform the field of Library and Information Science.

#### Research Questions

Acknowledging that the social sciences often draw on many resources is important in formulating the research questions for this study. When designing a study about social scientists, one must recognize that research materials and methods may vary a great deal depending on the specialty and available resources. In fact, it is possible that there may be few, if any, differences between social scientists and physical scientists. For example, a study by Ellis, Cox, and Hall (1993) found no major differences between social scientists' and physicists' information-seeking behavior.

This study was based on a conceptual framework which consists of a synthesis of existing models of information-seeking along with incorporation of key contextual factors affecting information-seeking, which will be identified in a review of the literature. This conceptual framework is used to identify six key research questions:

1. What types of information resources do social science scholars generally need to access?
2. How do social science scholars identify and locate relevant information for research and teaching?
3. What information resources do social science scholars prefer to use for research and teaching and where do they find them?
4. What information resources do social science scholars use most frequently?
5. To what extent do social science scholars use electronic resources and print resources for research and teaching?
6. What barriers affect social science scholars' information-seeking behaviors and use of electronic resources?

In addition, this study attempts to assess the relationships between social science scholars' information-seeking behaviors and demographic or professional variables:

7. Is age, gender, length of service, rank, department, college, or preferred search language related to the scholar's information needs?
8. Is age, gender, length of service, rank, department, college, or preferred search language related to whether a scholar prefers print or electronic sources?
9. Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar physically visits the library?

10. Is age, gender, length of service, rank, department, college, or English-language competency related to the number of times per month that the scholar accesses the library catalog through the Internet?
11. Does the proposed model hold for social science scholars in developing Arab countries?

The relationship between information-seeking and a diverse range of demographic and professional variables is investigated for the following reasons:

First, the majority of studies of information-seeking among scholars have only investigated differences by different disciplines; very little attention has been given to the impact of personal characteristics such as age and gender.

In addition, various employment-related variables that are likely to influence patterns of information-seeking and their outcomes, such as rank, length of service and department (within social science), were selected for study.

Finally, preferred search language (measured on the basis of self-evaluation by participants) is included as an independent variable. Most research on information-seeking has been conducted among English-language speaking scholars and the majority of social science resources are published in English. The study investigated the relationship between preferred search language and information-seeking behavior and its outcomes in order to identify any specific issues or difficulties faced by those scholars who have a low level of competency in English and to explore differences between the information-seeking experiences of scholars who primarily use English sources and those who primarily use Arabic sources in their work.

By investigating the impact of a wide range of demographic and professional variables on information-seeking, the researcher will be better placed to explain any observed patterns of information-seeking behavior and its outcomes which are

inconsistent with existing models and theories of information-seeking developed in Western, English-speaking countries.

To answer the research questions, the researcher employed a mixed-method research methodology (Devadason & Lingam, 1996; Lomax & Lowe, 1998). The analysis of information-seeking behaviors among Sultan Qaboos University social science faculty was based on data collected via a questionnaire completion, formal interview (e-mail and face-to-face), and a focus group. The quantitative methods allowed the researcher to collect quantifiable data on information-seeking practices and to investigate the relationships between information-seeking and various demographic and professional variables, while the qualitative methods allowed him also to explore information-seeking experiences in greater depth, using the participants' own perspectives and words.

Devadason and Lingam's (1996) methodology for the identification of information needs of users was followed, utilizing both quantitative and qualitative approaches. The first (quantitative) method was a questionnaire distributed to 367 social science faculty who were actively teaching during the 2006-2007 academic year, including full-time and adjunct lecturers, assistant professors, associate professors, and professors in the college of Arts and Social Sciences, the college of Education, the college of Commerce and Economics, and the Law College. The second (qualitative) method consisted of e-mail interviews of 21 faculty and semi-structured face-to-face interviews with 16 faculty in order to acquire in-depth information about their information-seeking behavior and needs. Finally, four focus groups, discussion about information-seeking practices were conducted with 13 social science faculty selected purposefully from social science colleges. This mixed-method approach enabled the identification of social science faculty members' needs and

allowed the data to be thoroughly analyzed from a variety of perspectives. Results, detailed in chapter five and six, were presented as descriptive and inferential statistics to identify trends, relationships, and differences in the data and as narrative summaries based on qualitative coding techniques to identify in-depth information. These data are used to validate a model of the information needs and information-seeking behaviors of the average social scientist at Sultan Qaboos University in Oman.

### Operational Definitions

Consistent with prior studies in this area, the following terms will be defined as follow:

#### *Social Sciences*

For the purpose of the current study, a social science is the academic field that includes the following disciplines: psychology, political science, sociology and social work, anthropology, geography, history, economics, finance, education, communication, law, library and information science, criminology, and women's studies. A social science scholar is “any scholar who consider him or herself a member in one, or a combination of two or more of these academic disciplines” (Meho, 2001, p. 6).

#### *Information Needs*

According to Rowley and Turner (1978) information need is any piece of information, recorded as well as unrecorded, that a scholar may need (as distinct from want, demand, and use) in connection with his study, teaching and research activities.

#### *Information-Seeking Behavior*

Wilson (2000, p. 49) defines information-seeking behavior as “the purposive seeking for information as a consequence of a need to satisfy some goal. In the course

of seeking, the individual may interact with manual information systems (such as a newspaper or a library) or with computer-based systems (such as the World Wide Web)." Meho (2001, p. 6) defines it as the "activity the social science faculty chooses to address the information need. It could take the form of questions to other individuals, the use of print and non-print materials, or the searching for answers using other sources."

#### *Electronic Resources*

Reitz (2004) defines electronic resources as "material consisting of data and/or computer program(s) encoded for reading and manipulation by a computer by the use of a peripheral device directly connected to the computer, such as a CD-ROM drive, or remotely via a network, such as the Internet (*AACR2*). The category includes software applications, electronic texts, bibliographic databases, etc." (p. ¶ 1).

#### *Barrier*

Any condition or challenges that affect the information seeking behavior of social science scholars.

#### Organization of the Study

The first chapter introduces the topic, outlining the objectives of the study and explaining its importance. The objectives of the study, explained in the present chapter, includes determination of the following:

1. The types of information resources social science scholars generally need to access;
2. How social science scholars locate relevant information for research and teaching;
3. The information resources social science scholars prefer to use for research and teaching;

4. The information resources used most frequently by social science scholars;
5. The extent to which social science scholars use electronic resources and print resources for research and teaching;
6. The barriers affecting social science scholars information-seeking behaviors and use of electronic resources;
7. Social science scholars' views and feelings about their information-seeking practices and the outcomes;
8. The relationship, if any, between age, gender, length of service, rank, department, college, and preferred search language, and the scholar's information needs;
9. The relationship, if any, between age, gender, length of service, rank, department, college, and preferred search language, and whether a scholar prefers print or electronic sources;
10. The relationship, if any, between age, gender, length of service, rank, department, college, and preferred search language, and the number of times per month that the scholar physically visits the library; and,
11. The relationship, if any, between age, gender, length of service, rank, department, college, and preferred search language, and the number of times per month that the scholar accesses the library catalog through the Internet.

The ensuing chapters systematically answer the aforementioned research questions.

The second chapter discusses the study's theoretical framework, which is a synthesis of three information-seeking models: Wilson's (1996) model of information-seeking behavior, Ellis' (1989) model of information-seeking, and

Kuhlthau's (1991) model of information search process. An in-depth description of the model is made, together with a brief comparison to other information-seeking models. All parts of this project are influenced by Wilson's model, Ellis' model, and Kuhlthau's model in that the researcher sought to understand social scientists' information-seeking behavior and not merely their information needs.

The third chapter contains a critical review of literature. This chapter provides a broad overview of the literature relevant to this study. The information-seeking behaviors of scholars in general and of social science scholars in particular are discussed, as is the use of electronic resources by a wide range of scholars and specifically by social science scholars in both developing and developed countries. The use of the Internet among all scholars, and specifically social science scholars, is also discussed. Finally, the third chapter examines the barriers that influence the information-seeking behavior of social science scholars.

The fourth chapter describes the methodology of the study, which consists of two parts: a quantitative approach and a qualitative approach. The quantitative portion of the study involves the administration of a questionnaire containing 57 questions. The questionnaire was sent to each faculty member in the Social Sciences colleges at Sultan Qaboos University by the help of the coordinators of each college. The qualitative aspect of the study involves the administration of 21 e-mail interviews, 16 face-to-face interviews, and four focus groups consisting of both open- and closed-ended questions. This chapter also provides a comprehensive description of the setting of the study.

The fifth chapter discusses the quantitative findings of the study. It presents and analyzes the quantitative data gathered from the survey using both descriptive and inferential statistics.



The sixth chapter contains the qualitative findings. It presents and analyzes the qualitative data from e-mail, face-to-face interviews and focus groups using qualitative coding techniques to identify trends in the data. These data were used to validate a model of the information needs and information-seeking behaviors of the average social scientist at Sultan Qaboos University in Oman.

The seventh and final chapter discusses the results and limitations of the study, including limited applicability to Omani social science faculty at Sultan Qaboos University, potential for research bias, and an unpredictable number of responses. The contributions and implications of the study to the overall knowledge regarding the information needs and information-seeking behaviors of social sciences scholar in the Arab world are also discussed. The study concludes with suggestions for further research and for improving the library collection at Sultan Qaboos University and offers a comprehensive plan for implementing change in the university library system to create an atmosphere conducive to social science research.

#### Summary

This chapter has served as a general introduction to the study, the purpose of which was to examine the information needs and information-seeking behaviors of social science scholars at Sultan Qaboos University in Muscat, Sultanate of Oman. The study employed a synthesis of Wilson's (1996) model of information-seeking behavior, Ellis' (1989) model of information-seeking, and Kuhlthau's (1991) model of information search process as a theoretical framework to conduct an in-depth inquiry into the information needs and information-seeking behaviors of the university's 437 current social science faculty. Both quantitative and qualitative methods are used to gather data about the context, strategies, and search experiences

of these scholars. In particular, the study seeks to learn about the impact of electronic media, search engines, and databases on these scholars' research and teaching.

By testing a generic model of information-seeking in the context of social science research in a developing country in the Middle East, the study is intended to help improve the knowledge base on which Library and Information Science is based and will also provide information to assist in the development of delivery of information services and resources that are tailored to the needs of users in Oman and similar developing countries.

## CHAPTER 2

### THEORETICAL FRAMEWORK

#### Introduction

Most of the major models of information-seeking that have been developed by information science scholars focus primarily on the general processes of information-seeking, and not on the context of the information search or the types of information available. This is not necessarily a weakness of such studies, because they are intended to be generic models, which can be applied to various types of information-seekers and their information environments. However, it does impose limitations on the extent to which they can fully explain information-seeking. For example, Wilson himself acknowledged in his later work (1999) that his 1981 model paid insufficient attention to contextual factors. He writes “The limitation of this kind of model, however, is that it does little more than provide a map of the area and draw attention to gaps in research: it provides no suggestion of causative factors in information [behavior] and, consequently, it does not directly suggest hypotheses to be tested” (Wilson, 1999, p. 251). Other theories of information-seeking, such as those proposed by Ellis (1989), Kuhlthau (1991), and Dervin (1983), for example, make reference to the types of sources being used by the information-seeker when explaining the different stages of their models but give little consideration to the ways in which different contexts and different types of information resources might actually influence information-seeking behavior. For example, there have been major changes in the information environment since most of these models were developed, in the form of the Internet and the widespread availability of electronic sources of information, and there is a need to review the impact of this new information environment on behavior and consider what it means for the continuing relevance of

existing models. Moreover, all of the main models of information-seeking were developed in Western developed countries, where information can be assumed to be in almost limitless supply. In the case of developing countries, where the availability of information in various forms may be much more limited, there is a greater need to take into account the impact that the information environment and specific sources of information have on behavior and processes.

Thus, for the purpose of this study, a new model of information-seeking is developed for use as a conceptual framework in studying the information-seeking behavior of social scientists in Oman, as an example of a developing country. This conceptual model, shown in Figure 5, is based on a synthesis of elements of the existing information-seeking models of Wilson (1996), Ellis (1989), and Kuhlthau (1991), along with additional elements representing the information environment, specifically the location and format of information resources.

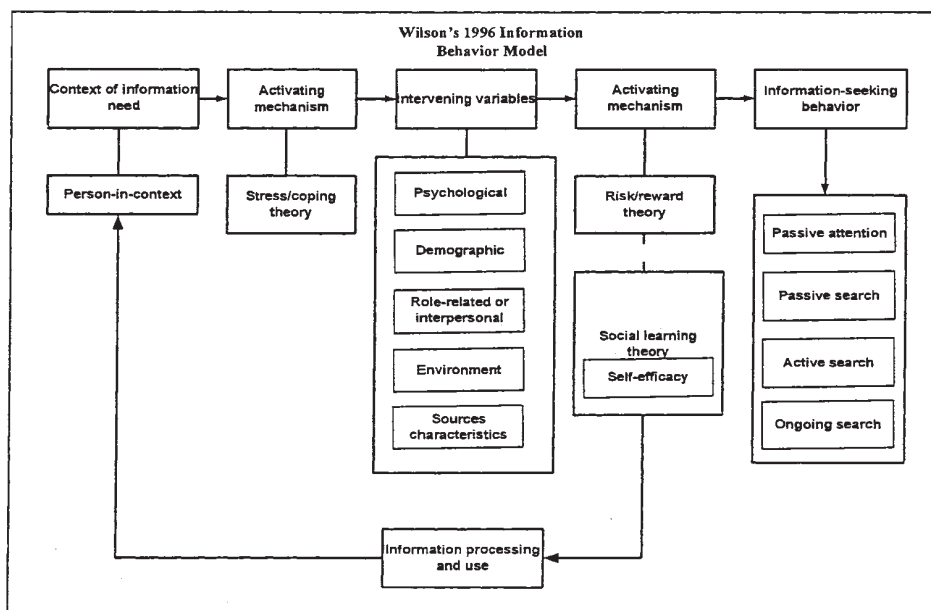
Although there are a number of well-established models, such as Dervin (1983) model, Bates (1989) model, and Foster (2004) that might have been used to study information-seeking among social science scholars in Oman, it was decided to develop a new model based on key features of existing models which previous research has shown to be most relevant to the study of social science information-seeking.

Wilson's (1996) model of information behavior forms the conceptual framework for the synthesized model. Wilson (1996) is one of the earliest theorists on information-seeking behavior to highlight the need to study information-seeking behavior, rather than just information needs. He also called attention to the importance of contextual factors, which include the information-seeker's own characteristics and his or her role as well as features of the external environment.

Although there are other conceptual frameworks of the information-seeking process, such as Dervin's (1983) sense-making theory, Wilson's 1996 model is considered to provide the most comprehensive approach to studying information-seeking behavior. Moreover, being based on the relatively neutral information-transfer theory, it is less influenced by particular theoretical perspectives such as the cognitive constructivist approach underlying Dervin's 1983 theory. In following Wilson's 1996 conceptual framework (see figure 2), the model used in this study simply presupposes that information-seeking is carried out in order to satisfy a perceived need, but which has to be adapted in response to contextual factors or 'barriers' such as the nature of the information environment and the available sources. The stages of information-seeking to be tested in the current study are then added to this basic conceptual framework.

Figure 2

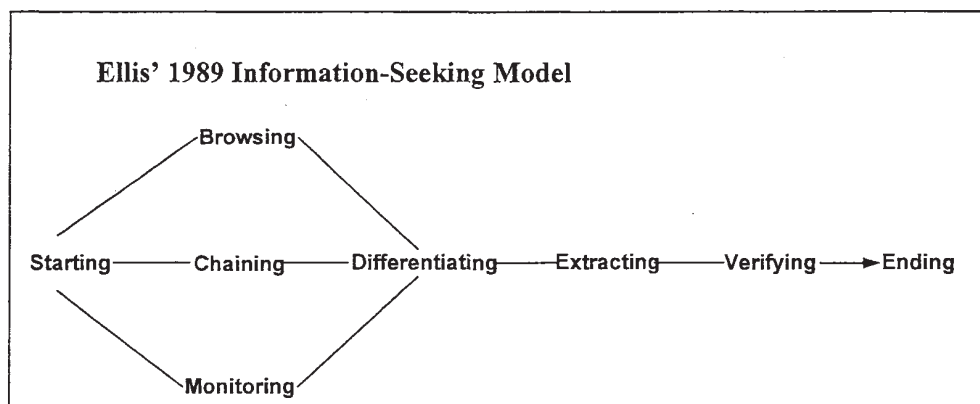
*Wilson's 1996 Information Behavior Model\* (Wilson, 1999)*



\* From "Models of information behaviour research," by T. D. Wilson, 1999, *Journal of Documentation*, 55(3), p. 259. Copyright by Journal of Documentation. Adapted by permission by the author. (See Appendix K)

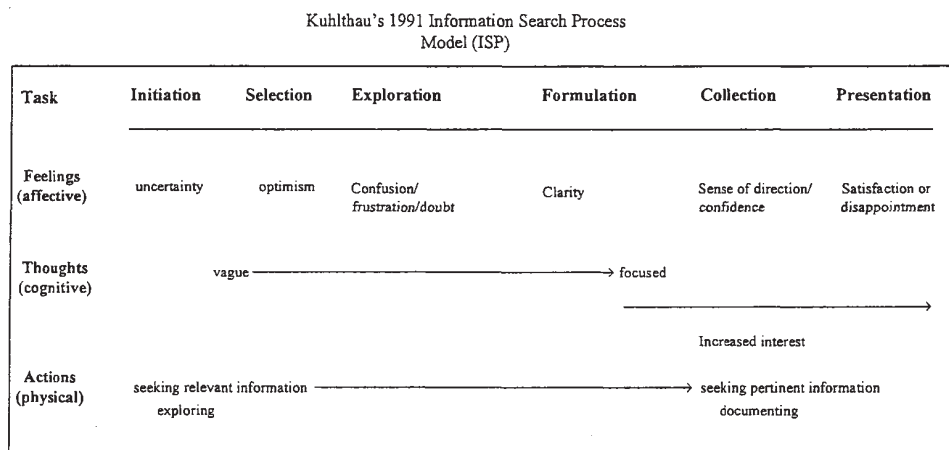
The stages of information-seeking used in the synthesized model are drawn from both Ellis' 1989 information-seeking model (see figure 3) and Kuhlthau's 1991 information search processes model (ISP) (see figure 4). Of all the theories of information-seeking, Ellis' is believed to be most relevant to information-seeking among social scientists, as the six generic stages of information-seeking identified in the model were developed on the basis of research with this academic group. By modifying the framework developed by Ellis (1989) and substituting a number of stages from Kuhlthau's (1991) model, it is possible to ensure that the synthesized model also takes into account the underlying emotions and thought processes which underlie the generic stages and their outcomes. As highlighted by Kuhlthau (1993), affective factors drive a person to seek information, and when relevant information is identified it is processed in the cognitive domain, changes the thought processes of the individual, and thus influences his or her subsequent information-seeking behavior. Affective factors are particularly relevant in the early stages of the information-seeking process, which are often characterized by uncertainty and anxiety about how to solve a research problem, and when there is a need to identify and understand particular concepts arising from initial searches. They are equally important in the later stages, when the information-seeker's cognitive processes have been changed by their information search and their new understanding can be used to arrange the information they have gained into a coherent framework which answers their research question. In the interim, various procedures are adopted in the process of searching for, identifying and extracting relevant information, referred to in the new model as monitoring, categorizing and sifting, which largely parallel the interim stages of Ellis' (1989) model.

Figure 3

*Ellis' 1989 Information-Seeking Model*

\* From "Models of information behaviour research," by T. D. Wilson, 1999, *Journal of Documentation*, 55(3), p. 252. Copyright by Journal of Documentation. Adapted by permission from D. Ellis (See Appendix M)

Figure 4

*Kuhlthau's 1991 Information Search Process Model (ISP) (Kuhlthau, 2004)*

\* From "Seeking meaning: A process approach to library and information services," 2<sup>nd</sup> edition (p. 82) by C. C. Kuhlthau, 2004, Westport, CT: libraries Unlimited. Copyright by Carol Collier Kuhlthau. Adapted with permission of the author. (See Appendix L)

It is considered particularly important in a study of information-seeking behavior in a non-Western country to take into account the impact of affective factors. There are likely to be cultural differences between countries in the relative importance of personal feelings and intuitive factors, as opposed to logic, in guiding information-seeking. This may influence the extent to which existing models of information-seeking are applicable to non-Western societies. The incorporation of stages of information-seeking based on Kuhlthau's model of information search process will enable this study to fully investigate the impact of affective factors when testing the model in Oman, while retaining the established framework of social-science information-seeking derived from Ellis' (1989) model of information-seeking.

The selection of these three models of information-seeking for use in the study's conceptual framework is therefore based on the assumption that they offer particular benefits for the study of information-seeking among social scientists in developing countries. This is not to suggest that other models and theories of information-seeking are less relevant to this context. However, most of these focus primarily on specific aspects of information-seeking and less on understanding the whole process. For example, Dervin (1983) is mainly concerned to explain how information-seekers construct their own interpretation of information, while Foster (2004) expands on Kuhlthau's (1991) approach by developing a more detailed conceptualization of the affective and cognitive influences on information-seeking. Similarly, Bates' (1989) berry-picking model is most concerned with demonstrating how information is selected from sources, rather than providing a framework of the information-seeking process from start to finish.

Drawing mainly on the information-seeking processes identified by Ellis (1989) and Kuhlthau (1991), then, this model (see figure 5) describes a pattern of



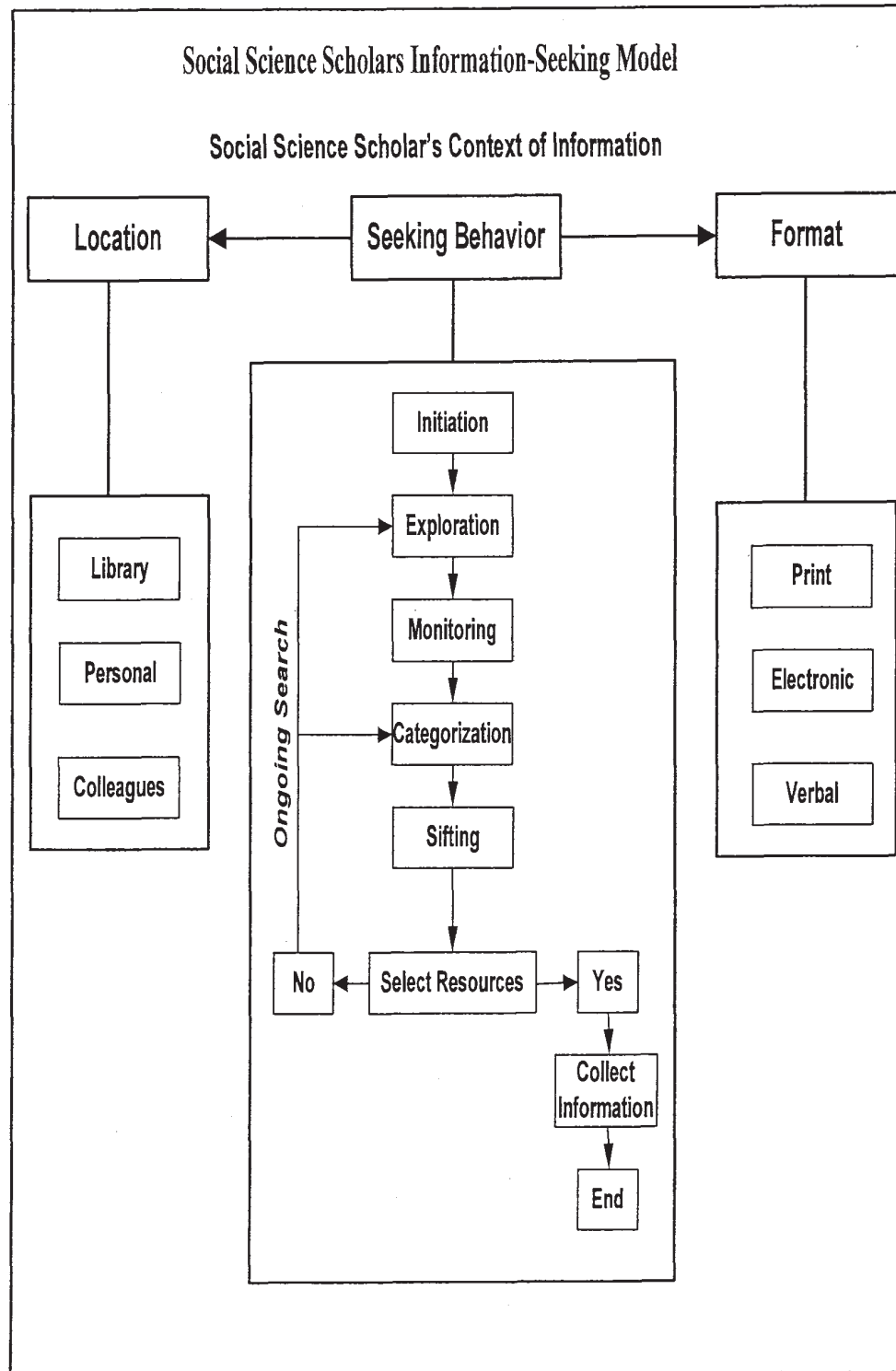
social scientists' information-seeking behavior that includes eight generic features: Initiation, Exploration, Monitoring, Categorization, Sifting, Selecting Resources, Collecting, and Ending. It also incorporates into the conceptual framework the key variables of location and format of information resources, which have been identified in previous research as being important in the study of information-seeking behavior (Meho, 2001). For example, studies of social scientists in Western societies have indicated that this group differs from researchers in other disciplines partly in terms of being more inclined to use informal information from colleagues, and less likely to use electronic resources when searching for information (Hobohm, 1999; Francis, 2005).

Briefly, the main stages of information-seeking, as conceptualized in this working model, are as follows.

The *Initiation* stage of the process, as in Kuhlthau's (1991) model, is the starting of the search process. It is characterized by feelings of uncertainty, anxiety, and apprehension (Aber, 2005). At this point, the researcher recognizes a need for information (Kingrey, 2002), becomes aware of a lack of knowledge and understanding (Kuhlthau, 2005), and begins an effort to resolve this feeling of uncertainty (Kingrey, 2002). The researcher's perceived need for information leads him or her into a range of behaviors, the simplest of which is to "look up" the answer in a resource or to ask a knowledgeable person, who may be key a source of information or who leads the seeker to needed sources of information. These sources of information may in turn lead to other sources of information, or the searcher's encounter with them may raise still more questions, either of which may drive the seeker to continue asking questions.

Figure 5

*Social Science Scholars Information-Seeking Model (Proposed Model)*



*Exploration*, which corresponds to the third stage in Kuhlthau's model, is the search for information on a topic. It is a stage that involves coming to grips with basic concepts and identifying related personal and social factors that affect the process and the outcome of exploration. At this stage, as in initiation, social scientists may value information derived from first-hand investigations, such as their own personal experiences and collections, and may seek advice from colleagues. In this stage inconsistent, confusion, and doubt frequently increase (Kuhlthau, 2005). Actions involved in this stage are "locating information about the general topic, reading to become informed, and relating new information to what is already known" (Kuhlthau, 1991, p. 366).

*Monitoring* involves staying informed of new information by regularly following particular sources of information and is characteristic of ongoing research. Both formal (e.g., journals, databases, newspapers, conference proceedings, publisher indices) and informal (e.g., friends, colleagues, experts) information resources are used for keeping up-to-date (Ellis & Haugan, 1997).

*Categorizing*, similar to Ellis' "Differentiating," consists of using known differences between sources to stratify and clarify issues. At this stage, the location as well as the format of information is important to the process of categorizing the information obtained.

*Sifting*, which is similar to Ellis' "Extracting," involves going through information resources and identifying relevant material from them (e.g., sets of journals, collections of indexes, abstracts or bibliographies, and computer databases). According to Ellis (1989), the source "consists of a run of a periodical, a set of conference proceedings, a series of monographs, the graphies, indexes, or abstracts, whether continuing or closed. The activity usually requires the setting aside of

discrete—and sometimes considerable—periods of time for working through the source” (p. 198). This stage is considered to be the most directed and focused of information seeking processes.

*Resource Selection* involves choosing the most relevant information resources that will be used in the research and teaching purposes. According to Kuhlthau (1991), “When, for whatever reason, selection is delayed or postponed, feelings of anxiety are likely to intensify until the choice is made” (p. 366).

*Collection*, similar to Kuhlthau’s fifth stage, “refers to a stage with thoughts of a sense of direction, [and] feelings of confidence and increased interest” (Aber, 2005, p. 64) and involves gathering selected information that addresses the specific focus the researcher has formulated. At this point, the individual has developed an understanding of the concepts underlying the problem and uses these concepts to make decisions regarding the relevance of various resources, organize and connect information, and determine how each piece fits into the developing solution (Kingrey, 2003).

The final stage, *Ending*, is the completion of the search, and may, as in Kuhlthau’s model, result in a research paper, book, class lecture, or other intellectual product, which describes and summarizes the process and results of the information search. In this stage, according to Kuhlthau (2005), a new understanding is generated enabling the researcher to explain his or her thoughts and ideas to others, or put the learning to use.

Like Wilson’s (1996) model, the present one is also a general model of information-seeking behavior that “...suggests how information needs arise and what may prevent [and by implication, aid] the actual search for information” (Wilson, 1999, p. 253). Fundamental to the present model, as with Wilson’s model, are two

propositions: 1) "...information need is not a primary need, but a secondary need that arises out of needs of a more basic kind," and 2) "...in the effort to discover information to satisfy a need, the enquirer is likely to meet with barriers of different kinds" (Wilson, 1999, p. 252). Here it is important to note that the format of information (electronic, print, verbal) may constitute a barrier or a help, or both. Consequently, the researcher attempted to assess what aspects of each type of format helped and hindered information search for social science scholars. As such, format of information may also play a key role in resource selection.

The context of social scientists' information searches is also investigated; that is, the overall environment and immediate environment of the user, how the user searches for information, and how the user identifies the relevant information that he/she needs. Because of the potentially important roles of location and format as part of the context of the information searches of social scientists, the present research involves observing social scientists' information-seeking in those contexts. By looking at information needs and information-seeking behavior in relation to location and format of information, the present research endeavors to learn what information is needed by social science scholars as well as how they understand their information seeking process, and to identify aids and hindrances to acquiring that information.

Like Kuhlthau's (1991) model, the present model considers the cognitive and emotional aspects of the information-seeker's behavior by relating the researcher's feelings, thoughts, actions, and tasks to the information-seeking process. Particularly, Kuhlthau's (1991) Initiation and Collection stages are especially relevant to social science searches because of the role played by information location at both stages. Information may be located in other people, such as colleagues, who may be

important sources of information or who direct the user to sources of information, or it may be located in personal collections or in a library or archive.

Finally, the present model, like Ellis' (1989) model, "sit[s] between the micro-analysis of search behavior (starting, chaining, extracting, verifying, ending) and a more macro-analysis of information behavior generally (browsing, monitoring, differentiating)" (Wilson, 1999, p. 255) and seeks to determine what factors affect the choices social science scholars make in the course of their information searches.

Similar to the work of Choo, Detlor, & Turnbull (2000), the present model seeks to assess the impact of electronic resources by looking at the use of a number of behaviors associated with using the Web. These, according to Choo, et al. (2000), include: 1) a "starting move," which may involve going to a jump site, portal site, or homepages; 2) "chaining," which takes place when the researcher follows leading out of the current page; 3) "browsing" which involves scanning top-level pages, examining lists of results, or viewing site maps; 4) "differentiating" which involves using book marks or printing, copying, or going directly to a site; 5) "monitoring," which is similar to monitoring in the context of ongoing research and involves revisiting a site to look for changed content; and 6) "extracting" which involves systematically working through a website to extract information of interest.

#### Purpose and Value of the Conceptual Model

The purpose of developing a conceptual framework for use in this study is to ensure that the research uses a systematic method of comparing the information-seeking behavior of social science scholars in Oman, as an example of a developing country in the Middle East, with that of social science scholars and other information-seekers in Western, developed countries. Models of information-seeking are valuable to library and information science as they provide a means of disaggregating the

various stages of information-seeking behavior into its component stages, allowing detailed study of human thought processes and actions at each stage, and facilitating the subsequent development and delivery of information products and services which are tailored to this behavior and which help promote successful outcomes from it.

Generic models are also of significant value as a comparative research tool. The use of a model developed on the basis of research in developed Western countries, as a framework for the development of a study of information seeking in Oman, provides the opportunity for a systematic comparison of information-seeking behaviors between scholars in Oman and in the West. In this way, the model can aid in an understanding of the information-seeking behaviors of social science scholars in the Middle East, and in Oman in particular, by demonstrating that this either parallels that of scholars in the West, and therefore can largely be explained in terms of existing theories and models, or that it diverges from the model and therefore from the behavior of scholars in Western countries. In the latter case, the study can investigate and identify the contextual factors, which appear to be responsible for the particular characteristics of information-seeking in Oman, which might also apply to other Middle Eastern or other developing countries.

For example, as discussed in the literature review, there is research evidence of particular conditions often found in less developed countries which are likely to impose constraints or other influences on the ways academic researchers obtain their information. These include, for example, the availability of research material in their native language or relating to similar social environments, a lack of access to research in areas similar to their own, budgetary constraints, and issues of intellectual freedom.

The existing established models of information seeking, such as those of Wilson (1996), Ellis (1989), and Kuhlthau (1991), are known to reflect generic

features which are common to many different categories of academic information-seekers, at least during the late 20<sup>th</sup> century when most of the published research in this area was carried out, and which therefore can be used for comparative research. Many of these studies identify similarities between researchers of different disciplines in their information-seeking behavior (INFROSS, 1970s as in Line, 1999; Folster, 1989; Ellis, Cox & Hall, 1993; Ellis & Haugan, 1997; Romanos de Tiratel, 2000).

Similarly, Ellis and Haugan (1997), who conducted a study of the research activities of engineers and research scientists at Statoil's Research Centre in Norway, were able to readily map the engineers' and scientists' information-seeking activities to the eight generic stages of research already identified by Ellis for social scientists: surveying; chaining; monitoring; browsing; distinguishing; filtering; extracting and ending. Ellis and Haugan (1997) conclude that Ellis' (1989) information-seeking model is robust in relation to the information-seeking patterns of scientists, engineers, and social scientists in both an academic and an industrial research environment and over a period of time in which there had been considerable developments in the information environment owing to rapid technological change.

Although relatively few studies of academic information-seeking have been conducted in non-Western, non-English speaking countries, there is some limited evidence that existing models such as Ellis' (1991) framework can also be applied to researchers in these countries. For example, on the basis of a three-year longitudinal study of the information-seeking behaviors of social science and humanities scholars at the University of Buenos Aires in Argentina, Romanos de Tiratel (2000) concludes that there are no significant differences between these researchers and those in Anglo-Saxon countries. When initiating research, both groups demonstrated a preference for using informal information search methods such as consulting colleagues. Interpreting



this finding within a social constructionist perspective, Romanos de Tiratel (2000) concluded that neither geographical nor disciplinary differences account for different patterns of information seeking, since each user's information need is unique and his or her information is formed and interpreted through interactions with other individuals and the diverse social and organizational contexts in which the research is conducted.

Other studies have also found that the information-seeking behavior of social scientists in developing countries is very similar to that of social scientists in Western, English-speaking countries, but have come to the different conclusion that this is because the main influence on information-seeking is the discipline of the researcher, regardless of geographical location. For example, Francis' (2005) study of social science faculty at the University of the West Indies, Augustine, found that, as in the Anglo-Saxon world, social scientists in this university favor the use of journal articles to inform their research and keep them up to date with developments in their specialist area. Like the Argentinean researchers in Romanos de Tiratel's (2000) study, the West Indian social scientists also relied heavily on informal sources of information such as recommendations by colleagues. Francis (2005) concludes that regardless of the location and information environment in which social science scholars work, journals in particular are an essential information resource for them, and that information-seeking patterns in the social sciences are universal in nature.

Despite the existence of a number of studies of academic researchers, including social scientists, which were conducted in developing countries, by far the majority of studies have been carried out in Western, English-speaking countries. The research which has been carried out in developing countries, such as Romanos de Tiratel's (2000) study of West Indian social scientists, and Mooko and Aina's (1998)

study of social science faculty at the University of Botswana, have limited their focus, in the main, to observing patterns of information-seeking and information-use and comparing these with what is known about these practices among Western researchers. Little effort has been made to refine or develop comprehensive models of information-seeking behavior within a non-Western, developing country environment.

#### Use of the Conceptual Framework in the Study Design

The use of a conceptual framework, based on established generic models of information-seeking behavior and the key contextual factors influencing such behavior, enabled the researcher to design appropriate research instruments to meet the study objectives. In particular, the framework is used to identify the types of questions that should be included in the survey questionnaire, e-mail and face-to-face interviews, and focus groups, in order to generate data on the information needs and behaviors of Omani social science scholars, which could be readily compared with what is known about their counterparts in the West. Additionally, the model is used to provide sufficiently detailed and practical information to feed into the ongoing development and delivery of library and information services in Sultan Qaboos University and in Oman and the Middle East more generally.

In this way, the conceptual framework is used to identify six key research questions:

1. What types of information do social science scholars generally need to access?
2. How do social science scholars identify and locate relevant information for research and teaching?
3. What information sources do social science scholars prefer to use for research and teaching and where do they find them?

4. What information sources do social science scholars use most frequently?
5. To what extent do social science scholars use electronic resources and print resources for research and teaching?
6. What barriers affect social science scholars' information-seeking behaviors and use of electronic resources?

In addition, the study broke new methodological ground in LIS studies by attempting not simply to describe information seeking behavior but also to analyze statistically the relationships among social science scholars' information-seeking behaviors and a number of demographic variables, as follows:

7. Is age, gender, length of service, rank, department, college, or preferred search language related to the scholar's information needs?
8. Is age, gender, length of service, rank, department, college, or preferred search language related to whether a scholar prefers print or electronic sources?
9. Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar physically visits the library?
10. Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar accesses the library catalog through the Internet?
11. Does the proposed model hold for social science scholars in developing Arab countries?

The range of questions identified as being pertinent to the present inquiry necessitated the use of both quantitative and qualitative research methods. On the one hand, the researcher needs to quantify different types of information-seeking behavior and conduct statistical analyses to identify correlations and relationships between

these and various demographic characteristics. On the other hand, there was also a perceived need to explore individual experiences of information-needs and information-seeking in more depth in order to provide a more comprehensive picture of information-seeking behavior as a whole phenomenon and to facilitate understanding of the reasons for particular patterns of behavior.

In order to address these requirements, the researcher used a mixed-method approach to the project, consisting of a structured survey questionnaire sent to all social science faculty based at the university during the 2006-2007 academic year, 21 e-mail interviews, 16 face-to-face interviews, and four focus groups with purposefully selected social science scholars.

Although generic models of information-seeking can provide a helpful conceptual framework for research in this area, their main value is as a starting point, against which the influence of other contextual factors on information-seeking can be measured. The review of the literature on information-seeking (Chapter 3) reveals the importance of contextual factors in influencing information-seeking behavior, patterns, and outcomes. In particular, it highlights the fact that earlier models of information-seeking may now need to be modified to take into account changes in the technological nature of the information environment. It also demonstrates that information-seeking is influenced by:

1. Research traditions and the publication patterns and formats in various academic domains; and
2. Local conditions, especially in non-Western, developing countries.

The current study focuses particularly on the relevance of these two categories of contextual factors in influencing patterns of information-seeking behavior, with a view to developing a more refined generic model of information-seeking which is

relevant to social science scholars in developing countries. Since various studies have already examined the contextual factors influencing the information-seeking behavior of social scientists as a disciplinary group, the main focus of this study is on the local conditions and demographic characteristics affecting information-seeking among social scientists in Oman, as an example of a developing society in the Middle East.

#### Significance of the Study

The present study is intended to make a significant contribution to knowledge in this area, by:

1. Synthesizing the features of existing information-seeking models, which from an examination of the literature are believed to best represent the behavior of social science scholars;
2. Using this model as a conceptual framework for a study of social science scholars in Oman; and
3. Refining the model as necessary on the basis of the results.

The ultimate objective is to produce a generic model which is equally applicable to social science scholars in developing and developed countries or, if this is not found to be possible, to produce an alternative generic model of information-seeking among social science scholars in developing countries.

A number of previous studies of information-seeking have taken a similar approach and have in this way contributed to an incremental development of knowledge and understanding about the nature of information-seeking, particularly among social scientists as a group which exhibit distinct information-seeking behavior. For example, one of the most significant findings of the Meho and Tibbo (2003) study of social science researchers studying the Kurdish people was that Ellis' (1991) model of information-seeking behavior needed to be revised to incorporate

four additional activities which did not fit readily within the existing model. These were accessing, networking, verifying, and information-managing. Meho and Tibbo (2003) observed that, among their study participants, initial searches often failed to lead to the information required, and considerable time was being spent trying to locate and gain access to research materials. The barriers to access included the unavailability of sources at their own academic institution and refusals of access to government data, and these barriers often necessitated travel to other institutions, sometimes overseas, to locate the materials they needed. The activity of networking was found in this study to be particularly important to the social science researchers in the context of access problems, as they built up networks of contacts with fellow academics and members of other organizations relevant to their research in order to facilitate information-sharing and the building of personal research collections. It was noted that the Internet had greatly facilitated this process, enabling the development of what the study team referred to as “invisible colleges” (Meho & Tibbo, 2003).

Meho and Tibbo (2003) also identified the need to refine the concept of differentiation, as included in Ellis’ (1989) model, to reflect the more elaborate process conducted by their study participants in order to evaluate the ideological perspectives of research material. Meho and Tibbo (2003) argue that the process of “verification” as it is undertaken by social scientists is different than the verification activities of physical scientists, which is concerned with checking figures and formulas for errors. In the social science context, verification is necessary in order to identify potential sources of ideological bias in the work or its findings. This was particularly pertinent to the study of stateless peoples, since research material may be published by the very governments or organizations that oppress these groups, but is likely to be of relevance to many other social science topics. Additionally, Meho and

Tibbo (2003) argued that the development of web-based resources had made verification a more important activity than it was at the time Ellis published his model of information-seeking, since many of the participants in their study expressed the view that electronic resources were often unreliable or inaccurate.

Finally, Meho and Tibbo (2003) observed that information management is a particularly important activity undertaken by the social science researchers in their study, who repeatedly referred to the ways in which they file, archive, or organize their research material. The study team noted that although these forms of information management cannot be categorized as information searching or gathering activities, they have a very important role in information retrieval and therefore should be included in the model as a separate category.

The current study is based on a similar approach, in that it mapped the study findings regarding information-seeking among social science scholars in Oman against the existing conceptual framework and attempted to identify specific stages or aspects of information-seeking behavior which do not fit the conceptual framework.

If the patterns of information-seeking behavior among social science scholars in Oman are found to fit the existing model of information-seeking, the study will provide support for the view that it is possible to develop a generic theory of human information-seeking behavior that is equally applicable to developed and developing countries. No such theory exists to date; there are only a number of models, which have attempted to describe and classify observed patterns of behavior for use in predicting these patterns in other situations. In this way, the models have been useful to the field of Library and Information Science by predicting the ways in which information-seekers will attempt to satisfy their needs for information, enabling information providers to develop services and resources tailored to these behaviors.



However, as Bates (2005, p. 3) noted, “Models are most useful at the description and prediction stages of understanding a phenomenon. Only when we develop an explanation for a phenomenon can we properly say we have a theory. Consequently, most of theory in LIS is really still at the modeling stage.” Further research, especially in comparative contexts such as the countries of the Middle East, will help to inform an understanding of the nature of information-seeking behavior and the factors which influence it to enable a theory of human information-seeking behavior to be developed.

In particular, by applying a conceptual model of information-seeking developed in the West to a developing country environment and seeking to identify and explain observed divergences from this model, the study helps promote understanding of whether there is indeed a generic pattern of information-seeking that applies across all local environments, or whether local contextual factors influence information-seeking to such an extent that no generic theory can be developed.

#### Summary

This chapter discusses the conceptual framework used in the current study and justifies the use of this framework in terms of facilitating the systematic, comparative study of information-seeking among social science scholars in Oman. By using a general framework based on established models of information-seeking, particularly as they apply to social scientists, and by observing divergences from this framework among the study participants, it will be possible to arrive at conclusions regarding the existence or otherwise of generic patterns of information-seeking across cultures and the relative importance of contextual factors in determining information-seeking behaviors.



## CHAPTER 3

### REVIEW OF LITERATURE

#### Introduction

This chapter consists of a critical review of relevant literature on information-seeking, with particular reference to social science scholars and to information-seeking in developing countries. The main findings of previous research are discussed within a number of key themes, including the use of formal and informal sources of information, the use of electronic resources and barriers to information-seeking among these groups. The purpose of the review is to provide contextual background information for the current study of social science scholars in Oman and to identify which issues to focus on in order to provide useful comparative data and help to fill some of the current information gaps. The key findings from previous research are used in the development of a conceptual model of social science information-seeking in developing countries, which forms the framework for the current study. The knowledge gaps, which are identified in the literature review, are used in the design of the research instruments in order to provide results that would enable refinement of the model and the development of a theory of information-seeking for developing countries. The strengths and limitations of previous work in this area are also considered, and the chapter concludes by identifying the main gaps in the literature, which need to be addressed, either in this study or in future research more generally.

#### The Origin and Development of Research on Information-Seeking

The Royal Society Scientific Information Conference of 1948 marked the beginning of the modern study of information-seeking behavior (Wilson, 2000). At this Conference, a number of papers on the information behavior of scientists were newly published or released from war-time restrictions (Wilson, 1999). Bisco (1967a,

cited in Brittain,1970), reported that the first known empirical studies of information needs and uses, in contrast to the recorded uses of stored materials, were conducted by Bernal (1948a) and Urquhart (1948). The theories developed during this period, particularly those about “invisible colleges” and reward systems, presumed linear models of information science research (Crane, 1972; Hagstrom, 1965) and were concerned with the use of information resources and systems more than the human aspects of information use (Wilson, 2000).

Since then, a field of Library and Information Science (LIS) research has evolved which is focused on user needs and seeking behavior and which is intended to inform the design of library and information resources and service delivery.

#### Definitions of Information, Information Needs, and Information-Seeking

Within the LIS research context, the term “information” has been used broadly to encompass a wide range of phenomena. For example, Rohde (1986, p. 50-51) uses the term to “denote factual data or advice or opinion, a physical object, such as a book or journal, or the channel through which a message is conveyed, for example, oral or written communication.” At its most basic level, “information” is “any stimulus that reduces uncertainty” (Krikelas, 1983, p.6).

While there is a general consensus on how to define “information,” “information need” is a more subjective, relative concept that only really exists in the mind of the experiencing individual (Wilson & Streatfield, 1981). In its broadest sense, “information need” is defined as the “recognition of the existence of uncertainty” (Krikelas, 1983, p.6).

The term “information-seeking behavior” encompasses “...the ways individuals articulate their information needs, seek, evaluate, select, and use information...in other words, information-seeking behavior is a purposive seeking for

information as a consequence of a need to satisfy some goal” (Meho & Haas, 2001, p. 6). In the course of seeking, the individual may interact with manual information systems (i.e., a newspaper, book or journal), or with computer-based systems (i.e., the World Wide Web) (Wilson, 2000).

In practice, information-seeking means different things in different contexts and varies across academic disciplines. In fact, distinct differences exist among scholars’ information-seeking behaviors, the types of information they use, and their theoretical and practical use of vocabularies and paradigms specific to their disciplines (Kingrey, 2002; Lines-Andersen, 2002). This review focuses primarily on information-seeking as it applies to social science scholars and those in developing countries.

#### Information-Seeking Among Social Scientists

Within LIS research, the majority of studies to date have focused on the physical sciences or related academic areas. Overall, “there have been fewer studies of social scientists than of their counterparts in the sciences” (Francis, 2005, p. 67), and it has been noted that the social sciences remain woefully understudied (Bates, 1996; Case, 2002). Various reasons for this relative neglect of the social sciences which have been put forward include the imprecise terminology and fuzzy-edged concepts of the subject areas (Hobohm, 1999), the fact that most of the social sciences are relatively young and scarcely organized as coherent disciplines (Line, 1999), and because there is no firm agreement as to what constitutes the social sciences, beyond sociology, psychology, political science, and economics. As Line (1999) states, “most would include social anthropology, social psychology and management; some would include education, and others history” (p. 131). The only common thread appears to

be that “the discipline is concerned with human beings interacting or acting in groups” (Line, 1999, p. 131).

In fact, one of the main features distinguishing social science from other academic domains is its interdisciplinary nature, which complicates the study and interpretation of information-seeking among social scientists. Nevertheless, since the Royal Society Conference, a number of studies have been conducted on the information needs and seeking behaviors of social science scholars (Newcomb, 1953; Paisley, 1968; Vickery, 1994; Belkin, 1995). Differences and overlaps between the information-seeking behavior of social scientists and other academics have been identified, confirming that despite the inter-disciplinary nature of social science, this domain is worthy of study in its own right within library and information science (LIS).

In the 1970s a major program of research conducted at Bath University, as in Brittain (1984), in the UK investigated the information-seeking behaviors of social science scholars and practitioners. Often referred to simply as ‘The Bath Studies,’ the Investigation into Information Requirements of the Social Sciences (INFROSS) and the Design of Information Systems in the Social Sciences (DISISS) were the first major studies conducted from an Information Science perspective which aimed to determine social science user requirements in terms of library and information services. However, the current practical relevance of findings from the Bath studies is very limited, since the studies were conducted long before the information-seeking environment was transformed by the development and widespread use of electronic resources, particularly the Internet.

A major program of empirical research based on social science students was conducted by Ellis (1987, 1989) who used this research to develop a generic model of

six stages of information-seeking: starting, chaining, browsing, differentiating, monitoring, and extracting. This has become one of the major conceptual models underpinning the field of Library and Information Science and still forms the basis of the generic framework of much research in this area, including the present study. Although it has subsequently been refined and modified, Ellis' (1989) model of information-seeking has retained its value over time as a tool for categorizing and interpreting information-seeking behavior, especially among social scientists. However, it was developed in the context of a Western, developed society and its relevance and applicability to information-seeking in non-Western countries remains unknown.

More recently, Meho and Tibbo (2003) reported on research, which focused on the inter-disciplinary nature of the information needs of social scientists. On the basis of their study of social science researchers across many different academic institutions who were conducting research on stateless people, Meho and Tibbo (2003) were able to refine Ellis' (1989) model of incorporate observed aspects of information-seeking which did not fit readily within the existing model. The main value of Meho and Tibbo's (2003) work was to highlight the inter-disciplinary nature of the work of many social scientists, which differentiates them from single-disciplinary scholars and introduces particular complexities and challenges into their information-seeking behavior. This important aspect of social science research has been addressed as a central feature in the current study.

Various other studies have included research into the information-seeking behavior of social scientists, some using a comparative perspective, which also covers scholars from other academic disciplines. The following discussion draws widely on

research in this area to describe what is known about information needs and information-seeking behavior within the social science domain.

#### *Diversity within Social Science*

Despite these general observations about the influence of research traditions and publication formats in the social science domain, it is important to note that there is considerable diversity between different social science disciplines, which will also influence patterns of information-seeking. For example, as Line (1999) notes, econometrics, a branch of economics, is closely related to mathematics and research in this area thus shares similarities with the hard science or natural sciences, while survey research stated that most of the data in this area is very 'soft.' Additionally, individual characteristics such as the researcher's own level of experience and purpose for conducting research will interact with disciplinary characteristics to affect patterns of information-seeking and the resources used.

#### *Use of Informal Sources*

Research has found that both social scientists and humanities scholars tend to favor informal methods of obtaining information such as consulting colleagues, browsing and following references or citations (chaining) from other works (Bouazza, 1986; Watson-Boone, cited in Bass, Fairlee, Fox, & Sullivan, 2005; Hobohm, 1999, Ucak & Kurbanoglu, 1998). They are also less likely than other categories of researchers to consult reference librarians or bibliographic reference tools (Duff & Johnson, 2002). In the case of humanities scholars, one explanation which has been given for this tradition of using informal sources is that they are already experts in their respective fields and do not have a need for help or advice when searching for information, or that they are reluctant to acknowledge a lack of information or knowledge of important sources (Ucak & Kurbanoglu, 1998).

A number of studies and articles have indicated that social science research tends to be less systematic and more informal than in other research domains, such as the physical sciences and humanities (INFROSS, 1970, cited in Wilson, 2000; Brittain, 1984; Bouazza, 1986). Line (1999) has argued that the “relative lack of coherence and consistency in the social sciences” (p. 132) and the instability of the subject matter has meant that “the penalties for ignorance of previous work in supposedly similar areas are far less than in the pure or applied sciences” (p. 132). The inference is that social scientists have less rigorous information-seeking behavior than other types of researchers and have also been less likely to demand improved library and information services to meet the needs of their disciplines. Following this line of argument, it is possible to contend that information-seeking and retrieval by social science scholars is less systematic and rigorous through necessity, due to a lack of sufficient information in their subject areas, and that they have to make do with whatever is available to them (Line, 1999).

Research topics in social science frequently span many different sub-disciplines, such as geography, history, psychology, and sociology, rather than being clearly delineated in the way that physical science research topics often are. Moreover, as Line (1999) notes, since social science is concerned with human beings interacting or acting in groups, “the interaction of largely unpredictable with other largely unpredictable beings produces great scope for instability and uncertainty” (Line, 1999, p. 131). These inherent characteristics of social science research often require a great deal of flexibility and innovation in information-seeking behavior, which leads to the use of informal sources of information such as colleagues, and the use of various chaining strategies to follow up references in what may often appear to be an unsystematic fashion.



Since social science is the study of people and societies which are themselves in a constant state of development and change, this means that the concepts, terminologies and findings of research in this domain tend to change much more frequently than those of other disciplines, and there are fewer definitive sources of reference information available. Moreover, social scientific research is more often conducted from a specific theoretical or ideological perspective, and the findings of previous studies, therefore, have to be regarded much more cautiously and interpreted more carefully than in research domains where there is a greater degree of consensus or inherent objectivity, such as the physical sciences. This may be one of the factors leading social science scholars to rely more heavily on references in books rather than citations in periodical articles, since the latter may be regarded as less authoritative given the relative ease of publication in journals rather than books.

In general, previous studies have found that social science scholars utilize a wide variety of sources in their information-seeking, including books, journals, monographs, archives, citations, indexes and abstract, personal collection, and electronic sources (Brittain, 1970; Stoan, 1991; Folster, 1989; Meho, 2001; Case, 2002). However, a number of studies have found that social scientists are particularly likely to use informal methods of searching for information sources, compared with their counterparts in other academic disciplines.

One of the main findings of the Bath Studies (in Brittain, 1984), for example, was that compared with scholars of other disciplines, social science scholars were less likely to use a formalized approach to information retrieval and preferred personal recommendations, browsing, and chain citations over the traditional bibliographies and reference databases used by their non-social science peers.



Similarly, the social science researchers as well as the scientists in Ellis, Cox, and Hall's (1993) study employed personal contacts as an initial source of information when approaching a new topic. Both groups were found to rely equally heavily on starter references, personal contacts, reviews or review type material, and secondary services. In comparison, the humanities scholars tended to rely more heavily on formal sources when seeking information, such as printed bibliographies, subject catalogues and research guides (Broadbent, 1986; Stoa, 1991; Sievert & Sievert, 1989; Wiberley & Jones, 1989). Given the observed similarities between scientists and social scientists in their heavy use of personal contacts in information-seeking, the findings of research by Brittain (1970) on the role of informal networks in the science community may also help to shed light on their role among social scientists. Brittain (1970) found that the informal networks is a quick way in bringing new developments to researchers, help to keep researchers aware of the latest state of knowledge in their field, and the information disseminated by the informal networks is current. Informal networks were also seen to be important as an informal arena in which scientists are willing to speculate about their work, discuss their mistakes as well as their successes, and range over a broad area of interests which in a more rigorous framework may appear only tangential to their specific findings, and, finally, it allows them to direct a communication and select the information they need.

The research highlighted above was conducted long before the establishment of the Internet and other electronic means of communication, and it may be the case that the relative importance or nature of informal networks within academic communities has changed as a result. However, more recent research with scientists (Ucak & Kurbanoghu, 1998) also found that scientific conferences and meetings provided this group with an important platform for the acquisition of informal

information through discussions with colleagues encountered at such gatherings. When the respondents in Ucak and Kurbanoghu's (1998) study were asked as to why they attend scientific meetings, all indicated that such meetings were beneficial, not only for the knowledge gained from listening to presentations and discussions, but also for developing social contacts and relationships. It may be that the establishment of the Internet has facilitated the process of informal networking among various groups of academics, complementing rather than detracting from the importance of face to face gatherings. This view was supported by research by Borgman (2000) who noted that "The invisible college...has embraced the ease in communicating informally in a virtual environment" (p. 145).

Similarly, Tenopir (2003) noted that many previous studies have observed that although scientists in all fields of work read peer-reviewed journal articles, there are significant differences in their level of use of such articles and whether they obtain them in print or electronic format (Pullinger & Baldwin, 2002; Tenopir & King, 2000; Kling & McKim, 1999; Kling & McKim, 2000, cited in Tenopir, 2003). For example, physicists, it is observed, have traditionally been heavy users of preprint articles and have adapted and make much use of e-print services, because their research tends to be highly collaborative, while engineers tend to read fewer journal articles than scientists, but highly value them and spend more time on those that they do read (Tenopir, 2003).

Quigley, Peck, Rutter, McKee, and Williams' (2002) survey of 230 science faculty and researchers at the University of Michigan also observed different levels of use of preprint literature and noted the important tradition of using this publication format in certain scientific disciplines, notably mathematics (78%) and astronomy (70%). In disciplines where preprinted literature was used less frequently, such as

geology (13.3%) and chemistry (9.1%), the research team noted that it is sometimes the case that the use of preprint literature is actively discouraged by their respective professions.

As the social sciences are interdisciplinary in nature, a number of studies have found that social scientists tend to fall somewhere between other disciplines such as science and humanities, using a wider range of formal and informal sources (Case, 2002, p. 238). As such, social science scholars rely on a wide variety of both formal (e.g., journal articles, books) and informal sources (e.g., personal contacts, colleagues) of information. They often have to depend on literature (e.g. printed documents, archival materials, government publications, newspapers, statistics) from other disciplines not indexed in social sciences literature per se which require “a great deal of creative ingenuity on the part of the researcher to conceptualize as significant and then track down” (Stoan, 1991, p. 244).

The use of informal sources of information by social scientists is something that needs to be examined in the context of the current study of social science scholars at Sultan Qaboos University in Oman. It is conceivable that this might be a feature of social science information-seeking that is different in developing countries and may, therefore, have an impact on overall patterns of information-seeking and information use. For example, more limited availability of relevant formal resources in developing countries might lead scholars to depend even more heavily on informal sources, but, conversely, smaller numbers of people working in similar fields of work within the country might result in a lower level of reliance on informal sources and networking, at least at the local level. Observing these patterns and comparing them with those of scholars in developed countries might help to inform understanding of the reasons why social scientists use formal or informal sources of information.

### *Preference for Formal Sources*

Social science scholars have reported that although they acquire needed information through both informal and formal channels, given the choice, they prefer the formal to the informal (Ucak & Kurbanoghu, 1998, Meho & Haas, 2001; Meho & Tibbo, 2003).

Formal sources of information most often used by social scientists include monographs, books, and journals (Folster, 1989; Hobohm, 1999; Shokeen & Kushik, 2002). Research by Abouserie (2003) indicated that social science faculty members' choice of information sources partly depends upon the task for which they are seeking information. More specifically, the study revealed that social science faculty depend more on formal sources, such as books and journal articles, both print and electronic, for conducting research than for teaching (Abouserie, 2003).

For reference sources, social science scholars have been found to express a preference for encyclopedias and dictionaries rather than handbooks and bibliographies rather than indices and abstracts (Ucak & Kurbanoghu, 1998). Social science scholars also rely heavily on government publications. Mooko and Aina (1998) used a combination of two complementary research designs (survey and citation analysis) to examine the use of government publications by 75 social science faculty at the University of Botswana. They indicated that most social sciences faculty at the university used government publications for research and teaching. The five government publications reported as most used by social scientists in order of importance were statistical reports, national development plans, annual reports, reports of commissions and committees and population census reports.

A study by Buttlar and Wynar (1992) surveyed social science scholars who had published in five major ethnic studies journals (Canadian Ethnic Studies, Ethnic

Forum, International Migration Review, Journals of American Ethnic History, and Journal of Ethnic Studies). Results showed that journal articles, monographs, government documents, library catalogs, and newspapers were the sources that were most highly valued by respondents. Similarly, Meho and Haas (2001) reported that the information sources used by social science scholars in their study to locate government information were similar to those used by the respondents in Buttlar and Wynar's (1992) study. Social scientists in both of these studies indicated that printed and electronic-format journals, databases, government documents, indexes and abstracts in print format, and library catalogs were the sources that they consulted most frequently.

One of the main limitations of previous studies on the use of formal versus informal sources of information among social scientists is that the studies have not fully considered the impact on use of the availability of and convenient access to such sources. In general, there is considered to be unrestricted availability and access to all potential forms of information, which indeed is often the case in developed countries. However, these may be far more restricted in some developing countries, particularly where there no lengthy tradition of social science research, or where official restrictions on freedom of information reduce or prevent access to certain types of documents. Even in the developed world, there are likely to be variations in the ease of access to various types of information, and there is a need for improved understanding of the influence of availability and access on patterns of information-seeking and their outcomes. Social Scientists in Meho's (2001) study indicated that the government information either hard to find or remains classified for long periods of time. The present study will explore this, with a view to producing findings which can be generalized to other contexts.

### *Publications*

These characteristics of social science have also resulted in different publication patterns and formats, which affect the availability of information and how it can be used. In many physical sciences, for example, there is a well-established terminology and definitive research findings which have facilitated the development of databases, handbooks, indices and abstracts, which are as a result widely used in information-seeking within these disciplines and less so in the social science and humanities domains, where encyclopedias and dictionaries are more frequently used as reference sources (Ucak & Kurbanoglu, 1998).

The lack of consensus in the social sciences may also necessitate the use of broader-ranging information searches and the consultation of a larger number of sources in order to effectively interpret and evaluate the findings of previous work on a particular subject. Nevertheless, a number of studies have found that journal articles are one of the most popular sources of information overall for social scientists, more so than for humanities scholars (Folster, 1989; Romanos de Tiratel, 2000), perhaps because of the greater need in social science for up-to-date information given the rate of development of social science knowledge.

Compared with the physical sciences, it has also been much more difficult to develop a coherent and comprehensive established body of research in the social sciences due to the parochial nature of many social science studies and the tendency for social science researchers to write in their own native languages rather than English (Line, 1999). The body of research which does exist tends to consist predominantly of material published in the English language and from Western countries. It has also been observed that there has been a general tendency for parochialism within social science in Western and Eastern Europe and the United

States (Brittain, 1986), with research from the U.S. being most predominant in availability and accessibility all over the world, while research from outside these three main areas is virtually ignored in other parts of the world. Publication patterns and accessibility of sources to social science researchers around the world, therefore, influence their information-seeking behavior by encouraging a focus on American and other English-language sources and the research findings they contain, at the expense of non-Western research findings published in other languages, which might have taken information-seekers in different directions, both in their continuing search for information and the conclusions they arrive at in their own research. Although Brittain's (1986) comments on the parochialism of social science research were made before the development of the World Wide Web which has improved the ease of international communications between social science researchers, it remains likely that research published in the English language will receive a greater audience than material in other languages.

#### *The Use of Primary Research*

A further difference in information-seeking between social scientists and other researchers is that social scientists often undertake ground-breaking research in particular topics to generate up-to-date findings, for example, on people's attitudes or experiences. As a result, they can rely less heavily on secondary sources of material than, say, humanities researchers and spend more time generating new information or data from primary sources rather than seeking existing information. This is one of the reasons why studies of information-seeking have found that social science scholars spend less time consulting library sources than researchers in other disciplines (Romanos de Tiratel, 2000).



### *Location of Information*

Several studies have found that researchers from various disciplines mainly use information located in libraries, personal collections, or among their network of colleagues or other contacts. For social scientists, the inter-disciplinary nature of their work means that the books and journals they need are often spread throughout a library, and it can be difficult to use library resources efficiently, even with the assistance of a librarian (Turner, 2000). Perhaps for this reason, few of the social scientists surveyed by Abouserie (2003) indicated that they read from sources located in the central and department libraries. While a slightly higher percentage reported using sources in their own homes, the majority stated that they read from sources located in their offices. Similarly, a study by Folster (1989) revealed that consulting a librarian was a very low priority for social scientists engaging in information-seeking. Folster (1995) found that libraries are utilized only as a last resort by social scientists and are viewed as sources for acquiring material previously identified as relevant, rather than as a primary source for identifying relevant information. Instead, social scientists have been shown to greatly value and heavily rely on personal collections for their research (Soper, 1976; Folster, 1989; Hartmann, 1995; Hobohm, 1999). Several studies on information needs and information-seeking behavior of users have indicated that the process of seeking information always starts with the personal collection (Hobohm, 1999). Both scientists and social scientists in Soper's (1976) study reported that convenience was the main reason for putting effort and money into building their personal collections. Other reasons cited were easier to use due to the ability to arrange the collection to meet and reflect their needs and interests and the flexibility, responsiveness, and accessibility of personal collections more than other collection of materials (Soper, 1976).



This is another area in which existing research findings are less likely to be relevant to a developing country context. It is likely to be the case that libraries in developing countries will have smaller collections of relevant materials, particularly in the relatively young subject areas of the social sciences. This may lead to an increased reliance on personal collections, but at the same time it may be difficult to build these personal collections due to budgetary constraints and the difficulty of purchasing academic resources locally. Again, research is needed in this area to understand the role of location of information on patterns of information-seeking, which is likely to have wider applicability to understand human behavior in information-seeking.

#### *Use of Electronic Resources*

Electronic sources have revolutionized the way research can be done. Those seeking information no longer have to physically go to the library but can stay at home or the office and merely need to log on to access online library information resources. The ease in which information can be retrieved online “can enable innovation in teaching and increase timeliness in research as well as increase discovery and creation of new fields of inquiry” (Renwick, 2005, p. 21), and research has shown that many information-seekers prefer to use electronic resources and the Internet to obtain information quickly and easily (Dalglish & Hall, 2000). Tenopir (2003) conducted a study of the ways in which students and faculty in an academic setting use the Internet and other electronic resources. This revealed that relevant articles were generally printed out rather than saved or book marked, and that hyperlinks were used by scholars to locate and view related research. Tenopir (2003) also discovered that library subscriptions to e-journals were increasing over time as

scholars from different disciplines increasingly relied on them, while library and personal subscriptions to print journals were decreasing.

Some studies have found that social scientists lag behind their counterparts in other academic disciplines in their use of technology (Hobohm, 1999). Even at the time of the Bath studies, social science scholars were found to be less likely than those in other academic disciplines to make use of new technology in their information seeking (Line, 1971). By the late 1980s, studies were indicating that social scientists' use of technology had still not increased significantly since the Bath studies; possible reasons for this according to Preschel and Woods (1989, p. 282) were "costs, the interdisciplinary structure, imprecise terminology and fuzzy-edged concepts of the subject areas, and the possibly poor prospectus for return on investment," suggesting that it may have been at least in part a lack of adequate technology provision in libraries which was contributing to the low of usage among social scientists. However, many studies have provided evidence that social scientists actually prefer to use print resources for information (Hernon, 1984; Folster, 1989; Hobohm, 1999; Folster, 1995; Tenopir, 2003; Francis, 2005) and are less likely to use electronic sources (Bouazza, 1986; Hobohm, 1999). According to these studies, social scientists mainly rely on books, journals, conferences proceedings, bibliographies, government publication, and dissertations for their information.

In general, it seems that traditional print sources of information continue to be important to social scientists, along with other academic researchers, despite the growth in the availability of electronic-format information. This was predicted in 1992 by the participants in Reichel's study of humanists, scientists, and social science scholars in a university environment. When interviewed about their perceptions of how technological resources will affect the information-seeking process by the year

2001, the scholars indicated that even though they believed that electronic access to information would be dominant by 2001, traditional sources would continue to be important and the overall impact will be additional types of information sources, not replacement of formats. Similarly, Curtis, Weller, and Hurd's (1993) study of health sciences faculty at the University of Illinois at Chicago found that although new electronic formats were becoming available for accessing literature, the traditional formats of information resources continued to be used.

Nevertheless, there does seem to have been a significant increase over time in the use of electronic resources by social science scholars, reflecting a general trend in information-seeking behavior, which has had an impact on academic research generally. Meho & Haas' (2001) research topic based analysis revealed that besides using traditional methods for locating relevant information, social science scholars used the World Wide Web and electronic mail in their information-seeking. More than 88% of the social scientists in this study indicated that they had electronic resources in their research of the Kurds, including several core social science indexes and abstracts (Meho & Haas, 2001, p. 20). These findings mirror those of similar research with science researchers. According to Curtis, Weller, and Hurd (1997), the use of electronic resources by scientists had increased since their first study in 1991. Faculty used electronic resources in higher percentages and used a wider of electronic resources in 1995 than they did in 1991, and this trend towards electronic resources was expected to continue.

Similarly, a survey of science faculty at the University of Oklahoma conducted by Brown (1999) found that less than 50% of the science faculty were using electronic journals for teaching and research. Another survey by Lenares (1999) found that the percentage of the use of electronic journals by scientists from different

disciplines had jumped to 61%. Lenares' (1999) study found that the number of faculty using electronic journals had increased in all disciplines, with the greatest growth in use among scholars in the physical and biological sciences. Ninety percent of respondents in the physical sciences reported that they use electronic journals.

Research since then has supported Meho and Haas' (2001) findings that social science faculty generally utilize information technology to support their research (Hughes & Buchanan, 2001; Tenopir et al, 2003; Heterick, 2002; Tombros, Ruthven, & Jose, 2005). A study by Heterick (2002) indicated that social scientists comfortable using electronic resources and they believe that variety of electronic resources such as databases are very important for their research. Francis' (2005) study of social scientists' information-seeking behaviors at the University of the West Indies revealed a preference for journal articles in electronic format over print articles, which demonstrates that social scientists "have embraced electronic publishing and [have] electronic access capabilities" (Francis, 2005, p. 71). It was reported that the awareness of new information technology among the social scientists in this study was demonstrated not only by their knowledge and use of the Internet and e-mail, but also by their utilization of a wide range of other relevant electronic databases.

The main limitation of previous research in this area is the reduced applicability of much of the work to present-day information-seeking, given the extremely rapid changes in the nature of the technological environment which are taking place. Even since the publication of the Meho and Haas study in 2001, it can be expected that there may have been an increase in the use of electronic information-seeking, as technology becomes faster and easier to use, more resources become available in electronic format, and individuals become more skilled in the use of information technology. The major significance of the technological environment to

Library and Information Science research presents challenges to this area, since there is a constant need to update the findings of previous studies and to explore the impact of technology in a range of different subject areas and geographical environments.

*Factors Influencing the Use of Electronic Resources*

The retrieval techniques required with the use of technology are often incompatible with the way social scientists search for information. Hobohm (1999) describes this problem as twofold, due to

...the rigid methods of the computer with regard to storing and retrieving information, and the fuzzy object and informal scientific behavior of the scholars. Information retrieval is inherently uncertain and incomplete because on the input side you never really know for which circumstances a document indexed will find a future use, and on the output side—the moment of information retrieval—you do not know which context has produced documents you will find. And necessarily it has been different in most of the aspects, not only in terms of the date of creation. And finally there is the indexing process itself which is problematic regardless if it has been done by human in intellectual indexing or by a machine in automatic indexing.” (p.125)

Moreover, the specialized nature of social science research often impedes social science scholars' success in finding adequate information in electronic format. For example, social science research that is historically focused requires the examination of archival materials (Meho & Tibbo, 2003, 575). It is among these scholars that reliance on personal collections, archives, and fieldwork may be more appropriate than the use of electronic resources. However, other research has found that electronic resources are more useful to social scientists than to humanities scholars (Wiberley & Jones, 1994) since humanistic evidence is not easily categorized

or entered into relational databases is not readily subject to statistical analysis in the way that much of social science material is (Wiberley & Jones, 1994).

Personal characteristics and previous experience also have an impact on the extent of use of electronic resources among academic scholars. In a study of medical science faculty at the University of the West Indies (Renwick, 2005), it was found that “how faculty attain [computer] skills and knowledge depends on many factors, such as their disciplines, academic status and ranks, ages, access (hardware and location) to electronic resources, and training. Factors motivating use can be, for example, what level of importance they allocate to e-resources, how useful they have found them, and for which purposes they use e-resources” (p.22).

Renwick (2005) argued that the library plays a leading role in terms of orientation and training in the use of information resources, including electronic resources. However, an earlier study by Stoa (1991) reported that “[Social science scholars’] rates of use do not improve even when [they] are trained in database searching and given more convenient access” (p. 248). Although the use of information technology has increased generally since the time of Stoa’s study, it is likely that there is still a disparity between those scholars in the social sciences or other disciplines who are more or less technologically literate and are at ease with the Internet and other electronic sources.

The availability of electronic-format information within a particular field of study will also have an impact on the use of electronic resources in information searching in that field. In this context, there has been a major increase in recent years in the availability of electronic journals, in many different academic areas, reflecting the increasingly important role that journals occupy in academic research, whether in print or electronic format (Tomney & Burton, 1998; Tenopir & King, 2001; Fry &

Tajja, 2004). Tenopir and King (2001) found that about a third of the journal articles being read by scientists in their study were from electronic resources or digital databases, and that reading of journals had increased in recent years and had become diversified to cover a wide variety of journals. Among the West Indian social scientists in Francis' (2005) study, it was found that a number of electronic databases were very popular, including EbscoHost, Emerald, OCLC FirstSearch, and Proquest. However, between a quarter and one-third of the participants had never heard of each of these sources, indicating that there is still a wide diversity of practice within social science in terms of electronic information-seeking.

Comparing the usage of electronic resources among various disciplines, the SuperJournal project indicated that social scientists are more task-driven (browse or search depending on the task) than scientists in their use of electronic journals. More specifically, social science scholars search for current and relevant articles when prompted by tasks while scientists browse electronic journals on a regular basis to keep up to date (Pullinger & Baldwin, 2002).

Studies, which have investigated the impact of factors influencing the use of electronic resources, have been valuable in highlighting the influence of personal factors such as age, occupational seniority and previous experience. This is a perspective which has been lacking more generally in research on information-seeking with the majority of studies simply describing behavior, or, at most, comparing it between researchers of different disciplines. There is a pressing requirement for research on information-seeking, which examines the relationships between socio-demographic factors and information-seeking behavior and its outcomes. This was a major focus of the current study, which investigated patterns of



information-seeking behavior by variables such as age, gender, length of service, rank, department, college, and English language competency.

### *Use of the Internet*

Research into the use of the Internet among information-seekers falls into three main categories: 1) studies of Internet use among library and information professionals; 2) studies of Internet use among academic faculty, and 3) studies of Internet use among other groups in the population. For the purpose of this study, studies of the use of Internet by university faculty members are the main focus. In contrast with everyday information seeking which often starts with a “sense of coherence” or some basis of knowledge about the information being sought, “occupational or school information-seeking starts out with a gap” (Savolainen, 1995, p. 267) and is generally limited to specific topics (Rieh, 2004).

There is evidence from research that the Internet has revolutionized information-seeking among scholars across many disciplines (Tenopir, 2003). Jirojwong and Wallin (2002) found that faculty in their study searched the Internet for their information needs more than they searched electronic indexes or perused content pages of current journals on an electronic databases. Similarly, a study conducted by Herring (2001) on the use of the Internet by faculty members in various academic departments from 30 post-secondary institutions in the state of Alabama revealed that only 3.4% were not using the Internet for research. Of the remainder, 43.5% reported that they used the Internet to find information, 30.9% to find or enhance “useful information” (e.g., provide links to related information in their research), and 19.8% to create information content (e.g., produce their own Web documents).

Although the respondents in Herring’s (2001) study were generally satisfied with the information they obtained from the Internet, they also questioned the



accuracy and reliability of the information and the sufficiency of Internet resources for research.

Similarly, in the DLF/CLIR/Outsell study almost all of the science faculty and graduate student participants who reported using the university library website believed that the information obtained from the site was credible, while less than half of the participants (45.9 %) reported using information from other websites without verifying its accuracy (in Tenopir, 2003).

#### *Patterns and Strategies of Electronic Search*

Research on scholars' information-seeking patterns has shown differences in the kinds of search strategies used in different fields. Bates (1996), in Talja and Maula (2003), has argued that domain size (the amount of topically relevant materials compared to all materials in the area) and the amount of scatter in a domain have the greatest influence on search strategies. Interdisciplinary fields, such as the social sciences, are typically 'high scatter disciplines' in the sense that "...the researcher must typically cross several disciplines to locate all relevant materials" (p. 156-157).

A number of recent studies have indicated that social scientists use different strategies and methods to locate the needed information resources. Participants in Meho's (2001) study indicated that they use the World Wide Web and electronic mailing lists. The adoption of information technology by the participants of this study is because "a large proportion of information on stateless nations is published, disseminated, or communicated exclusively through the Web and e-mail" (p. 126). Similarly, the online catalog, in Starkweather and Wallin (1999) is used by most faculty members to search for information resources. This use of online catalog was "viewed as very convenient since it reduced the number of trips made to the library to

check for materials or the use of library [system] for searching” (Starkweather & Wallin, 1999, p. 650).

When Ellis (1989) developed his model of the information-seeking behaviors of social science scholars, he purported that the functions in his model could be implemented in hypertext-based systems. Upon examining Ellis’ (1989) model of information-seeking behavior, Choo et al. (2000a) identified several behaviors associated with using the Internet for gathering needed information. According to Choo et al. (2000a, p. 6), “If we visualize the World Wide Web as a hyperlinked information system distributed over numerous networks, most of the information-seeking behavior categories in Ellis’ model are already being supported by capabilities available in common Web browser software.”

Using Ellis’ (1989) model, the first move one makes on the Internet is a “*starting*” move (see figure 6). Thus, the individual begins surfing the Internet from a particular site, which may include a jump site, portal site, or homepage (Choo et al., 2000a). The second behavior, “*chaining*,” occurs when hypertext links are followed to related information resources in both backward and forward linking directions (Choo et al., 2000b). “*Browsing*,” the third move, is “dependent on interaction among the information-seeking factors: task, domain, setting, user characteristics and experience, and system content and interface” (Marchionini, 1995, p. 107), and it consists of scanning webpages, looking through top-level pages, examining lists of headings, or viewing site maps (Choo et al., 2000b).

As seen in Figure 6, “*differentiating*” includes book-marking, printing, or copying relevant information, or going directly to a specific site by entering the URL. The next type of behavior, “*monitoring*,” includes revisiting a site to monitor for changed content and subscribing to E-mail based services. “Extracting moves” is

characterized by participants systematically working through a website to extract information of interest (Choo et al., 2000a).

Figure 6

*Shows information-seeking behaviors and Web moves*

	<b>Starting</b>	<b>Chaining</b>	<b>Browsing</b>	<b>Differentiating</b>	<b>Monitoring</b>	<b>Extracting</b>
Literature Search Moves (Ellis et al., 1989, 1993, 1997)	Identifying sources of interest	Following up references found in given material	Scanning tables of contents or headings	Assessing or restricting information according to their usefulness	Receiving regular reports or summaries from selected sources	Systematically working a source to identify material of interest
Anticipated Web Moves	Identifying Web sites/pages containing or pointing to information of interest	Following links on starting pages to other content-related sites	Scanning top-level pages: lists, headings, site maps	Selecting useful pages and sites by book-marking, printing, copying and pasting, etc.; Choosing differentiated, pre-selected site	Receiving site updates using e.g. push, agents, or profiles; Revisiting 'favorite' sites	Systematically searches a local site to extract information of interest at that site

\* From "Information-seeking on the Web: An integrated model of browsing and searching," by C. W. Choo, B. Detlor, and D. Turnbull, 2000, *First Monday*, 5(2).  
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In his review of the literature on browsing, Marchionini (1995) observed an agreement on three general types of browsing, each differentiated by the object of search or needed information, and by the systematicity of tactics used: 1. *Directed or specific browsing*. This type of browsing occurs when browsing is systematic, focused, and often driven by a specific object or target. Examples include scanning a list for a known item and verifying information or retrieving dates or other facts; 2. *Semi-directed or predictive browsing*, which has a less definite target and proceeds less systematically. An example is entering a single, general term into a full-text database and casually examining the retrieved records. This type allows various degrees of target definitions; however, it is time-consuming; and 3. *Undirected or*

*general browsing*. It occurs when there is no real goal and very little focus, for example, changing television channels or navigating the WWW to find something of interest (Marchionini, 1995).

Much of the work in this area was conducted many years ago, and it can be expected that changes in the nature of the information environment including the Internet, especially the vastly increased availability of on-line resources, might have an impact on the ways in which people conduct their searches and on the outcomes of these searches. Further empirical work is needed in this area to map existing models of information-seeking to observed patterns of behavior, in order to update and refine the models, or alternatively to replace them with models which better reflect the present-day environment. The current study will not collect detailed information on online information-search patterns and behavior but will help to provide more general contextual information on information-seeking in a developing country, which may be valuable to further, detailed studies of online information-seeking in similar environments.

#### *Barriers to Information-Seeking*

As inter-disciplinary researchers, social scientists face a number of specific challenges and potential barriers to effective information-seeking. Different academic disciplines to a large extent have their own specialist languages and terminology; this can be serious barrier to communication and understanding across disciplines (Brittain, 1970; Skelton, 1973; Broadus, 1971, Palmer, 1996). The more subject areas a scientist covers, the greater their command of different vocabularies needs to be (Murphy, 2003). Moreover, in order to interpret the literature within a particular subject area, there is a need to have knowledge and understanding of the history, surrounding context, and current status of the material (Palmer, 1996).

According to Lee (2005), although many researchers consider physical collections of resources, such as those available in a library, to be useful for effective information retrieval, they can also present obstacles to information-seeking because they cannot be modified to meet individual needs. This is especially the case for interdisciplinary scholars, who often need to be able to simultaneously search several sub-disciplinary collections of the library.

Social scientists also face difficulties and barriers in their information-seeking, which are common to academic researchers generally. For example, scholars in Starkweather and Wallin's (1999) study reported lack of time to be the main barrier that limited their use of library's electronic resources. Other barriers reported in this study included unawareness of resources, lack of access to some CD-ROMs, lack of online citation indexes, lack of library instructions, and problems with network connections. Similarly, a study by Quigley, et al. (2002) revealed that major obstacles in scholars' information seeking behavior were lack of time, unavailability of needed material, and information retrieval difficulties. Many scholars in this study commented on the time it takes to visit the library because of its physically distant location from their departments, while others stated that their work required that they visit several libraries on campus, taking up a lot of their time. In this study, interdisciplinary scholars in particular expressed frustration with the distribution of materials across various library units on campus (e.g., the engineering, medical, and museums libraries), the lack of electronic access to older literature, "grey," and foreign literature, poor control of government and state publications and inadequate coverage by indexes of journals in certain areas (Quigley et al., 2002).

The science researchers in Quigley, et al.'s (2002) study described information retrieval difficulties as a barrier due to confusing search systems, confusing or

inadequate indexing of material, and the user's own lack of skill with search systems or with technology in general. Likewise, the results of a study by Meho and Haas (2001) on the information-seeking behaviors of social scientists revealed that the main reason for the nonuse of government publications was not due to the faculty member's knowledge or lack of knowledge about information services and sources, but rather, deficient library collections and services.

Barriers to information seeking are likely to be closely related to the specific environment in which a scholar works, as well as subject area. The main limitation of previous studies in this area is that they have mainly been conducted in developed, Western societies, where practical barriers to information seeking are likely to be fewer than in the developing world. The current study of information-seeking among social science scholars in Oman will help to redress the balance and provide a better understanding of the barriers and constraints facing scholars in the developing world.

#### Information-Seeking in Developing Countries

Most studies of information-seeking behavior have been conducted in Western, English-speaking countries, and the research participants have often been selected from large academic institutions with abundant information resources. However, these are unlikely to be representative of scholars around the world. Many academic researchers are based in non-Western, developing countries where the availability of research materials may be more limited and where there may be other types of constraints on information seeking and retrieval. There are a limited number of research studies, which have focused on information-seeking by researchers in developing countries. This section discusses the key findings of a number of these studies in order to highlight the conditions that may influence information-seeking behavior in such countries. It is intended to shed further light on how models of

information-seeking behavior may need to be refined in order to adequately incorporate contextual factors in order to move towards a comprehensive theory of information-seeking.

#### *Similarities with Developed Countries*

Some studies of information-seeking behavior in non-Western, non-English speaking countries have found that there are few differences between information seeking in these countries and in the west, and that the various models of information-seeking behavior, such as Ellis' (1989) can be readily applied to researchers in developing countries.

For example, on the basis of a three-year longitudinal study of the information-seeking behaviors of social science and humanities scholars at the University of Buenos Aires in Argentina, Romanos de Tiratel (2000) concluded that there were no significant differences between these researchers and those in Anglo-Saxon countries. When initiating research, both groups demonstrated a preference for using informal information search methods such as consulting colleagues. Taking a social constructionist perspective, Romanos de Tiratel (2000) concluded that neither geographical nor disciplinary differences account for different patterns of information seeking, since each user's information need is unique and his or her information is formed and interpreted through interactions with other individuals and the diverse social and organizational contexts in which the research is conducted.

Other studies have also found that the information-seeking behavior of social scientists in developing countries is very similar to that of social scientists in Western, English-speaking countries, but have concluded that this is because the main influence on information seeking is the discipline of the researcher, regardless of their geographical location.



For example, Francis' (2005) study of social science faculty at the University of the West Indies, Augustine, found that, as in the Anglo-Saxon world, social scientists in this university favor the use of journal articles to inform their research and keep them up to date with developments in their specialist area. Like the Argentinean researchers in Romanos de Tiratel's (2000) study, the West Indian social scientists also relied heavily on informal sources of information such as recommendations by colleagues. Francis concluded that regardless of the location and information environment in which social science scholars work, journals in particular are an essential information resource for them, and that information-seeking patterns in the social sciences are universal in nature. Similarly, Ucak and Kurbanoglu (1998), who conducted research with scholars in science, engineering, social sciences and humanities in a Turkish University, came to the conclusions that the main differences in information-seeking behavior are between disciplines, not between countries.

Despite the similarities which these studies have found between the actual information-seeking practices of researchers in developing countries and in Western, developed countries, there is also research evidence of particular conditions often found in less developed countries which are likely to impose constraints or other influences on the ways in which social science scholars in particular, as well as other academic researchers in developing countries, obtain their research material.

#### *Format and Location of Information Used*

Existing studies on social science scholars in developing countries indicate that despite dissimilar working environments and differences in the quality and quantity of available resources, social scientists in developing and developed countries share common characteristics in their information needs and seeking



behaviors (Romanos de Tiratel, 2000; Lleperuma, 2002; Patitungkho & Deshpande, 2005). For example, Romanos de Tiratel (2000) investigated the information-seeking behaviors of Argentine social science and humanities scholars at the University of Buenos Aires and found no substantial differences between them and scholars in Anglo-Saxon countries. When initiating research, this group of social scientists tended to use informal sources such as consultation with colleagues before utilizing formal sources, such as journals, just like their colleagues in developed countries (Ellis, et al., 1993; Hallmark, 1994).

Francis (2005) highlighted the importance of informal networking among social scientists in developing countries, since “much of the information social scientists from developing countries would find useful cannot be found in external databases” (p. 71). A number of studies have highlighted the importance of personal communication with colleagues in one’s region, and in other parts of the world, as a vital information resource for scholars in developing countries (Lleperuma, 2002; Menou, 1993). The most practical method for personal communication with colleagues, particularly those in other countries, is through the use of E-mail. However, although scholars in some developing nations utilize E-mail, access to the Internet and other electronic resources appears to vary among countries, and research on the topic is scarce (Younis, 2002).

Social scientists in developing countries have also been found to express a preference for formal compared with informal sources of information, despite also using the latter frequently. For example, the social science scholars in Lleperuma’s (2002) study exhibited a distinct preference for formal sources of information and considered maps, atlases, and access to databases as the least important sources. Likewise, social science scholars in Haryana, India indicated that they prefer formal

sources than the informal. Current journals were the most used sources, followed by books (Shokeen & Kushik, 2002). In a study of the information-seeking behaviors of education, humanities, and social science faculty members from six universities in Bangkok, Thailand, textbooks were found to be the most popular type of information source for all faculty members (Patitungkho and Deshpande, 2005). In Romanos de Tiratel's (2000) study, both social scientists and humanities scholars reported that they preferred to use materials written in their mother tongue or translated into it.

Research among social scientists in developing countries also highlights a heavy dependence among this group on the use of official government publications, which has similarly been identified among social scientists in the Western world. For example, in a study of social science faculty at the University of Botswana, 97.3% indicated that they consult government publications for research (89%) and teaching (86%) (Mooko & Aina, 1998). When asked about the specific types of government documents utilized, respondents in Mooko and Aina's (1998) study reported the heaviest use of annual and statistical reports, national development plans, government policy documents, reports of commissions and committees, and population census reports. The least used publications were statutes and law reports and this is because they are used primarily by the Department of Law. Similar results have been obtained by studies of social science scholars in developed countries. For example, a study by Buttlar and Wynar (1992), which surveyed social science scholars' published articles in ethnic studies journals, found that government documents were one of the most valued sources of information. Likewise, social science scholars surveyed by Meho and Haas (2001) reported frequent use of government documents, and regarded them as very important sources of information.

Whereas it has been observed that Western social scientists make relatively little use of library resources, preferring to rely on their personal collections of research material and information sources of information (Folster, 1989; Hobohm, 1999; Romanos de Tiratel, 2002), research indicates that scholars in developing countries are heavy users of library resources. The majority of the social scientists in Shokeen and Kushik's (2002) Indian study, for example, reported visiting the library daily, while more than half of the social science scholars interviewed by Mooko and Aina (1998) indicated that they were heavily dependent on the University of Botswana Library for their information needs. This may be due to the inability of social scientists in developing countries to build up adequate personal collections of research material due to cost constraints, and in some countries, to less well developed networks of personal contacts, perhaps because there are fewer people working in the same specialist area.

#### *Use of the Internet*

The Internet and the World Wide Web have had a major impact on the information environment, within which social science researchers operate, particularly those in developing countries, which have very limited resources locally in the form of research materials and information databases. Many international, regional and national organizations now post their official data on the Web, and these are often used heavily by social science researchers. For example, the participants in Francis' (2005) study of West Indian social science faculty reported using on-line data from agencies including The Organization of American States (OAS); Economic Commission for Latin America and the Caribbean (ECLAC); and CARICOM regional institutions, and more than half of the participants expressed a preference for access to journal articles in electronic format. More generally, the availability of the

Internet provides social science researchers around the world with instant access to research materials that could otherwise be very difficult to locate.

A study by Lazinger, Bar-Ilan, and Peritz, from the Hebrew University of Jerusalem in Israel, sought to examine and compare the use of the Internet among the academic scholars. The study revealed that among 462 respondents, 91.6 reported that they use computers and 80.3 of them use the Internet. Findings also indicated that social science scholars (86.4) use the Internet more than those from humanities (62.4), but less than those from science and Dental Medicine (90.7). More than half (57%) of academic scholars reported that they use the Internet to conduct research with distant researchers.

The Arabian Gulf academic libraries have had full Internet access since the early 1990's, and the majority of scholars make use of the Internet and E-mail in their daily work (Siddiqui, 2003). The E-mail function is being used not only for personal communication, but also to send and receive interlibrary loan (ILL) requests to other libraries and to communicate information regarding the status of requests. However, the Internet has not yet been used for resource sharing via electronic document delivery (EDD) systems in the Arabian Gulf (Siddiqui, 2003). A recent study of the use of the Internet by Al-Sharqa University faculty members by Bu-Merafi (2001, as cited in Younis, 2002) found that approximately 33% the scholars use the Internet primarily for E-mail, while the remainder use it for information searches on other libraries' online catalogues, for browsing the web, reading and publishing, and entertainment. In Thailand, fifty-two percent of faculty surveyed by Patitungkho and Deshpande (2005) reported using the Internet for education purposes and were also frequent users of E-mail for personal communication.

*Barriers to Information-Seeking*

*Language Barriers.* A major problem often faced by researchers in non-English speaking countries is the relative lack of availability of research material in their native language, or relating to similar social environments. In the social sciences, the majority of published information is in the English language, with material generated from the United States being predominant. Brittain (1984) observed that social science research in North America, the UK and other parts of Western and Eastern Europe was very parochial in the early 1980s. British social scientists, for example, rarely cite other than British and North America literature. As a result, the social science in this part of the world is developing independently, often unaware of developments in the other part of the world. The only exception to the general trend for parochialism in the social sciences was the general predominance of North American literature, which was fairly extensively available and referred to all over the world.

One of the differences between social scientists and researchers in other disciplines such as the physical sciences is that social scientists often express a preference for reading research material in their native languages (Romanos de Tiratel, 2000). In Ucak and Kurbanoglu's (1998) study of researchers from four different disciplines in a Turkish University it was found that, unlike scientists and engineers, social scientists and humanities scholars prefer to read texts which had been translated into Turkish, even if they understand the language that they were published in. Other studies have found a general preference among researchers of various disciplines in non-English speaking countries for reading materials in their own language. For example, Patitungkho and Deshpande (2005) found that nearly three quarters of all their faculty respondents from various disciplines in a Thai

University generally read research materials in Thai, compared with only about a quarter who did their reading in English.

*Lack of Access to Similar Research.* One implication of these findings is that it may be more difficult for social science researchers in non-English speaking developing countries to keep up-to-date with international developments in their specialist areas, or to obtain access to sufficient research material, which has been generated in a non-Western context for background to their own research. Hobohm (1999) has observed that it is sometimes even a national policy in developing countries to prevent foreign researchers from gaining access to national information sources due to a fear of giving away valuable advantages over other countries. This may have a disproportionately negative impact on the social science researchers in other parts of the less-developed world, who potentially stand to gain the most value from having access to research conducted in similar environments to their own. As a result, they may rely more heavily on informal methods of obtaining information, such as talking to professional colleagues and other personal contacts in their subject areas. Francis (2005), who conducted research with social science faculty in the University of the West Indies, commented on the importance of informal communications such as attendance at conferences, meetings, and personal communication with colleagues and peers as a particularly significant information resource in the Caribbean, with linkages between the region and social scientists in North America, a phenomenon which has been facilitated by technological developments such as the Internet and E-mail.

*Budgetary Constraints.* In many developing countries, the availability of information and the facilities with which to access it and other research facilities in developing countries are restricted by tight budgetary constraints. In Argentina, for

example, it was observed by Romanos de Tiratel (2000) that the most significant barriers to information-seeking faced by the researchers in his study, such as a shortage of books and journals, result from budgetary deficiencies. A study of forty university libraries in Pakistan, Saeed, Asghar, Anwar, and Ranzam (2000) revealed that only half had Internet access. Even where Internet access was available, budgetary constraints meant that many of the libraries had an insufficient number of computer terminals and skilled staff and experienced frequent technical problems such as connectivity failures. In some countries information-search tools such as electronic search systems may be very limited as a result of similar financial constraints, making information seeking more laborious and time-consuming. Various studies have observed that there are poor information infrastructures in the social sciences in developing countries (Myoung & Wilson, 1999; Ma Wengfeng & Wang Liqing, 1999, cited in Hobohm, 1999), and Kishida and Matsui (1997, cited in Hobohm, 1999) identified a net correlation between a country's Gross Domestic Product (GDP) and its production of social science research material.

These factors may result in a tendency for social science researchers, either through necessity or convenience, to make compromises when searching for research material, by making use of readily available or accessible information rather than conducting more systematic searches to locate and retrieve the most appropriate or useful sources. Although the development of the Internet and World Wide Web is likely to have increased the general availability and accessibility of information in electronic format, this is still likely to be predominantly English-language material.

*Access to and Availability of Local Data.* In developing countries, research is often concerned with investigating or addressing local or national issues and problems. As a result, there is a high level of demand for locally generated data and



other research material. For example, Francis' (2005) study of social science faculty in the University of the West Indies found that her study participants regarded local and regional sources of data as particularly important to their work. These include data on, for example, GDP, unemployment rates, consumer prices and population characteristics, produced by national organizations such as the Central Statistical Office and the Central Bank, or regional inter-governmental organizations such as CARICOM and the Caribbean Development Bank. However, the study participants reported that this data was frequently unavailable to them, either because of slippage in the data publication schedule or because the access to it was prevented under by data classification laws.

In many developing countries there is less freedom of information than in Western, developed societies. Governments may deliberately restrict access to information or data, particularly in politically unstable countries where there is a risk that it might be used against the government by opposition parties or other groups hostile to the government. In extreme scenarios, social science researchers in some less developed countries work under conditions of oppression or censorship of their research by their governments. All of these conditions will have significant implications for the information-seeking behavior and practices of social science scholars. In particular, they may have to weigh up the risks and benefits of gaining access to information for use in their research, and, in extreme cases, the risks may even include danger to their own lives. More typically, there will be a need to weigh up the costs and benefits, particularly in terms of research time, or the expense of travel to alternative locations, to obtain information which is not available or accessible locally.



*Adapting Information Seeking to Local Conditions.* Again, the use of informal sources of information is particularly important when access to data through official channels is restricted. In general, there is evidence that social science scholars in the developing world rely very heavily on their networks of contacts (Francis, 2005; Romanos de Tiratel, 2000), although there are exceptions perhaps reflecting local conditions such as the availability of published research material. For example, Lleperuma (2002) found that social scientists in Sri Lanka exhibited a preference for journals and other formal sources of information, while networking was relatively unimportant as an information-seeking behavior. Similarly, Shokeen and Kushik (2002) and Patitungkho and Deshpande (2005) found evidence in their studies that social science scholars in India and Thailand, respectively, preferred formal sources of information such as journals and textbooks over informal contacts. In combination, these various research findings indicate that social science researchers in the developing world exhibit similar preferred patterns of information-seeking behavior to their counterparts in the developed world, but that they have to modify these as a result of local conditions such as the unavailability or restricted access to preferred sources of information.

*Impact of Technological Developments.* The Internet and the World Wide Web have had a major impact on the information environment within which social science researchers operate, particularly those in developing countries, which have very limited resources locally in the form of research materials and information databases. Many international, regional and national organizations now post their official data on the Web, and these are often used heavily by social science researchers. For example, the participants in Francis' (2005) study of West Indian social science faculty reported using on-line data from agencies including The

Organization of American States (OAS); Economic Commission for Latin America and the Caribbean (ECLAC); and CARICOM regional institutions. More generally, the availability of the Internet provides social science researchers around the world with instant access to research materials that could otherwise be very difficult to locate.

Many studies of researchers in developing countries have observed that they tend to be heavy users of the Internet. For example, Siddiqui (2003) found that the majority of users of the Arabian Gulf academic libraries that they studied were making regular use of the Internet and E-mail in their work, while more than half of the social science faculty members in Thailand who were studied by Patitungkho and Deshpande (2005) also reported using the Internet and E-mail for education and for personal communications.

*The Use of Libraries.* Whereas it has been observed that Western social scientists make relatively little use of library resources, preferring to rely on their personal collections of research material and sources of information (Folster, 1989; Hobohm, 1999; Romanos de Tiratel, 2002), research indicates that scholars in developing countries are heavy users of library resources.

The majority of the social scientists in Shokeen and Kushik's (2002) Indian study, for example, reported visiting the library daily, while more than half of the social science scholars interviewed by Mooko and Aina (1998) indicated that they were heavily dependent on the University of Botswana Library for their information needs. This may be due to the inability of social scientists in developing countries to build up adequate personal collections of research material due to cost constraints, and in some countries, to less well developed networks of personal contacts, perhaps because there are fewer people working in the same specialist area.

## Summary

A review of the literature in this area confirms that, although generic models of information-seeking can be developed which describe common categories of information-seeking behavior, there are also many contextual factors, which have an impact on this behavior and its outcomes. For example, the inter-disciplinary nature of social science results in patterns and strategies of information-seeking among social science scholars, which are different from scholars in other academic disciplines, even though there are also overlaps between them. Similarly, it is clear from the current literature on information-seeking among social scientists and other scholars in developing countries that local conditions do appear to have a significant impact on information-seeking behavior. The available evidence seems to suggest that, overall, social science researchers in the developing world exhibit similar preferred patterns of information-seeking behavior to their counterparts in the developed world, but that these have to be modified as a result of local conditions such as the unavailability or restricted access to preferred sources of information.

As a result, it cannot be assumed that existing models of information-seeking behavior can be readily applied to developing countries. More research is needed to test the relevance of such models in different environments and to refine them or develop alternative models as necessary to ensure that they accurately reflect observed patterns of behavior in developing countries. This study is intended to contribute to this by using a generic model of information-seeking to study the behavior of social science scholars in Sultan Qaboos University in Oman, as an example of a developing country in the Middle East.

## CHAPTER 4

### METHODOLOGY

#### Introduction

The primary purpose of the current study is to investigate the information needs and information-seeking behaviors of social science scholars. Specifically, this study addressed the question of how social science scholars locate and use relevant information, particularly electronic resources and other emerging technologies for their specific research and teaching needs. Formal and informal sources of information and electronic resources utilized by social science scholars are discussed. In addition, barriers affecting scholars' information-seeking behavior are identified, and differences between scholars based on age, gender, length of service, rank (lecturer, assistant professor, associate professor, professor), department, college (Arts and Social Sciences, Commerce and Economy, Education, and Law), and preferred search language are described.

Ten research questions were addressed:

1. What types of information do social science scholars generally need to access?
2. How do social science scholars identify and locate relevant information for research and teaching?
3. What information sources do social science scholars prefer to use for research and teaching and where do they find them?
4. What information sources do social science scholars use most frequently?
5. To what extent do social science scholars use electronic resources and print resources for research and teaching?

6. What barriers affect social science scholars' information-seeking behaviors and use of electronic resources?

In addition, this study attempted to assess the relationships between social science scholars' information-seeking behaviors and demographic variables:

7. Is age, gender, length of service, rank, department, college, or preferred search language related to the scholar's information needs?
8. Is age, gender, length of service, rank, department, college, or preferred search language related to whether a scholar prefers print or electronic sources?
9. Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar physically visits the library?
10. Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar accesses the library catalog through the Internet?
11. Does the proposed model hold for social science scholars in developing Arab countries?

Initially, the researcher had intended to conduct a mixed-methods study consisting of both quantitative (survey) and qualitative (interviews), both of which were to be distributed via e-mail. This distribution method was chosen because the researcher had expected to conduct the data collection from the United States of America. However, a change of plans involving the researcher's extended return to the Sultanate of Oman presented the opportunity to gather data directly from participants. In order to enrich the data, face-to-face interviews and focus group components were added to the methodology.

The current chapter describes the approach to the mixed-method design (including a description of quantitative research, qualitative research, and mixed designs); the study environment (focusing on the participants in the proposed study and the instruments to be employed); the procedures for both data collection and data analysis; reliability, validity, and regulations; ethical issues; and methodological challenges.

#### Approach to Mixed-Method Design

This section of the methodology consists of a discussion of the research design. A mixed-method design is employed consisting of both quantitative and qualitative components. This approach is chosen in order to be able to triangulate the data and thereby confirm the findings.

#### *Triangulation in Research*

The term *triangulation* is a technical term and was first used in social sciences. It uses in surveying, military strategy, and navigation to describe a technique comes from navigation and land surveying techniques that use multiple (at least three) location markers to identify the position of a third (Arksey & Knight, 1999). In the social sciences research, triangulation is defined as “attempt[s] to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint and, in so doing, by making use of both quantitative and qualitative data” (Cohen & Manion, 1986, p. 254). There are different types of triangulation that can be combined in one study; these are methodological triangulation; data triangulation, investigator triangulation; and theoretical triangulation. Combining these different types of triangulation in one study has been claimed to (a) gain a deep and wide understanding of the study (Olsen, 2004); (b) increase the credibility and validity of the study results (Busha & Harter, 1980; Webb,

Campbell, Schwartz, Sechrest, & Grove, 1981; Knafl & Breitmayer, 1989; Gorman & Clayton, 1997); (c) strengthen the complementarity of a study; and (d) enhance interpretability (Arksey & Knight, 1999, p. 25). Triangulation is very important and helps increase our understanding of an investigation, but it can be time consuming and very expensive. “A researcher’s limited budget, short time frame, and narrow training will affect the amount of triangulation that is practical” (Patton, 1999, p.4).

This approach to triangulation is described by Altrichter, Posch, and Somekh (1996, p. 117), who wrote “[triangulation] gives a more detailed and balanced picture of the situation.” In the current study, triangulation was achieved through data triangulation, which consisted of collecting multiple types of data, using multiple sources, and multiple data collection procedures. Both quantitative (questionnaire) and qualitative (e-mail interview, face-to-face interview and focus group) approaches are combined to triangulate the study findings. This combination of methods will reduce the chance of making errors or drawing inappropriate conclusions. This advantage of data triangulation has been explained by Arksey and Knight (1999, p. 21) who wrote, “triangulation was regarded as a strategy to overcome problems of validity and bias. By collecting diverse sets of data derived by different methods, there was thought to be less chance of making errors; or of drawing inappropriate conclusions, than would be the case if relying upon just one data set.”

#### *Quantitative Methods*

Quantitative research designs are those for which the primary data consists of variables that can be coded numerically. These variables may be truly numeric (such as age or the number of times an event occurs) or categorical (such as gender). The survey (questionnaire) employed in the current study represents the quantitative research approach.

The Questionnaire is a method or technique used to study a phenomenon. It is “used to determine the present status of [this] phenomenon” (Powell & Connaway, 2004, p. 83). According to Labaw (1982, p. 12) a questionnaire is “much more than a set of questions. It is a totality, a gestalt that greater than the sum of its individual questions...is organic, with each part vital to every other part, and all parts must be handled simultaneously to create the whole instrument.” A good questionnaire must offer several advantages; these advantages indicated by Powell (1997) are as follows:

1. Encourage frank answers or responses.
2. Help to reduce interviewer bias.
3. Eradicate variation in the questioning process.
4. Make data relatively easy to collect and analyze.
5. Collect a large amount of data in a short period of time.
6. Inexpensive to administer.

However, the major disadvantages of the questionnaire are related to the participant’s knowledge and background of the subject, the questions’ ambiguity, poor wording of questions, and poor design (Martyn & Lancaster, 1981; Labaw, 1982; Powell, 1997; Powell & Connaway, 2004). To avoid these kinds of disadvantages in this study, the researcher took careful steps to develop the questionnaire. The questionnaire is designed to include closed, open-ended and multiple-choice questions. These types of questions are simple, effective, and easy to complete by the participants. The questionnaire is also sent to nine referees from three different countries to evaluate the accuracy of the content and assess the design and wording of the questions. The questionnaire then sent to a group of participants to pre-test it. Furthermore, the questionnaire is designed by a computer specialist using



Adobe InDesign Software and printed in a special and glossy paper by a private printing establishment.

The quantitative data gathered for the current study were examined using descriptive statistical and inferential statistical techniques. The descriptive techniques included frequencies and percentages for the categorical and multiple responses variables, and ranges, means, and standard deviations for the numeric variables. It helped the researcher to “define the characteristics or relationships, or both, among variables based on systematic observation of these variables” (Williams & Monge, 2001, p. 15). The inferential statistical technique included independent samples t-test, chi-square test of independence, Pearson correlations, and oneway ANOVA.

#### *Qualitative Methods*

Qualitative methods of research (Lofland & Lofland, 1995) are applied in a naturalistic and inductive manner in this study. Unlike deductive research, which consists of an inquiry to a problem based on a theory, consisting of variables which are empirically tested to determine whether or not the theory used for prediction is correct or not, inductive research is conducted by the process of gathering specific bits of data, which are the words used by the participants in the study, and which are then examined for patterns and emerging themes, resulting in the contextual findings. Qualitative research attempts to disclose participants’ perceptual realities. The qualitative approach in the current study takes the form of phenomenological research. The qualitative approach is phenomenological because the research is centered upon the beliefs and opinions of the participants of the study. Creswell (1998) stated that a “Phenomenological study describes the meaning of the lived experiences for several individuals about a concept or the phenomenon” (p. 55). The

phenomenological approach is based on the assumption that the participants are experts on their own lives, knowledge is contextual and relational, and subjective data is valid (Creswell, 1998).

*Interview.* The use of interviews as a data collection method rests on the assumption that respondents' points of view are meaningful, knowable, and capable of being made explicit. An interview is chosen when interpersonal contact is important to the research and when it is desirable to have the opportunity for follow-up of interesting comments. The two main types of interviews are structured interviews, which make use of a carefully worded survey, and in-depth interviews, in which the interviewer does not follow a set approach to questioning. Structured interviews emphasize obtaining answers to carefully phrased questions and are the approach used in the present research. To limit bias introduced by the presence of the researcher, interviewers can be taught to deviate as little as possible from the protocol to make sure that all respondent are interviewed in the same way. In the present research, this uniformity is achieved through the use of a set of interviews that is e-mailed to the interviewees and face-to-face interviews. In contrast, in-depth interviewing is used when the researcher wants to obtain free and open responses (Patton, 1990).

In general there are six kinds of questions that can guide any interview. These six kinds of questions according to Patton (1990, p.290-292) are as follows:

1. Experience/Behavior Questions. The questions under this category are aimed at eliciting descriptions of experiences, behaviors, actions, and activities that would have been observable had the observer been present.

2. Opinion/Values Questions. Aimed at understanding the cognitive and interpretive processes of people. Answers to these questions tell us what people think about particular issues.
3. Feelings questions. These kinds of questions are aimed at understanding the emotional responses of people to their experiences and thoughts. Here, the interviewer is looking for adjective responses.
4. Knowledge questions. These questions are sought to find out what factual information the participants have about some issues.
5. Sensory questions. These are questions about what is seen, heard, touched, tasted, and smelled. The purpose of these questions is to allow the interviewer to enter into the sensory apparatus of the interviewees. They attempt to have interviewees describe the stimuli to which they are subject.
6. Background/demographic questions. These questions concern the identifying characteristics of the interviewee. Answers to these questions help the interviewer locate the respondent in relation to other people.

These are the kinds of questions that the researcher should consider when developing the interview guide or questions. According to Patton (1999, p. 293), “keeping these types of questions in mind can particularly helpful when it comes to planning the comprehensiveness of the interview and ordering the questions in some sequence.”

In the current study, the researcher took into consideration all these six types of questions when developing the interview guide; therefore, all six kinds of questions are included in the study.

*E-mail interview.* A structured e-mail interview (Murray, 1995; Curasi, 2001; Meho, 2001; Lillard, 2002; Meho & Tibbo, 2003) was the data-collection technique chosen for the first qualitative part of the study. Its purpose was to establish any perceived or actual similarities or differences between the information needs and information seeking-behaviors of social sciences scholars and other scientists.

E-mail interviews are preferred by the researcher over phone interviews, as E-mail interviews would allow the participants greater freedom in considering the questions before answering, and a more liberal amount of time to develop answers to the questions. This method also facilitated data collection and eliminated scheduling conflicts by enabling the simultaneous distribution of the interviews to participants rather than one at a time on the telephone. Meho and Tibbo (2003, p. 573) summarize the advantages of e-mail interviews as follows:

1. E-mail interviews are unobtrusive and can be friendlier to participants than telephone interviews. The former also allows the participants to take their time in answering questions without the interruption of the interviewer.
2. E-mail interviews are more economic in terms of time; they allow interviews with several participants to take place at once, whereas the telephone is normally used to interview one person at a time.
3. E-mail interviews reduce the problem of interviewer effect in terms of, for example, personal communication skills. Through e-mail, only written correspondences are made.

4. E-mail messages allow for the totality of the exchange to be reviewed by either party (interviewer and interviewee) and eliminate any errors introduced through incorrect transcription.
5. E-mail interview provides "ready-transcribed" data-the text from e-mail interviews can easily be tailored for word processing or computer-based qualitative analysis package with a minimum of alteration.
6. E-mail interview provides an opportunity to interview much larger and more diversified group of people than were possible with traditional types of interviews.

Despite these advantages, there are several potential disadvantages to conducting an e-mail interview as well. Potential disadvantages include a lack of contextual cues, such as changes in inflections or non-verbal signifiers, and participants may be less likely to complete the interview without the pressure of face-to-face contact. The participants' response time may be slow, which would delay data collection, whereas data collection in face-to-face interviews is instantaneous. Furthermore, probing for additional information would have to be conducted through follow-up E-mails, which increases the likelihood of the aforementioned disadvantages (Meho & Tibbo, 2003). Despite these potential disadvantages, it is believed that e-mail interviews will provide the current study with benefits and negate the potential disadvantages.

*Face-to-face interview.* In addition to the E-mail interviews, the researcher conducted 16 face-to-face interviews with purposefully selected social science faculty. Selected faculty were called or sent an e-mail request to participate in an interview, to be arranged at their convenience. All interviews lasted between 40 and

50 minutes and were tape-recorded, with the permission of the participants. Full assurances of confidentiality were provided.

The main advantage of face-to-face interviews over other survey research techniques lies in the personal rapport and enhanced communications that can be built up between the interviewer and the interviewee. On the one hand, the researcher can obtain a wealth of extra information from the interviewee's body language, tone of voice etc., while at the same time the respondent can seek clarification of questions if necessary and explain their answers more fully than in a written survey. In other words, a face-to-face interview provides data on understandings, opinions, attitudes, feelings, and the like that people have in common (Arksey & Knight, 1999). The main disadvantage is that the presence of the interviewer can influence the respondent's answers, since some respondents may be more likely to provide the response that they think the interviewer wants to hear. Face to face interviews can also be less appropriate for research into sensitive or controversial topics, when the respondent might prefer a high degree of anonymity.

Face-to-face interviews and the questionnaires on which they are based can take various forms, depending on the type of information the researcher intends to collect. In a structured interview, the wording of the questions and the order in which they are asked remains the same in every case. Often the range of possible answers to questions are also pre-defined, with respondents being asked to indicate which answer applies to their own situation. Structured interviews are most appropriate for collecting factual information and are more reliable than unstructured interviews for comparing the characteristics or experiences of different types of respondents, because differences in their responses are unlikely to have been influenced by the ways in which the questions were asked.

Unstructured interviews are more like informal conversations, in which the questions can be phrased in any way, and the interviewer can probe in order to get the respondent to expand on or clarify their responses. Unstructured interviews can be very useful in providing researchers with an in-depth understanding of their respondents' views and experiences and to explore new research topics in order to identify issues of importance to respondents but which it is difficult for the researcher to pre-define.

Semi-structured interviews provide an opportunity to combine the benefits of both structured and unstructured interviews. By including a mix of closed and open questions, the researcher will be able to obtain factual information on respondents' information-seeking experiences and also to explore their views and feelings about these experiences, probing as necessary to obtain information that is relevant to the key research questions of this study.

In this study, semi-structured face-to-face interviews is used. Twenty-one open-ended questions (with no pre-defined responses) are used to collect information on respondents' knowledge, behavior, feelings and opinions regarding information seeking, and the researcher probed as necessary in order to clarify questions or responses or to obtain additional information from respondents. The questions were the same questions asked in the E-mail interview, in order to allow triangulation of the results from both methods.

*Focus Group.* A focus group is "a way of listening to people and learning from them" (Morgan, 1998, p. 9). It is "a collectivistic rather than an individualistic research method that focuses on the multivocality of participants' attitudes, experiences, and beliefs" (Madriz, 2000, p. 836). Typically it is used as a means of testing concepts, new products, and messages (Edmunds, 1999). Greenbaum (2000)

indicated that the “strength of the focus group technique is that it enables [participants] to share their views in a nonthreatening environment, with the goal of learning about the factors that dictate a particular action or attitude” (p. 6).

The structure of the focus group is intended to encourage participants to speak freely and completely about behaviors, attitudes, and opinions they possess (Berg, 2004). Rubin and Rubin (1995) explain this more by saying “in focus groups, the goal is to let [participants] spark off one another, suggesting dimensions and nuances of the original problem that any one individual might not have thought of. Sometimes a totally different understanding of a problem emerges from the group discussion” (p. 140).

Focus groups are useful as a qualitative research method which can be used to explore issues in depth and which are often used either to assist in identifying relevant issues to be explored in further research, or to help explain the findings generated by other methods. Typically, a moderator will guide the discussion to ensure that it covers topics relevant to the study and will encourage each participant to contribute his or her views to the discussion. It is the interaction of focus group participants which often produces useful insights in research which are not gained from individual interviews alone. As Morgan (1996, p. 139) has noted “What makes the discussion in focus groups more than the sum of separate individual interviews is the fact that the participants both query each other and explain themselves to each other.”

The focus group setting also provides the opportunity for researchers to set various tasks for the participants and to observe the way in which different members of the group go about completing it. This research method was employed in the study to help identify how social science faculty go about the process of information seeking in practice.



*Strengths and Weaknesses of Mixed-Method Designs*

This section describes the advantages and disadvantages of using a mixed-method (or “multi”) research design. As noted above, the research combined quantitative (i.e., the survey) and qualitative (i.e., the e-mail interview, face-to-face interview, and focus group) approaches to research and can therefore be termed a mixed-method design. Mixed-methods research is

a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process. As a method, it focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone. (Creswell & Plano Clark, 2007, p. 5)

Mixed-methods designs have several advantages over a single design approach (Tashakkori & Teddlie, 2003). These advantages include:

1. Building on the strengths of each approach.
2. Providing a more complete picture of the research problem.
3. Providing both broadly generalizable (via quantitative data) and rich (via qualitative data) results.
4. Presenting results using both objective data (e.g., the percentage of the respondents using a particular library resource via the survey) and subjective data (e.g., descriptions of the steps in conducting research via the e-mail interview) data.

5. It is ““practical” in the sense that the researcher is free to use all methods possible to address a research problem. It also “practical” because individuals tend to solve problems using both numbers and words, they combine inductive and deductive thinking, and they (e.g., therapists) employ skills in observing people as well as recording behavior” (Creswell & Plano Clark, 2007, p. 10).

However, the mixed-method design also has disadvantages. These include:

1. It takes time, because the researcher has to collect and analyze both quantitative and qualitative data (Creswell & Plano Clark, 2007).
2. Increased cost of conducting research because in essence two research projects are conducted.
3. Possible lack of focus as attention is required in two directions.
4. Need for expertise in analysis of in two areas (quantitative analysis and qualitative analysis) rather than a single area.

In the present study, the advantages of the mixed design listed above outweigh the potential disadvantages of such an approach. The disadvantages are not be detrimental because (a) the costs of the current study are low, (b) both approaches converged on the same set of research questions and therefore the research focus is not dispersed, and (c) both methods quantitative and qualitative analysis are employed.

#### Study Environment

Two facets of the current study were described in this section: the participants (i.e., the sample and the population from which they are drawn) and the instruments.

### *Participants*

The population of interest in the study consisted of social science scholars in Arab countries. A convenient sample of social science faculty from Sultan Qaboos University in Oman is selected. There were approximately 437 social sciences faculty at Sultan Qaboos University distributed among four colleges: the College of Arts and Social Sciences; the College of Commerce and Economy; the College of Education; and the Law College. Each of the social science scholars who is currently employed in any of these four colleges of Sultan Qaboos University is invited to participate in the survey, and three purposive samples of them are selected and invited to participate in the e-mail interview, face-to-face interview, and focus group. At the time of the study, there are approximately 367 social sciences faculty.

### *Instrumentation*

*Survey.* A copy of the survey is contained in Appendix A. The survey is designed in its initial form based on the previous literature (Brown, 1999; Abouserie, 2000; Gleeson, 2001; Yitzhake & Hammershlag, 2004). The survey consists of five sections. The first section contains questions related to demographic and background characteristics of the respondents (e.g., age, gender, employment status, level of education). These data are used to answer research questions 7-10, which examined whether these variables are related to various aspects of the scholars' information needs, preference for print or electronic sources, physical visits to the library, and number times per month the scholar accesses the library catalogue via the Internet.

The second section of the survey contained in Appendix A contains items, which are created to address the first and second research questions of the current study, which are "What types of information resources do social science scholars

generally need to access?” and “How do social science scholars identify and locate relevant information for research and teaching?” Questions in this section include the types of information resources social science scholars need to access (e.g., books, journals, dissertations, conference proceedings, etc.), how journal articles are examined (e.g., skimmed, fully read, etc.), the number of hours per week that the respondent spends examining a variety of sources of information for research and teaching purposes, methods of examining information (e.g., printing a copy of the resource, reading research articles on the screen of the computer), how searches are performed (e.g., using specific queries in general search engines, searching academic databases) for both general and specific searches, how websites are documented (e.g., bookmarking, printing), and the importance of a variety of different resources (e.g., newspapers, journals, Internet sources).

The third section of the survey is designed to gather information about the specific sources that are used to gather information and is created to address the third research question of the proposed study (“What information sources do social science scholars prefer to use for research and teaching and where do they find them?”) as well as the fourth research question (“What information sources do social science scholars use most frequently?”). The questions in this section of the survey include the methods used to locate relevant research (e.g., browsing print articles, browsing electronic journals), whether or not the respondent currently has any personal subscriptions to academic journals and if so, how many personal subscriptions the respondent has, the number of electronic journals that the respondent regularly reads, the primary methods used by the respondent for obtaining journal articles (e.g., personal subscriptions, reading library copies), the ways in which archival materials

are accessed (e.g., interlibrary loan, microfilm), the importance of non-Internet resources, familiarity and use of various electronic databases (e.g., psychoinfo, proquest), preferences for print or electronic documents, the use of library resources (e.g., print journals, archives, reserves) and non-library resources (e.g., bibliographies, newspapers) for research or class preparation, and preferred methods of seeking information (e.g., talking to colleagues or experts, reading journal articles, reading textbooks).

The fourth section of the survey is designed to examine the use of electronic and print resources for research and teaching. The questions in this section are designed to answer the fifth research question of the present study, "To what extent do social science scholars use electronic resources and print resources for research and teaching?" The questions in this section of the survey assess both print and electronic resources (e.g., electronic monographs, electronic textbooks, print monographs, print textbooks) and assess their use separately for undergraduate teaching, graduate teaching, current research in the field, and older research in the field.

The fifth and final section in the survey assesses barriers to information-seeking and is designed to address the sixth research question, "What barriers affect social science scholars' information-seeking behaviors and use of electronic resources?" The questions in this section assess training in the use of library databases, the kinds of training offered (e.g., demonstration, instructional brochures), the benefits derived from the training, the types of training materials that the respondent would have found useful (e.g., seminars for professors, seminars for students), the types of library resources that the respondent would like to have access

to (e.g., expanded book collections, expanded journal access), the level of confidence in electronic academic resources, and the respondents' level of Internet skill.

*Interviews.* In addition to the survey described above, which is used for the quantitative portion of the study, a set of open-ended questions is developed in order to provide qualitative data. These open-ended questions are addressed through an e-mail interview and face-to-face interview. The interview questions are contained in Appendix C. The interview is partitioned into four sections. The first section collects the interviewees' demographic information: "Would you please introduce yourself, your gender, your college and department, your area of specification, and your native language?" The second section examines the information resources used by social science faculty. It contains six questions as follows: 1. Please describe to me the types of information resources that are available to you in the university library? 2. How have research methods and information access changed since you began researching? How have these changes impacted your research? 3. Thinking about the sources of information that you normally use in your research, please tell me why you normally use these and what their advantages and disadvantages are? 4. How do you think the information resources available at Sultan Qaboos University Library could be improved? 5. What are the implications for you when you are unable to find the information resources that you need for your work? How does this situation make you feel? 6. What could Sultan Qaboos University do to make information-seeking a more satisfying and enjoyable experience for you?

The third section of the interview queries the respondents about potential barriers to information-seeking and access. The five questions in this section assess the sufficiency of the library resources provided to support research, level of comfort

in using the library's resources, library and non-library related barriers to obtaining important resources, and methods that students use to conduct research. These questions are as follows: 1. Do you feel the university library (not including databases) has sufficient materials to support your research? If no, what types of materials would improve your research experience? 2. How comfortable do you feel using library resources? Would additional classroom training or informational brochures help improve your use of the library resources? Why or why not? 3. In the previous survey, you estimated the importance of various information resources. Are there any barriers to obtaining these resources? If so, what are they? (for example, not knowing how to use the library resources, not sure where to locate sources). 4. Are there any barriers external to the library that prevent you from doing research or make it significantly more difficult? What are those barriers? 5. Thinking about your classroom experiences, how would you say most of your students conduct research? (for example, do they demonstrate a skilled understanding of locating resources? Too many Internet citations? Unusual citations?).

The fourth and final section of the interview examines the research process or seeking process of the social science scholars and is directly related to the conceptual model in the present study. It asks the participants nine questions related to their information-seeking behavior process. These questions are: 1. When you begin searching for information for research purposes, how do you start your research process? Do you have quite a specific idea of what information you require, or are you scanning in your field (for new information)? 2. If you start with a specific idea, do you expect to find something on that specific topic or just something similar? 3. When searching for information for research purposes, to what extent do you usually

rely on first-hand information such as personal experiences, your own resources or advice from colleagues? Are these generally important or unimportant in your information seeking? 4. Do you regularly monitor newspapers, journals and other sources for information relating to your specific areas of research? How? 5. Can you please describe briefly how you organize and store the information that you collect in the course of your research? 6. When you find useful sources of information, such as journal articles or books, how do you generally locate relevant information in them? For example, do you usually just skim them, read relevant parts only, or read the whole resource? Please describe the process you normally undertake. 7. Do you generally print Electronic resources for use in your research, or save or read them in electronic format? 8. Do you usually take action to obtain relevant resources as soon as you find them (e.g., by ordering books or articles or by printing electronic material) or do you usually wait until your search is complete and then obtain copies of the resources? 9. At the end of the information seeking process, what do you do with that information (produce a paper, book, conference presentation, or class lecture)? Please explain.

*Focus Group.* The final version of the topic guide for the focus group is prepared on the basis of the emerging findings from the survey, E-mail interviews, and face to face interviews. The group is used to explore in further depth issues arising in the research and to understand more fully the experiences of and views on information-seeking among social science faculty at Sultan Qaboos University. The group is also used to identify relevant issues regarding information-seeking that are of importance or of concern to the participants themselves, and for that reason the topic guide is tightly defined in advance. The group is expected to provide information in relation to topics, including: 1. Information-seeking behavior of social science



scholars. 2. Internet usage. Here the participants are asked to describe how they would locate relevant research information using the Internet, and what criteria they use for evaluating Internet resources. 3. Databases usage. The items in this topic assess which aspects of the most commonly used databases are most appealing, whether or not the currently used databases meet the majority of research needs, changes observed by the respondents in terms of methods of information access over time, the types of electronic sources that would enhance research productivity, and barriers to using these databases.

In order to stimulate discussion and to assist the researcher in understanding the actual process of information-seeking among the participants, they are initially asked to complete a short written exercise (15 minutes). In this exercise, they are given an example of a social science research question and asked to use a computer and to write down the steps that they would typically take in order to obtain information to answer the question. In doing so, they are also asked to write down any thoughts or issues that occur to them in the process of doing this exercise. It is expected that this process would be effective in encouraging the participants to recall about their past experiences of information-seeking in order to be able to contribute productively to the discussion. The written documents are also collected by the researcher and included in the content analysis of the focus group material.

#### Procedures

This portion of the description of the methodology explains the specific research procedures employed including the collection of the data (for the survey, e-mail interviews, face-to-face interviews, and focus groups assessments) and the methods employed in analyzing the data from each approach.

### *Data Collection*

Data are collected via both a survey containing closed and open-ended questions (i.e., numeric questions, categorical questions, and multiple response questions) (see Appendix A), e-mail interviews, face-to-face interviews containing open and open-ended questions (see Appendix C), and a focus groups (see Appendix D). Each social science scholar at Sultan Qaboos University is invited to participate in the study. Each scholar received a copy of the survey along with the informed consent form (see Appendix F) and instructions in how to respond it. The primary investigator and one colleague were responsible for distributing the survey. The participants returned the surveys to the researcher through their coordinators. The survey required approximately 30-40 minutes to complete.

Twenty one e-mail interviews and 16 face-to-face interviews were conducted. One hundred fifty scholars were purposefully selected from the approximately 367 social science scholars and contacted with an e-mail containing the interview questions. Their responses are sent via return e-mail to the primary investigator. It is anticipated that the e-mail questions would take approximately 30-40 minutes to answer.

Sixteen scholars volunteered to participate in face-to-face interviews. The interviews are recorded by the investigator and each interview took approximately 40-50 minutes.

Four focus groups are conducted. Thirteen social science scholars from three of the four colleges (College of Arts and Social Sciences, College of Commerce and Economics, and College of Education) agreed to participate. In total, four focus groups are conducted at a location that was convenient to scholars, three of which had

three participants and one of which had four. The focus groups are tape-recorded with the permission of scholars and each focus group lasted approximately 30-40 minutes.

### *Data Analysis*

The data analysis portion of the present study consists of quantitative data analysis and qualitative data analysis.

*Quantitative Analysis.* Data from the survey are examined via descriptive and inferential quantitative techniques. Descriptive statistics are methods of deriving characteristics or summary indices from the raw data collected from the survey. Descriptive statistics are “transform large groups of numbers into more manageable form, [while] inferential statistics are methods that allow the researcher to generalize characteristics from his set of data to a larger population” (Huck, Cormier, & Bounds, 1974, p. 19). Initially, descriptive statistics are provided for the respondent background variable from the first section of the survey consisting of frequencies and percentages for the categorical (e.g., gender, academic rank) and multiple responses variables (e.g., use of e-mail for a variety of purposes), and means, ranges, and standard deviations for the numeric variables (e.g., age, number of years employed at Sultan Qaboos University). All inferential analyses are performed using two-tailed tests and an  $\alpha$  level of .05.

The first research question of the present study is: “What types of information do social science scholars generally need to access?” This question is addressed via descriptive statistics, and data to address this question was taken from section 2, item 1 of the survey. Frequencies and percentages are provided.

The second research question is “How do social science scholars identify and locate relevant information for research and teaching?” This question is also

addressed via descriptive statistics on the items in Section 2 of the questionnaire.

Frequencies and percentages are provided for the categorical and multiple responses items in this section of the survey.

The third and fourth research questions are “What information sources do social science scholars prefer to use for research and teaching and where do they find them?” and “What information sources do social science scholars use most frequently?” The items related to these two questions are in the third section of the survey. These questions are addressed in the study via descriptive statistical techniques. Specifically, ranges, means, and standard deviations are provided for the numeric variables (e.g., number of journals used on a regular basis) and frequencies and percentages for the categorical (e.g., subscriptions to academic journals) and multiple response variables (e.g., methods used to locate relevant research).

The fifth research question of the study is: “To what extent do social science scholars use electronic resources and print resources for research and teaching?” Items related to this question are found in the fourth section of the survey in Appendix A, which contains four multiple response variables. Frequencies and percentages for each option in each of these four questions are computed to address the fourth research question.

The sixth research question of this study is: “What barriers affect social science scholars' information-seeking behaviors and use of electronic resources?” The fifth section of the survey in Appendix A contains the set of items related to this question. The items are a combination of both categorical (e.g., whether or not the respondent was offered training through the university library) and multiple responses

(e.g., types of training offered) and, therefore, frequencies and percentages are computed for each item.

The seventh research question is: "Is age, gender, length of service, rank, college, department, or preferred search language related to the scholar's information needs?" There are eight outcome variables for this question. In order to test this question, the researcher used independent samples t-test (for age and length of service) and chi-square tests of independence (for gender, rank, college, department, and preferred search language) in relation to the eight types of information needs in section 2, item 1 of the survey. These types of information are books, journals, databases, government documents, dissertation, conference proceedings, audio-visual materials, and newspapers.

The eighth research question of the present study is: "Is age, gender, length of service, rank, department, college, or preferred search language related to whether a scholar prefers print or electronic sources?" Age and length of service are assessed as a continuous variable while gender, rank, department, college, and preferred search language are categorical variables. The outcome variable is the dichotomy from Item 10 of Section 3 of the survey, "If given the choice between examining the same document in print form or electronic form, which do you prefer?" Therefore, one independent samples t-test (comparing those who prefer print to those who prefer electronic on their age, gender, and length of service), and two chi-square tests of independence (between preference for print or electronic documents) and (a) rank (b) department (c) college and (d) preferred search language) were performed.

The ninth research question of the study is: "Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times

per month that the scholar physically visits the library?” Here, the outcome (number of times per month that the scholar physically visits the library) is a continuous variable. This means that a score “can logically fall anywhere along a continuum of possible scores” (Huck, et al., 1974, p. 160). The Pearson product-moment correlation technique is used to look for relationships between variables when the dependent variable (visits to the library) is a continuous one. Therefore, one Pearson product-moment correlation coefficient (between length of service and number of times per month that the scholar physically visits the library) is performed. The one-way ANOVA, like the *t*-test, is used to test the difference between means. The ANOVA differs from the *t*-test in that it can “compare two or more groups” of means (Huck, et al., 1974, p. 58). The use of ANOVA enabled the researcher to compare groups defined by rank, department, college, and preferred search language in terms of the number of times per month that the scholar physically visits the library. If either of the ANOVAs are statistically significant, follow up tests would be performed using Tukey’s Honestly Significant Difference (HSD) test. This test analyzes each pair of means in order to determine if “the two means are significantly different from one another” (Huck, et al., 1974, p. 68).

The tenth research question of this study is: “Is age, gender, length of service, rank, college, department, or preferred search language related to the number of times per month that the scholar accesses the library catalog through the Internet?” As was the case for the seventh research question, the outcome variable (number of times per month that the scholar accesses the library catalog through the Internet) is continuous. Pearson correlation coefficient (between length of service and number of times per month that the scholar accesses the library catalog through the Internet) and two

oneway ANOVAs (comparing groups defined by rank and college in terms of the number of times per month that the scholar accesses the library catalog through the Internet) are performed. If either of the ANOVAs is statistically significant, follow up tests would be performed using HSD tests.

*Pre-testing of the Questionnaire.* For the purpose of the pilot study, the draft questionnaire is initially sent to nine academic referees for comment and evaluation. These included four academic referees from Sultan Qaboos University (SQU) in Oman, and five referees from overseas, including three from the United States of America and two from Tunisia.

The referees from SQU are selected purposefully to represent a range of specialist areas and Colleges and included two specialists in the area of Library and Information Science from the College of Arts and Social Sciences, and two from the College of Education, of which one is in the Department of Foundation and Educational Administration and one in the Department of Curriculum and Instruction.

All referees are contacted by email and are asked to evaluate the accuracy of the questionnaire content in relation to the topic and specific objectives of the study and to provide comments on the overall design of the questionnaire and the wording of specific items. Referees are asked to provide comments within two weeks of receipt of the draft questionnaire. All nine referees responded within this two week period. Their overall comments and suggestions can be summarized as follows:

1. Referees commented that the draft questionnaire was too lengthy; it is recommended that the researcher should reduce the number of questionnaire items, especially those in the first section (personal information).

2. Suggestions are made for omitting some irrelevant questions which are not likely to make a useful contribution to the study objectives.
3. Suggestions are also made for merging a number of questionnaire items which collected similar information.
4. It is proposed that an additional group of questions should be included in the second or third sections of the questionnaire in order to collect information on how respondents locate relevant information for research and teaching and the sources which they use to obtain this information.

The referees' recommendations and suggestions are used by the researcher to modify the questionnaire for the purpose of a pilot survey.

*Pilot Survey.* The survey is then piloted by distributing the draft questionnaire to a sample of 30 academic faculty at SQU. For the purpose of this pilot survey, a purposive sample is selected to represent all social sciences colleges at SQU, with sample members being selected randomly within each college. Since the researcher is located in the United States at the time of the pilot survey, questionnaires are distributed by electronic mail. Participants are informed in the covering email message that they are being invited to participate in the pilot stage of the survey and encouraged to provide comments on the format of the questionnaire, the wording of and ease of answering specific questions and the average time needed to complete the questionnaire. Participants are given two weeks to complete and submit comments on the questionnaire, and the importance of their participation to the overall success of the study is emphasized.

Within the two week period allowed for completion and return of the questionnaire, 20 responses are received by the researcher, which is considered a good response rate. The comments received from the participants related mainly to the



length of time required to complete the survey, which most participants reported to be approximately 30 minutes, and to the format of the questionnaire, which it is felt needed improvements.

In response to these comments, the researcher considered first whether to reduce the length of the questionnaire in order to shorten the time needed for completion but decided against this due to the importance of all the questions to the objectives of the survey.

In order to improve the format of the questionnaire, in response to the second category of participant comments, the researcher asked a specialist in the Printing Services Center in Emporia State University to redesign the questionnaire. The specialist used Adobe InDesign Software to design the questionnaire to make it more user-friendly as well as visually attractive. The importance of a well-designed questionnaire in survey research was highlighted by Martyn & Lancaster (1981) who noted “A cramped, poorly typed, duplicated questionnaire printed on semi-absorbent paper will not inspire the respondent to regard the questionnaire or survey seriously” (p. 8-9).

*Translation of the Questionnaire.* Since the study is conducted within an Arabic environment, it is decided to translate the original English-language version of the questionnaire into Arabic to make it easier for respondents who are not proficient in the English language to understand and complete. In order to ensure the accuracy of translation, the researcher employed a three stage process. First, three qualified specialists are asked to translate the questionnaire into Arabic, including a teacher who holds a Master’s degree in Library and Information Science and who is familiar with the study topic, a certified translator who is also a lecturer in a Tunisian university, and a certified translator who operates a translation company in the

Sultanate of Oman. The researcher then subsequently reviewed and compared the three Arabic translations of the questionnaire with the original English version and selected the most suitable for use, to which minor modifications are made on the basis of the other two versions. In the final stage of the translation process, the researcher sent the modified Arabic version of the questionnaire to a fourth specialized and certified translator from Tunisia to re-translate it into English. The English translation of the Arabic version of the questionnaire is then compared with the original English version of the questionnaire, as a check that the Arabic version used to produce the translation accurately reflected the original English version. After receiving the English translation of the Arabic copy, the researcher compared it with original English copy and is able to confirm that both are identical. He then sent both the Arabic and English versions of the questionnaire to his outside member of the dissertation committee, who is fluent in both Arabic and English, for checking and approval. After approval of the final version of the Arabic questionnaire, the researcher distributed this to a sub-sample of 15 of the pilot survey participants in order to seek comments on the appropriateness of the content and to check whether the Arabic words were understandable to respondents.

Finally, the researcher used Adobe InDesign Software to design the Arabic and English final versions of the questionnaire, which is then sent to a private printing company in Oman who reproduced 300 copies of the English version (see Appendix A) and 200 copies of the Arabic version (see Appendix B). It is considered that these numbers would be sufficient to ensure that members of the study population could choose to receive and complete the questionnaire in either Arabic or English.

*Distribution of the Questionnaire.* The researcher then sought ethical approval from both Emporia State University and Sultan Qaboos University to conduct the

survey, and obtained a supporting letter from the consultant of the vice-president of Sultan Qaboos University asking Social Sciences faculty members to help the researcher by completing the questionnaire. This letter is included, along with an explanation of the purpose of the survey, when sending out the questionnaire.

At the time when the survey is conducted, there are a total of 437 Social Science faculty members at Sultan Qaboos University representing four colleges: the College of Arts and Social Sciences, the College of Education, the College of Commerce and Economics, and the Law College. Of the total number of faculty at that time, 70 were on study leave, leaving a potential survey population of 367. Table 1 shows the distribution of these by College.

Table 1

*Number of Actual and Available Social Sciences Faculty Members*

College	Actual Number	Available Number	Missing Number
Arts & Social Sciences	174	158	16
Education	135	112	23
Commerce & Economics	90	66	24
Law	38	31	7
Total	437	367	70

In April 2007, the researcher started distributing the survey by hand with the help of one of his colleagues at the Department of Library and Information Science and the coordinators of each department of the targeted colleges. It took two weeks to distribute all of the questionnaires. After one week, the researcher sent a follow-up

email to all participants reminding them to complete the questionnaire and stressing the importance of their participation in the study.

By May 2007, 70 completed questionnaires have been returned, out of the total of 367 distributed to all colleges. This is considered an insufficient response rate and the researcher therefore extended the period for return of questionnaire by a further two weeks. Additionally, the Dean of each college and the Head of each department are approached in person in order to seek their help and support in encouraging faculty members to participate in the study. They all expressed willingness to help and promised to contact faculty members to ask them to complete and return the survey as soon as possible. Eighty additional questionnaires are received during this extended two-week period, but the overall response rate is still considered to be insufficient and the researcher sent a second reminder email to faculty members to return the survey questionnaire. Within another month, an additional 68 questionnaires are returned, bringing the total number to 218, which represented a response rate of 59.4%, a good level of response in survey research. The data collection process is terminated on July 20, 2007. It should be noted that data collection is likely to have been hampered by the fact that the city of Muscat, where the research was taking place, experienced a catastrophic typhoon on June 5, 2007. The storm resulted in much destruction of lives and property, and doubtless prevented many faculty members from responding.

*Qualitative Analysis.* The data from the e-mail interviews, face-to-face interviews, and focus groups are analyzed using qualitative content analysis. Qualitative content analysis is a procedure designed to extract themes and typical responses from a large amount of textual data. Content analysis has been used for over 50 years in social science research (Berelson, 1952; Kracauer, 1952). The

primary aim of the qualitative content analysis is to derive common beliefs or themes provided by the participants. Answers to the open-ended interviews and focus groups questions are examined in this manner. The researcher used a qualitative analysis software program, NVIVO, to facilitate the process of analysis. Initially, the responses are examined and a preliminary set of themes created. Then, the responses are re-examined and coded according to the preliminary themes, with additional themes added as necessary. Results of the qualitative analysis are presented separately for the questions within each section of the survey and include direct quotes from the respondents. Where appropriate, findings are related to the personal or professional characteristics of the respondents, although the qualitative nature of the data does not allow conclusions to be drawn on an aggregate level about the relationship between these characteristics and information-seeking.

#### Reliability and Validity

In this section, reliability and validity of quantitative and qualitative research methods are discussed. Before examining the problems of determining reliability and validity of qualitative research methods such as interviews and focus groups, it is necessary to look at these two concepts in their original context, that of quantitative research. In this section, the quantitative meanings of the concepts are defined, followed by a brief description of ensuring reliability and validity that can be transferred to qualitative research. Although these terms have a broad definition, such as when the reliability or validity of a piece of research is of concern, the researcher intends a “narrow” definition in the context of the present discussion. That is, in the “broad” sense, reliability has to do with the degree to which research results can be replicated, and validity refers to the ability to generalize results to the population as a whole through the use of representative and/or random samples, etc.

*Reliability in Quantitative Research*

Reliability is a statistical construct developed by test and survey developers to quantify errors of measurement in sample data. Reliability can be defined as the degree to which test or survey scores are consistent, dependable, or repeatable; in other words, the degree to which they are free of errors of measurement. Reliability indicates (1) the extent to which individual differences in scores can be attributed to real differences in the characteristics being measured and (2) the extent to which they can be attributed to chance (Anastasi, 1988). There are four types of reliability: test-retest (the amount of similarity between scores obtained by the same subjects on two separate administrations of the same test); alternate-form reliability (the amount of similarity between scores obtained by the same subjects on two equivalent versions of the same test); split-half (the amount of similarity between individuals' scores on equivalent halves of the same test); and Kuder-Richardson Reliability and Coefficient Alpha (the amount of similarity of responses to all items in the same test) (Anastasi, 1988). From these definitions, it is clear that reliability indicates the researcher's ability to obtain the same results from the same participants at different times using the same or similar methods.

A major factor that affects reliability is the homogeneity (similarity) of the group being surveyed. In other words, if a group consists of members who are substantially alike (that is, restricted range) the group will tend to produce an apparently unreliable measure of reliability because reliability depends on the heterogeneity (variability) of the sample (Anastasi, 1988). Therefore, if relatively homogeneous subjects are surveyed, the instrument may appear to be unreliable. For

this reason, very small sample sizes may make it difficult to obtain meaningful reliability indices.

### *Validity in Quantitative Research*

There are two types of validity: internal and external. Internal validity is the extent to which results accurately reflect what the instrument is intended to measure (Cook & Campbell, 1979). For example, evaluation apprehension is an anxiety-creating concern with appearing normal or acceptable, and is often experienced by people when they take part in research. In a classic study, Rosenberg (1965) wrote that its presence reduces the internal validity of research because participants may behave or respond as they believe the researcher expects them to. In the present study, evaluation apprehension will be reduced by (1) using anonymous survey techniques and (2) use of an e-mail interview, which will give the participants a greater feeling of anonymity than they would have in a face-to-face interview situation. In addition, it is known that researchers in face-to-face settings may give subtle cues, known as demand characteristics, to subjects that serve to bias their responses (Orne, 1962). This is not an issue in the present research because face-to-face interviews and focus groups data collection techniques are employed at that point. Another barrier to internal validity is experimenter effects, which is the impact of the researcher on the participant, including the unintentional tendency for researchers to obtain responses from a participant that confirm their initial expectations. The use of a carefully worded, consistently applied survey instrument and interview protocol helped to limit this effect, as did the lack of face-to-face interviews and focus groups data gathering techniques in the e-mail interviews.

External validity is the extent to which a particular inference derived from a test instrument is appropriate or meaningful. The measure of validity is a validity coefficient, or coefficient of correlation. This measure shows the strength of the relation between predictor (independent variable) and criterion (dependent or outcome variable) (Anastasi, 1988). There are three types of validity: content, construct, and criterion validity. Content-validity is the extent to which the test content covers a representative sample of the domain being measured. To have content validity, the domain must be thoroughly analyzed to make sure that all important facets of it are reflected in the survey questions. Criterion-validity is the extent to which the survey can predict an individual's performance in some activity, and is not applicable in this context. Construct-validity is the extent to which the survey is able to measure a theoretical construct or trait, such as leadership or anxiety (Anastasi, 1988).

The development of a valid instrument requires several procedures to be employed sequentially. This builds validity into the survey from the beginning. The steps are: (1) formulation of detailed construct definitions; (2) preparation of survey items in accordance with the construct definitions; (3) item analysis in order to select the most effective questions; and (4) validation of scores and combinations of scores (Anastasi, 1988). Thus, developing survey instruments can be impractical without adequate staff, training, time, and funding.

To summarize thus far, an examination of reliability and validity in quantitative research reveals four important domains. First, reliability, as an indicator of error variance, is dependent on the amount of difference or variability among participants. This means that a survey distributed to a group of very similar individuals would produce a low reliability coefficient because of the restricted range



of the sample. Consequently, when only a small sample is available (e.g., six or eight faculty on the same campus), accurate reliability coefficients may not be possible, and other means of ensuring that the researcher is obtaining consistent results must be found. Since the present study will sample 367 faculty members, it is likely that a sufficiently large and variable sample would be obtained. Second, the numerous types of reliability and validity suggest that these two concepts are each the result of triangulation, or overlap, of different facets of the concepts. This means that ways of ensuring validity in qualitative research must be capable of confirmation by other sources of information. The use of documentary review and a survey helped to confirm the validity of interviews and focus groups findings. Third, the development of reliable and valid quantitative instruments is not only a quantitative issue: considerable conceptual rigor is required, for example, to develop thorough and clear construct definitions before any survey items are ever developed or administered. In the present study, the interview and focus group questions have been based on a thorough review of the existing literature. Fourth, some obstacles to internal validity, such as demand characteristics and evaluation apprehension, are inherent in the testing situation and may be difficult to control. In the present study, the researcher attempted to limit these problems as described above.

Issues of reliability and validity are important in any empirical investigation. In the current study, instruments are designed that have not been employed in past research, and therefore the reliability and validity of these instruments has not been documented. However, there are reasons to believe that both the instruments and the results of the current study are both reliable and valid.

In terms of reliability, most of the items that were assessed on the survey ask that the respondents report basic information. Although there are a few items that ask for respondents' ratings of their perceptions (e.g., "how important are non-Internet electronic resources to your research or class preparation" in Section 3 of the survey for which respondents indicate whether they think these resources are "vital," "very important," "somewhat important," "not very important," or "not relevant"), the bulk of the items should have very high reliability. For example, if respondents indicate that they do have a computer in their office, it is likely that their response would be the same if they were to complete the survey a second time. Although no measurements are perfectly reliable, the fact that the items in the survey typically ask for basic information indicates that the reliability of the responses should be high.

However, the interviews (e-mail interviews and face-to-face interviews) and focus groups contain primarily open-ended questions and, therefore, its reliability may be lower. One of the key aspects of reliability is that the results of the study should be repeatable. In the current study, reliability is, therefore, also addressed by the thorough description of the methods employed and the decisions made along the way. Therefore, another researcher could replicate the current study by using the same data and making the same decisions. While another researcher may not have made identical decisions in the research process, the fact that the *process* by which conclusions were drawn will be thoroughly described means that the results will be replicable and therefore can be termed reliable.

One of the factors that will contribute to the validity of the current study is the fact that both quantitative and qualitative approaches are employed. Therefore, any results that are method-specific (i.e., found in the quantitative portion of the study but

not in the qualitative portion of the study, or vice versa) are revealed as such. Increased levels of confidence are, therefore, assigned to those results and conclusions that are warranted by both the quantitative and qualitative portions of this study. Results and conclusions obtained from only one of the two approaches will receive less weight in the interpretation of the results.

#### Ethical Issues

Research can have a powerful impact on participants' lives. Researchers must always think very carefully about the impact of their research and how they ought to behave, so that no harm comes to the subject of the research or to society in general. In other words, ethics or moral principles must guide research (McNeill & Chapman, 2005, p. 12).

There are three primary ethical issues in the current study: confidentiality, anonymity, and voluntary participation. As described in the letters of introduction (see Appendix F, G, H, I, J), responses to both the survey, e-mail interview, face-to-face interview, and focus group are completely confidential. That is, the identity of the respondents will not be revealed either in terms of the fact that they participated in the current study or in terms of their specific answers.

The second ethical issue that is relevant to the current study is anonymity. It is noted above that direct quotes from the e-mail interview, face-to-face interview, and focus group may be used in reporting the results of the current study. However, the identity of the individuals who provided these direct quotes will not be revealed in the reporting of the results. Data other than the direct quotes from the e-mail interview, face-to-face interview, and focus group are presented only in summary form (e.g., frequencies, percentages, ranges, means) and, therefore, anonymity is not

compromised. Surveys are assigned a code number to conceal the identity of the respondents. Completed surveys are stored in the researcher's office in a locked cabinet.

A third relevant ethical issue is voluntary participation. Respondents are informed in the letters of introduction (see Appendix F, G, H, I, J) that their participation in the current study is entirely voluntary and that there would be no negative consequences if they (a) decided not to participate or (b) decided to participate but withdraw from the study at a later time.

### Challenges of the Study

There are likely to be a number of specific challenges in carrying out a study of this nature among scholars in the Middle East. This section identifies some of the main challenges expected and describes how the researcher intends to deal with these.

The main challenge is likely to be related to language. Some faculty members in Sultan Qaboos University do not read or speak English or are unable to do so to a sufficiently high standard to complete a questionnaire or interview in English. Other faculty members are unable to read or speak Arabic. As a result, it will be necessary to translate the English questionnaire and interview guide into Arabic and to have two versions available to offer to the research participants.

This not only increases the overall workload for the researcher in preparing, analyzing, and reporting on the study, but it introduces complications and potentially reduces the accuracy of the results, since it can be very difficult to directly translate words and concepts from English into Arabic, and vice versa. Moreover, there are cultural differences in styles of communication between Arabic, particularly the form used in Oman, and English. For example, Omanis tend to use more formal, less personal communication styles and often are reluctant to express their own feelings or

relate their experiences. This presents particular difficulties in survey research, especially research on information-seeking, which requires participants to provide information on their personal feelings and experiences.

In order to help address these issues, the participants was first encouraged to complete the questionnaire or interview in English if possible, with Arabic only being used if their level of competency in English is very low. The questions were worded so as to capture information on their personal experiences and feelings about information-seeking, but also took into account local protocol on the use of communication styles so as not to unduly offend or embarrass participants. In addition, the survey, interviews, and the focus group questions were written in language which is as simple and straightforward as possible, not only in order to encourage participation in English but to facilitate the process of translation into Arabic. Where questionnaires, interviews, or focus groups were completed in Arabic, specialist translators were used to ensure that translations of the responses were accurate.

Often related to English-language proficiency, the educational background of the study participants may also have an influence on their ability or willingness to participate effectively in the research. This is an issue which is of relevance to research in developing countries more generally. Even within a university context, survey questionnaire research is much less common in the developing world than in the developed, Western world, and faculty members who have not been educated in the West may perhaps be less inclined to take part or provide useful responses to the survey. It is very important but often very difficult in survey research to achieve a satisfactory response rate, and given the relatively small number of social science faculty in Sultan Qaboos University, it will be particularly important in this study to

achieve as high a response rate as possible, in order to allow for valid statistical analysis of the results. Particular attention is paid to ensuring that participants were able to take part in the study, for example by offering a questionnaire for completion in Arabic if necessary, and that they fully understand the purpose of the research and how it is likely to be of benefit to them. When approaching potential participants and distributing the questionnaire, therefore, it was crucial to explain how they themselves, and the university generally, will benefit from the research in the form of improved library and information services.

Another challenge relates to the dispersal of social science faculty throughout the colleges of Sultan Qaboos University and the very diverse range of subject areas covered in their work and their information-seeking. This is a problem which is inherent to many studies of social scientists, who by nature are a multi-disciplinary group, but particularly so in the case of this university, where there is no central hub of social science. The dispersal of social science faculty throughout the university presents potential difficulties and an increased workload to identify and gain access to all faculty who fall within the defined population for the study, i.e., all social scientists employed by the university during the 2006-2007 academic year. Furthermore, the diverse range of participants and subject areas again means that the questions asked need to be sufficiently simple and neutral in focus as to be relevant to a wide range of information-seeking contexts.

There is, as noted in the introduction, a relatively flexible concept of time in many Middle Eastern cultures, including Oman, which might result in a slow response by participants to the request to complete a questionnaire, e-mail interviews, face-to-face interviews, and focus groups, jeopardizing the timescale for completion of the study. The researcher dealt with this potential risk by specifying a deadline for return

of questionnaires or e-mail interviews and being prepared to send out at least two reminders to the research participants. These took the form of an initial e-mail reminder, followed by a telephone call during which participants are asked if they require any assistance to complete the questionnaire or interview.

Unlike some developing countries of the Middle East, there are no particular restrictions on intellectual freedom in Oman, so this issue is unlikely to present a problem in the context of the present study. In other countries where intellectual freedom is more restricted, research participants might be reluctant to talk about their experiences of information-seeking, particularly the use of non-official sources of information. In these cases, research studies would have to be designed very sensitively in order to elicit as much useful information as possible without putting participants at any personal risk, and official clearance of the study might have to be secured before proceeding.

Finally, it should be noted that data collection of this study was likely to have been hampered by the fact the Sultanate of Oman, where the study was taking place, experienced a catastrophic typhoon called “Guno” on June 5, 2007. The tornado resulted in much destruction of lives and property and doubtless prevented many social science scholars from participating in the study. Furthermore, this disaster has also changed the study plan and delayed the data collection.

### Summary

This chapter has described the research approach taken in the current study. The mixed-method design (including a description of quantitative research, qualitative research, and mixed designs) employed is described in detail including the advantages and disadvantages of this approach. The individuals who participated in this study and the instruments employed were presented. The specific research procedures (including

both data collection and data analysis) employed in the study are documented. Issues of reliability, validity, regulations, and ethics are then addressed. The final section of this chapter examined the methodological challenges of the study. The next chapter contains a presentation of the quantitative results of the current study.



## CHAPTER 5

### QUANTITATIVE FINDINGS

#### Introduction

Quantitative data was collected using a questionnaire. The questionnaire is developed in its initial form based on the previous studies and consists of five sections. The first section of the survey contains items related to demographic and background characteristics of the respondents, while the other four sections are created to address the ten key research questions of the survey. A Statistical Package for Social sciences (SPSS) database is created by the researcher in order to facilitate the processes of organizing, coding, and analyzing the collected data. The (SPSS) is also used to create the tables necessary to demonstrate the data. Two quantitative analysis techniques are derived using the SPSS to analyze the data collected from the questionnaire. Those are descriptive analysis and inferential analysis.

This chapter sets out the findings of the quantitative data collection in relation to the ten key research questions of the study. The chapter begins by presenting the descriptive analysis, followed by the inferential analysis.

#### Descriptive Analysis

Descriptive analysis is a technique undertaken to analyze the characteristics and relationship among different variables based on systematic observation of these variables (Williams & Monge, 2001). This section presents the descriptive analysis of the survey. It includes frequencies and percentages for the categorical and multiple responses, and ranges, means, and standard deviations for the numeric variables. The findings of the descriptive analysis are organized and presented in sequence under the first six key questions of this study.

*Demographic and Background Information*

*Sample profile.* A total of 218 faculty members out of 367 participated in the current study, which represented a response rate of 59.4%, a good level of response in survey research. The first set of questions in the survey assessed the demographic characteristics of the sample (in Part 1 of Section 1 of the survey). Descriptive statistics for the categorical demographic characteristics are shown in Table 2.

Table 2

*Descriptive Statistics for Categorical Demographic and Background Variables*

(N=218)

	Frequency	Percentage
<b>Gender</b>		
Male	162	74.3
Female	56	25.7
<b>Nationality</b>		
Omani	105	48.2
Egyptian	53	24.3
Other	60	27.5
<b>Academic Rank</b>		
Lecturer	43	19.7
Assistant Professor	132	60.6
Associate Professor	28	12.8
Professor	15	6.9
<b>College</b>		
Arts & Social Sciences	103	47.2
Commerce & Economics	39	17.9
Education	63	28.9
Law	13	6.0

	Frequency	Percentage
<b>Department</b>		
English Language	22	10.1
Curriculum & Instruction	19	8.7
Sociology & Social Work	16	7.3
Arabic Language	15	6.9
Geography	15	6.9
Other*	131	60.1
<b>Employment Status</b>		
Full Time Instructor	207	95
Visiting Instructor	9	4.1
Missing Data	2	.9
<b>Where Highest Degree Received</b>		
United Kingdom	69	31.7
Egypt	46	21.1
United States	29	13.3
Australia	24	11.0
Other	47	21.6
Missing Data	3	1.38
<b>Publish Regularly</b>		
No	65	29.8
Yes	153	70.2

*\* Only those departments with 15 or more individuals formed separate groups, with the remainder of the sample placed in an "other" department group.*

The majority of the sample (74.3%, N=162) was male and female comprised only 25.7% (N=56). It is important to note that women at SQU hold high academic positions and play a vital role in the education system.

Respondents reported being from 23 different nationalities, with the most common nationalities being Omani (48.2%, N=105) and Egyptian (24.3%, 53). In terms of academic rank, most of the respondents (60.6%, N=132) were assistant professors, with 19.7% lecturers, 12.8% associate professors, and 6.9% professors.

Nearly half of the respondents (47.2%, N=103) came from the College of Arts & Sciences, with an additional 28.9% coming from the College of Education. The colleges of Commerce and Economics (17.9%, N=39) and Law (6.0%, N=13) had the lowest number of respondents.

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Table 3

*Percentage of respondents based on the Available Social Sciences Faculty Members in each college*

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College	Available Number	Frequency	Percentage
Arts & Social Sciences	158	103	65.2
Education	112	63	56.3
Commerce & Economics	66	39	59.1
Law	31	13	41.9

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However, as shown in Table 3 above, 65.2% ( $N = 103$ ) of an available 158 Arts & Social Sciences faculty responded to the survey. These 103 respondents constituted 47.2% of the sample ( $N = 218$ ). The group constituting the third -highest proportion in the sample was the Education faculty, with 28.9% of the sample and 56.3% of available faculty. The Commerce & Economics faculty, which constituted

17.9% of the sample, accounted for the second-highest response rate in the sample, with 59.1%. This was followed by Law, with the smallest number of available faculty ( $N=31$ ), constituting 6% of the sample and having a 41.9% response rate. Thus, the available number of faculty in each college were unequal and, therefore, account for widely varying proportions of the overall sample. Response rates, though they varied from a low of 41.9% for Law to a high of 65.2% for Arts & Social Sciences faculty, were all of an acceptable range.

There were 27 academic departments represented in the sample, with the most common being English Language (10.1%), Curriculum & Instruction (8.7%), Sociology & Social Work (7.3%), Arabic Language (6.9%), and Geography (6.9%).

The employment status of over three-quarters of the sample (95%,  $N=207$ ) was full time instructors, and (4.1%,  $N=9$ ) reported being visiting instructors. There were 28 different countries reported as the place where the highest degree was earned, with the United Kingdom (31.7%,  $N=69$ ), Egypt (21.1%,  $N=46$ ), the United States (13.3%,  $N=29$ ), and Australia (11.0%,  $N=24$ ) being the most common. As a result, the majority of respondents earned their highest degrees in English speaking countries. Most of the respondents (70.2%) reported publishing on a regular basis.

The age of the respondents ranged from 24 to 70 years old with a mean of 42.67 years ( $SD=9.52$  years). Approximately 40% of respondents were 40-49 years of age, with the remainder being 30-39 (29.9%,  $N=65$ ), 50-59 (16.5%,  $N=36$ ), or 20-29 (9.2%) years of age. Only 10 respondents (4.6%) were 60 or upward years of age.

Table 4 shows the distribution of the social science faculty by age.

Table 4

*Illustrates the distribution of respondents by age*

	Frequency	Percentage
20-29 year	20	9.2
30-39 year	65	29.9
40-49 year	87	39.9
50-59 year	36	16.5
60-Onward year	10	4.6

In regard to length of services, the respondents had been employed at SQU for between 1 and 21 years ( $M=8.31$  years,  $SD=5.02$  years). Consistent with relative maturity of the sample, most of the respondents (36.9%,  $N=80$ ) reported having been faculty at SQU for 6-10 years. Faculty who had been at the university for 1-5 years made up 30.0 percent of the sample, followed by those who had been at the university for 11-15 years (14.7%,  $N=32$ ) and 16-20 (12.9%,  $N=28$ ) years. Only one respondent reported that he has working at the university for 21 years or more. Table 5 shows length of services at SQU.

Table 5

*Shows length of service of respondents at SQU*

	Frequency	Percentage
1-5 year	76	35.0
6-10 year	80	36.9
11-15 year	32	14.7
16-20 year	28	12.9
21+ year	1	.5
Missing Data	1	.5

The average number of years spent or lived in developed nations was 5.40 (Range=0 to 30 years,  $SD=6.40$  years). The respondents reported publishing an average of 3.67 articles in the past five years (Range=0 to 30 articles,  $SD=3.65$ ). Table 6 presents descriptive statistics for the continuous demographic and background variables.

Table 6

*Descriptive Statistics for Continuous Demographic and Background Variables*

(N=218)

	N	Minimum	Maximum	Mean	SD
Number of Years Lived in Developed Nations	214	0	30	5.40	6.40
Number of Articles Published in Past 5 Years	217	0	30	3.67	3.65

*Computer use.* Respondents were also assessed regarding their computer usage (in Part 2 of Section I of the survey). Descriptive statistics for the categorical computer use variables are shown in Table 7.

Table 7

*Descriptive Statistics for Computer Usage (N=218)*

	Frequency	Percentage
Having a Computer in Office		
No	2	.9
Yes	216	99.1
Having a Computer at Home		
No	11	5.0
Yes	207	95.0
Computer Skills		
Less than adequate	8	3.7
Adequate	52	23.9
Somewhat proficient	69	31.7
Very Proficient	89	40.8
Email Uses (Multiple Response)		
Personal correspondence	215	98.6
Student correspondence	130	59.6
Research	148	67.9
Other	7	3.2
Do not use email	0	0.0



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	Frequency	Percentage
<hr/>		
Locations Used to Access Internet (Multiple Response)		
Office	208	95.4
Home	144	66.1
Library	3	1.4
Internet Café	4	1.8
Other	1	.5
Type of Home Internet Access (Multiple Response)		
Through the University	8	3.7
Dial-up	125	57.3
ADSL	62	28.4
Cable modem	2	.9
Other	2	.9

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In respect to the use of computer, nearly all (99.1%) of the respondents reported having a computer in their office, and 95.0% reported having a computer at home. In general the respondents felt that they had good computer skills, with 31.7% indicating that they were proficient and 40.8% indicating that they were very proficient, while only 3.7% indicated that they were less than adequate. E-mail was used by nearly all of the respondents for personal correspondence (98.6%), and by the majority of the respondents for research (67.9%) and student correspondence (59.6%). None of the respondents indicated that they did not use email.

In terms of where they accessed the Internet, nearly all (95.4%) indicated that they accessed the Internet from the office, and nearly two-thirds (66.1%) indicated that they accessed the Internet from home. Most of the respondents (57.3%) reported

having a dial-up connection from home, with the remainder having ADSL (28.4%, N=62) or through the university (3.7%)

Table 8 shows descriptive statistics for the continuous computer use variables. The respondents were asked to indicate the number of years they have owned a computer. Respondents reported having owned a computer for an average of 8.62 years (Range=0 to 28 years,  $SD=4.56$  years) and spent an average of 13.35 hours per week using the Internet for research and teaching (Range=0 to 55 hours,  $SD=9.03$  hours).

Table 8

*Descriptive Statistics for Continuous Computer Use Variables (N=218)*

	<i>N</i>	Minimum	Maximum	Mean	<i>SD</i>
Number of Years Owned a Computer	216	0	28	8.62	4.56
Hours per Week Spent Using Internet for Research and Teaching	211	0	55	13.35	9.03

*Library use.* The final part of the background section of the survey (Part 3 of Section 1) addressed library usage. Table 9 contains descriptive statistics for this section of the survey.

Table 9

*Descriptive Statistics for Library Use Variables (N=218)*

	<i>N</i>	Minimum	Maximum	Mean	<i>SD</i>
Percentage of Research Delegated to an Assistant	218	0	90	8.10	17.59
Times Per Month Visit the Library	216	0	12	2.95	2.54
Times Per Month Access Library Through the Internet	217	0	30	4.88	5.36

The respondents were asked three questions about the library use. They were asked whether they delegate a portion of their library or database research to a research assistant, number of times per month they physically visit the university library, and number of times per month they access the library catalog through the Internet. Participants reported delegating between 0% and 90% of their research to an assistant ( $M=8.1$ ,  $SD=17.6$ ). In addition, the participants reported visiting the library between 0 and 12 times per month ( $M=2.95$  times,  $SD=2.54$ ). Most of respondents (63.4%,  $N=137$ ) indicated that they physically visit the library 0-3 times per month, followed by those who visit the library 4-7 (29.6%), 8-11 (6.5%) and 12 or more (.5%) times per month. In respect to the number of times per month they accessed the library catalog through the Internet, respondents reported that they accessed the library catalog through the Internet between 0 and 30 times per month ( $M=4.88$ ,  $SD=5.36$ ). Nearly two-thirds (65.9%,  $N=143$ ) of respondents have accessed the library catalog 5 or less times per month, with the remainder accessing 11-15 (3.7%) or

16-20 (5%) times per month. Only two (1%) respondents reported that they access the library catalog through the Internet 21 or more times per month.

*Information Needs of Social Science Scholars*

The first research question of the current study is: What types of information do social science scholars generally need to access? Data to address this question is taken from Section 2, Item 1 of the survey. Table 10 shows descriptive statistics for the responses to this question.

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Table 10

*Descriptive Statistics for Information Needs (N=218)*

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	Frequency	Percentage
Journals	209	95.9
Books	208	95.4
Conference Proceedings	147	67.4
Databases	120	55.0
Audiovisual Materials	107	49.1
Dissertations	71	32.6
Government Documents	69	31.7
Newspapers	59	27.1

---

The most common types of information needed by the social science scholars in the current study was met through journals (with 95.9% indicating that they access journals), followed closely by books (with 95.4%). Conference proceedings (67.4%), databases (55.0%), and audio-visual materials (49.1%) were also popular.

Dissertations (32.6%), government documents (31.7%) and newspapers (27.1%) were less popular.

*Identifying and Locating Relevant Information*

The second research question is: How do social science scholars identify and locate relevant information for research and teaching? To address this question, data from Section 2, Items 2 through 8 of the survey are examined. Table 11 shows descriptive statistics for the categorical items in this section.

Table 11

*Descriptive Statistics for Categorical Measures of Identifying and Locating Relevant Information (N=218)*

	Frequency	Percentage
<b>How Journals are Accessed</b>		
Read abstract	66	30.3
Skim each article	29	13.3
Read each article	41	18.8
Skim then read each relevant article	58	26.6
Browse the index	24	11.0
<b>Method of Accessing Electronic Journal Articles (Multiple Response)</b>		
Email	72	33.0
Print	150	68.8
Save to hard drive	161	73.9
Save to portable medium	56	25.7
Read article on screen	86	39.4
Other	1	.5

	Frequency	Percentage
<b>Methods of Search for Specific Non-Research Questions</b>		
General query	105	48.2
Specific query	81	37.2
Webpage	27	12.4
Academic database	4	1.8
Other	1	.5
<b>Methods Search for Specific Research Questions</b>		
General query	16	7.3
Specific query	91	41.7
Webpage	45	20.6
Academic database	64	29.4
Other	2	.9
<b>How Websites are Saved (Multiple Response)</b>		
Bookmarked	181	83.0
Emailed	34	15.6
Printed	79	36.2
Saved to disk	58	26.6
Write down web address	91	41.7

When asked how journals were accessed to find relevant articles, the most common response was reading the abstracts (30.3%), followed by skimming each article for relevancy and then reading it in full later (26.6%). Some respondents (18.8%) also indicated that they read each and every article in the journal in full. The most popular method of saving relevant journal articles was to save them to the computer's hard drive (73.9%), followed by printing the article (68.8%). Some respondents also indicated that they read the article on-screen (39.4%) or emailed the article to themselves. When searching for specific questions that were not related to

research, the most common search method was a general query in a search engine (48.2%) followed by a more specific query (37.2%) and perform a search from a webpage (12.4%). However, when they were searching for research-related materials, specific queries in general search engines (41.7%) were the most popular method, followed by searching academic databases (29.4%) and perform a search from a webpage (20.6). When asked how they saved useful or relevant websites, 83.0% of the sample indicated that they bookmarked the site, 41.7% indicated that they wrote down the web address, and 36.2% printed out the web page.

In addition to questions about how they identified and located relevant information, respondents were also asked about the importance of various sources of information, and descriptive statistics for their responses are presented in Table 12.

Table 12

*Descriptive Statistics for the Importance of Various Resources (N=218)\**

	Very Unimportant	Unimportant	Neutral	Important	Very Important
Personal Collection	3.2	0.0	3.2	29.4	64.2
Library Texts	2.8	2.3	7.8	44.0	43.1
Print Journals	2.8	2.8	4.6	26.1	63.8
Electronic Journals	3.2	1.4	3.7	22.9	68.8
Newspapers	15.7	41.9	21.2	15.2	6.0
Government Archives	5.0	13.8	32.1	32.6	16.5

Non-governmental Archives	7.8	21.1	41.7	24.8	4.6
Internet Sources	2.3	2.8	4.1	28.0	62.8
Fieldwork	3.7	2.3	11.5	30.7	51.8
Colleagues	3.2	5.5	28.0	39.4	23.9

*Note.* Table entries are the percentages of respondents endorsing each category for each resource.

Based on these ratings, electronic journals were the most important resources, with 68.8% of the sample indicating that these were very important. Only 2.8% of the respondents reported that electronic journals are very unimportant. Next most important were the participants' personal collections, with 64.2% of respondents indicating that these were very important, while 3.2% indicated that personal collections are very unimportant. Print journals come in the third place of most important resources, with 63.8% indicating that these were very important, and then Internet resources (with 62.8% indicating that these were very important). The least importance resources were non-governmental archives, with only 4.6% indicating that these were very important, and newspapers (with only 6.0% indicating that these were very important).

Finally, Table 13 shows descriptive statistics for the continuous measures related to this research question.



Table 13

*Descriptive Statistics for Continuous Measures of Identifying and Locating Relevant Information (N=218)*

	<i>N</i>	Minimum	Maximum	Mean	<i>SD</i>
Hours per week spent searching for, skimming, or reading resources for research purposes	217	0	48	9.70	6.06
Hours per week spent searching for, skimming, or reading resources for teaching purposes	217	0	48	8.90	6.06

Respondents indicated that they spent an average of 9.70 hours per week reviewing resources for research purposes (Range=0 to 48 hours, *SD*=6.06 hours) and that they spent 8.90 hours per week reviewing resources for teaching purposes (Range=0 to 48 hours, *SD*=6.06 hours).

#### *Use of Various Information Resources*

The third research question of the current study is: What information sources do social science scholars prefer to use for research and teaching and where do they find them? Section 3 of the survey (all items except Items 1, 9, and 10) provided the data for this research question. Table 14 provides descriptive statistics for the categorical items related to this research question.

Table 14

*Descriptive Statistics for Categorical Measures of Sources Used to Obtain Information (N=218)*

	Frequency	Percentage
<b>Methods Used to Locate Relevant Research (Multiple Response)</b>		
Browse print journals	156	71.6
Browse electronic journals	177	81.2
Browse the library catalog	136	62.4
Browse the stacks at the library	72	33.0
Browse relevant Internet sites	159	72.9
Search bibliographies of relevant articles	79	36.2
Refer to books or periodicals in personal collection	148	67.9
References from peers	129	59.2
Other	5	2.3
<b>Language Used when Searching for Information</b>		
Arabic	47	21.6
English	76	34.9
Both Arabic and English	95	43.6
<b>How Journal Articles are Obtained (Multiple Response)</b>		
Personal print subscription	62	28.4
Read library's copy	133	61.0
Photocopy library's copy	146	67.0
Personal electronic subscription	30	13.8
Read library's electronic copy	133	61.0
Interlibrary loan	59	27.1

	Frequency	Percentage
Free electronic version	118	54.1
Document delivery service	21	9.6
Colleagues	130	59.6
Other	4	1.8
How Archival Materials are Obtained (Multiple Response)		
Viewing documents at the university library	135	61.9
Interlibrary loan/document retrieval	38	17.4
Government websites	71	32.6
Academic websites	131	60.1
General knowledge websites	43	19.7
Microfilm/microfiche	17	7.8
Visiting offsite locations to view print documents	52	23.9
Other	2	.9
Importance of non-Internet Electronic Resources for Research or Class Preparation		
Not relevant	2	.9
Not very important	10	4.6
Somewhat important	39	17.9
Very important	90	41.3
Vital	77	35.3
Awareness of Various Electronic Databases (Multiple Response)		
PsychInfo	38	17.4
ProQuest	127	58.3
EbscoHost	79	36.2
Lexis	21	9.6
ERIC	123	56.4
LISA	15	6.9

	Frequency	Percentage
Dissertation Abstracts	143	65.6
SCOPUS	57	26.1
Other	20	9.2

Respondents were asked which methods were used to locate relevant research, and indicated that browsing electronic journals (81.2%), browsing relevant Internet sites (72.9%) and browsing print journals (71.6%) were the most common methods used by respondents. In addition, referring to books or periodicals in their personal collection (67.9%), browsing the library catalog (62.4%) and references from peers (59.2%) were also popular methods for respondents. Searching bibliographies of relevant articles (36.2%) and browsing the stacks at the library (33.0%) were the least popular methods for respondents.

In terms of the language, respondents were asked which language most commonly used to search for information, 43.6% (N= 95) of the respondents indicated that they used both Arabic and English, 34.9% (N=76) indicated that they used English, and 21.5% (N=47) indicated that they used Arabic.

Respondents were also asked in this section of the survey how they obtained journal articles. The most popular way to obtain journals articles was to photocopy the library's copy (67.0%), with reading the library's copy (61.0%) and reading the library's electronic copy (61.0%) also popular responses. More than half of the respondents also indicated that they talked to colleagues (59.6%) and obtained free electronic versions (54.1%) of journal articles. Document delivery service (9.6%, N=21), interlibrary loan (27.1%, N=59), and personal print subscription (28.4%,

N=62) were the lesser popular ways to obtain journals articles. Archival materials, on the other hand, were most frequently obtained by either viewing documents at the university library (61.9%) or through academic websites (60.1%).

When asked how important non-Internet electronic resources were for research or class participation, the majority of respondents tended to indicate that they were either very important (41.3%) or vital (35.3%). Only .9% of the respondents see the non-Internet electronic resources not relevant for their research or class preparation. In the next portion of the survey relevant for this research question, respondents were asked which electronic databases they were aware of, Dissertation Abstracts (65.6%), ProQuest (58.3%), and ERIC (56.4%) were the most common responses. Very few respondents were aware of LISA (6.9%) or Lexis (9.6%). When respondents asked which databases they used most often, they indicated that ProQuest (27.6%), ERIC (18.9%), and Dissertation Abstracts (8.8%) were most used databases. Other databases used were Emerald, Science Direct, COPAC, Elsevier, IEEE, Synergy, Blackwell, Oxford Journals, and Cambridge Journals. Moreover, 81.9 of respondents reported they do not use databases. These respondents were asked to indicate their reasons for not using databases. They reported that they do not use databases because of lack technological skills; lack of relevant titles available in their fields; dislike of reading on screen; a preference for reading printed materials; and the time required to browse these databases. Table 15 illustrates most often used databases.

Table 15

*Most Often Database used by respondents (N=218)*

	Frequency	Percentage
Psychinfo	13	6.0
Proquest	60	27.6
Ebscohost	14	6.0
Lexis	3	1.4
ERIC	41	18.9
LISA	4	1.8
Dissertation Abstracts	19	8.8
SCOPUS	11	5.1
Other	11	5.1
None	41	18.9
Missing	1	.5

Respondents were then asked which library resources they currently used. Print journals (84.4%) and reference books (80.7%) were the most popular library resources, followed by electronic journals (73.4%) and electronic databases (67.0%). DVD/VHS video tapes (5.0%) and reserves (3.7%) were lesser popular library resources used by respondents. In terms of the most popular non-library resources, the Internet (90.8%) and print journals (81.7%) were the most common responses, followed by electronic journals (71.1%), personal monograph collections (65.6%), Internet databases (44.5%), and other university's libraries (40.4%). CD/LP/Cassette audio tapes (8.3%) and DVD/VHS video tapes (6.9%) were rarely used non-library resources. Table 16 shows descriptive statistics of library and non-library resources currently used by respondents.

Table 16

*Descriptive statistics of library and non-library resources currently used*

	Frequency	Percentage
Library Resources Currently Used (Multiple Response)		
Non-reference books	62	28.4
Reference books	176	80.7
Print journals	184	84.4
Electronic journals	160	73.4
Archives	50	22.9
Computer lap	56	25.7
Audio-visual materials	34	15.6
DVD/VHS video tapes	11	5.0
CD/LP/Cassette audio tapes	22	10.1
Reserves	8	3.7
Electronic databases	146	67.0
Newspapers	33	15.1
Interlibrary loan or document retrieval	99	45.4
Reference services	38	17.4
Other	4	1.8
Non-Library Resources Currently Used (Multiple Response)		
Personal monograph collection	143	65.6
Bibliography	73	33.5
Print journals	178	81.7
Electronic journals	155	71.1
Government or institutional archives	54	24.8
Internet	198	90.8
DVD/VHS video tapes	15	6.9

	Frequency	Percentage
CD/LP/Cassette audio tapes	18	8.3
Newspapers	39	17.9
Internet databases	97	44.5
Other university's libraries	88	40.4
Other non-university library	27	12.4

Finally, the respondents asked questions related to the preferred methods of seeking information. (Note that lower means are indicative of more preferred methods). The most preferred method of seeking information was reading journals ( $M=2.48$ ,  $SD=1.70$ ), followed by reading textbooks ( $M=3.09$ ,  $SD=2.22$ ) and using search engines ( $M=3.81$ ,  $SD=2.11$ ). The least popular methods were asking librarians ( $M=7.48$ ,  $SD=2.00$ ), writing to a colleague ( $M=7.26$ ,  $SD=1.72$ ), and attending conferences ( $M=5.62$ ,  $SD=1.99$ ). The number of journals used regularly ranged from 0 to 30 with a mean of 5.96 ( $SD=4.22$ ), while the number of journals to which the respondents currently subscribed ranged from 0 to 9 with a mean of 1.62 ( $SD=1.83$ ) (see Table 17).



Table 17  
*Descriptive Statistics for Continuous Measures of Sources Used to Obtain  
 Information (N=218)*

	<i>N</i>	Minimum	Maximum	Mean	<i>SD</i>
Preferred Methods of Seeking Information <sup>1</sup>					
Asking Librarians	216	1	9	7.48	2.00
Attending Conferences	216	1	9	5.62	1.99
Reading Papers	216	1	8	4.04	1.81
Reading Journals	217	1	8	2.48	1.70
Reading Textbooks	217	1	9	3.09	2.22
Searching Bibliographies	217	1	9	5.76	2.35
Talking to Colleagues	216	1	9	5.43	1.85
Using Search Engines	217	1	9	3.81	2.11
Writing to a Colleague	216	1	9	7.26	1.72
How Many Journals Used/Research Project	207	0	30	5.96	4.22
How Many Journals Subscribed	217	0	9	1.62	1.83

<sup>1</sup>Lower ranks indicate more preferred methods of seeking information.

*Frequency of Information Resource Use*

The fourth research question of this study was: What information sources do social science scholars use most frequently? Data from Section 4 of the survey were used to address this question, and Table 18 shows the results.

Table 18

*Descriptive Statistics for Most Frequently Used Information Sources (N=218)*

	Frequency	Percentage
<b>Primary Source of Information for Undergraduate Teaching</b>		
Electronic monographs	3	1.4
Print monographs	6	2.8
Electronic textbooks	18	8.3
Print textbooks	4	1.8
Electronic journals	4	1.8
Print journals	3	1.4
Electronic preprints	149	68.3
Print preprints	20	9.2
Electronic conference proceedings	10	4.6
Print conference proceedings	1	.5
<b>Primary Source of Information for Graduate Teaching</b>		
Electronic monographs	4	1.8
Print monographs	2	.9
Electronic textbooks	0	0.0
Print textbooks	43	19.7
Electronic journals	5	2.3
Print journals	1	.5
Electronic preprints	49	22.5

	Frequency	Percentage
Print preprints	23	10.6
Electronic conference proceedings	1	.5
Print conference proceedings	1	.5
Missing	89	40.8
Primary Source of Information for Current Research		
Electronic monographs	3	1.4
Electronic textbooks	2	.9
Electronic Journals	107	49.1
Electronic preprints	2	.9
Electronic conference proceedings	12	5.5
Print Monographs	1	.5
Print Textbooks	32	14.7
Print journals	58	26.6
Print Preprints	1	.5
Primary Source of Information for Previous Research		
Electronic monographs	1	.5
Electronic textbooks	1	.5
Electronic Journals	60	27.5
Electronic preprints	2	.9
Electronic conference proceedings	8	3.7
Print Monographs	2	.9
Print Textbooks	56	25.7
Print journals	85	39.0
Print Preprints	3	1.4

In this section respondents were asked four questions related to the use of electronic and print resources for research and teaching. When asked what their primary source of information was for undergraduate teaching, by far the most

popular response was electronic preprints (68.3%), followed by print preprints (9.2%) and electronic textbooks (8.3%), while the least popular was print conference proceedings (.5%), electronic monographs (1.4%), and print journals (1.4%). The primary source of information for graduate teaching was electronic preprints (22.5%), followed by print textbooks (19.7%) and print preprints (10.6%). The primary source of information for current research was electronic journals (49.1%) followed by print journals (26.6%) and print textbooks (14.7%), while the primary source of information for previous research was print journals (39.0%) followed by electronic journals (27.5%) and print textbooks (25.7%).

#### *Electronic Versus Print Resources*

The fifth research question is: To what extent do social science scholars use electronic resources and print resources for research and teaching? Item 10 from Section 3 of the survey provided the data for this question. Table 19 shows the results.

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Table 19

*Descriptive Statistics for Preference for Print or Electronic Documents (N=218)*

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	Frequency	Percentage
Prefer Print	140	64.2
Prefer Electronic	78	35.8

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The respondents showed a strong preference for print documents, with 64.2% indicating that they preferred print versions compared to only 35.8% who preferred electronic versions.

### *Barriers to Information-Seeking*

The sixth research question of this study is: What barriers affect social science scholars' information-seeking and use of electronic resources? Data from Section 5 of the survey is used to address this question and table 20 shows the results.

The first question is whether the respondent had been offered database training through the library, and 55% of respondents indicated that they offered database training by the university library. When asked what types of training they had received, the most common response was demonstrations by social sciences staff or faculty (33.5%), followed by informal personal assistance by library staff (26.6%), demonstrations from database representatives or from the help files in the database itself (23.4%). Of those who received training ( $n=120$ ), more than half (51.7%) indicated that it greatly increased their search productivity, while another 39.2% indicated that it somewhat increased their search productivity. In terms of the types of training that would be helpful in the future, the most popular responses were brochures on effective searching for each database (71.1%), seminars offered to faculty on non-electronic resources (60.1%), and seminars offered to faculty on electronic databases (59.2%). The types of library resources most needed in the future were expanded journal access (89.0%), expanded book collections (83.9%), and more databases (81.7%). Newspaper access (21.1%), print archival materials (37.2%), and electronic archival materials (41.7%) were not seen as great needs for the future. Finally, the respondents indicated that they were very confident (59.6%) or somewhat

confident (36.2%) in the library resources, with only 2.8% indicating that they were somewhat skeptical and .9% indicating that they were very skeptical.

Table 20

*Descriptive Statistics for Barriers to Information Seeking (N=218)*

	Frequency	Percentage
Offered Training on How to Use Databases Available		
Through the Library		
No	98	45.0
Yes	120	55.0
Types of Training Offered (Multiple Response)		
Demonstration by social sciences staff or faculty	73	33.5
Instructional brochure or flyer	38	17.4
Seminar taught by library staff for faculty members	35	16.1
Seminar taught by library staff to a class of students	9	4.1
Informal personal assistance by library staff	58	26.6
Demonstrations directly from database representatives or the help files in the database	51	23.4
Other	5	2.3
Result of Training (n=120 who received training)		
Decreased productivity	0	0.0
Had no effect on search productivity	11	9.2
Somewhat increased search productivity	47	39.2
Greatly increased search productivity	62	51.7

	Frequency	Percentage
Types of Training Material that Would Be Helpful		
(Multiple Response)		
Brochures on effective searching for each database	155	71.1
Seminars offered to faculty on effective use of library resources (non-electronic)	131	60.1
Seminars offered to faculty on effective use of library resources (electronic)	129	59.2
Seminars offered to your classes on effective use of library resources (both electronic and non-electronic)	69	31.7
Other (please specify)	8	3.7
Types of Library Resources Needed in the Future		
(Multiple Response)		
More databases	178	81.7
Expanded book collection (both electronic and print)	183	83.9
Expanded journal access (both electronic and print)	194	89.0
More archival materials in print form	81	37.2
More archival materials in electronic form	91	41.7
More newspaper access	46	21.1
Expanded reference services	94	43.1
Confidence in Library Resources		
Very skeptical	2	.9
Somewhat skeptical	6	2.8
Somewhat confident	79	36.2
Very confident	130	59.6
Missing	1	.5

### Inferential Analysis

This section presents the inferential analysis of the survey. Inferential analysis is used to test the research questions 7 to 10. Independent samples t-test, chi-square test of independence, Pearson correlations and oneway ANOVA tests are performed to determine whether observed differences between the dependent variables and independent variables are statistically significant. Where the ANOVAs are statistically significant, follow up test are carried out. The independent variables of this study are:

1. Age
2. Gender
3. Length of service (Tenure)
4. Rank
5. Department
6. College
7. Preferred search language

The dependent variables on the other hand are:

1. Types of information needs
2. Preference for print or electronic resources
3. Physically visits the library
4. Internet access of library catalog

#### *Predictors of Information Needs*

The seventh research question is: Is age, gender, length of service, rank, department, college, or preferred search language related to the scholar's information needs? There are eight outcome variables of interest for this question (each of the eight information needs assessed in Item 1 of Section 2 of the survey). The first set of



analyses was a set of independent samples *t* tests compared the average age of the respondents who felt that each resource was or was not an information need (see Table 21). There was no difference in the average age of those who did and did not see books as an information need, ( $t(216)=-.46, p=.644$ ). There was also no difference in age between those who did and did not see journals as an information need, ( $t(216)=1.18, p=.239$ ). There was, however, a difference in the average of those who did and did not see databases as an information need, ( $t(216)=2.03, p=.044$ ). Those who did see databases as an information need tended to be younger ( $M=41.49, SD=9.37$ ), than those who did not see databases as an information need ( $M=44.10, SD=9.56$ ).

Table 21

*T-test of Age and Tenure versus Types of Information Resources, Format of Resources, Visit to Library, and Access Library Catalog Through the Internet*

Types of Information Resources	t-test	
	Age	Tenure
<b>Books</b>	Not Significant $t(216)=-.46, p=.644$	Not Significant $t(215)=-.68, p=.495$
<b>Journals</b>	Not Significant $t(216)=1.18, p=.239$	Not Significant $t(215)=-.94, p=.350$
<b>Databases</b>	Statistically Significant $t(216)=2.03, p=.044$	Not Significant $t(215)=-1.64, p=.103$
<b>Government Documents</b>	Not Significant $t(216)=.47, p=.638$	Not Significant $t(215)=1.91, p=.057$
<b>Dissertations</b>	Not Significant $t(216)=-1.08, p=.284$	Not Significant $t(215)=-1.11, p=.270$
<b>Conference Proceedings</b>	Not Significant $t(216)=1.04, p=.298$	Statistically Significant $t(215)=-2.23, p=.027$

<b>Audio-visual Materials</b>	Not Significant $t(216)=.69, p=.494$	Not Significant $t(215)=.12, p=.904$
<b>Newspapers</b>	Not Significant $t(216)=-1.30, p=.197$	Not Significant $t(215)=-.14, p=.892$
<b>Format of Resources</b>	Statistically Significant $t(216)=2.35, p=.020$	Statistically Significant $t(215)=-1.08, p=.282$
<b>Correlation test</b>		
	<b>Age</b>	<b>Tenure</b>
<b>Visit to Library</b>	Not Significant $(r=-.03, p=.657)$	Not Significant $(r=-.13, p=.056)$
<b>Access Library Catalog through the Internet</b>	Not Significant $(r=-.06, p=.401)$	Statistically Significant $(r=-.15, p=.028)$

The average age of those who did and did not see government documents as an information need did not differ, ( $t(216)=.47, p=.638$ ). Similarly, there were no differences in age between those who did and did not see dissertations ( $t(216)=-1.08, p=.284$ ), conference proceedings ( $t(216)=1.04, p=.298$ ), audio-visual materials ( $t(216)=.69, p=.494$ ), or newspapers ( $t(216)=-1.30, p=.197$ ) as information needs.

The next set of analyses consisted of a series of independent samples  $t$  tests comparing the tenure (years at Sultan Qaboos University) between those who did and did not see each resource as an information need. There were no differences in terms of years for those who did and did not see books ( $t(215)=-.68, p=.495$ ), journals ( $t(215)=-.94, p=.350$ ), databases ( $t(215)=-1.64, p=.103$ ), government documents ( $t(215)=1.91, p=.057$ ), dissertations ( $t(215)=-1.11, p=.270$ ), audio-visual materials ( $t(215)=.12, p=.904$ ), or newspapers ( $t(215)=-.14, p=.892$ ) as information needs.

However, there was a difference in the tenure at Sultan Qaboos University for those who did and did not see conference proceedings as information needs, ( $t(215)=-2.23, p=.027$ ). Those who saw conference proceedings as an information need tended to have longer tenures ( $M=8.84, SD=5.21$ ) than those who did not see conference proceedings as an information need ( $M=7.23, SD=4.44$ ).

The next set of analyses compared those who did and did not have each type of information need in terms of gender via a series of  $\chi^2$  tests of independence (see Table 22). There was no gender difference between those who did and did not see books ( $\chi^2(1)=.10, p=.749$ ), journals ( $\chi^2(1)=.29, p=.592$ ), databases ( $\chi^2(1)=3.70, p=.054$ ), government documents ( $\chi^2(1)=3.64, p=.056$ ), dissertations ( $\chi^2(1)=1.15, p=.284$ ), conference proceedings ( $\chi^2(1)=.17, p=.682$ ), audio-visual materials ( $\chi^2(1)=.61, p=.436$ ), or newspapers ( $\chi^2(1)=3.24, p=.072$ ) as information needs.

Table 22

*Chi-Square test, T-test, and ANOVA test of Gender, Rank, Department, College, and Preferred Search Language versus Types of Information Resources, Format of Resources, Visit to Library, and Access Library Catalog Through the Internet*

Types of Information Resources	Chi-square ( $\chi^2$ ) test				
	Gender	Rank	Department	College	Search Language
<b>Books</b>	Not Significant $\chi^2(1)=.10, p=.749$	Not Significant $\chi^2(3)=3.13, p=.372$	Not Significant $\chi^2(5)=4.85, p=.435$	Statistically Significant $\chi^2(3)=19.48, p<.001$	Statistically Significant $\chi^2(2)=9.72, p=.008$
<b>Journals</b>	Not Significant $\chi^2(1)=.29, p=.592$	Not Significant $\chi^2(3)=5.14, p=.162$	Not Significant $\chi^2(5)=5.62, p=.345$	Not Significant $\chi^2(3)=7.26, p=.064$	Not Significant $\chi^2(2)=1.04, p=.596$
<b>Databases</b>	Not Significant $\chi^2(1)=3.70, p=.054$	Not Significant $\chi^2(3)=4.87, p=.182$	Statistically Significant $\chi^2(5)=13.30, p=.021$	Statistically Significant $\chi^2(3)=13.04, p=.005$	Statistically Significant $\chi^2(2)=12.33, p=.002$

<b>Government Documents</b>	Not Significant $\chi^2(1)=3.64$ , $p=.056$	Not Significant $\chi^2(3)=7.05$ , $p=.070$	Statistically Significant $\chi^2(5)=41.16$ , $p<.001$	Statistically Significant $\chi^2(3)=42.47$ , $p<.001$	Not Significant $\chi^2(2)=1.89$ , $p=.389$
<b>Dissertations</b>	Not Significant $\chi^2(1)=1.15$ , $p=.284$	Not Significant $\chi^2(3)=6.07$ , $p=.108$	Not Significant $\chi^2(5)=8.16$ , $p=.148$	Not Significant $\chi^2(3)=7.17$ , $p=.067$	Not Significant $\chi^2(2)=3.28$ , $p=.194$
<b>Conference Proceedings</b>	Not Significant $\chi^2(1)=.17$ , $p=.682$	Not Significant $\chi^2(3)=1.41$ , $p=.703$	Statistically Significant $\chi^2(5)=22.03$ , $p=.001$	Statistically Significant $\chi^2(3)=16.99$ , $p=.001$	Statistically Significant $\chi^2(2)=10.96$ , $p=.004$
<b>Audio-visual Materials</b>	Not Significant $\chi^2(1)=.61$ , $p=.436$	Not Significant $\chi^2(3)=2.44$ , $p=.487$	Statistically Significant $\chi^2(5)=48.99$ , $p<.001$	Statistically Significant $\chi^2(3)=51.63$ , $p<.001$	Not Significant $\chi^2(2)=3.09$ , $p=.214$
<b>Newspapers</b>	Not Significant $\chi^2(1)=3.24$ , $p=.072$	Not Significant $\chi^2(3)=1.89$ , $p=.597$	Not Significant $\chi^2(5)=2.81$ , $p=.729$	Not Significant $\chi^2(3)=.46$ , $p=.929$	Not Significant $\chi^2(2)=2.28$ , $p=.320$
<b>Format of Resources</b>	Not Significant $\chi^2(1)=2.58$ , $p=.108$	Statistically Significant $\chi^2(3)=9.47$ , $p=.024$	Statistically Significant $\chi^2(5)=18.38$ , $p=.003$	Statistically Significant $\chi^2(3)=19.84$ , $p<.001$	Statistically Significant $\chi^2(2)=11.59$ , $p=.003$
		<b>t-test</b>	<b>ANOVA test</b>		
		<b>Gender</b>	<b>Rank</b>	<b>Department</b>	<b>College</b>
					<b>Search Language</b>
<b>Visit to Library</b>	Not Significant $t(214)=.99$ , $p=.324$	Not Significant $F(3,212)=1.52$ , $p=.211$	Statistically Significant $F(5,210)=2.60$ , $p=.026$	Statistically Significant $F(3,212)=6.83$ , $p<.001$	Statistically Significant $F(2,213)=9.46$ , $p<.001$
<b>Access Library Catalog through the Internet</b>	Not Significant $t(215)=.75$ , $p=.452$	Not Significant $F(3,213)=.31$ , $p=.822$	Not Significant $F(5,211)=.72$ , $p=.611$	Not Significant $F(3,213)=2.09$ , $p=.103$	Not Significant $F(2,214)=1.81$ , $p=.166$

In the next set of analyses, a series of  $\chi^2$  tests of independence were performed to determine if there were any differences between respondents of different academic ranks in terms of whether or not they felt that each resource was an information need. Results indicated that there were no differences between individuals of different academic ranks in terms of books ( $\chi^2(3)=3.13, p=.372$ ), journals ( $\chi^2(3)=5.14, p=.162$ ), databases ( $\chi^2(3)=4.87, p=.182$ ), government documents ( $\chi^2(3)=7.05, p=.070$ ), dissertations ( $\chi^2(3)=6.07, p=.108$ ), conference proceedings ( $\chi^2(3)=1.41, p=.703$ ), audio-visual materials ( $\chi^2(3)=2.44, p=.487$ ), or newspapers ( $\chi^2(3)=1.89, p=.597$ ) as information needs.

The next set of analyses compared individuals of different academic departments in terms of whether or not they saw each resource as an information need. As noted above, individuals in the sample came from 27 different academic departments, and therefore to create a manageable number of groups for the  $\chi^2$  tests of independence, only those departments with 15 or more individuals formed separate groups, with the remainder of the sample placed in an “other department” group (see Table 2). There were no differences between individuals from different departments in terms of whether they saw books ( $\chi^2(5)=4.85, p=.435$ ), journals ( $\chi^2(5)=5.62, p=.345$ ), dissertations ( $\chi^2(5)=8.16, p=.148$ ), or newspapers ( $\chi^2(5)=2.81, p=.729$ ) as information needs.

There were, however, differences between individuals from different departments in terms of the other information needs. First, there were differences between individuals from various departments in terms of whether they saw databases as information needs, ( $\chi^2(5)=13.30, p=.021$ ). Individuals in the Arabic Language department were much less likely to see databases as an information need (13.3%) than individuals in the English Language (63.6%), Curriculum & Instruction (52.6%),

Sociology & Social Work (50.0%), Geography (46.7%), and other (60.3%) departments.

Second, there were differences between individuals from different departments in terms of whether they saw government documents as an information need, ( $\chi^2(5)=41.16, p<.001$ ). Those in the Sociology & Social Work department (75.0%) and those in other departments (40.5%) were more likely to see government documents as information needs than those in the English Language (9.1%), Curriculum & Instruction (5.3%), Arabic Language (0.0%) or Geography (6.7%) departments.

Third, there were differences between departments in terms of whether the faculty members saw conference proceedings as an information need, ( $\chi^2(5)=22.03, p=.001$ ). Those in the Arabic Language department (20.0%) were less likely to see conference proceedings as an information need than those in the English Language (77.3%), Curriculum & Instruction (52.6%), Sociology & Social Work (62.5%), Geography (60.0%) or other (74.8%) departments.

Finally, there were differences between the various departments in terms of whether the respondents say audio-visual materials as information needs, ( $\chi^2(5)=48.99, p<.001$ ). Those in the Arabic Language (1.2%) and Sociology & Social Work (12.5%) departments were less likely to see audio-visual materials as information needs than those in the English Language (77.3%), Curriculum & Instruction (68.4%), Geography (100.0%), or other (45.8%) departments.

In the next set of analyses, differences in information needs between respondents from different academic colleges were examined. There were no differences between respondents from different colleges in terms of whether they saw journals ( $\chi^2(3)=7.26, p=.064$ ), dissertations ( $\chi^2(3)=7.17, p=.067$ ), or newspapers

( $\chi^2(3)=.46, p=.929$ ) as information needs. There were, however, differences between individuals from the different colleges in terms of the other five information resources.

First, respondents from different colleges differed in terms of whether they saw books as an information need, ( $\chi^2(3)=19.48, p<.001$ ). Faculty members from the College of Commerce & Economics (82.1%) were less likely to see books as information needs than those from the Colleges of Arts & Social Sciences (98.1%), Education (98.4%), or Law (100.0%). Second, the respondents from different colleges differed in terms of whether they saw databases as an information need, ( $\chi^2(3)=13.04, p=.005$ ). Specifically, faculty members from the College of Commerce & Economics (79.5%) were more likely to see databases as an information need than respondents from the Colleges of Arts & Social Sciences (53.4%), Education (46.0%), or Law (38.5%).

Third, there were differences between the individuals from different colleges in terms of whether or not they saw government documents as an information need, ( $\chi^2(3)=42.47, p<.001$ ). Those from the College of Law (84.6%) were most likely to see government documents as an information need, followed by those in the College of Commerce & Economics (56.4%), with those from the College of Arts & Social Sciences (29.1%) and especially those from the College of Education (9.5%) being much less likely to see government documents as an information need. Fourth, there were differences between faculty members from different colleges in terms of whether or not they viewed conference proceedings as an information need, ( $\chi^2(3)=16.99, p=.001$ ). Specifically, those from the College of Commerce & Economics (92.3%) were mostly likely to see conference proceedings as an information need, followed by those from the College of Law (76.9%), the College of

Arts & Social Sciences (65.0%), and the College of Education (54.0%). Lastly, there were differences between the respondents from various colleges in terms of whether or not they saw audio-visual materials as information needs, ( $\chi^2(3)=51.63, p<.001$ ). Those from the Colleges of Commerce & Economics (7.7%) and Law (15.4%) were relatively unlikely to see audio-visual materials as an information need compared those from the Colleges of Arts & Social Sciences (52.4%) and Education (76.2%).

The last set of analyses for this research question compared those who primarily search for information in English, Arabic, or both in terms of their information needs. There were no differences between these three groups in terms of whether or not they saw journals ( $\chi^2(2)=1.04, p=.596$ ), government documents ( $\chi^2(2)=1.89, p=.389$ ), dissertations ( $\chi^2(2)=3.28, p=.194$ ), audio-visual materials ( $\chi^2(2)=3.09, p=.214$ ), or newspapers ( $\chi^2(2)=2.28, p=.320$ ) as information needs.

However, there were differences between those in the English, Arabic, or both languages groups in terms of the other three information needs. First, individuals in these three groups differed in terms of whether or not they saw books as an information need, ( $\chi^2(2)=9.72, p=.008$ ). Specifically, those who searched primarily in English (89.5%) were less likely to see books as an information need than those who searched primarily in Arabic (100.0%) or in both languages (97.9%). Second, there were differences between the three groups in terms of whether or not they saw databases as an important information resource, ( $\chi^2(2)=12.33, p=.002$ ). Those who searched primarily in English were more likely (68.4%) to see databases as an information need than those who searched primarily in Arabic (36.2%) or in both languages (53.7%). Third, there were differences between the three groups in terms of whether or not they saw conference proceedings as an information need, ( $\chi^2(2)=10.96, p=.004$ ). Specifically, those who searched primarily in Arabic (48.9%) were less



likely to see conference proceedings as an important information need than those who searched primarily in English (77.6%) or in both languages (68.4%).

#### *Predictors of Preference for Print or Electronic Resources*

The eighth research question of the current study is: Is age, gender, length of service, rank, department, college, or preferred search language related to whether a scholar prefers print or electronic sources? For this question, the outcome variable of interest is whether the respondent indicated a preference for print or electronic resources in Item 10 of Section III of the survey. The first test compared those who preferred print to those who preferred electronic in term of age, and this test was statistically significant,  $t(216)=2.35, p=.020$ . Those who preferred print documents were generally older ( $M=43.78, SD=9.76$ ) than those who preferred electronic documents ( $M=40.65, SD=8.78$ ). The next test compared those who preferred print versus electronic documents in terms of their tenure at SQU. This test was not statistically significant, ( $t(215)=-1.08, p=.282$ ), indicating that the two groups did not differ in terms of tenure. Next, a  $\chi^2$  test of independence was performed between gender and a preference for print versus electronic resources. This test was not statistically significant, ( $\chi^2(1)=2.58, p=.108$ ), indicating that males and females did not differ in terms of whether they preferred print or electronic resources.

In the next test, individuals of differing academic ranks were compared in terms of whether they preferred print or electronic resources, and the result was statistically significant, ( $\chi^2(3)=9.47, p=.024$ ). Lecturers (51.2%) and assistant professors (62.9%) were less likely to prefer print documents than associate professors (85.7%) or professors (73.3%). Next, individuals from different departments were compared on their preference for print or electronic resources, and the result was statistically significant, ( $\chi^2(5)=18.38, p=.003$ ). Faculty members in the

Curriculum & Instruction department were least likely to prefer print resources (47.4%), while those in the Sociology & Social Work (100.0%), Arabic Language (86.7%), Geography (80.0%), English Language (63.6%), and other (58.0%) departments were more likely to prefer print resources. In fact, those in the Curriculum & Instruction department were the only group with a preference for electronic resources.

Next, faculty members from various colleges were compared in terms of their preference for print versus electronic documents, and the result was statistically significant, ( $\chi^2(3)=19.84, p<.001$ ). Those in the College of Education (42.9%) were least likely to prefer print resources, while those in the Colleges of Law (84.6%), Arts & Social Sciences (74.8%), and Commerce & Economics (64.1%) were more likely to prefer print resources. In this case, those from the College of Education were the only group to prefer electronic resources. The final test for this research question compared those who preferred to search in English, Arabic, or both in terms of their preference for print versus electronic resources, and the result was statistically significant, ( $\chi^2(2)=11.59, p=.003$ ). Those who searched in Arabic (85.1%) were more likely to prefer print resources than those who searched in English (56.6%) or those who searched in both languages (60.0%).

#### *Predictors of Visits to the Library*

The ninth research question is: Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar physically visits the library? The outcome variable for this research question was the number of times that the faculty member reported physically visiting the library in Item 24 of Section I of the survey. The first test examined the correlation between age and the number of times that the scholar

physically visited the library, and the correlation was not statistically significant ( $r=-.03$ ,  $p=.657$ ) indicating that there was no relationship between age and visits to the library. Similarly, there was no relationship between tenure at Sultan Qaboos University and visits to the library ( $r=-.13$ ,  $p=.056$ ). The next test compared males and females in terms of the number of visits to the library, and this test was not statistically significant,  $t(214)=.99$ ,  $p=.324$ . A oneway ANOVA was then performed comparing individuals grouped by academic rank with the number of times they visited the library as the dependent variable. The result of this test was not statistically significant,  $F(3,212)=1.52$ ,  $p=.211$ . This indicated that individuals of differing academic ranks did not differ in terms of visits to the library.

Individuals in different academic departments were then compared via a oneway ANOVA, and the result was statistically significant,  $F(5,210)=2.60$ ,  $p=.026$ . Tukey HSD post-hoc tests were then performed to determine which groups differed from which other groups. The only statistically significant difference was that those in the English Language department ( $M=1.77$ ,  $SD=1.54$ ) visited the library less than those from the Arabic Language department ( $M=4.60$ ,  $SD=2.38$ ),  $p=.011$ . Next, a oneway ANOVA was performed comparing individuals from different colleges in terms of the number of times they visited the library, and the result was statistically significant,  $F(3,212)=6.83$ ,  $p<.001$ . Tukey HSD post-hoc tests revealed that those from the College of Law ( $M=5.75$ ,  $SD=2.93$ ) visited the library more frequently than those from the College of Arts & Sciences ( $M=3.05$ ,  $SD=2.66$ ),  $p=.002$ , more frequently than those from the College of Commerce & Economics ( $M=2.18$ ,  $SD=1.65$ ),  $p<.001$ , and more frequently than those from the College of Education ( $M=2.71$ ,  $SD=2.36$ ),  $p=.001$ .

In the final test for this research question, those who preferred to search in English, Arabic, or both were compared in terms of the number of monthly visits to the library. The result of this test was statistically significant,  $F(2,213)=9.46, p<.001$ . Tukey HSD post-hoc tests indicated that those who preferred to search in English made fewer visits to the library ( $M=2.07, SD=2.23$ ) than those who preferred to search in Arabic ( $M=3.98, SD=2.71$ ),  $p<.001$ , and fewer visits than those who preferred to search in both languages ( $M=3.15, SD=2.47$ ),  $p=.012$ .

#### *Predictors of Internet Access of Library Catalog*

The tenth and final research question of the current study is: Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar accesses the library catalog through the Internet? For this question, the outcome variable was the number of times that the faculty member reported accessing the library catalog through the internet from Item 25 of Section I of the survey. First, age was not related to the number of times than a faculty member accessed the library catalog via the Internet ( $r=-.06, p=.401$ ). However, there was a correlation between tenure at SQU and the number of times that the library catalog was accessed through the Internet ( $r=-.15, p=.028$ ). The negative correlation indicates that those with longer tenures at SQU tended to access the library catalog through the Internet less frequently. A  $t$  test was then performed comparing males and females in terms of the number of times that they accessed the library catalog through the Internet, and the result was not statistically significant,  $t(215)=.75, p=.452$ , indicating that males and females did not differ.

A oneway ANOVA was then performed comparing scholars of differing academic ranks in terms of the number of times that they accessed the library catalog through the Internet. The result was not statistically significant,  $F(3,213)=.31, p=.822$ ,

indicating that the groups did not differ. The oneway ANOVA comparing those from different academic departments was also not statistically significant,  $F(5,211)=.72$ ,  $p=.611$ . This indicated that scholars from different academic departments did not differ in terms of the frequency with which they accessed the library catalog through the Internet.

When individuals from the different academic colleges were compared, the results was not statistically significant,  $F(3,213)=2.09$ ,  $p=.103$ , indicating that scholars from different academic colleges did not differ in terms of accessing the library catalog through the Internet. Finally, those who preferred to search in English, Arabic, or both did not differ in terms of the frequency with which they accessed the library catalog through the Internet,  $F(2,214)=1.81$ ,  $p=.166$ .

#### Summary of Findings

The first research question of the current study is: What types of information do social science scholars generally need to access? The results indicated that the most common sources of information preferred by social science scholars in the current study were journals and books, and to a lesser extent conference proceedings and databases. Audio-visual materials, dissertations, government documents, and newspapers were not as commonly needed.

The second research question is: How do social science scholars identify and locate relevant information for research and teaching? Results indicated that:

1. Reading abstracts and skimming then reading articles were the most common way that journals were accessed to find relevant articles.
2. Saving relevant journal articles was most frequently done on the computer's hard drive and by printing the article.

3. Specific non-research questions were searched for most commonly with a general query in a search engine or a specific query to a search engine.
4. Research-related questions were likely to be answered using general search engines and academic databases.
5. Saving useful websites was typically done by bookmarking the site.
6. Electronic journals were the most important resource, followed by the participants' personal collections, print journals, and Internet sources.
7. Respondents spent an average of 9.70 hours per week reviewing resources for research purposes and 8.90 hours per week reviewing resources for teaching purposes.

The third research question is: What information sources do social science scholars prefer to use for research and teaching and where do they find them? Results showed that:

1. Journals and books were preferred the most by social science scholars.
2. Browsing electronic journals and browsing print journals were the most common ways to locate relevant research.
3. The majority of respondents tended to use both Arabic and English to search for information.
4. Photocopying the library's copy, reading the library's copy, and reading the library's electronic copy were the most common ways to access the library's collection of journal articles.
5. Archival materials were most frequently obtained by either viewing documents at the university library or through academic websites.
6. Respondents felt that non-Internet electronic resources were very important for teaching and research.

7. Dissertation Abstracts, ProQuest, and ERIC were the databases that the respondents were most familiar with, and very few respondents were aware of LISA or Lexis.
8. In terms of the library resources currently used, print journals and reference books were the most popular.
9. In terms of the most popular non-library resources, the Internet and print journals were the most common responses.
10. The most preferred method of seeking information was reading journals followed by reading textbooks, while the least popular methods were asking librarians and writing to a colleague. Respondents used an average of 5.96 articles regularly and subscribed to an average of 1.62.

The fourth research question of this study is: What information sources do social science scholars use most frequently? The most frequently used source of information was ProQuest, followed by ERIC, and Dissertation Abstracts, with Lexis, LISA, and SCOPUS used very infrequently. The primary sources of information for undergraduate teaching and graduate teaching were electronic preprints, print preprints, and electronic textbooks. When searching for current research, electronic journals were most popular, followed by print journals and print textbooks. When searching for previous research, print journals and electronic journals were most popular.

The fifth research question is: To what extent do social science scholars use electronic resources and print resources for research and teaching? Results showed a clear preference for print documents. Nearly two-thirds of the sample preferred print versions of documents and resources.

The sixth research question of this study is: What barriers affect social science scholars' information-seeking behaviors and use of electronic resources? Results showed that:

1. 55% of the respondents had received training on the library resources.
2. Demonstrations by social sciences staff or faculty and informal personal assistance by library staff were the most common types of training.
3. Of those who received training, over half indicated that it greatly increased their effectiveness of search.
4. In terms of the types of training that would be helpful in the future, the most popular responses were brochures on effective searching for each database, seminars offered to faculty on non-electronic resources, and seminars on electronic databases (59.2%).
5. Journal access, expanded book collections, and more databases were the types of resources most desired in the future.
6. Nearly all of the respondents indicated that they were either very confident or somewhat confident in the library resources.

The seventh research question is: Is age, gender, length of service, rank, department, college, or preferred research language related to the scholar's information needs? Results showed that:

1. There were no age-related differences in terms of information needs.
2. The only difference related to tenure at SQU (length of service) was that those who saw conference proceedings as an information need tended to have longer tenures than those who did not see conference proceedings as an information need.
3. There were no differences in information needs based on gender.



4. There were no differences in information needs based on academic rank.
5. There were differences based on academic department, with individuals in the Arabic Language department being less likely to see databases, conference proceedings, and audio-visual materials as information needs.
6. There were also differences based on college, with members from the College of Commerce & Economics being less likely to see books and audio-visual materials as information needs and more likely to see databases and conference proceedings as information needs, and those from the College of Law being most likely to see government documents as an information need.
7. Those who preferred to search in Arabic only were more likely to see books as an information need and less likely to see databases or conference proceedings as an information need.

The eighth research question of the current study is: Is age, gender, length of service, rank, department, college, or preferred search language related to whether a scholar prefers print or electronic sources? Results showed that:

1. Those who preferred print documents were generally older than those who preferred electronic documents.
2. Lecturers and assistant professors were less likely to prefer print documents than associate professors or professors.
3. Faculty members in the Curriculum & Instruction department were least likely to prefer print resources.
4. Those in the College of Education were least likely to prefer print resources.

5. Those who searched in Arabic were more likely to prefer print resources than those who searched in English or those who searched in both languages.

The ninth research question is: Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar physically visits the library? Results indicated that

1. Those in the English Language department visited the library less than those from the Arabic Language department.
2. Those from the College of Law visited the library more frequently than those from other colleges.
3. Those who preferred to search in English made fewer visits to the library than those who preferred to search in Arabic, and those who preferred to search in both languages.

The tenth and final research question is: Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar accesses the library catalog through the Internet? The only statistically significant relationship for this research question was that those with longer tenures at Sultan Qaboos University tended to access the library catalog through the Internet less frequently than those with shorter tenures.

## CHAPTER 6

## QUALITATIVE FINDINGS

## Introduction

Qualitative data are collected using three different methods: e-mail interviews, face-to-face interviews, and focus groups. These data collection methods are intended to triangulate the research findings generated by the quantitative stage of data collection, by providing more in-depth information on the research participants' own experiences of and views on information seeking and the available information resources at Sultan Qaboos University (SQU). The following sections describe the administration of data collection, levels of response and characteristics of participants in the case of the e-mail interviews, face-to-face interviews, and focus groups, respectively. These are followed by an overview of the research instruments used in each case. The remainder of the chapter sets out the collated findings of the three stages of qualitative data collection in relation to the key research questions of the study and their relevance to the proposed model of information-seeking as set out in Chapter 2.

*E-mail Interviews*

The researcher sent an e-mail message to 200 selected faculty members in which he introduced himself, explained the purpose of the study and invited them to participate in an e-mail interview. The 200 faculty members are selected using a purposive sampling approach in order to ensure that both male and female faculty and representatives of various colleges and departments had the opportunity to participate in the research. Purposive sample is a sample selected with a purpose in the researcher mind (Trochim & Donnelly, 2007). The purpose is to generalize the study results to a

larger population (Creswell & Plano Clark, 2007; Patton, 1990; Nachmias & Nachmias, 1981).

A total of 70 faculty members responded to this initial e-mail, expressing their willingness to participate in the e-mail interview. The interview questions (see Appendix C) along with the informed consent (see Appendix H) were subsequently e-mailed to these 70 faculty members on July 1<sup>st</sup>, 2007, with a request to them to return their responses by e-mail to the researcher within two weeks. After two weeks, only 10 responses had been received from those faculty members who had agreed to participate in the study. Since this was regarded as an inadequate response rate, the researcher sent a reminder to the remaining faculty members and extending the period for response for an additional two weeks. An additional 17 responses were received during this extended response period.

Of the total 27 responses received to the e-mail survey, 6 were excluded from the analysis as they were incomplete, leaving a usable sample of 21. The total useable response rate, based on the 70 e-mail questionnaires distributed, was therefore 30%, an acceptable level of response in survey research. The characteristics of respondents to the e-mail survey, by gender, academic rank, and college, and the language in which the interview was completed, are shown in Table 20. Fourteen members (67%) of the sample were male; 7 (33%) were female. Academic rank of the interviewees was: Assistant Professor 52.3% ( $n = 11$ ); Lecturer 47.6% ( $n = 10$ ). The majority ( $n = 12$ ; 57.1%) were members of the College of Arts and Social Sciences; 6 (28.6%) were members of the College of Education; and 3 (14.3%) were members of the College of Commerce and Economics. More than three-quarters (76.2%,  $n = 16$ ) of the interviews were conducted in English; the remaining 23.8% ( $n = 5$ ) were conducted in Arabic.

Table 23

*Demographics of Respondents to E-mail Interview Survey & Interview Language**(N=21)*

Participant Number	Gender	Academic Rank	College	Language of Interview
1	Male	Lecturer	Arts & Social Sciences	English
2	Male	Lecturer	Arts & Social Sciences	English
		Assistant		
3	Female	Professor	Arts & Social Sciences	Arabic
		Assistant		
4	Male	Professor	Arts & Social Sciences	English
5	Male	Lecturer	Arts & Social Sciences	English
6	Male	Lecturer	Arts & Social Sciences	English
		Assistant		
7	Female	Professor	Arts & Social Sciences	English
8	Male	Lecturer	Arts & Social Sciences	Arabic
		Assistant		
9	Male	Professor	Arts & Social Sciences	Arabic
		Assistant		
10	Male	Professor	Arts & Social Sciences	English
		Assistant		
11	Male	Professor	Arts & Social Sciences	English
12	Female	Lecturer	Arts & Social Sciences	English
		Assistant	Commerce &	
13	Female	Professor	Economics	English
			Commerce &	
14	Male	Lecturer	Economics	English
			Commerce &	
15	Male	Lecturer	Economics	English
16	Male	Assistant	Education	English

		Professor		
17	Female	Lecturer	Education	Arabic
		Assistant		
18	Female	Professor	Education	English
		Assistant		
19	Male	Professor	Education	English
		Assistant		
20	Male	Professor	Education	English
21	Female	Lecturer	Education	Arabic

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### *Face-to-face Interviews*

When distributing the main quantitative survey questionnaire, the researcher also invited faculty members to take part in in-depth data collection by means of face-to-face interviews (see Appendix C). Initially, 25 faculty members expressed their willingness to participate in face-to-face interviews, and provided telephone or e-mail contact information in order to allow for the interviews to be scheduled. Of the original 25 faculty members who had offered to participate, only 16 responded to the follow-up phone call or e-mail and subsequently completed a face-to-face interview. These interviews were conducted during June and July 2007 in a variety of locations for convenience of the participants: their own offices and homes, the researcher's office and the university main library. The duration of each interview was between 40-50 minutes, and seven of the interviews were conducted in English and nine in the Arabic language. All the interviews were tape recorded with the permission of the interviewee, and they were each asked to sign the consent form giving the researcher permission to record and use their interview responses for the purpose of the study (see Appendix I). All of the interviews were subsequently transcribed and those conducted in Arabic were translated by two qualified translators. The transcripts were

then e-mailed to the interviewees for their review, and these were all returned without modification by the interviewees.

The characteristics of the 16 face-to-face interview respondents are shown in Table 21. Eleven (68.8%) were male; 5 (31.2%) were female. Twelve (75%) were Assistant Professors; 4 (25%) were Lecturers. Colleges were represented as follows: 7 (43.8%) Arts & Social Sciences; 4 (25%) Commerce & Economics; 4 (25%) Education; and 1 (6.2%) Law. The duration of the interviews ranged from 40 – 50 minutes; more than half (n = 9) were conducted in Arabic, with the remaining 7 being conducted in English.

Table 24

*Characteristics of Face-to-face Interview Respondents & Interview*

*Language/Duration (in Minutes) (N=16)*

Participant		Academic			
Number	Gender	Rank	College	Language	Duration
1	Male	Assistant Professor	Arts & Social Sciences	Arabic	50
2	Male	Assistant Professor	Arts & Social Sciences	Arabic	40
3	Female	Assistant Professor	Arts & Social Sciences	Arabic	50
4	Male	Assistant Professor	Arts & Social Sciences	English	45
5	Male	Assistant Professor	Arts & Social Sciences	English	40
6	Male	Associate Professor	Arts & Social Sciences	English	50
7	Female	Assistant Professor	Arts & Social Sciences	English	45
8	Female	Lecturer	Commerce & Economics	Arabic	40
9	Male	Assistant Professor	Commerce & Economics	Arabic	50
10	Male	Assistant Professor	Commerce & Economics	English	50
11	Male	Assistant Professor	Commerce & Economics	English	45

Participant		Academic			
Number	Gender	Rank	College	Language	Duration
12	Female	Lecturer Assistant	Education	Arabic	45
13	Female	Professor	Education	English	45
14	Male	Lecturer	Education	Arabic	40
15	Male	Lecturer Assistant	Education	Arabic	50
16	Male	Professor	Law	Arabic	40

### *Focus Groups*

A purposive sample of 30 faculty members, selected from the university telephone directory, were contacted by telephone by the researcher, who explained the purpose of the study to them and invited them to participate in focus groups to discuss the topics of interest.

Of the 30 faculty members contacted, 13 agreed to participate in the focus groups, a good response rate of 43%. In total, four separate focus groups were conducted, three of which had three participants and one of which had four. Each group lasted between 30 and 40 minutes and all were conducted in the Arabic language. Two groups were held at the college of Arts and Social Sciences, 1 at the college of Education, and 1 at the main library of the university. All of the focus groups were tape recorded with the permission of the group participants, and each participant was asked to sign a consent form authorizing the use by the researcher of the information they had provided (see Appendix J). The focus group recordings were subsequently transcribed and translated into English by qualified translators.



The characteristics of the focus group participants by gender, academic rank, and college, as well as details of the duration of the interview and the language in which it was conducted, are shown in Tables 22 to 25, for each group respectively.

Table 25

*Characteristics of Focus Group 1 Participants & Language/Duration of Group (in Minutes) (N =4)*

Participant Number	Gender	Academic Rank	College	Language	Duration
		Assistant			
1	Male	Professor	Arts & Social Sciences		
		Assistant			
2	Female	Professor	Arts & Social Sciences	Arabic	40
		Assistant			
3	Female	Professor	Arts & Social Sciences		
		Assistant			
4	Male	Professor	Arts & Social Sciences		

Table 26

*Characteristics of Focus Group 2 Participants & Language/Duration of Group (in Minutes) (N=3)*

Participant Number	Gender	Academic Rank	College	Language	Duration
1	Male	Assistant Professor	Arts & Social Sciences		
2	Male	Lecturer	Arts & Social Sciences	Arabic	35
3	Male	Lecturer	Arts & Social Sciences		

Table 27

*Characteristics of Focus Group 3 Participants & Language/Duration of Group (in Minutes) (N=3)*

Participant Number	Gender	Academic Rank	College	Language	Duration
1	Male	Assistant Professor	Arts & Social Sciences		
2	Male	Assistant Professor	Commerce & Economics	Arabic	40
3	Male	Lecturer	Education		

Table 28

*Characteristics of Focus Group 4 Participants & Language/Duration of Group (in Minutes) (N= 3)*

Participant Number	Gender	Academic Rank	College	Language	Duration
			Arts & Social Sciences		
1	Male	Lecturer	Sciences		
2	Male	Lecturer	Education	Arabic	40
3	Female	Lecturer	Education		

### *Research Instruments*

The qualitative research instruments were designed to provide more in-depth information on how social science scholars at Sultan Qaboos University locate and use relevant information, particularly via electronic resources and other emerging technologies for their specific research and teaching needs. Information was sought on both formal and informal sources of information and electronic resources utilized by social science scholars, as well as on participants perceived barriers to information-seeking, and their views on how these might be overcome.

Both the e-mail and the face-to-face interview guides consisted of the same set of questions, but the face-to-face interview method allowed the researcher to probe respondents for more information about respondents' views and experiences and resulted in more detailed answers. The interviews guide is attached in Appendix C. They each included three main sections as follows:

*Use and types of information resources:* This section sought information on respondents' knowledge of information resources available in the University library,

changes in research methods and information access over time, the advantages and disadvantages of various sources of information, and the implications to them of not being able to find the information they need.

*Barriers:* This section explored respondents' views on whether the university resources are sufficient to meet their needs, their level of comfort and proficiency in using library resources, other library or non-library related barriers to information-seeking, and their views on students' information seeking proficiency.

*The information-seeking process:* This section sought to generate information on information-seeking behavior in relation to the proposed model of social science scholars information-seeking discussed in Chapter 2 in order to test the applicability of this model to social science researchers in Sultan Qaboos University. Respondents were asked to describe how they initiate their research process, how they explore different sources of information, their experiences of monitoring sources relating to their specialist areas, the ways in which they organize and store the material collected, how they locate relevant information from the sources identified, whether they use the resources in electronic or printed format, whether they obtain copies of relevant resources immediately or when the search is complete and how they generally use the information at the end of the searching process.

The focus groups collected information in a slightly different way to address three research questions related to the social science scholars' information seeking behavior, the use of the Internet, and the use of electronic resources. Each focus group first included a practical simulation of information-seeking in which participants were required to use a computer for 15 minutes to obtain information on a specified subject. Each participant was subsequently asked to describe the steps that they followed to obtain information about this subject in order to illustrate their

information-seeking behavior in practice. It was also expected that the use of the information-seeking simulation exercise would be effective in encouraging the participants to recall about their past experiences of information-seeking in order to be able to contribute productively to the subsequent discussion.

The focus groups were also used to explore in more detail the participants' usage of electronic resources for information-seeking, specifically electronic databases and the Internet. They were asked to describe and explain their use of specific databases and any difficulties encountered in the use of these databases, and to discuss how they are able to use the Internet to find information for scientific research, and what standards are used to judge the quality and validity of information retrieved from the Internet.

The focus group method was found to be effective in promoting interaction between participants which provided the researcher with a useful insight into the extent of consensus and divergence among their views and experiences. Participants were also encouraged to explain and expand on their answers in response to comments or questions from others in the group, which improved the depth and clarity of the information provided.

#### *Coding and Analysis Procedures*

The qualitative research material generated from the e-mail interviews, face-to-face interviews, and focus groups were analyzed using content analysis, a procedure designed to extract themes and typical responses from a large amount of textual data. The researcher used a qualitative analysis software program, NVIVO, to facilitate the process of analysis. Initially, the responses were examined and a preliminary set of themes created, which were based on the main research questions and the various sub-themes of interest to the study, as defined in the research

instrument. Then, the qualitative responses were re-examined and coded according to the preliminary themes, and additional themes were added as necessary. The advantage of using qualitative analysis software is that it allows considerable flexibility in the ordering and re-ordering of material into different themes and in the examination of findings by respondents with different characteristics, such as gender or specialist area.

The final coding scheme based on the initial research questions and other issues emerging from the research material is included in Appendix E.

## Findings

### *Introduction*

The qualitative findings are presented roughly in the order that they were collected in the interview and focus group guides and consist of the collated results of the e-mail interviews, face-to-face interviews, and focus groups discussions in relation to:

*Use and types of information resources:* This covers respondents' knowledge of information resources available in the University library, their views on changes in research methods and information access over time and how these have impacted their research, the advantages and disadvantages of various sources of information, the implications to them of not being able to find the information they need and how they deal with this situation.

*Barriers:* This covers respondents' views on whether the university resources are sufficient to meet their needs, their own level of comfort in using these resources and the perceived information-seeking proficiency of their students. Specific library-related and general barriers to effective information-seeking reported by the research

participants are reported, along with their suggestions as to how these might be addressed.

*The information seeking process:* This seeks to apply the proposed model of information-seeking discussed in Chapter 2 to the research findings regarding the information-seeking practices of social science researchers in Sultan Qaboos University. This section of the findings draws heavily on the results of the focus groups, in which respondents carried out and discussed a simulated research process, but also on relevant findings from the e-mail interviews and face-to-face interviews, in which respondents were asked about their initial search strategies, their identification of relevant sources of information and use of monitoring practices, their methods of organizing and storing research material, their means of identifying relevant information from sources identified, their use of print or electronic format resources and their ultimate use of the material.

Within each section any identified differences between the views and experiences of participants with different characteristics are highlighted, focusing in particular on differences between respondents from the different departments of Library and Information Science; English; Curriculum & Instruction, Foundation & Educational Administration, Psychology, Management, and Economics and Finance.

#### Use and Types of Information Resources

##### *Awareness of Library Resources*

When asked to describe the types of information resources available to them in the University library, virtually all respondents gave very positive answers and most stressed that “all types” of information resources were available. The following is a typical quotations:

As far as information resources are concerned, we have all types of information resources, we have books and some e-books, print journals and e-journals, number of databases, little provide the full text and the rest just provide only the citation of the articles and if you need any you have to order them and some of them really expensive. We have also references, microfilms, and audiovisual materials. (Male, Assistant Professor, Department of Psychology)

We have a very good library that includes both electronic and non-electronic resources, books, e-books, print journals, e-journals, databases, audiovisual materials (video, cassette, maps, CDs,....) (Male, Lecturer, Department of English).

All respondents mentioned both print and electronic resources, and most specified a number of different types of resources. Overall, the following types of resources were identified as being available in the University library:

1. Printed books and printed journals
2. Electronic books and electronic journals
3. Electronic databases
4. CD-Rom databases
5. Audio-visual materials (videos, cassettes, maps, CDs, microfilm etc.)
6. Newspapers
7. Public documents
8. University dissertations.

The responses to this question indicated that the research participants all have a good knowledge of the resources available to them in the University library and are satisfied in general terms with the range of resources available. There were no notable



differences between the responses of respondents from different departments or specialist areas in terms of satisfaction with the available resources.

*Changes in Information Search Methods and Access*

Interview respondents were asked to explain how research methods and information access have changed since they began researching and how these changes have had an impact on their research.

In answering this question, nearly all respondents referred to the increased use of computers and online information as the major change since they had started researching, and highlighted various ways in which this had had an impact on their research. In particular it was noted that the increase in electronic information had made the research process faster and easier and that it was now possible to search for information from their own home or office rather than having to visit the library.

These advantages were cited by respondents from a range of different specialist areas:

Previously, when I needed any resource I was required to go to the library building to get the information required. But now, most information and services are available online. So, from my desk I get all I need and this makes my research process quicker, easier, and it saves me time. (Male, Assistant Professor, Department of Library and Information Science)

Access to information has changed due to the use of computers. Before, I had to go to the library and check each item on the shelf, but with the use of computers and the availability of the Internet and electronic resources (Databases and Electronic Journals) our research methods have changed dramatically. Now, it is so easy and speedy. (Female, Assistant Professor, Department of English)

It has changed dramatically; 10 years ago I had to physically go to the library and search the card catalog and then look for the book on the shelves. There was no online Catalog. Today, due to the Technology revolution, just a computer click from your home or office. You do not need to visit the library. You can check the online catalog and you can browse the databases available, as well as the electronic journals. It is speedy and does not require much effort from you. (Female, Assistant Professor, Department of Education)

To tell the truth, the greatest change has been that now I can do my work faster. Writing an article, for example, used to take three, four, five months. But now it does not take more than one month or a maximum of two months ... if your topic has already been covered and you want to complement what has been written, discuss or analyze what has been written in that field, it has become possible to do this with great speed and precision. (Male, Assistant Professor, Department of Library and Information Science)

An Assistant Professor respondent from the Department of Economics and Finance explained that the overall impact of the technological developments and easy availability of information was positive because it allowed more comprehensive and sophisticated searches to be conducted.

From a qualitative point of view, research at the moment has become more comprehensive and more complicated in English, especially now that we can find more information and compare research. Of course, this has a more positive impact than past research. (Male, Assistant Professor, Department of Economics and Finance)

However, several research participants referred to difficulties they had encountered as a result of the expansion in electronic information, while at the same

time recognizing that it did offer benefits to their research and noting improvements in their own ability to use the technology:

At the beginning, it was quite hard to get the specific information I needed. But it is going better for me since I participated in a course on “how to use search engines.” (Male, Lecturer, Department of Library and Information Science)

I [am] still weak in using electronic resources, but I think I am much better than 4 years ago when I first started doing my PhD. I would not look at the Internet at all, I would not search with Google very frequently; because you know, basically I totally relied on textbooks basically. I think that is very strange. (Male, Assistant Professor, Department of English)

I am not the kind of person who deals with electronic things, or plays with computers ... Overall, I believe using electronic resources will change the way I look for information; where to look for information; and do not forget that electronic resources are fast, easy to use if you try them, and more than that, save you time. (Male, Assistant Professor, Department of English)

Only one research participant referred to any other change in information search methods and processes over time, citing their own increase in skills and knowledge as having a positive influence on their research. (Male, Lecturer, Department of Library and Information Science).

#### *Information Resources Used and Their Advantages and Disadvantages*

Overall, the following sources of information were specified by various respondents to the e-mail and face-to-face interviews, or by the focus groups participants, as being used for their research: printed books, print journals, electronic

journals, online databases, the Internet, personal experiences, personal collections of resources, public documents, colleagues and other experts.

*Print resources.* Print resources (books and journals) were mentioned by slightly more participants than electronic resources as their preferred source of information, which is in line with previous research studies (Bouazza, 1986; Hobohm, 1999) that identified a preference for print over electronic resources among social science scholars. Respondents who expressed a preference for print resources cited various advantages of their use including being easy to find, containing a large amount of relevant information and being more readily portable than electronic resources:

I prefer to use print resources for several reasons; (1) they are with you wherever you go; (2) they are easy to use and to read; (3) it is more difficult to lose the information. (Male, Assistant Professor, Department of Curriculum & Instruction).

For my Ph.D. I started with going immediately to textbooks then to print journals, I always start with them because they are easy to use, easy to browse, they make it easy to locate the relevant information, and you can use them anywhere and all the time. (Male, Assistant Professor, Department of English).

I would give priority to print journals. The reason is that all my research topics are related to my Ph.D. dissertation and I have already started the literature on that by using a huge number of books. so I have a fairly sufficient idea of the literature in these areas. So, I immediately go to journals to update myself.

(Male, Assistant Professor, Department of English).

I mostly use books, they are easy and fast, and I can take them with me everywhere I go. But, if I could not find what I am looking for in the book I

rely on electronic resources. (Male, Assistant Professor, Department of Library and Information Science)

Only one specific disadvantage of using books and print journals was mentioned by an interview respondent, who expressed a preference for electronic resources: the fact that the printed resources available in the University library were too dated for many of their needs:

I rely on books when I cannot find anything through e-resources. And, why is that? Because many of [the] books available at the library are out of date and in my field current information is very important. (Male, Assistant Professor, Department of Economics & Finance)

*Electronic resources.* Conversely, one of the main reasons why many respondents expressed a preference for electronic resources was they provided the most current, up-to-date information in their fields of research:

I can find current, accurate information that I need, and my research requires by using electronic journals. (Male, Lecturer, Department of Library and Information Science)

I also rely on journals, especially the electronic ones. They provide me with current, and full text of the articles. (Female, Assistant Professor, Department of Psychology).

The flexibility and speed of use of electronic resources including journals and online databases were also cited as advantages by respondents who expressed a preference for these over print resources:

I use electronic journals because it is much easier to locate articles. (Male, Assistant Professor, Operation Management and Business Statistics Department)

I use the electronic resources, particularly databases, because they provide me with current articles. They are fast and save me time and I can get a huge number and relevant articles. And, of course, it's the same thing with electronic journals. (Female, Assistant Professor, Curriculum and Instruction Department)

However, a drawback of electronic journals and databases mentioned by a considerable number of respondents was that they often do not include the full text of articles, and therefore have insufficient information for their research purposes:

Not all databases and e-journals at Sultan Qaboos University library contain the full text of the articles. Most of them contain only the bibliographic information and the abstract. (Male, Assistant Professor, Department of Economics & Finance)

I rely first on electronic resources and the Internet because they are current, fast, easy, and not much efforts is needed to search them. My only concern or problem is the availability of full text. (Male, Assistant Professor, Department of Library and Information Science)

Reasons for my use of databases are (1) databases are rich with current articles and studies in my area of specialization; (2) databases provide me with the full text of the articles; (3) speedy in retrieving articles; and (4) accuracy of the seeking process. But, the only problem is the full text of the article. (Female, Assistant Professor, Department of Library and Information Science, Focus Group participant)

When asked which sources of information they tended to use in their initial searches for information, several respondents said that this was the Internet, for

reasons including the vast amount of information available, and the flexibility and ease of use:

The Internet is the first source of information I rely on because it provides me with a huge amount of information. (Male, Lecturer, Department of Library and Information Science, Focus Group)

I believe the Internet is in first place, thanks to its ease of use; and the quantity of the information available in the Internet, then comes the personal library. In third place, colleagues, and then the university library. (Male, Assistant Professor, Department of Economics & Finance)

Honestly, the Internet is my favorite source of information. It is very important and I always start my search with it. (Male, Lecturer, Department of English)

*Personal collections/own background and experience.* Research participants from across the range of academic departments covered in this study noted the importance of their own personal experience or personal collections as important resources in their research. Respondents stressed that personal experience was generally the starting point for their research, and that their topics of study were usually selected on the basis of their existing knowledge:

So, if I want to write in the field of library and information science, of course I will need to be equipped with a background that will enable me to cover all sides of the topic. Thus, personal experience is considered an essential element in the preparation of any scientific research. (Male, Assistant Professor, Department of Library and Information Science)

Sure, I rely on these sources, they are very important in information seeking process. My area of specification is involves me as a teacher, as a lecturer, so my personal experiences are always involve in aspect in my area. For

example, when I am teaching I try to get insights ideas about the most special ways in teaching. When I was doing my Ph.D. degree, I relied a lot on my personal experience. (Male, Assistant Professor, Department of Curriculum and Instruction).

My personal experiences are very important in all the research I write. As we know, writing about a topic you know nothing about is very hard to accomplish. (Male, Lecturer, Department of Library and Information Management)

Although few respondents overall specifically mentioned their personal collections of books and articles, these were reported to be particularly important to some participants. Not all of the social science scholars covered in this study had extensive personal collections of resources that they could rely on, however. Reasons cited included budgetary constraints and difficulty of purchasing academic resources locally.

I actually have a good number of books and articles. It is in my nature that I always keep all the articles I read and all the books that I can get a hold of, and it is a personal library that I have in my office and at home. (Male, Assistant Professor, Department of Economics & Finance)

There is one thing that I have not mentioned, that is that my personal collection. I have quite a good collection and I do consult it. (Female, Assistant Professor, Department of Management)

Regarding my personal collection, I really do not have that many resources that I can rely on. I have a poor collection of resources, because it is difficult to find academic resources here in the country. (Male, Assistant Professor, Department of English)



*Colleagues and other experts.* A number of respondents reported that they placed great importance on information and advice from colleagues, or other experts in their fields, when conducting research. Colleagues were seen to be a very valuable source, particularly when information was difficult to obtain from other resources. The impression gained from the research findings was of a worldwide network of fellow specialists who were consulted as necessary when conducting research:

Regarding my colleagues, they are really very helpful. I rely on them when find nothing in the printed and electronic resources provided by the university library. (Male, Lecturer, Department of Library and Information Management)

As for colleagues, honestly we help each other a lot and this happens in a comprehensive way, especially since the professors always have different perspectives. (Male, Assistant Professor, Department Economics & Finance)

I do consult and seek out colleagues help, recommendations, and suggestions, whether they are inside or outside the country. (Female, Assistant Professor, Foundations & Educational Department)

One's own experience by itself is insufficient. One needs to seek the help of those who are experts in this field. For example, if I need to write about a specific system and I cannot benefit from my own experience, which is still limited in the field of system basics and structures of system, then it is possible to seek the help of an expert in this system, and therefore I cannot do without a colleague's or expert's experience in this field ... they are those who will direct you towards different features and characteristics, adding important sources that may help you. (Male, Assistant Professor, Department of Library and Information Science)

Although the majority of respondents did specify a preference for one type of information resource, one research participant pointed out that all types of resources have their unique advantages and were useful in his research:

Every type of information resource has its own advantages. To illustrate, books provide the information in depth. So, I usually use all types to benefit from them. (Male, Assistant Professor, Department of Sociology & Social Work)

*Implications of Non-Availability of Resources*

Interview respondents were also asked about the implications of not being able to find the information resources needed for their work in the University library and how this made them feel. Participants reported that this happened quite frequently and indicated that they experienced feelings of extreme disappointment or dissatisfaction when it did occur.

I feel upset and unsatisfied. It is very bad when your library cannot provide your information needs. I have experienced this situation times. (Male, Assistant Professor, Department of Psychology)

I feel frustrated and unsatisfied and sometimes feel that I do not want to continue. (Male, Assistant Professor, Department of Psychology)

It makes me upset and unhappy for some time. (Male, Lecturer, Department of Library and Information Science)

Of course, it is a bad feeling. It is similar to when someone needs a drop of water in the desert. It means that this drop of water can be the piece of information you need, a basic piece of information that you cannot bypass in your studies, and therefore, when you exhaust all the sources, you feel pain

and frustration. (Male, Assistant Professor, Department of Library and Information Science)

Most responded to this question by explaining what they did to overcome the difficulty, such as asking University colleagues or overseas contacts if they have the resources needed, or contacting the authors of articles directly to try to obtain copies from them. Others reported seeking alternative ways of obtaining them, via the Internet, for example, or by using the inter-library loan service.

To go over this I always consult the Internet and my colleagues who are very helpful and who own a very good collection in their homes. (Male, Assistant Professor, Department of Library and Information Science)

If I need a particular type of information resource and it is not available in the library I would request it through the interlibrary loan or search the web (it might be there in an electronic format). (Male, Assistant Professor, Department of Library and Information Science)

When I am unable to find what I need, I go to the Internet and also talk to some of my colleagues in the English department. Fortunately we have some excellent professors in our department and they are always happy to offer any help we might need, they own very good libraries in their offices and homes. If I urgently need the information and there is no other way to get it, then I would order the book or the article. (Male, Assistant Professor, Department of English)

To deal with this situation, I consult friends and colleagues inside and outside the country. I also consult the Internet to find my way out. I sometimes write to the authors of the articles to get a copy of their articles, sometimes I get a

response from them and sometimes there is no response, but it is helpful.

(Female, Assistant Professor, Department of Psychology)

Friends or colleagues are also very important. I always rely on them and many times I have found what I am looking for from them. They are very supportive and provide you with advice, such as where to look, how and so on. (Male, Assistant Professor, Department of English)

I try to get it through different sources such as the Internet, or by visiting some other libraries in or outside Oman. (Male, Lecturer, Department of Library and Information Science)

Although respondents commonly drew on their networks of colleagues and other fellow professionals to find the resources, one Assistant Professor in the Department of Library and Information Science expressed the view that he preferred to find resources independently before seeking the help of others:

It gives you further motivation to find another way or means ... the piece of information I get by myself is always better than the one I get from others. It makes you feel the effort you have made. You can seek the help of others only when you are at a dead end. (Male, Assistant Professor, Department of Library and Information Science)

#### Barriers to Information Seeking

Several different questions were asked in order to provide an understanding of whether the respondents face library-related barriers to information seeking. Views on the adequacy of the University library resources were investigated, as well as levels of comfort and competency in the use of these resources and perceived need for training or assistance. Respondents' perceptions of students' information seeking proficiency were also investigated. Finally, research participants were asked directly about the

specific library- and non-library related barriers to information seeking that they experienced in their work and for their views on what might be done to address these barriers.

*Perceived Adequacy of Library Resources*

There was a divergence in views regarding the adequacy of library resources, and this did not seem to be related to particular areas of specialism; a variety of views were expressed by respondents from each of the academic departments covered in the study. On the one hand, a number of respondents expressed satisfaction, in general terms, with the resources available, while at the same time recognizing that there was room for improvement, particularly in terms of expanding the range of print or electronic resources.

I believe the library is the first place to look for information. Why? Because it contains most of what you are looking for, textbooks, journals both print and electronic, references and so on; and even if you do not find what you are looking for in the library you can use the interlibrary loan that the library provides for its users. In other words, the library still and will still be the first place for all users. (Male, Assistant Professor, Department of English)

Information sources are rich and good. (Male, Assistant Professor, Department of Library and Information Science)

Yes, it has sufficient information resources, but it has to be improved ... by enriching the electronic resources both e-journals and databases. (Male, Lecturer, Department of Library and Information Science)

To some extent yes, the library has a good collection of resources, but we are looking for more resources that will satisfy our needs. (Male, Assistant Professor, Department of Sociology and Social Work)

To some extent yes, but we are still looking for more up to date print resources especially books. We need more books in English. (Female, Assistant Professor, Department of Psychology)

On the other hand, other respondents from a range of academic departments and specialist areas were clearly very dissatisfied with the available library resources. Many expressed the view that the range needed to be expanded and updated, either in relation to specific specialist areas or in terms of providing more resources in either the English language or the Arabic language.

It is very poor. We need more hard copies of well-known books. (Male, Lecturer, Department of English)

I am teaching in Arabic and most of my research is also written in Arabic. However, there are zero electronic journals in Arabic provided by the library. (Male, Lecturer, Department of Library and Information Science)

It is not sufficient in relation to my area and this is really a sad thing. It is important to increase all types of information resources, the most up-to-date and the most recent resources in my area and in other areas. (Male, Assistant Professor, Department of English)

We always have to search the Internet and e-mail friends from other countries to provide us with such resources. (Male, Assistant Professor, Department of Geography)

One of the main sources of dissatisfaction which was mentioned by a number of respondents was the lack of full-text resources which are accessible via the library, while others, particularly in the Department of Economy and Finance, noted the need for the library to expand its collection of other specified types of resources, such as

social data, more Arabic resources from within Oman, and international conference papers.

The full text is actually the problem ... in our different databases, there are no database that contains full text. Furthermore, there are many databases that provide bibliographical data only, plus the abstract. (Male, Assistant Professor, Department of Library and Information Science)

When your resources are electronic you should not have any problem; you just download or copy and paste and then you get the source you want. But, if the e-journal or database does not contain the full text of the article, then here is the problem. In this case you either have to pay for this article, and it is very expensive, or order this article through interlibrary loan and it takes a long time to get. (Male, Assistant Professor, Department of Library and Information Science)

The electronic resources are poor at our library. Yes, you can search and they are accessible, but the problem is that you cannot get the full text of the articles and this annoys me. (Male, Assistant Professor, Department of Library and information Science)

Sometimes we need foreign resources such as international conferences, and other times we need Arabic resources, such as papers from within Oman. (Male, Assistant Professor, Department of Economy and Finance)

I believe that there is a need for social data in comparison to the data other countries have. (Male, Assistant Professor, Department of Economy and Finance)

*Level of Comfort in Using Library Resources*

All respondents confirmed that they were comfortable using the library resources, although some felt that training or brochures would be helpful, either to increase their own level of proficiency or to provide assistance to those who are less competent in using the library. Although a considerable number of participants in this study were library and information specialists, who can be expected to have a high level of competence in using library resources, similar views were expressed by participants from other specialist areas.

I feel comfortable using both print and electronic library resources. And, I do not have any difficulties or any need for training, but this training and brochures would help those who are very weak in using the library resources especially the electronic ones. (Male, Assistant Professor, Department of Library and Information Science)

I have no difficulty using the library resources ..., training programs and brochures are very helpful especially for those who are not skilled in using the library or the Internet resources. (Male, Assistant Professor, Department of Curriculum & Instruction)

I do not have any difficulty using them, even with the e-resources. Training programs and brochures might be helpful for those faculty members who are very poor in using the library resources. (Male, Assistant Professor, Department of Library and Information Science)

I feel comfortable, but more training and brochures would make things even better. (Male, Assistant Professor, Department of communication)

In fact, the use of information resources is not difficult in general. However, it is always better to have brochures or data that explain the way these databases



or information resources are used and therefore make the work of the researcher and the library staff less complicated, time-consuming, and annoying. (Male, Lecturer, Department of Library and Information Science)

Some respondents from the Library and Information Science area highlighted the fact that faculty and students needed to be made more aware of the resources that are available in the library and how to use these and suggested specific actions that might be taken by the library to increase their awareness of and ability to use its information sources.

There are so many researchers and even professors among our colleagues who do not know what electronic resources are available in the main library. Or even about the way they are used. Not only professors, but also the graduate students who are in urgent need to know how to deal with databases and their specifics. (Male, Assistant Professor, Department of Library and Information Science)

There is a serious need for organizing training sessions about the way to deal with reference books, for example, because such reference books, including dictionaries, encyclopedias, or directories, are prepared and organized using a very special system. The researcher should get to know their titles, the nature of the information they contain, and of course the way they are classified so that s/he can benefit from them. For that reason I see that training is necessary. Flyers and brochures are also essential and are considered a kind of Current Awareness such as a book jacket which helps us distinguish between references. Organizing conferences about recent books is important. So, you can have one of the most distinguished readers come and tell us about her/his view of a specific book that has reached the library; or have some of the

people who work in the library identify a specific book the library has just obtained and talk about its contents and the ideas it exposes; or have a number of professors make book reviews. (Female, Assistant Professor, Department of Library and Information Science)

*Perceived Level of Student Proficiency in Research*

Respondents' views regarding student proficiency in information searching generally fell into two extremes. Some expressed the opinion that their students were very good at research and utilized both print and electronic resources well.

Our students at the department of library and information science are very skilled in conducting research and they use all types of information resources in their research papers especially articles from journals (print and electronic). (Female, Assistant Professor, Department of Library and Information Science)

My students always surprise me with their searching skills, either in locating print resources or electronic resources through e-journals, databases, and the Internet. (Female, Assistant Professor, Department of English)

My students have excellent searching skills, either in locating print resources or electronic resources through e-journals, databases, and the Internet. (Male, Assistant Professor, Department of Economics & Finance)

On the other hand, some respondents felt that students' research skills were very poor. Among those who felt their skills were poor, some expressed the view that students relied too heavily on resources retrieved from the Internet, while others felt that they did not exploit this information source sufficiently and made too much use of print resources only.

They have a lot of difficulties in selecting the appropriate sources for their topics. Also, they tend to depend on electronic resources more. (Male, Lecturer, Department of English)

I realize that they refer to almost the same resource. There is also great use of Internet resources. (Female, Assistant Professor, Department of English)

They are very weak and ... most of their citations are from the Internet. (Male, Assistant Professor, Department of Library and Information Science)

I taught second and third year students and they were very poor in using the library resources especially the electronic resources. What we specifically need for our students is courses on research methods. Such courses would improve their information seeking skills. Also, we as faculty members have to encourage our students to use a variety of resources in their term papers.

(Male, Assistant Professor, Department of English)

Most of them have lack a of skills in searching electronic resources. As a result, students are still using the printed books and journals for their research.

Sometimes that reduce(s) the quality of their search. (Male, Lecturer, Department of Library and Information Science)

This divergence of views did not appear to be related to different areas of specialist or academic department and indicates that there may genuinely be significant differences in information seeking proficiency among students, with a need for more training to bring all students up to a good standard of research skills.

#### *Library-Related Barriers to Information-Seeking*

A small number of respondents indicated that they were not aware of any specific library-related barriers to their research.

No, there aren't any barriers. (Male, Lecturer, Department of English)

Actually I have no problem locating any resources that I need from the library.

(Male, Lecturer, Department of English)

The vast majority of research participants, however, cited at least one specific library-related barrier to effective information-seeking which had an impact on their work. Three main types of barriers could be identified from their responses: inadequate resources; problems with the organization of library resources; and information technology limitations.

*Inadequate resources.* As noted in the previous section, many respondents felt that the library provides an inadequate level of resources to meet their needs. The lack of full-text articles was regarded a major problem by numerous research participants and was cited as a specific library-related barrier to effective research, as was the ordering process for items not available within the library.

Most of the electronic resources available at the library do not provide the full text of the articles, so the library should subscribe to these resources in full.

(Male, Lecturer, Department of Sociology & Social Work)

Some of the database and e-journals available at the university library do not provide the full text of the articles and using interlibrary loan to get these articles is time-consuming. It takes long time to get them. (Male, Lecturer, Department of Library and Information Science)

The interlibrary loan service is very bad and also needs to be improved. It takes a long time to get an item through interlibrary loan. (Male, Assistant Professor, Department of Education & Learning Technology)

*Organization of library resources.* Another significant barrier to effective information searching mentioned by several respondents related to the poor

organization of resources within the library and the frequent discovery, in particular, that items they were looking for were missing from the shelves:

Sometime, when I search for books, I don't find them in their locations even when the system shows that they are available. (Male, Assistant Professor, Department of Library and Information Science)

The library material is accessible though they need better and clearer organization. (Male, Assistant Professor, Department of Geography)

The library collection is offered in an open shelf style. So sometimes the resources aren't checked out and yet at they are not in their location. (Male, Assistant Professor, Department of Library and Information Science)

I always have a hard time locating some resources, because they are not in their places, so our library needs better organizing. (Female, Assistant Professor, Department of English)

One information science specialist noted that although the library was in the process of updating and expanding its range of resources, these were not reaching the shelves quickly enough due to staffing and budgetary limitations which affected the preparation and cataloguing process:

Most of the information resources in the library are out of date. They have not been updated, though the library is in the updating process; but the issue is in the preparation. So, you find that all the recent sources are still in the storage. The personnel working on their preparation, indexing, classification, and placement on the shelves; is insufficient. Therefore, they have a great deal of work to do. The library has a good budget for its sources, but the problem is that the minute such sources get into the shelves, they become out of date. (Male, Assistant Professor, Department of Library and Information Science)

*Information technology limitations.* The lack of adequate computing facilities in the library was also cited as a barrier to effective information-seeking by a significant number of respondents. The lack of a computer lab was mentioned as a drawback, as were the lack of an adequate Internet connection provided and other technological limitations.

Internet speed and no computer lab in the library. (Male, Lecturer, Department of English)

The availability and accessibility of ... resources. Sometimes you do not find them and sometimes you cannot access them because of the network. (Male, Assistant Professor, Department of Library and Information Science)

There is another service the library should provide for its users and that is the Internet. Most users, especially students, would like to see this service provided. (Male, Assistant Professor, Department of Curriculum & Instruction)

I mostly use on-line journals and the network (Internet) is sometimes down. So, it might be a good idea to have a separate server for the library (if there is not one already there). (Male, Assistant Professor, Department of Economics & Finance)

One respondent cited as a barrier to research the fact that the library's electronic resources could not be accessed from other locations.

The electronic resources are still not accessible from the outside. I hope the library will consider the hundreds of users who always need to access the library from home or abroad. (Male, Lecturer, Department of Library and Information Science)

### *How Barriers Might be Addressed*

Respondents' suggestions as to how the University library might improve its services to users and thus overcome various barriers to information seeking fell into three main categories: improving and expanding library resources, providing better Information Technology facilities, and providing more support and training to users. Additionally, a number of other specific suggestions for improving various aspects of library services were offered.

*Improving and expanding information resources.* Virtually all the study participants made suggestions for ways in which the library's collection of resources could be improved in order to improve the information-seeking experience. Specifically, many respondents noted that the library should subscribe to more electronic resources containing full-text articles, although respondents also indicated a demand for more print resources, particularly more up-to-date texts in both English and Arabic.

The library should enrich its collection both print and electronic, and focus more on the electronic ones, in all areas, especially social sciences.

Information resources in social sciences in the main library are very poor and old, so this is another issue that the library should improve. (Male, Assistant Professor, Department of English)

Sultan Qaboos University library should subscribe to full text databases so the user can find what he looks for easily and without paying anything. Today, electronic resources are very important, provide a wide range of articles and they are current, so more attention should be made in this area of information resources. (Male, Assistant Professor, Department of English)

More books in Arabic and English; more electronic resources; e-journals and databases. (Male, Lecturer, Department of Library and Information Science)

The library can improve their materials by searching the web, locating the free Arabic journals and linking them to its web site. It is easy and there is no need for much or difficult effort. (Male, Lecturer, Department of History)

*Improving information technology systems.* Numerous respondents expressed a desire for the University to provide a faster Internet connection since this would improve their ability to search efficiently for information online and enhance their ability to download articles from online sources. In addition, respondents commented on the need for the University to update its technology so that more users could be online at the same time, and for a computer lab to be made available within the University's main library.

The university should speed up the network, because it is very slow. (Male, Lecturer, Department of Geography).

Enhancing the number of users that can access the online resources at the same time. (Male, Lecturer, Department of Library and Information Science)

The library, like most libraries in the world, has to have a computer lab and Internet service. (Male, Assistant Professor, Department of English)

Internet speed is very important since downloading an article, for example, takes a long time. (Male, Assistant Professor, Department of Economy and Finance)

*Support and training.* Even though the majority of research participants had indicated that they were comfortable using the library resources, when asked about ways in which the library could improve its services, many indicated that better training and more information about the resources available would be beneficial to



them and other users. Specific suggestions for what these might consist of included training programs conducted every semester, brochures, and flyers.

The library needs to do training programs for its users on how to use the library in general. These programs should be provided every semester. The library should also provide brochures and flyers on how to use particular resources such as electronic journals, databases, interlibrary loan, and so on. (Male, Assistant Professor, Department of English)

To make information seeking more enjoyable and satisfying, Sultan Qaboos University should provide some courses for all users, I think the library and the Information Technology Center should work together to provide such courses. I myself need such a course to improve my skill in using the electronic resources and I think many faculty members and students need these courses. (Male, Assistant Professor, Department of English).

One respondent from the Department of Library and Information Science explained the pressing need for training for library users in terms of the complex organization of library resources, which can act as a barrier to locating relevant information for inexperienced users.

The organization of some of the entries of is by the publisher, some others by subject, some others are organized chronologically and others' organization is made of different points. So a novice researcher will be incapable of getting to the reference and extracting the piece of information from it, and this becomes even more cumbersome when the library official is busy or something, leading therefore to the missing of all improvement opportunities. What I suggest in this case is that the main library organizes little workshops for all specialties to enable people to know their references, how to deal with other colleges and

faculty in terms of references, etc. (Male, Assistant Professor, Department of Library and Information Science)

A number of respondents suggested that the library should involve the user community more in the development of its collection, or should improve the process by which this presently takes place, for example, by having a more clearly-defined selection process for resources.

The community's needs should be analyzed. (Male, Assistant Professor, Department of Library and Information Science)

Sultan Qaboos University library is working in developing and improving its collection. It involves the faculty members from different colleges in the clear selection process ... But to make all this happen we need a good selection policy. Up to now we do not have a clear policy, so the library managers should work on this policy very soon in order to be able to improve the library collection. (Male, Assistant Professor, Department of Library and Information Science)

Update the important textbooks with more interaction with academic departments. (Male, Assistant Professor, Department of Economics & Finance)

Other types of additional support respondents believed could be usefully provided by the library included the electronic dissemination of information about newly acquired resources and the development of specialist support to researchers in different academic areas.

The main library should provide this good service on the Internet by putting the most recent books that have arrived into the library, even though there are

not so many especially, since most of them are still in the storage. (Male, Assistant Professor, Department of Geography)

It would be good if they can develop a manual of all resources available for researchers in each discipline and a librarian assigned to each discipline, so we can have a business librarian and an engineering librarian , etc. (Male, Assistant Professor, Department of Economics & Finance)

Finally, other specific suggestions for ways in which the library could improve its services to users included speeding up the inter-library loan service and increasing the physical area of the library to enable it to accommodate more print resources and information technology facilities.

#### *Non Library-Related Barriers to Information-Seeking*

Slow or otherwise inadequate Internet connections were one of three main non-library related categories of barrier to information-seeking that were identified by respondents, along with a lack of adequate time for research and language/cultural-related factors.

Numerous research participants commented on various ways in which poor access to the Internet, either in terms of speed or location, has a negative impact on their ability to conduct research. This was reported to result in feelings of frustration and to have the effect, in some cases, of causing them to give up on searches.

The Internet is slow and results in making the researcher feel very bored and sometimes makes her/him abandon her/his research and leave it incomplete.

(Male, Assistant Professor, Department of Economy & Finance)

The speed of the Internet makes the process of searching more difficult and in some cases makes us quit the searching process. (Female, Assistant Professor, Department of English)

We are asking for a speedy Internet that can make our search more fun. (Male, Lecturer, Department of Library and Information Science)

The fact is the Internet at Sultan Qaboos University is very slow and this makes the search for information difficult, especially when you want to download an article that you obtain in the database. In other word, due to the slow speed of the Internet, the search for information is prolonged and in many instances I get bored waiting and most of the time I eventually stop the search. (Female, Assistant Professor, Department of Economics & Finance, Focus Group participant)

I normally use online books, journals and databases because they generally have the new information, are available anytime and can be searched very easily. However, the most significant problem annoying me is that this kind of resource requires an online connection, and there are a limited number of users with access to these resources at the same time and the other problem is that the Internet is very slow. It takes most of your time to do one search. (Male, Assistant Professor, Department of Library and Information Science, Focus Group participant)

The other most commonly cited non-library related barrier to information seeking was the lack of sufficient time for research due to respondents' teaching commitments.

The time for conducting or completing research is missing. We spend most of our time in teaching and supervising the students, we do not have time for writing. (Male, Assistant Professor, Department of Library and Information Science)

We are so busy with teaching and there is not enough time to conduct or complete a research paper. Sultan Qaboos University has to consider this issue; and decrease the teaching load. (Male, Assistant Professor, Department of Communication)

Language and cultural-related factors were also cited as barriers to information seeking. One respondent noted the difficulty that sources in his area of specialism (Library and Information Science) were published in English, and, since they were weak in this language, there was often a need to have these translated.

Most of the literature in our field [is] in the English language and as I mentioned earlier, my English is very poor, so this is a serious barrier. Most of the time, I have to ask a friend to translate the texts that I need to quote or cite. (Male, Assistant Professor, Department of Library and Information Science)

As you know most of the databases are available in the English language and as I mentioned, my knowledge of the English language is poor. As you all may know, in order for anyone to conduct serious research in a certain subject it is impossible to do so without consulting articles written in English. For these reasons, I seek help from colleagues that are more knowledgeable in English to help me translate some of the articles. (Female, Assistant Professor, Department of Library & Information Science, Focus Group participant)

Another research participant, a specialist in English literature, commented on cultural issues that restricted the confidence of Omanis in producing research publications, leading them to feel they could not do so unless they had first accumulated a vast amount of information on the subject. This then acted as a barrier to information seeking as they would not even start the process of producing a research paper, seeing it as too daunting a task.

I always have in my mind that I should not try unless I know everything. Of course you cannot know everything. Those who write and are very famous in their field, I do not think they know everything even in their own specializations. So, I think our culture and society installs in us the idea of accumulating a large quantity of information and that becomes a social pressure for us, instead of producing something you want to accumulate information for other sources ... I think most Omanis are facing this problem. We may not feel it, we may not concuss of this, but I think it is there, it affects us ... We may think that we cannot produce something like a person in the United States. I think we lack that confidence. I think we have to be creative and produce information not accumulating information. (Male, Assistant Professor, Department of English).

#### The Information-Seeking Process

Finally, qualitative research material is collected on the specific information-seeking practices of the research participants in order to test the applicability of the proposed model of information seeking discussed in Chapter 2 to their experiences, as an example of a group of social science scholars in an Arabic society. The research findings are also intended to contribute to the clarification and elaboration of the model, by providing an illustration of the various stages of information seeking in practice.

This section of the findings draws heavily on the results of the focus groups, in which respondents carried out and discussed a simulated research process, but also on relevant findings from the e-mail interviews and face-to-face interviews, in which respondents are asked about their initial search strategies, their identification of relevant sources of information and use of monitoring practices, their methods of

organizing and storing research material, their means of identifying relevant information from sources identified, their use of print or electronic format resources and their ultimate use of the material. These research findings are reported in relation to the eight stages of the model of social science scholars information-seeking discussed earlier: *Initiation, Exploration, Monitoring, Categorizing, Sifting, Resource Selection, Collection, and Ending.*

### *Initiation*

The research participants' descriptions of their information searching practices clearly showed the importance in research of the *initiation* period in clarifying the nature of their information needs. This can be observed to consist of three distinct aspects that might be defined as *consideration, preparation, and expectation.*

The term *consideration* is used here to refer to the process in which respondents consider what their information needs are and how they should go about meeting them. This stage also involves breaking down a large research topic into more manageable sub-topics to facilitate the searches.

First, I ask myself, what is the purpose of the information that I am looking for? This will help me to choose appropriate resources and also the number of results that are necessary to complete my work, e.g: for research I am always using electronic journals and obtain at least 20 specific articles. But for presentation or preparing for a lecture I am always looking for books and maybe one or two are enough. (Male, Lecturer, Department of Library and Information Science)

I would start by dividing my topic into several subjects that I will address in this topic. (Male, Assistant Professor, Department of English)

The first step was to divide the topic into specific keywords, such as community knowledge, community information, information specialist, and the management of library information. The second step was to determine the database that is appropriate to use for my search. (Male, Assistant Professor, Department of Library & Information Science, Focus Group participant)

*Preparation* refers to the stage in which respondents ensure that they have adequate skills and knowledge to be able to use the resources that will be required to meet their information needs. In some cases, this involves seeking advice from information specialists or other experts, while in others it involves gaining familiarity with particular sources of information, such as databases.

I still remember my first visit to the main library; I was looking for information sources to conduct research on the history of library science. I asked the reference librarian to guide me in finding the most appropriate ways of searching. (Male, Lecturer, Department of Library and Information Science)

Before consulting the search engine I always try to learn how this engine works. (Male, Lecturer, Department of Geography)

The study showed that many of these social science scholars start their information-searching with a clear idea of their *expectations*, for example, in terms of locating new information, getting either the exact information they need, or being satisfied with similar or related information. The initiation stage in which they consider their research ideas is shown to be important in clarifying these expectations and guiding the subsequent research. A number of respondents referred to their feelings and emotional states, such as optimism, when describing their practices at the



initiation stage, demonstrating the importance of emotional as well as cognitive factors at these early stages of the information-seeking process.

When starting any research I always have the feeling that I am going to find new and current information for this research especially through the e-resources, and my feeling is usually accurate. (Male, Assistant Professor, Department of Economics & Finance)

Yes, most of the time I have an idea exactly what information [I am] looking for. (Male, Lecturer, Department of Library and Information Science)

If I understand exactly what I need and how I can write what I need, in this case I expect to get exactly what I am looking for. (Male, Lecturer, Department of English)

I expect to find information on that particular topic, but at the same time, I would not disregard any relevant and similar information that might help me in this topic or idea. I always try to enrich my topic by drawing upon all relevant areas or information. (Male, Assistant Professor, Department of English)

I am optimistic and always have the feeling that I am going to find new and current information for my research topics. I really do not quit until I use all ways of searching available. (Female, Assistant Professor, Department of Psychology)

The research findings also indicated that many of the respondents have well-established routines for initiating and conducting their information searches, involving a clear prioritization of the order in which various information resources are consulted. The use of such precedents when planning research can be seen to link the

initiation stage with the exploration stage, in which specific information resources are identified for use.

I normally start by having a quick look at the published research and building a broader idea of my topic. I always start with the print and electronic journals, and then the databases. (Male, Assistant Professor, Department of Library and Information Science)

My first place is the e-resources (databases and e-journals) and if I cannot find anything I will browse the Internet and the printed resources. (Male, Lecturer, Department of History)

When I approach a scientific research topic my initial step are, first, defining the topic; second defining the chapters of the topic; and then searching for information. (Male, Assistant Professor, Department of Communication)

### *Exploration*

This stage covers the process of actually searching for information on a defined subject and the selection of specific information sources for use in conducting the searches. The format and location of information resources selected for use is of particular interest in relation to social science scholars, who have been shown in previous research to differ from other groups of specialists in relation to the preference for informal rather than formal sources and print rather than electronic sources of information (Goldberg, 1971; Skelton, 1973; Bouazza, 1986; Hobohm, 1999). As noted in preceding sections, the social scientists in this study report using a wide range of print and electronic resources in their information-seeking and this may partly reflect technological changes over time which have resulted in the wider availability of electronic-based information sources in the social science field. However, the study has also revealed that social science scholars at SQU do exhibit a

clear preference for print resources, even though they also recognize the importance of electronic resources to their work.

The research findings demonstrated that the participants do indeed go through an exploratory stage in their research. In this stage they consult various information sources, based largely on existing knowledge and previous experience of their utility, to check whether they have the information needed. They subsequently move on to others sources until their information needs are fulfilled.

I go to the library and I start by looking at the online catalog. When I finish with the book section, I start looking at the print journals and unfortunately I have to see each journal in my field in order to meet my needs ... When I finish searching the print resources, then I start looking on the Internet and then the electronic resources (e-journals and databases), this is only if I need more information. (Male, Assistant Professor, Department of English)

Most of the time I start my search by selecting the appropriate database; and most of the time I obtain information about what I am looking for. In the event that I don't find information about the subject that I am researching, I go to the university library's catalog to look for the information; third, I go to Internet search engines, in particular Google. (Male, Assistant Professor, Department of Curriculum & Instruction, Focus Group Participant)

I start with planning this topic and what I need to address in this topic. Then create some keywords to help me in searching the literature. Then I start looking for information resources by starting first with browsing the library's online catalog and the electronic resources. I also seek my colleagues help and advice in the topic. (Female, Assistant Professor, Department of Library & Information Science)

Within the process of exploring different resources, many respondents reported relying initially on their own personal experience or collections, or seeking the advice of colleagues, and then moving onto more impersonal sources such as the Internet for more focused searches.

My personal experience is always the first source for me. Then I turn to the Internet to narrow down my research topic. Of course, the help of more knowledgeable colleagues and acquaintances is needed. (Female, Assistant Professor, Department of English)

Experience plays an important role and I often rely on my experience in the field when writing research papers or studies. Personal experience, of course, comes in first place. I also consult my colleagues both at Sultan Qaboos University or in other countries. (Male, Assistant Professor, Department of Library and Information Science)

In many instances I go and ask my colleagues for advice concerning resources that may help me obtain information about the subject I am researching or provide me with information they have. (Male, Assistant Professor, Department of Economics & Finance, Focus Group Participant)

Personal experience is considered an essential element in the preparation of any scientific research ... However, one's own experience by itself is insufficient. One needs to seek the help of those who are experts in the field ... you cannot do without the others' experiences and their support of your research since they are those who will direct you towards different features and characteristics, adding important sources that may help you. ( Male, Assistant Professor, Department of Library and Information Science)

Thus, the results of this study provide support for the findings of earlier research regarding the importance of informal sources in the information-seeking practices of social science scholars. However, some respondents reported that they did not like to rely on such informal sources, preferring to use well-documented information.

I don't rely on personal accounts too much. I prefer to have reliable and documented resources. (Male, Lecturer, Department of English)

For research purposes, I rarely obtain advice from colleagues or friends. (Male, Lecturer, Department of Library and Information Science)

A number of respondents exhibited detailed knowledge of particular information sources that they use frequently, such as specific databases, and it was clear that their existing familiarity with these largely determined their predominance in the exploratory phase of research.

I have a very extensive knowledge of French databases. Most of the time I use the Dialog database, in the French language, and I also use Pascal database, these databases are useful and practical because they have many different keywords. Moreover, they give you the freedom to search by keyword, subject, title, author, and so on. Also, these databases give you the number of times the keyword you are searching for occurs in the article and this can help you decide whether this article would be helpful you or not. Moreover, these databases have a complete record of the articles and research studies of the subject you are searching for. (Male, Assistant Professor, Department of Library & Information Science, Focus Group participant)

I started to use my favorite search engine Google. Why? Because, in many cases, this search engine also links to other search engines such as AltaVista

and Yahoo. (Male, Lecturer, Foundations & Educational Administration, Focus Group participant)

I went directly to the search engine Google; because it is my favorite search engine. (Male, Assistant Professor, Department of Economics & Finance, Focus Group participant)

Respondents were sometimes unable to use their preferred choice of information resource, however, due to its non-availability, such as databases in the Arabic language. In other cases, the exploratory stage of research was shown to involve employing a variety of different methods for accessing the same information resources, due to their limited availability or content access via the University library.

Of course, the reason for searching for articles in English is very clear to all of you, it is due to the lack of articles and research studies in the Arabic language, especially in the area of Library and Information Science. (Female, Assistant Professor, Department of Library & Information Science, Focus Group participant)

The database the library recommends does not allow the user complete access to the articles or studies in the subject. Therefore, in many cases, if you need to obtain the full article you have to pay a large amount of money, and this is hard to do. For this reason we contact colleagues in other countries that have access to these databases and ask them to send us these articles. (Female, Lecturer, Department of Curriculum & Instruction, Focus Group participant)

I use English databases frequently and that's due to the fact that I graduated from a British university. In fact Dialog, Proquest, Eric, and Emerald are among the most important databases that I use in my research. It's rare that I don't find in these databases what I am looking for ...I do have an access to

some of the databases through the university that I graduated from. (Male, Assistant Professor, Department of Geography, Focus Group participant)

I always use my access permission at Exeter University where I got my PhD.

Its library is rich with full text articles. (Female, Assistant Professor, Department of Library & Information Science, Focus Group participant)

I contact many colleagues at British and American Universities and seek their help in my research and they always help me because their libraries are rich with either printed or electronic information resources. (Male, Assistant Professor, Department of Economics & Finance, Focus Group participant)

The information search simulation exercise conducted by focus group participants illustrated the electronic searching techniques used in their research. All the participants reported using keywords relating to the designated topic, although there were clear differences between them in the level of sophistication of their keyword searches.

I divided the subject to keywords, then I selected words that are synonymous with the keywords. (Male, Assistant Professor, Department of Library & Information Science, Focus Group participant)

I entered the topic in full (The Future of Education in the Knowledge Age) in the Yahoo search bar, and wow the results I got exceeded 100,000. I did not try any other subject headings, I am ashamed of myself, I am also weak in using the Internet. (Male, Lecturer, Department of Curriculum & Instruction, Focus Group participant)

My first step was to build several subject headings or keywords for the topic, and as we know, it is best way to make the search process easier. The keywords or subject headings I have put for this topic are as follows: (1) the

knowledge age and education today; (2) future of education in the world; (3) education and changes in the knowledge age. (Female, Lecturer, Department of Education & Learning Technology, Focus Group participant)

The exploratory stage of research was also shown to involve a process of snowballing of information, in which the initial relevant resources are identified and the citations and reference lists in these used to make subsequent searches for additional useful material.

I start by looking for the relevant papers in the top journals. I type keywords in Google and go to a couple of articles. Then from the references of these articles I do further research. (Male, Assistant Professor, Department of Economics & Finance)

First of all, I start with the Internet and then try to locate the major required readings. After that, I start locating such resources in the library until my research topic becomes more focused. (Female, Assistant Professor, Department of English)

Finally, respondents noted that the whole process of searching is repeated using different keywords and search terms if the initial searches do not result in sufficient information to meet their needs.

The first step is to focus on the topic and define its concepts. Secondly, build what I prefer to call the keywords network or subject headings. Third choose the information resources that I am going to use in order to get information for this topic. Then try to look under each keyword. In the event I do not find anything after I finished my search process, I redo it again with different keywords and sources. (Male, Assistant Professor, Department of Library & Information Science, Focus Group participant)



### *Monitoring*

In the proposed model of information-seeking, monitoring involves staying informed of new information by regularly checking sources relevant to a social science researcher's specialist area. In order to determine whether this stage is applicable to social science scholars at Sultan Qaboos University, the interview respondents were asked whether they regularly monitor newspapers, journals and other sources for information relating to their specific areas of research, and how they do so.

Overall, the study found that monitoring of relevant sources is commonly and regularly used among most participants in the study, across all specialist areas. In most cases, it takes the form of regularly reviewing journals in their subject areas, as well as browsing online reference sources. Online forums and discussion groups were also mentioned as means of keeping up to date with developments in the respondents' specialist areas. Overall, electronic sources of information were clearly of central importance in facilitating the process of monitoring.

I do monitor the Internet and e-journals by making a regular check of what it is available on the Internet and also checking the new issues of the e-journals. I also check table of contents, indexes, and review websites available online. Amazon.com also helps me in stay updated on the new books in my field.

(Male, Lecturer, Department of Library and Information Science)

I subscribe to three journals in my field and frequently check their new issues. I also have a list of important journals in my field that I keep track of regularly. (Male, Assistant Professor, Department of Library and Information Science)

I always keep myself updated by constantly looking at the information resources related to my subject, especially among the good scientific journals.

(Male, Assistant Professor, Department of Economics & Finance)

I check top journals and most used databases in the field. Discussion groups in my field that are available in the Internet also keep me updated. The Internet also keeps me updated, particularly amazon.com. (Female, Assistant

Professor, Department of Curriculum & Instruction)

I monitor both print and electronic journals. I do this by frequently checking the new issues of these journals. I have around 10 journals in both Arabic and English that I regularly check. Databases that we have at the library also provide us with the current information in the area. I also have a membership in one of the discussion groups and a listserv in the American universities.

(Male, Assistant Professor, Department of English)

Some respondents reported being very proactive in their monitoring of new information, not only by checking published sources, but by contacting colleagues and even writing to established experts in the field to check for updated information. Attending conferences was mentioned as another way of keeping up-to-date with developments in one's specialist field.

I regularly check the new issues of the top journals in my field. I also browse the publishers' catalogs and Indexes through the Internet. I also try to ask my colleagues in the department about the new articles and books in the field.

(Male, Assistant Professor, Department of Economics & Finance)

The conferences I attend (are) also helpful and sometimes in these conferences you meet some of the famous writers in the field. (Male, Assistant Professor,

Department of Management)

### *Categorizing*

Research participants were asked to describe briefly how they organize and store the information that they collect in the course of their research, in order to determine how the categorizing stage of the proposed model of information seeking applies to their actual practices. Categorizing is defined as the process of using known differences between sources to stratify and clarify issues, in which the location as well as the format (e.g., print or electronic) of the resources is important.

Overall, respondents reported relatively well-developed methods of categorizing and storing their research information, and it was evident that individuals had tried and tested methods of doing so which they generally followed when conducting research.

With regard to printed sources, these were generally organized in physical folders or binders, labeled with subject headings and stored in the respondent's office or at home, with some form of referencing or documentation to enable the respondent to locate the information easily.

For the print resources, I have files in my office and home. I put what I find in these files based on the subject headings that I have for each file. (Male, Assistant Professor, Department of Library & Information Science)

As for the printed resources, when I get a copy of them I also keep them in a file in which I include their call numbers and locations, for example, in the main library and their reference number etc. so that I can go back to them whenever I need to, especially when I have only one chapter or article. So the documentation of both the electronic and paper-printed sources I use is necessary. (Male, Assistant Professor, Department of Library and Information Science)

Most responses related to electronic sources of information, and although the general principle of saving information in subject-headed folders applied to both printed and electronic resources, it was clear that computer technology allowed for the use of more complex and flexible systems of categorization, with information stored in locations such as the computer's hard drive, desktop, USB memory device or e-mail folders.

I have folders in my computer hard drive and each folder has a name based on my interest, when I find any article I save it in one of these folders based on its topic. (Male, Assistant Professor, Department of Library and Information Science)

First I give codes to all the sources I get. Second, I write the bibliographic data on separate papers. Third, I extract the information and ideas from these sources onto separate papers and at the top of these papers I write the code of the source and pages. (Male, Assistant Professor, Department of Geography)

I should first confess that I am not very good in organizing and saving materials, but I do organize and save or store the materials I get. If it is on the Net for example, I would copy and paste the materials and store them in my hard desk or in a flash memory in certain folders, I have created for this purpose and I do the same thing with print resources. (Male, Assistant Professor, Department of English)

I save the electronic articles in folders created in my computer hard drive. Sometime my Yahoo email helps in saving and organizing the e-resources. (Female, Assistant Professor, Department of Curriculum and Instruction)

It became clear from some of the responses that the process of categorizing material online is often central to the whole information seeking process, with the storage categories also being used to structure the searches.

The first step is that I make a folder with the title of the research topic; then I start defining the concepts of the topic and finally search under each concept.

(Male, Assistant Professor, Department of Library and Information Science)

One respondent noted that he categorized research material not only by subject but accordingly to how relevant it was to the research topic, with a secondary level of information retained for possible future reference in case insufficient information was found which was more directly relevant. In this sense the process of categorization can be regarded as being of central importance to the information-seeking process not only in terms of organizing material, but also in contributing to the overall efficiency of the research process, since less important material can be quickly skimmed and stored for possible later retrieval if necessary.

The information that will lead me is classified into two categories: information that is closely related to the topic (which I keep and start investing); and information which has a secondary relation to the topic, which I do not necessarily overlook but I keep for later use – I may not find the information I need, so it is possible to look into this area. (Male, Assistant Professor, Department of Library and Information Science)

### *Sifting*

This refers to the stage of the information-seeking process which involves going through sources and identifying relevant material from them. In order to investigate how this occurs in practice, interviewees were asked to explain whether,

for example, they just skim resources, read relevant parts only, or read the entire resource to extract relevant material.

It was found that nearly all respondents employed a process of skimming key elements of resources, which provided them with a concise overview of what the resource contained, and its key points. These included, for example, the Table of Contents, the Index and the Abstract. Sometimes they also read the Introduction and Conclusions to glean the key points. In the case of some respondents, this process was often found to be sufficient to provide them with all the information they needed, while others used this process to guide them to the relevant parts of the resource that they should read.

I just take what is relevant by going through the abstract, then the table of contents and finally the conclusion. (Male, Assistant Professor, Department of Economics & Finance)

Most of the time I try to read the entire article or book, but when I need urgent information I read only the important parts. (Male, Assistant Professor, Department of Library and Information Science)

When I use books I always read the table of content of that book, then go directly to the specific pages that I need. (Male, Lecturer, Department of Sociology & Social Work)

Although few respondents read the whole resource immediately, a common practice was to skim it initially and to save useful resources for complete reading at a later stage when searching was complete.

I usually review the table of contents then I read the beginning of each chapter as well as the introduction. If I find anything relevant, I read them in complete after the process of searching is finished. (Male, Assistant Professor, Department of Library and Information Science)

### *Resource Selection*

In this stage, scholars choose the specific resources that will be used in the research. An important consideration in this process is to judge the quality and validity of the information, particularly information that is retrieved from the Internet. The focus group participants in particular were asked to explain how they deal with this issue.

Respondents reported using the sifting process described above to make judgments about whether certain resources are likely to be useful for their research, skimming the Abstract or Table of Contents, for example. Their existing knowledge of the author or journal is also important in the resource selection process, with priority being given to well-known, reputable sources.

First, I define the information resource, I mean, what type of journal especially since the good scientific journals are classified. In the field of Economics, for example, if I find an article published in a journal called “American Book Review,” I understand that this is a very credible resource. So the journal is a trustworthy resource for information. (Male, Assistant Professor, Department of Economics)

First, I consider the author of the article. If the article’s author is well known in this area; I go ahead and use the results of this article. (Female, Lecturer, Department of Psychology, Focus Group participant)

In the first place, I check the author of the article and then the source of the article, such as a refereed journal, or a conference proceeding, or electronic book. The date of the article is very important in judging the quality of the articles. (Male, Assistant Professor, Department of Library & Information Science, Focus group participant)

It was noted that some on-line information cannot be regarded as reliable, although one respondent remarked on recent improvements in the documentation of some online resources which helps make the process of resource selection easier.

Information on the Internet is now is better documented, especially in the case of electronic journals which include the researcher's name, address, and date. So these are well-documented. The problem is with the information that is published on the Internet with no author. They do not have any address. The degree of credibility here is therefore doubtful. Even if some people think that the URL address of the website can be used for citation, they should take into account that these sites are changing. So, if today this site is available, it may not be there the next day, and therefore you won't be able to access the same information. So you should not trust such types of data. (Male, Assistant Professor, Department of Economics & Finance)

### *Collection*

This involves gathering selected information that addresses the specific focus of the study, based on the understanding that the researcher has by now gained about the topic under study and which can be used to organize and connect information to address the specific research question. The two key issues related to the process of collecting research material which were investigated in this study were the question of whether the scholars obtain copies of resources immediately or wait until their



searches are complete, and whether they print them out for use or read them on the computer screen.

The respondents were split in terms of their preferences for obtaining relevant resources immediately or waiting until a later stage. Those who ordered articles immediately claimed that this strategy saved time and prevented the possibility that they would not be able to find the resource at a later stage.

I request the article so that I make good use of my time. When I find an article in relation to my topic even though I do not need it at that specific time, I request it so that when the time to read comes, I should have already gotten it. Therefore, I do not wait until the end of the searching stage since this makes me lose so much time. (Male, Assistant Professor, Department of Library and Information Science)

I obtain them once I have the relevant information because I can't be sure that I will find that resource again. (Male, Lecturer, Department of English)

I take action immediately. Waiting until the end of my searching process is time-consuming. (Female, Assistant Professor, Department of Psychology)

However, two respondents highlighted the advantage of being able to select only the most relevant resources to order, if they waited until all their searches were complete.

I normally obtain the resources after I finish the searching process so I can choose the most relevant resources and obtain them. (Male, Lecturer, Department of Library and Information Science)

I prefer to finish my research process first and then take care of obtaining the relevant resources. I know it is time-consuming, but this is the only way to get the relevant ones. (Male, Assistant Professor, Department of Psychology).

An interesting and surprisingly finding was the unanimous view that it was better to print documents out rather than reading them from the computer screen, perhaps reflecting the traditional preference among social science scholars for printed documents, despite their growing use of electronic resources. A practical advantage of this approach cited by some respondents was that it offered them the flexibility of being able to read the resources in any location or at any time.

I prefer reading directly from the paper, and this may be a matter of habit. We are used to reading from books and articles. (Male, Assistant Professor, Department of Economics & Finance)

Nothing is more comfortable than “black on white,” i.e. paper. (Female, Assistant Professor, Department of English)

I actually prefer printing the electronic texts to read and store rather than reading them on the computer’s screen. It is always easier to check the printed resources. (Male, Assistant Professor, Department of Economy and Finance)

For me it is very hard to read articles in electronic format. So, I always save them on my USB drive and then print them out and read them in my free time. (Male, Lecturer, Department of Library and Information Science)

### *Ending*

This refers to the completion of the search and the generation of an output based on the research, such as a lecture, publication, conference paper or other product. Interviewees were asked what use they generally made of the information collected in their searches.

A number of respondents made the point that the end purpose of the search needs to be clearly defined at the outset in order to ensure that appropriate material and information is collected to achieve this purpose.

I start first with why I need the information and that will define the end use. For example, if I get an idea that I feel can be put together in a paper. I start doing a thorough search to obtain all relevant literature and continue the process until I end up with a complete paper. The paper will start first as an initial draft that can be presented somewhere. (Male, Assistant Professor, Department of Economics & Finance)

In my opinion, this should be decided before searching or seeking for information because in some ways it will impact what resources you should search, and how much information you need. (Male, Lecturer, Department of Library and Information Science)

The respondents mostly cited similar uses of the information collected, with preparation for a class lecture being mentioned most often. Other uses included preparing a research paper for publication or presentation at a conference or writing a book or a book chapter.

#### Summary

This chapter has presented the analysis and results of the qualitative portion of the study. Data collection and analysis procedures are described, as are the demographic and other characteristics of the qualitative sample participants. The next and final chapter of the study is the discussion and conclusion chapter. In it the results of both the quantitative and qualitative portions are summarized and synthesized, conclusions are drawn, and recommendations are made for further research and practice.

## CHAPTER 7

## DISCUSSION AND CONCLUSIONS

## Overview of the Study

This study is intended to contribute to the field of research in Library and Information Science (LIS) by investigating the information needs and information-seeking behavior of social science scholars at Sultan Qaboos University in the Sultanate of Oman, an Arab country in the Middle East. It uses a mix of quantitative and qualitative research methods to explore the ways in which social science scholars at this university locate and use relevant information for their research and teaching needs and the perceived and actual barriers to their effective information-seeking and use of electronic resources.

Initially, a critical literature review of relevant previous research on information-seeking among social science scholars was conducted. The review highlighted specific information gaps which the study addresses and informed the development of a conceptual model for the study based on a synthesis of various established models of information-seeking. The use of this conceptual model in the design of the study and in interpretation of the research findings enabled the researcher to assess the applicability to a non-Western, non-English speaking society of a model which is grounded in established theories of information-seeking developed on the basis of research conducted in the West.

As well as making a significant theoretical contribution to the field of knowledge on information seeking in this way, the study was designed to collect factual information for practical use in improving library and information services in Sultan Qaboos University and in academic settings in the Middle East more generally.

Specifically, the study addressed the following six main research questions:

1. What types of information resources do social science scholars generally need to access?
2. How do social science scholars identify and locate relevant information for research and teaching?
3. What information sources do social science scholars prefer to use for research and teaching and where do they find them?
4. What information sources do social science scholars use most frequently?
5. To what extent do social science scholars use electronic resources and print resources for research and teaching?
6. What barriers affect social science scholars' information-seeking behaviors and use of electronic resources?

In addition, the study investigated the relationships between a range of demographic and professional characteristics, on the one hand, and information-seeking behavior on the other among social science scholars at Sultan Qaboos University, in order to provide a more accurate understanding of information-seeking and how this is influenced by socio-demographic factors. In doing so, the study has involved a level of analysis which has rarely been used in previous studies of information-seeking.

7. Is age, gender, length of service, rank, department, college, or preferred search language related to the scholar's information needs?
8. Is age, gender, length of service, rank, department, college, or preferred search language related to whether a scholar prefers print or electronic sources?

9. Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar physically visits the library?
10. Is age, gender, length of service, rank, department, college, or preferred search language related to the number of times per month that the scholar accesses the library catalog through the Internet?
11. Does the proposed model hold for social science scholars in developing Arab countries?

This concluding chapter first provides a discussion of the contributions of the study in general terms, followed by a discussion of the key research findings from the quantitative survey and from the qualitative research. Findings consideration of the theoretical and practical implications of the findings is provided. Finally, the methodological limitations of the study are noted, and suggestions for further research in this area and concluding comments on the overall importance of this research are made.

### The Contribution of the Study

#### *Theoretical Contributions*

Within the field of library and information science, various models of information-seeking have been developed in order to promote an improved understanding of how academic scholars typically search for information for research purposes, what factors influence their information-seeking behavior and what the barriers are to its effectiveness. However, most of the research in this area on which the models have been developed has been conducted with academics in non-social science disciplines and almost entirely in Western, English-speaking countries.

The few studies of information-seeking that have been conducted with social science scholars have indicated that their information-seeking behavior differs in

significant ways from that of scholars in other academic disciplines, in that they are more likely, for example, to rely on informal rather than formal sources of information, and are somewhat less likely to use electronic technology in their information-seeking practices. However, these studies are now quite dated and it is not known to what extent recent technological developments within library and information services have had an impact on the information-seeking behavior of social scientists and other academic scholars.

Additionally, very little is known about information-seeking behavior in non-Western, non-English-speaking developing societies, such as those of the Middle East. It might be expected that information-seeking behavior and its outcomes might be different in these societies compared with the developed societies of the Western world due to the impact of language and cultural factors, educational traditions, and the relative availability of information resources and technology. In the social science area in particular, relatively few texts are available in the Arabic language, which may present a barrier to effective information-seeking among social science scholars who have a limited command of the English language, or at least influence their information-seeking behavior and its outcomes. More generally, the relatively limited availability of information-seeking tools and support services in a developing society is also likely to have an impact on information-seeking practices.

These factors indicate that existing theories and models of information-seeking may have major inherent limitations, since their relevance to present-day information-seeking among social science scholars generally and particularly among social science scholars in non-English speaking developing countries, is not known. Although often presented as generic models of information-seeking, in reality these models and theories reflect information-seeking behavior only in the Western,

developed countries in which they were originally generated, and many do not take into account the specific information-seeking behaviors of social scientists, as opposed to other academic specialists such as scientists or engineers. There are, therefore, major theoretical gaps in the field of knowledge about information-seeking which must be addressed by research among social science scholars, on the one hand, and by studies of information-seeking in developing, non-English speaking countries, on the other hand.

This study makes a significant theoretical contribution to knowledge in this area by addressing both of these information gaps and by collecting information on the information-seeking behaviors and experiences of social science scholars in Oman. More generally, it helped to update the theoretical and conceptual base in which Library and Information Science is grounded.

The research was conducted within a conceptual framework, outlined in Chapter 2, that was based on a synthesis of existing models of information-seeking as well as the incorporation of various contextual factors that can be expected to affect information-seeking behavior among social scientists generally and scholars in Oman and other non-Western countries in particular. The conceptual framework was based on a synthesis of three information seeking models: Wilson's (1996) model of information-seeking behavior, Ellis's (1989) model of information-seeking, and Kuhlthau's (1991) model of information search process, and includes eight main stages in the process of information-seeking, termed initiation, exploration, monitoring, categorization, sifting, selection, collecting, and ending. The model also incorporates two main categories of contextual factors believed to be particularly relevant to the information-seeking practices of social scientists: location of information and format of information. The use of this framework enables the



researcher to develop a research instrument and methodology that could be used to test the applicability of various elements of existing information-seeking models to social science information-seeking in Oman and to investigate the impact of contextual factors specific to the study population.

The research makes an additional theoretical contribution to the field of knowledge on information-seeking behavior by examining the impact on information-seeking of various socio-demographic factors such as age, length of service, and gender. Most previous studies of information-seeking have been primarily descriptive, or have focused only on investigating the relationship between information-seeking and different disciplinary backgrounds (Abouserie, 2003). In contrast, this research has investigated the ways in which information-seeking behaviors vary among sub-groups *within* a particular academic field, and what variables are associated with different types of behavior, thus helping to refine the overall understanding of information-seeking and the factors that contribute to its effectiveness.

Overall, the theoretical significance of the study is to provide information on which the present-day relevance and cross-cultural applicability of established theories and models of information-seeking can be assessed and to identify ways in which they need to be updated or refined. More generally, the study is expected to make a contribution to the understanding of information-seeking among social science scholars, both generally and in a developing country context. In this way it will enable the ongoing development and refinement of theories and models of information-seeking to inform the field of Library and Information Science.

#### *Practical Contributions*

By providing detailed information on the information-seeking practices of social science scholars in a developing society in the non-English speaking world, the

study is also of practical value and relevance to the ongoing development of library and information services in these societies. The study has the immediate practical application of providing information to help improve the content, format, and delivery of library and information services at Sultan Qaboos University and potentially at similar universities in the Middle East. The previous relative lack of research into information needs and information-seeking behavior among social scientists and other scholars in Oman and other Middle Eastern societies has prevented librarians and information specialists in this region from understanding and developing the types of resources and services which are needed there, so the availability of relevant materials and appropriate support services might be lacking and may present barriers to effective information-seeking.

Having research-based information on the use of library and information services will also help libraries to operate more cost-efficiently by reducing less frequently used sources of information and methods of information retrieval and by providing sources and materials tailored to the needs and information-seeking practices of the users. Moreover, the information from this study will provide library managers with a better understanding of the way in which they can support social science scholars from an administrative perspective, for example, by developing and delivering training in the use of library and information resources and technology targeted at their particular needs.

By increasing the effectiveness of information-seeking and its outcomes among the country's academic scholars, the research is also likely to make a positive indirect contribution to the continuing development of Oman. The Sultanate has undergone a rapid economic and social transformation in recent decades and is now one of the most modern and technologically advanced countries in the Middle East.

Yet like other developing countries, Oman still faces significant economic and social challenges which must be overcome in order to ensure its sustainable development. In order to reduce unemployment and limit Oman's dependence on foreign expatriate workers, the government is encouraging training of Omanis in information technology, business management, and English language. Improved library and information services within Oman, which are targeted at the needs of users, are needed in order to underpin this policy and help ensure its success.

The following section discusses the key research findings, followed by a discussion of their theoretical and practical implications.

#### Discussion of the Findings

The major purpose of this section is to present and discuss the most striking findings from quantitative survey and from qualitative research and compare them with previous studies in the area of information needs and seeking behavior of social science scholars (Brittain, 1970; Ellis, Cox, & Hall, 1993; Ucak & Kurbanglu, 1998; Hobohm, 1999; Meho, 2001; Abouserie, 2003, Kuhlthau, 2004).

#### *Types of Information Resources*

Respondents in this study claimed to have a good knowledge of the information resources available to them in the university library. Most respondents stressed that all types of information resources were available for them to use. The results also indicated that different information resources are used by social science faculty members including journals, books, conference proceedings, databases, audio-visual materials, dissertations, government documents, fieldwork, and newspapers. The most frequently used types of information resources used were journals and books. This finding confirmed the results of other studies such as (Hobohm, 1999; Shokeen & Kushik, 2002; Abouserie, 2003; and Francis, 2005). For example, Meho's

2001 study indicated that major types of resources used by social scientists were fieldwork data, grey literature, journals articles, books, archival materials, and newspaper articles.

#### *Changes in Information Search Methods*

All respondents reported having computers in their offices and at homes. They indicated that the increased use of computers and online information resources has changed the way they seek for information for their research and teaching purposes. In particular, they noted that this had made the research process faster and easier, that they are now able to search for information from their offices and homes rather than going to the library, and that the library is the last choice for them. These findings support Hobohm (1999) findings, who writes, "it is obvious that not only the information [behavior] has changed since the [70's] but also the research methodology and its instruments" (p. 125).

The result of a recent study by Abouserie (2003) that investigates the information-seeking and communication behavior of social science faculty is also similar to the findings of the current study. The results of Abouserie's (2003) study pinpointed that social science faculty members use and read electronic resources from their offices. Reasons behind this, according to Abouserie, could be the availability of the high-speed Internet connection at their offices and the availability of free copies and printed information resources from their offices. Similarly, a study by Folster (1989) reported that consulting a librarian was a very low priority and last choice for social science scholars engaging in information-seeking.

Results of the current study indicate, however, that many respondents referred to technical difficulties encountered in relation to the search from office or home. These difficulties are lack of computer skills and poor of Internet connection speeds.

*Format of Information Resources*

Surprisingly, social science scholars at SQU still prefer to use print resources rather than electronic resources. Most respondents (64.2%) showed a strong preference for print resources, while only 35.8% of respondents indicated that they prefer electronic resources. Respondents who prefer to use print resources indicated that they prefer them because they are easy to find, containing a huge amount of relevant information, and are more readily portable than electronic resources. Other reasons why social science faculty members prefer print resources were lack of adequate technology skills and poor speed of the Internet. Furthermore, many respondents who showed a preference for electronic resources indicated that overall they prefer to print out e-journals and databases articles in order to read and use them for research and teaching purposes. More recent studies have indicated that there may have been an increase in the use of technology in information-seeking by social scientists, but they still prefer use print resources (Meho & Haas, 2001; Meho, 2001; Francis, 2005). Costa and Meadows' (2000) study also support the findings of the current study. Their study revealed that although the rate of use of electronic resources by social science faculty is high, they still preferred print resources over electronic resources. However, Francis' (2005) study of social scientists at the University of the West Indies reported a preference for articles in electronic format over print format and that social scientists awareness of new technology was demonstrated not only by their knowledge and use of the Internet, but also by using a wide range of other relevant electronic journals and databases.

*Location of Information Resources*

Social science scholars in this study reported that location of information resources is very important for them. They indicated that they use different locations to search for information including libraries, Internet, personal collection, and colleagues and experts in the field.

*Internet.* Respondents indicated that the Internet is very important for them and they tended to use it to locate relevant information for several reasons, such as the vast amount of information available and its flexibility and ease of use. However, their use of the Internet was influenced by several difficulties, most importantly, slow Internet access speed. Likewise, Meho and Haas's (2001) research topic based analysis showed that social scientists used the Internet and e-mail to locate relevant information for their research of the Kurds. Similarly, Aber's (2005) study participants often used the Internet to provide awareness and access to published and unpublished information resources.

*Libraries.* Social scientists in this study revealed that they make fewer visits to the university library to check out materials due to the time it takes to visit the library and unavailability of needed material. However, they heavily used the library online catalog for their information needs. Most focus group respondents highlighted the importance of the library online catalog and reported that it is the first place to locate the information they need. Several previous studies conducted in developing countries support the findings of this study and indicated that social science faculty members in developing countries are heavy users of library resources (Mooko and Aina, 1998; Shokeen and Kushik, 2002). More than half of the social science faculty in the Mooko and Aina (1998) study of social science scholars in the University of Botswana made heavily use of the University of Botswana Library information resources. The reason

resources. The reason behind this, according to Mooko and Aina (1998), is the inability of social scientists in developing countries to build up adequate personal collections of material due to cost constraints and to less well-developed networks of personal contacts, perhaps because there are fewer people working in the same specialist area.

*Personal collection.* Almost 64.2% of social science faculty members from across the range of academic departments covered in this study noted the importance of their personal collections. Social scientists reported that their personal library was generally the starting point of their research. This finding supported by previous and current studies which indicated that scholars in general and social scientists in particular greatly value and rely heavily on their personal collection and that the searching process always starts from the personal collection (Soper, 1976; Folster, 1989; Hobohm, 1999; Meho, 2001). In Soper's 1976 study of the characteristics and use of personal collections, she noted that "personal collections are generally much smaller and probably lack much of the diversity and depth that are the strengths of major institutional libraries. It seems clear, however, that they are preferred as sources of works to be cited. They are obviously adequate for the special needs of their owners" (p. 414). A similar study conducted by Meho (2001) demonstrated that "most participants warmly praised their own collections and described it as the first place to refer to for any research project they work on" (p. 94).

However, not all of the social science faculty members participated in the current study had extensive personal collection that they could rely on due to cost constraints and difficulty of purchasing academic resources locally.

*College and experts.* Information resources can be also located in other people, such as colleagues or experts, and they are considered to be important sources



of information that direct researchers to the information resources that they need. In the current study, a number of respondents reported that they placed great importance on information and advice from colleagues, or other experts in their fields, when conducting research or preparing for a class lecture and conference presentations. Colleagues were seen to be a very valuable source, particularly when information was proving difficult to obtain from other information resources. The impression gained from the research findings was of a worldwide network of fellow specialists who were consulted as necessary when searching for information. Several research studies provide some evidence supporting this finding (Ucak & Kurbanoglu, 1998; Line, 1999; Romanos de Tiratel, 2000; Francis, 2005). For example, Francis' (2005) study pointed out that the West Indian social science faculty members value informal sources of information such as recommendations by colleagues.

#### *Barriers to Information-Seeking*

Social science scholars at Sultan Qaboos University in Oman face a number of specific challenges and barriers in their information-seeking which are to some extent common to scholars in general. This study revealed that social scientists at SQU face two different types of challenges and barriers:

1. Library-related barriers:
  - a. Inadequate library resources
  - b. Problems with the organization of library resources
  - c. Information technology limitations
  - d. Lack of adequate training
2. Non library-related barriers:
  - a. Inadequate Internet connections
  - b. Lack of adequate time for research



c. Language/cultural related barriers

Several previous studies conducted in developed, Western societies, and in developing, Eastern societies, have reported the same barriers to information-seeking of social science scholars (Brittain, 1970; Ucak & Kurbanoglu, 1998; Meho, 2001; Lee, 2005, Badu & Markwei, 2005; Francis, 2005).

Inadequate information resources was regarded as a major barrier by scholars in general. In his study of information-seeking behavior of social science faculty studying stateless nations, Meho (2001) noted that social scientists studying stateless nations had a difficult time finding the necessary materials in their libraries. Meho (2001) writes, "A closer look at the academic institutions at [which] the study participants teach showed that the majority of these institutions do not have specific programs or departments that are geared towards the study of stateless nations. Therefore, it is very likely that most libraries would hesitate to acquire extensive materials on topics that are not part of the academic make up of the universities or colleges they serve" (p. 119).

The language barrier was also considered a very important barrier by social science scholars. This barrier, according to Brittain (1970), caused social scientists to ignore the world's literature and draw far more heavily upon resources written in their own language. Ucak and Kurbanoglu (1998) also support this finding in their study of information need and information-seeking behavior of scholars at a Turkish university. They concluded that social science scholars pay great attention to resources translated into Turkish even though they can read and understand these resources in their original languages. One participant in Aber's (2005) study reported that she rarely visits the academic library because of the time constraints and the unavailability of adequate information resources.

### *The Information-Seeking Process*

The current study was conducted within a theoretical framework based on a synthesis of three existing models of information-seeking of Wilson's 1996 information-seeking behavior, Ellis' (1986) information-seeking, and Kuhlthau's (1991) information search process. The findings of the study indicated that the information-seeking practices of social science scholars match the eight stages of the model. These stages include initiation, exploration, monitoring, categorization, sifting, selecting resources, collecting, and ending. The key findings of the research in relation to the specific stages of this model were as follows:

*Initiation.* Respondents in this study highlighted the importance in research of the initiation stage in clarifying the nature of their information needs. Based on the findings, this stage consisted of three substages that were defined by social science scholars as consideration, preparation, and expectation. The findings also showed that many of the social science scholars had well-established routines for initiating and conducting their information searches, involving a clear prioritization of the order in which various information resources are consulted. The use of such precedents when planning research links the initiation stage with the exploration stage, in which specific information resources are identified for use. As noted in the findings, in this stage social scientists gain familiarity with particular sources of information, such as databases and electronic journals, and seek advice from colleagues, information specialists, or other experts.

The results of this study provide support for the findings of earlier studies regarding the initiation stage. Findings of the Meho and Tibbo (2003) study indicated that social scientists in this stage start by searching the literature on their topics using different information resources and, if needed, they seek advice from colleagues,

librarians, and key figures--people who the scholars believe are knowledgeable about their topic and can give advice or provide suggestions. Ellis and Haugan's (1997) study support the findings of both the current study and Meho and Tibbo's study. They found out that the participants of their study use colleagues and knowledgeable people to gain guidelines and information about the topic.

*Exploration.* Social science faculty members reported that they go through an exploratory stage in their research in which they consult various information sources to check whether they have the information needed and subsequently move on to other sources until their information needs are fulfilled. The findings noted that social scientists were sometimes unable to use their preferred choice of information resource, however, due to its non-availability in the university library, such as databases and e-journals in the Arabic language. The findings also indicated that the exploratory stage also involves a process of snowballing of information, in which the initial relevant resources are identified and the citations and reference lists in these used to make subsequent searches for additional useful material.

Some of these activities indicated by respondents of this study were similar to the participants of Meho's (2001) study. Findings of Meho's (2001) study noted all the study participants follow-up references in materials consulted. Ellis and Haugan's (1997) participants also more frequently follow-up references in articles.

*Monitoring.* The study found that monitoring of relevant sources is commonly and regularly used among most social science scholars in the study. Social scientists' monitoring of relevant resources takes the form of regularly reviewing journals in their subject areas, as well as browsing online reference sources. Online forums and discussion groups were also mentioned as means of keeping up-to-date with developments in the respondents' specialist areas. Overall, electronic sources of

information were clearly of central importance in facilitating the process of monitoring. Some respondents reported being very proactive in their monitoring of new information, not only by checking published sources, but by contacting colleagues and even writing to established experts in the field to check for updated information. Attending conferences was mentioned as another way of keeping up-to-date with developments in one's specialist field.

Overall, social science scholars in this study use the same monitoring tools and follow the same monitoring techniques as social scientists in previous studies (Line, 1971; Ellis, 1989; Meho, 2001; Meho & Tibbo, 2003). In Ellis' (1989) study, social science faculty members keep up-to-date on new developments in their fields through the use of informal contacts (colleagues, associates), monitoring services and research directories, journals or newspapers, and publishers' catalogs. Likewise, Meho (2001) reported that the social scientists in his study used both formal and informal information resources for keeping up-to-date. They "belong to discussion groups, subscribe to journals and current awareness tools (e.g., e-mail services providing table of contents of periodicals), attend conferences, read the news over the Web, receive publishers' catalogs, and/or purchase books" (p. 107).

*Categorization.* Social scientists at SQU used relatively well-developed methods of categorizing and storing their research information. They reported that they generally organized printed information in physical folders or binders, labeled with subject headings and stored them in their office or at home, with some form of referencing or documentation to enable them to locate the information more easily. Furthermore, computer technology allowed social scientists to use more complex and flexible systems of categorization, with information stored in locations such as the computer's hard drive, desktop, USB memory device or e-mail folders.

Categorizing in this study is similar to Ellis' Differentiating. However, social scientists in Ellis' (1989) study used different methods from social scientists in the current study. Findings in Ellis's study indicated that social scientists used several methods in differentiating material, including the substantive topic of study, the approach or perspective adopted, and the quality, level, or type of treatment.

*Sifting.* Respondents of this study used several methods to identify the relevant information from the sources they retrieved. They employed a process of skimming key elements of resources, which provided them with a concise overview of what the resource contained and its key points. These included, for example, the Table Contents, the Index and the Abstract. Sometimes they also read the Introduction and Conclusions to glean the key points. This finding is supported by several previous studies (Ellis, 1989; Ellis & Haugan, 1997; Meho, 2001). Ellis (1989) found that social scientists in his study employed the same methods as the social scientists in this study, especially the practice of reading Table of Contents, the bibliography, the index, and the abstract.

*Resources Selection.* Findings showed that in this stage social scientists use the sifting process described above to make judgments about whether certain resources are likely to be useful for their research. For example, they skim the abstract or table of contents. Their existing knowledge of the author or journal is also important in the resource selection process, with priority being given to well-known, reputable sources. Kuhlthau's (2004) findings indicated that participants used several methods to select the appropriate resources for their projects that include using descriptors to search out pertinent information, examining biography, indexes, and requesting assistance of the librarian. Similarly, the most important issues stated in the Fortine (2000) study were the content and the validity of the source.

*Collection.* Social scientists were split in terms of their preferences for collecting relevant resources immediately or waiting until a later stage. Those who ordered articles immediately claimed that this strategy saved time and prevented the possibility that they would not be able to find the resource at a later stage. Those who preferred to wait until the end of the searching process highlighted the advantage of being able to select only the most relevant information resources to order, if they waited until all their searches were complete.

*Ending.* This is the last stage of the information seeking process. Kuhlthau (1991, 2004) calls it the presentation stage or the search closure stage. In the present study, social science faculty members made the point that the end purpose of the search needs to be clearly defined at the outset in order to ensure that appropriate material and information is collected to achieve this purpose. They indicated that they mainly use the information they collected to write a research paper, make a presentation at a conference, or prepare a class lecture.

The next section discuss the theoretical and practical implications of the findings.

### Implications of the Findings

#### *Theoretical Implications*

The theoretical implications of the study can be highlighted as providing current information on the studied topics and assessing the results' applicability to established theories and models of information-seeking in cross-cultural settings. Additionally, it provided ways to improve such theories and models. More generally, the study is expected to make a contribution to the understanding of information-seeking among social science scholars, both generally and in a developing country context. In this way it will enable the ongoing development and refinement of theories

and models of information-seeking to inform the field of Library and Information Science.

First, the study makes a significant contribution to the field of knowledge related to information-seeking by providing an up-to-date picture of the information-seeking behavior of a group of social science scholars in the Middle East. Specifically, it has confirmed that while social science scholars, at least in this environment, do rely more heavily on electronic resources than their predecessors in earlier research, they still retain a preference for printed sources of information and usually print electronic sources for use rather than reading them on the computer screen. The study has also confirmed a key finding of earlier research with social science scholars: that they tend to rely heavily on informal sources of information, such as their own experience and the knowledge of their colleagues (Hobohm, 1999; Meho, 2001; Meho & Tibbo, 2003)

Second, one of the main objectives of this study is to develop a conceptual model on the basis of a synthesis of established theories of information-seeking of Wilson (1996); Ellis (1989); and Kuhlthau (1991), which could be tested for present-day relevance among a sample of social science scholars in a non-Western, non-English-speaking society. The applicability of the model developed was successfully tested using in-depth interviews (e-mail and face-to-face), focus groups, and a simulated information-seeking exercise with social scientists in Sultan Qaboos University in the Sultanate of Oman. It was found that the information-seeking practices of the study sample could be readily matched to the stages of the model, suggesting that, in general terms, information-seeking behavior follows universally applicable stages and patterns and that a model developed on the basis of research in one region of the world can be transferred for use to other regions. The study has also



demonstrated that such a model can be applied to current-day information-seeking, despite recent changes in the information environment such as the growth in the availability and use of electronic resources.

The synthesized model used in this study, however, also incorporates two key types of contextual factors: the *format of information* and the *location of information* used. This adaptation was particularly useful in informing the design of the primary research and the interpretation of the findings, particularly in terms of identifying and understanding the contextual factors that represent barriers to information-seeking in the Middle Eastern context. Specifically, it was found that social science scholars in Oman face three main types of barriers to information seeking:

- Limited availability of resources especially full text resources
- Poor Internet connection speeds or Internet availability
- A lack of sufficient Arabic language sources of information.

This suggests that although previous theories and models of information-seeking may be applicable to non-Western societies, they may not be *sufficient* to allow a full understanding of information-seeking among scholars in these societies without the incorporation of additional elements representing contextual factors.

The primary research also generated information which is likely to be of value in the further refinement of models of information-seeking. Specifically:

- The *initiation* stage can be broken down into three distinct elements: *consideration, preparation* and *setting expectations*.
- The stage of *monitoring* can be clearly divided into what might be defined as *passive* monitoring techniques, such as checking the contents and abstracts of journals to which the participants subscribe, *pro-active*



monitoring techniques such as writing to established experts in the field to check for updated information.

- Familiarity with and prior knowledge of information resources are key factors influencing the process of exploration, with many respondents demonstrating habitual patterns of searching in which familiar sources took priority. These were followed by less familiar sources only if the former did not provide the information needed.
- *Exploration* of sources is often a cumulative process, rather than one in which separate resources are searched from scratch. Many respondents note that citations and references in the resources located initially were then used to search for further relevant resources.
- The model should be regarded as having interrelated rather than consecutive stages, in that the *ending* stage, in terms of the intended output, must be defined at the outset and must constantly feed into all stages of the information-seeking process in order to ensure that appropriate material and information is collected to achieve its purpose.

The research made an additional theoretical contribution to the field of knowledge on information-seeking behavior by examining the impact on information-seeking of various socio-demographic factors such as age, gender, length of service, rank, and preferred search language. Most previous studies of information-seeking have been primarily descriptive or have focused only on investigating the relationship between information-seeking and different disciplinary backgrounds (Abouserie, 2000). In contrast, this research has investigated the ways in which information-seeking behaviors vary within an academic discipline and what variables are associated with different patterns of behavior, thus helping to refine the overall

understanding of information-seeking and the factors that contribute to its effectiveness. Indeed, it was found that there were differences in information needs and information-seeking practices between sub-groups of respondents, particularly by age, academic rank and academic department or college.

Although the primary research was conducted among social science scholars in the Sultanate of Oman, it is expected that many of the study's findings will be applicable, in broad terms, to similar developing countries, especially other Arab nations. In addition, the study provides a model for future studies in this area in terms of its methodology and research instruments, which might be adopted for use in research with similar populations in other developing countries.

#### *Practical Implications*

The study has generated many findings which are likely to be of practical value specifically to the Library and Information Services of Sultan Qaboos University, but also to other academic library and information service providers in similar academic environments in the Middle East and in other developing countries.

The study provides a new research base regarding the information-seeking behavior of social science scholars in an Arabic society of the Middle East. In doing so, it confirms that established models and theories of information-seeking can be applied, in general terms, to this non-Western, non-English speaking environment. Library and information service providers in this region can, therefore, use such theories and models as a framework for the overall design and delivery of their services. However, the study also highlights some specific barriers to information-seeking which are experienced by social science scholars in this society. These findings are likely to be of major importance in ensuring that the future development of such services addresses such barriers and improves the information-seeking

environment. These include inadequate provision of both printed and electronic resources, a lack of non-English language resources, and poor availability of Internet access.

By providing research-based data on the preferences of social science scholars for particular types of information resources, and the frequency of use, the study can help libraries operate more cost-efficiently by reducing less frequently used sources of information and methods of information retrieval, and by providing sources and materials tailored to the needs and information-seeking practices of the users. Moreover, the information from this study provides library managers with a better understanding of the way in which they can support social science scholars from an administrative perspective, by developing and delivering training in the use of library and information resources and technology targeted at their particular needs.

A set of specific recommendations for the future development of library and information services in Sultan Qaboos University and similar developing countries can be developed on the basis of the research findings. Although it is not realistic to expect that all of these recommendations can be implemented in the short term due to factors such as budgetary constraints, the University is advised to use these recommendations in the development of a long-term strategic development plan which is aimed at improving the information-seeking environment for all users. Such a plan is also likely to improve the overall cost effectiveness of delivering library and information services in the long-term, since the University will be able to target its resources at providing those resources and services which are most needed by its users, thus eliminating or minimizing expenditure on those which are of little value.

It must not be overlooked, of course, that the University libraries serve users of all academic disciplines, and that a crucial first step is to conduct similar research,

or at least some form of wider consultation exercise, with non-social science scholars at Sultan Qaboos University. The overall aim of this research should be to develop a corresponding list of recommendations based on the needs and preferences of social science scholars in a range of academic disciplines, which can then be collated and prioritized as necessary in the construction of a master plan for the future development of the University's library and information services.

The recommendations arising from the current study into the information needs and information-seeking behavior of the University's social science scholars are as follows:

1. Develop and disseminate printed guidance, such as brochures or flyers, on the information resources available in the library, and on how to use specific resources such as electronic databases.
2. Develop and deliver training courses or seminars on information-searching using printed and non-printed resources.
3. Conduct user-needs analyses or consultations with academic departments in order to involve the user community in the development of the library collections.
4. Expand the main library's collection of printed material, especially up-to-date resources, including both English and Arabic-language resources, as well as foreign-published resources such as conference proceedings.
5. Improve the organization of printed resources within the library so that specific items can be located more easily.
6. Speed up the process of cataloging and shelving new printed library information resources.
7. Improve the speed and effectiveness of the inter-library loan service.

8. Purchase subscriptions to increase availability of access to electronic databases with full-text articles, which are available free-of-charge to users.
9. Locate free Internet-based resources such as Arabic journals and include links to these on the library website.
10. Establish a computer laboratory with multiple systems for Internet access within the library.
11. Investigate whether the Internet connection speed available within the University might be increased and take steps to do so if possible.
12. Investigate the possibility of implementing a computer network in which users can easily access the library system from their offices and homes.
13. Actively disseminate information to University faculty on new resources available in the library.
14. Train individual library and information specialists to provide tailored support to scholars within specific academic disciplines.
15. Investigate the possibilities for increasing the physical area occupied by the library to enable it to accommodate more print resources and information technology systems.

#### Limitations of the Study

All research projects are subject to limitations (i.e., threats to internal validity) and delimitations (i.e., threats to external validity, or the extent to which the results of the study are generalizable). This study has several primary limitations and delimitations.

Although the study was conducted in Sultan Qaboos University as an example of an academic setting in a developing country in the Middle East, it is not known to

what extent the findings can be generalized to social science scholars outside Sultan Qaboos University. The Middle East includes a wide diversity of different national cultures and socio-economic settings, which might influence information-seeking behavior and its outcomes.

The study is cross-sectional in design, and therefore changes over time in terms of how social science scholars access and use information for research and teaching purposes were not examined (with the exception of one interview question that directly asks the respondents to comment on changes over time).

The study examines only social science scholars. Scholars from other areas (e.g., engineering, medicine, agriculture, or sciences) were not included in the current study. Scholars from these other areas may have different ways of accessing and using information and, therefore, the generalizability of the findings from the current study to scholars in other areas cannot be assured. Subsequent research projects could focus on scholars from different subject areas in order to determine if the current results generalize to other areas.

Additionally, although a wide range of academic disciplines within the social sciences are covered in the research, there are a relatively large number of library and information science participants included in the study, particularly in the qualitative research samples. This may have resulted in an overall bias in the research findings, since Library and Information Science specialists might be expected to be better informed about information resources and more skilled in information-seeking practices than other types of social scientists. The findings indicate, however, that there are relatively few differences between respondents from different academic disciplines in their experiences of information-seeking and its outcomes, suggesting

that any bias resulting from an over-representation of library and information specialists is likely to be minimal.

What is more difficult to assess is the extent of any bias in the findings which results from the self-selection of respondents into the study. Although relatively good response rates were achieved in both the quantitative and qualitative stages, there are a fairly large number of potential respondents who did not take part, and it is not known whether these non-responders differ systematically from the respondents in their information-seeking behavior. For example, it is possible that social science scholars, who have relatively high levels of information-seeking skills or who spend more time on research-related information-seeking, were more interested in the study and more likely to take part.

Additionally, there is always the possibility in survey and interview research of this type that respondents will exaggerate their abilities and accomplishments and under-estimate the difficulties they have experienced in order to create a good impression. Conversely, it is sometimes the case that survey respondents will focus more on negative rather than positive experiences, taking the opportunity of the study to express any complaints or discuss any difficulties they have had. Overall, there appears to be little evidence that the study findings have been unduly biased in one direction or the other, as these include a good distribution of both positive and negative comments. However, the accuracy of self-completion questionnaire responses and interview data cannot be fully verified within the scope of a study such as this.

Finally, although the use of a conceptual framework based on previous models of information-seeking was essential in order that the study could achieve its specific objectives, it is also possible that the use of this framework in the design of the study

means that certain issues of importance to social science scholars in Oman were omitted. Steps were taken to ensure that this would not be the case by allowing respondents to mention any other factors which they felt were relevant to the study and by including in-depth as well as structured interviews and focus groups to allow them to consider their experiences in detail and flag any issues of importance.

The following section provides some suggestions for the form that future research in this area might take.

#### Further Research

This research has generated a conceptual model and research instruments that have been validated in survey and qualitative research with social science scholars in Sultan Qaboos University in Oman. As a next step, it would be helpful to conduct comparative research using the same model and research instruments in other Middle Eastern societies and in other developing countries. This would help to refine the theoretical basis of library and information science by demonstrating whether the findings of this study can indeed be generalized to these societies and whether the conceptual model is likely to have universal applicability.

There is a need more generally for up-to-date research into information-seeking within a range of academic disciplines, in order to update the field of knowledge about information-seeking to reflect the technological changes in recent decades, especially the development and widespread availability of the Internet and other electronic information sources. Both quantitative and qualitative research are needed in this area in order to generate statistically representative results which can be generalized to other groups of information-seekers, but also to explore the experiences of information-seeking from the unique perspectives of the information-seekers themselves.



This study used an information-seeking simulation exercise to provide in-depth research material on the detailed processes involved in information-seeking. This is an approach which has not been widely used in research on information-seeking but which was found to have significant value in focusing the minds of research participants on their usual information-seeking practices and on their feelings, thought processes, and reactions while seeking information. It is therefore recommended that the use of similar simulation exercises are adopted in future research in this area, particularly as a means of generating detailed information on both cognitive and emotional factors in relation to information-seeking.

Finally, libraries and other information services should conduct monitoring and evaluation of the effectiveness of specific resources, systems, or other forms of support intended to improve the information-seeking process. Very little evaluation research has been conducted in this area in the past, but this is vital in order to identify best practice in library and information services so they can be more widely adopted, increasing the overall cost effectiveness of providing such services. Such monitoring and evaluation projects should collect both statistical data on the use of the resources, systems, or services and on levels of satisfaction on the part of the users. In addition, qualitative data on issues such as user's specific experiences and their suggestions for improving the design or delivery of such products or services should be also collected.

#### Concluding Remarks

It is hoped that this study will make a major contribution to the future development of an expanded knowledge base which will underpin library and information science in the 21<sup>st</sup> century. Technological developments and improved affordability of international travel are helping to create a global, inter-linked community of academic scholars and other researchers who will increasingly be

aware of and will demand state-of-the art research and information resources and facilities. Yet, library and information science is still largely grounded in theories which were generated several decades ago, before the creation of the Internet and the development and widespread use of a wide range of computing facilities and electronic resources.

One surprising aspect of this study has been to demonstrate that, despite these changes in the global information-seeking environment, many fundamental aspects of information-seeking behavior, at least among social science scholars, have changed relatively little over time, despite the increase use of the Internet and other electronic resources. For example, social science scholars retain a preference for printed resources, while at the same time acknowledge the benefits which the increased availability of electronic resources bring their information-seeking. They exhibit a continued heavy reliance on informal sources of information such as the knowledge and expertise of their colleagues and other professional contacts. This evidence of continuing patterns of information seeking despite changes in the information-seeking environment helps to confirm that the library and information science discipline is grounded in theories and models which are generally robust and of continuing value. At the same time there is a clear need to modify these, as in the existing study, so they can be applied in the present-day information-seeking context and to a range of geographical and cultural information-seeking contexts.

The researcher gratefully acknowledges the co-operation of Sultan Qaboos University's management with regard to this study and hopes that the University and its faculty and students will benefit from the outcomes. In order for this to be realized, however, there will need to be a real commitment on the part of the University and, in particular its library and information services management and staff, to take note of

the research findings and the practical recommendations set out in this report and to take action accordingly. Overall, the Library and Information Services team should be congratulated for delivering a range of resources and systems with which the research respondents expressed general satisfaction, despite budgetary constraints and other difficulties, such as a relative lack of Arabic-language resources within the social science field. At the same time, the study has provided an opportunity to systematically investigate specific sources of *dissatisfaction* with current resources and services and to identify specific ways in which these might be improved. The findings can be used to target available resources for addressing these in order to improve the information-seeking environment and improve user satisfaction levels and also to support bids for additional resources for library and information services.

The study should be regarded not just as a valuable piece of research in its own right and as a significant contribution to knowledge in the field of information-seeking, but also as a remarkable step in an ongoing process of understanding and addressing the information-seeking practices and needs of scholars at Sultan Qaboos University, so that the University can itself become firmly established as a world-class teaching and research center in the Middle East and globally.

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## APPENDIX A

## Survey (English Version)

### Section 1. Demographic and Background Information

The first section of the questionnaire is designed to gather *demographic and background information* about you. Please answer each question by writing your answer or by circling the letter that best describes your answer. This information is confidential and will be used only in conjunction with research on this topic and reported in the aggregate format.

#### Part 1. Demographic Information

1. Gender? *Please circle as applicable* 
  - a Male**       **b Female**
2. Current Age: \_\_\_\_\_
3. Nationality? *Please circle as applicable* 
  - a Omani**       **b Other (Please Specify)** \_\_\_\_\_
4. Academic Rank? *Please circle as applicable* 
  - a Lecturer**                       **b Assistant Professor**
  - c Associate Professor**               **d Professor**
5. College: \_\_\_\_\_
6. Department: \_\_\_\_\_
7. Employment? *Please circle as applicable* 
  - a Tenure**                       **b Non-Tenure**
  - c Full Time**                       **d Visiting**
8. Number of years employed at SQU: \_\_\_\_\_
9. Number of years spent in developed nations: \_\_\_\_\_
10. Where did you receive your highest degree: \_\_\_\_\_

11. What is your major area of teaching: \_\_\_\_\_
12. What is your major field of research: \_\_\_\_\_
13. Do you publish research on a regular basis in journals or conference proceedings (at least every two years)?
- a Yes**                       **b No**
14. How many articles have you published in refereed journals or conference proceedings in the last 5 years: \_\_\_\_\_

### Part 2: Computer Use

15. Do you have a computer in your office at the university?
- a Yes**                       **b No**
16. Do you have a computer at home?
- a Yes**                       **b No**
17. About how many years have you owned a computer? \_\_\_\_\_
18. How would you classify your Internet skills? *Please circle as applicable*
- a Very Proficient**
- b Somewhat proficient**
- c Adequate**
- d Less than adequate**
19. How many hours per week do you use the Internet for research and teaching purposes? \_\_\_\_\_
20. If you use E-mail, for what purposes do you use it? *Please circle as applicable*
- a Personal Correspondence**
- b Students Correspondence**
- c Research**
- d Other (please specify) \_\_\_\_\_**
- d I do not use E-mail**

21. Where do you most frequently access the Internet? *Please circle as applicable*

<sub>a</sub> Office

<sub>b</sub> Home

<sub>c</sub> Library

<sub>d</sub> Internet Cafe

<sub>d</sub> Other (*please specify*) \_\_\_\_\_

22. If you have Internet at home, what is your Internet access? *Please circle as applicable*

<sub>a</sub> University Connection

<sub>b</sub> ADSL

<sub>c</sub> Cable Modem

<sub>d</sub> Other (*please specify*) \_\_\_\_\_

### Part 3: Library Use

23. If you delegate a portion of your library or database research to research assistant, what is the percentage? \_\_\_\_\_

24. On average, how many times per month do you physically visit SQU main library? \_\_\_\_\_

25. On average, how many times per month do you access SQU library catalog through the Internet? \_\_\_\_\_



## Section 2. Locate Relevant Information for Research and Teaching

The first section of the questionnaire is designed to gather information about *how you locate relevant information for research and teaching*. Please answer each question by circling the letter that best describes your answer. This information is confidential and will be used only in conjunction with research on this topic and reported in the aggregate format.

1. What types of information resources do you generally need to access? *Please circle all that apply*
  - a Books**
  - b Journals**
  - c Databases**
  - d Government documents**
  - e Dissertation**
  - f Conference proceedings**
  - g Audio-visual materials**
  - h Newspapers**
2. For the journals you access most often, do you generally? *Please circle only one*
  - a Read abstract**
  - b Skim each article**
  - c read each article in full**
  - d Skim each article for relevancy and read in full later**
  - e Browse the index for relevance articles**
3. How many hours per week do you spend searching for, skimming, or reading journal or newspaper articles, books, or Internet websites for *research purposes*? \_\_\_\_\_
4. How many hours per week do you spend searching for, skimming, or reading journal or newspaper articles, books, or Internet websites for *teaching purposes*? \_\_\_\_\_

5. When locating relevant electronic journal articles, do you most often: *Please circle all that apply*
- <sub>1</sub> E-mail a copy to myself
  - <sub>2</sub> Print a Copy
  - <sub>3</sub> Save a copy to the hard drive
  - <sub>4</sub> Save a copy to a portable medium
  - <sub>5</sub> Read it on screen
  - <sub>6</sub> Other (*please specify*)
5. When searching for answers to a specific non-research question (e.g. health care issues...) do you primarily: *Please circle only one*
- <sub>a</sub> Enter a general query into search engine
  - <sub>b</sub> Enter a specific query into a search engine
  - <sub>c</sub> Go to a topic specific webpage and perform a search from there
  - <sub>d</sub> Search academic databases
6. When searching for answers to a specific related questions do you primarily: *Please circle only one*
- <sub>a</sub> Enter a general query into search engine
  - <sub>b</sub> Enter a specific query into a search engine
  - <sub>c</sub> Go to a topic specific webpage and perform a search from there
  - <sub>d</sub> Search academic databases
7. When you find a relevant website, do you usually: *Please circle all that apply*
- <sub>a</sub> Bookmark the site
  - <sub>b</sub> E-mail the webpage link to myself
  - <sub>c</sub> Print the webpage
  - <sub>d</sub> Save the webpage to a disk
  - <sub>e</sub> Write the information needed down on paper or in a different computer document.

8. Please estimate how important each resource is to your research?

		Very unimportant	Unimportant	Neutral	Important	Very Important
1	Personal Collection	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>
2	Library Text	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>
3	Print Journals	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>
4	Electronic Journals	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>
5	Newspapers	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>
6	Government archives	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>
7	Non- government archives	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>
8	Internet Sources	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>
9	Fieldwork	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>
10	Colleagues	<input type="checkbox"/> <sub>a</sub>	<input type="checkbox"/> <sub>b</sub>	<input type="checkbox"/> <sub>c</sub>	<input type="checkbox"/> <sub>d</sub>	<input type="checkbox"/> <sub>e</sub>

### Section 3. Sources Used to Obtain Information

The third section of the questionnaire is designed to gather information about the *sources you use to obtain information*. Please answer each question by circling the letter that best describes your answer. This information is confidential and will be used only in conjunction with research on this topic and reported in the aggregate format.

1. What methods do you use to locate relevant research? *Please circle all that apply*

- <sub>a</sub> Browse print journals
- <sub>b</sub> Browse electronic journals
- <sub>c</sub> Browse the library catalog
- <sub>d</sub> Browse the stacks at the library
- <sub>e</sub> Browse relevant Internet site
- <sub>f</sub> Search bibliographies of relevant articles
- <sub>g</sub> Refer to books and periodicals in my collection
- <sub>h</sub> References from peers
- <sub>i</sub> Other (*please specify*) \_\_\_\_\_

2. Which language do you use when looking for information? *Please circle as applicable*

- <sub>a</sub> Arabic
- <sub>b</sub> English
- <sub>c</sub> Both Arabic and English
- <sub>d</sub> Other (*please specify*) \_\_\_\_\_

3. How many journals do you use on a regular basis (including print and electronic version)? \_\_\_\_\_

4. If you personally subscribe to any academic journals, how many do you subscribe to? \_\_\_\_\_

5. How do you obtain journal articles? *Please circle all that apply*

- a Personal print subscription**
- b Read library's copy**
- c Photocopy library's copy**
- d Personal subscription to electronic version**
- e Read library's electronic version**
- f Interlibrary loan**
- g Free electronic version**
- h Document delivery service**
- i Colleagues**
- j Other (please specify) \_\_\_\_\_**

6. If you use archival materials, how do you generally access them? *Please circle all that apply*

- a Viewing documents at the university library**
- b Interlibrary loan/document retrieval**
- c Government websites**
- d Academic websites**
- e General knowledge websites**
- f Microfilm/microfiche**
- g Visiting offsite locations to view print documents**
- h Other (please specify) \_\_\_\_\_**

7. How important are non-Internet electronic resources to your research or class preparation?

- a Vital**
- b Very important**
- c Somewhat important**
- d Not very important**
- e Not relevant**

8. Which electronic database are you aware of? *Please circle all that apply*

**a PsychInfo**

**b ProQuest**

**c EbscoHost**

**d Lexis**

**e ERIC**

**f LISA**

**g Dissertation Abstract**

**h SCOPUS**

**i Other (please specify) \_\_\_\_\_**

10. Which electronic database do you generally use? *Please circle all that apply*

**a PsychInfo**

**b ProQuest**

**c EbscoHost**

**d Lexis**

**e ERIC**

**f LISA**

**g Dissertation Abstract**

**h SCOPUS**

**i Other (please specify) \_\_\_\_\_**

**j Do not Use. Why? (please specify the reasons) \_\_\_\_\_**

11. If you given the choice between examining the same document in print form or electronic form, which would you prefer?

**a Print**

**b Electronic**

12. Please indicate the most five library resources you currently use?
- <sub>a</sub> Non-reference books
  - <sub>b</sub> reference books
  - <sub>c</sub> Print journals
  - <sub>d</sub> Electronic journals
  - <sub>e</sub> Archives
  - <sub>f</sub> Computer lab
  - <sub>g</sub> Audiovisual equipment
  - <sub>h</sub> DVD/VHS
  - <sub>i</sub> CD/LP/cassette audio tapes
  - <sub>j</sub> Reserves
  - <sub>k</sub> Electronic databases
  - <sub>l</sub> Newspapers (online or print)
  - <sub>m</sub> Interlibrary loan or document retrieval
  - <sub>n</sub> Reference services
  - <sub>o</sub> Other (*please specify*) \_\_\_\_\_
13. Please indicate the most five non-library resources you currently use for research or class preparation?
- <sub>a</sub> Personal monograph collection
  - <sub>b</sub> Bibliographies
  - <sub>c</sub> Print journals
  - <sub>d</sub> Electronic journals
  - <sub>e</sub> Government or institution archives
  - <sub>f</sub> Internet
  - <sub>g</sub> DVD/VHS
  - <sub>h</sub> CD/LP/cassette audio tapes
  - <sub>i</sub> Newspapers (online or print)
  - <sub>j</sub> Internet databases
  - <sub>k</sub> Other university's libraries
  - <sub>l</sub> Other non-university libraries

14. Please rank the following methods of seeking information in your field you prefer to follow. (please read the methods listed below and place a "1" next to the method you most prefer; a "2" next to your second-most-preferred method; etc.)

	<b>Methods of seeking information</b>	<b>Rank</b>
<b>1</b>	<b>Asking librarians or information specialists</b>	
<b>2</b>	<b>Attending conferences and meetings</b>	
<b>3</b>	<b>Reading conference and meeting papers</b>	
<b>4</b>	<b>Reading professional journals in my field</b>	
<b>5</b>	<b>Reading textbooks in my field</b>	
<b>6</b>	<b>Searching bibliographic databases</b>	
<b>7</b>	<b>Talking to colleagues or experts in my own department</b>	
<b>8</b>	<b>Using an Internet search engine</b>	
<b>9</b>	<b>Writing to a colleague or expert at another university</b>	



#### Section 4. Use of Electronic and Print Resources

The fourth section of the questionnaire is designed to gather information about your *use of electronic and print resources for research and teaching*. Please answer each question by circling the letter that best describes your answer. This information is confidential and will be used only in conjunction with research on this topic and reported in the aggregate format.

1. Which of the following do you consider to be your *primary* source of information for *undergraduate* teaching? *Please circle all that apply*
  - <sub>a</sub> Electronic monographs
  - <sub>b</sub> Electronic textbooks
  - <sub>c</sub> Electronic journals
  - <sub>d</sub> Electronic preprints
  - <sub>e</sub> Electronic conference proceedings
  - <sub>f</sub> Print monographs
  - <sub>g</sub> Print textbooks
  - <sub>h</sub> Print journals
  - <sub>i</sub> Print preprints
  - <sub>j</sub> Print conference proceedings
  
2. Which of the following do you consider to be your *primary* source of information for *graduate* teaching? *Please circle all that apply*
  - <sub>a</sub> Electronic monographs
  - <sub>b</sub> Electronic textbooks
  - <sub>c</sub> Electronic journals
  - <sub>d</sub> Electronic preprints
  - <sub>e</sub> Electronic conference proceedings
  - <sub>f</sub> Print monographs
  - <sub>g</sub> Print textbooks
  - <sub>h</sub> Print journals
  - <sub>i</sub> Print preprints
  - <sub>j</sub> Print conference proceedings

3. Which of the following do you consider to be your *primary* source of information for *current research in your field*? Please circle all that apply
- a Electronic monographs**
  - b Electronic textbooks**
  - c Electronic journals**
  - d Electronic preprints**
  - e Electronic conference proceedings**
  - f Print monographs**
  - g Print textbooks**
  - h Print journals**
  - i Print preprints**
  - j Print conference proceedings**
4. Which of the following do you consider to be your *primary* source of information for *previous research in your field*? Please circle all that apply
- a Electronic monographs**
  - b Electronic textbooks**
  - c Electronic journals**
  - d Electronic preprints**
  - e Electronic conference proceedings**
  - f Print monographs**
  - g Print textbooks**
  - h Print journals**
  - i Print preprints**
  - j Print conference proceedings**

### Section 5. Barriers to Information Seeking

The fifth section of the questionnaire is designed to gather information about *barriers to your information seeking*. Please answer each question by circling the letter that best describes your answer. This information is confidential and will be used only in conjunction with research on this topic and reported in the aggregate format.

1. Were you ever offered training (formal or informal) on how to use the databases available through the university library?
  - a Yes**
  - b No**
  
2. If yes, what kind of training were you offered? *Please circle all that apply*
  - a Demonstration by social sciences staff or faculty**
  - b Instructional brochure or flyer**
  - c Seminar taught by library staff for faculty members**
  - d Seminar taught by library staff to a class of students**
  - e Informal personal assistance by library staff**
  - f Demonstrations directly from database representatives or through the help files in databases themselves**
  - g Other (please specify) \_\_\_\_\_**
  
3. If were offered and accepted training (formally and informally) from library staff, did it:
  - a Greatly increase search productivity**
  - b Somewhat increase search productivity**
  - d Have no affect on search productivity**
  - d Decreased search productivity**

4. What types of training materials would you find helpful? *Please circle all that apply*
- a Brochures on effective searching for each database**
  - b Seminars offered to faculty on effective use of library resources (non-electronic)**
  - c Seminars offered to faculty on effective use of library resources (electronic)**
  - d Seminar offered to your classes on effective use of library resources (both electronic and non-electronic)**
  - e Other (please specify) \_\_\_\_\_**
5. What types of library resources would you like to see in the future? *Please circle all that apply*
- a More databases**
  - b Expanded book collection (both print and electronic)**
  - c Expanded journal access (both print and electronic)**
  - d More archival materials in print form**
  - e More archival materials in electronic form**
  - f More newspapers**
  - g Expanded reference services**
6. How confident are you in the accuracy of electronic academic resources (such as peer-reviewed journals, digital documents, etc.)?
- a Very confident**
  - b Somewhat confident**
  - c Somewhat skeptical**
  - d Very Skeptical**

- A copy of the results will be available upon request. If you request to have a copy of the study results, please provide your e-mail or contact information below:

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Your participation to this survey is greatly appreciated

Researcher: Mohammed Nasser Al-Suqri  
 School of Library and Information Management  
 Emporia State University  
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## APPENDIX B

## Survey (Arabic Version)

سلوك الباحثين واحتياجاتهم من المعلومات في مجال العلوم الاجتماعية  
بجامعة السلطان قابوس في سلطنة عمان

## القسم الأول: البيانات والخبرة الشخصية

يهدف القسم الأول من هذه الإستبانة إلى جمع بياناتك الشخصية وخبرتك فيما يتعلق بالبحث عن المعلومات. الرجاء الإجابة في الفراغات المحددة أو الإشارة بعلامة (☑) على الرمز الذي يعبر عن إجابتك. هذا ونؤكد لكم بأن جميع المعلومات التي سوف تساهمون بها سوف تحاط بالسرية التامة ولن تستخدم إلا لغرض البحث العلمي في هذا الموضوع.

## الجزء الأول: البيانات الشخصية

1. الجنس:  ذكر  أنثى
2. العمر: .....
3. الجنسية:  عماني  أخرى (الرجاء تحديدها) .....
4. الوظيفة الأكاديمية:  
 محاضر  أستاذ مساعد  
 أستاذ مشارك  أستاذ
5. الكلية التي تنتسب إليها: .....
6. القسم الذي تنتمي إليه: .....
7. طبيعة عملك:  
 يعقد  بغير عقد  
 أستاذ دائم  أستاذ زائر
8. عدد السنوات التي قضيتها بالعمل في جامعة السلطان قابوس: .....
9. كم عدد السنوات التي قضيتها في الدول المتقدمة؟ .....
10. أين أنجزت شهادتك الجامعة العليا؟ .....
11. ما هو مجال تدريسيك الرئيس؟ .....
12. ما هو مجال بحثك الرئيس؟ .....
13. هل تنشر أبحاثك على فترات منتظمة في دوريات محكمة أو نشرات المؤتمرات (على سبيل المثال كل عامين)؟

نعم  لا

14. كم عدد المقالات العلمية التي نشرتها في الدوريات المحكمة في آخر 5 سنوات؟ .....

الجزء الثاني: استخدام الحاسب الآلي

15. هل يتوفر لديك حاسب آلي في مكتبك بالجامعة؟  
 نعم  لا

16. هل يتوفر لديك حاسب آلي في المنزل؟  
 نعم  لا

17. كم سنة مضت على اقتناء حاسبك الشخصي؟ .....

18. ما هو مستوى مهاراتك في استخدام الإنترنت؟  
 عاليا جدا  عاليا نوعا ما  
 مقبولة  أقل من المقبول

19. كم مرة تستخدم الإنترنت خلال الأسبوع لأغراض البحث والتدريس؟ .....

20. إذا كنت تستخدم البريد الإلكتروني، حدد الأغراض التي تستخدمه فيها؟ (يمكن اختيار أكثر من إجابة)

التعاملات الشخصية  الاتصال بالطلاب  
 البحث  استخدامات أخرى (الرجاء تحديدها) ....

21. أي الأماكن أو المواقع تستخدم معظم الأحيان في الاتصال بالإنترنت؟

المكتب  البيت  
 المكتبة  مقهى الإنترنت  
 أخرى (الرجاء تحديدها) .....

22. إذا كان لديك اتصال بالإنترنت في البيت، ما نوع هذا الاتصال؟

شبكة الجامعة  خطوط الهاتف  
 الإنترنت السريع ADSL  بواسطة المودم  
 أخرى (الرجاء تحديدها) .....

الجزء الثالث: استخدام المكتبة

23. إذا كنت تسند جزء من بحثك في المكتبة أو قواعد البيانات إلى مساعد باحث، ما النسبة المئوية للعمل الذي تسنده إليه؟ .....

24. في المتوسط، كم مرة في الشهر تقوم بزيارة مكتبة الجامعة؟ .....

25. في المتوسط، كم مرة في الشهر تقوم بتصفح فهرس مكتبة الجامعة المتاح عبر الإنترنت؟ .....

### القسم الثاني: طريقة الوصول إلى المعلومات المناسبة

يهدف القسم الثاني بجمع البيانات المتعلقة بطريقة وصولك إلى المعلومات المناسبة ضمن مصادر المعلومات لبحثك أو للتدريس. الرجاء الإجابة في الفراغات المحددة أو الإشارة بعلامة (☑) على الرمز الذي يعبر عن إجابتك. هذا ونؤكد لكم بأن جميع المعلومات التي سوف تساهمون بها سوف تحاط بالسرية التامة ولن تستخدم إلا لغرض البحث العلمي في هذا الموضوع.

1. ما مصادر المعلومات التي تحتاج إلى تصفحها والإطلاع عليها (اختر كل الإجابات المناسبة).

- الكتب
- الدوريات
- قواعد البيانات
- الوثائق الحكومية
- الرسائل الجامعية
- أعمال المؤتمرات
- المواد السمعية البصرية
- الصحف

2. ما هو الأسلوب الذي تتبعه غالباً في استخدامك للدوريات ذات العلاقة بمجال تخصصك (اختر إجابة

واحدة فقط)؟

- قراءة الملخص
- قراءة النقاط ذات الأهمية
- قراءة المقال بالكامل
- قراءة النقاط المهمة في المقالة ومن ثم قراءتها كاملاً فيما بعد
- تصفح الكشاف لقراءة مقالات أخرى ذات علاقة بالموضوع

3. كم ساعة تقضي كل أسبوع للبحث أو التصفح السريع، أو قراءة مقالات الدوريات والصحف اليومية

والكتب ومواقع الإنترنت بهدف الإعداد للبحث؟ .....

4. كم ساعة تقضي كل أسبوع للبحث أو التصفح السريع عن المعلومات، أو قراءة مقالات الدوريات

والصحف اليومية والكتب ومواقع الإنترنت بهدف التدريس؟ .....

5. كيف تتعامل مع مقالات الدوريات الإلكترونية بعد استرجاعك لها؟ (يمكنك اختيار أكثر من إجابة)

- إرسالها إلى بريدك الإلكتروني
- طباعتها
- حفظها في جهاز الحاسب
- حفظها في وسائط التخزين
- قراءتها على شاشة الكمبيوتر
- أخرى؟ (الرجاء تحديدها) .....

6. عند رغبتك في الحصول على إجابات لأسئلة لا تتعلق ببحثك (على سبيل المثال البحث عن معلومات في الصحة)، أي من الطرق التالية تتبعها للحصول على هذه الإجابات: (اختر إجابة واحدة فقط)

طباعة تساؤل عام في محرك بحث  طباعة تساؤل دقيق في محرك البحث

الذهاب إلى مواقع متخصصة والبحث فيها  البحث في قواعد البيانات

7. عند رغبتك في الحصول على إجابات لأسئلة تتعلق ببحثك، أي من الطرق التالية تتبعها للحصول على هذه الإجابات ( اختر إجابة واحدة فقط)

طباعة تساؤل عام في محرك بحث

طباعة تساؤل دقيق في محرك البحث

الذهاب إلى مواقع متخصصة والبحث فيها

البحث في قواعد البيانات الأكاديمية

8. كيف تتعامل مع مواقع وصفحات الويب ذات العلاقة باهتماماتك البحثية (يمكن اختيار أكثر من إجابة)

حفظ العنوان على المفضلة (Favorite)

إرسال رابط الصفحة إلى بريدك الإلكتروني

طباعة صفحة الويب

حفظ الصفحة في قرص مرن

كتابة المعلومات التي تحتاجها في ورقة خارجية أو كتابتها في برنامج آخر (مثلا: الورد)

9. الرجاء حدد أهمية مصادر المعلومات التالية بالنسبة لبحوثك؟

الأهمية	غير مهمة جدا	غير مهمة	محايد	مهمة	مهمة جدا
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



القسم الثالث: استخدام مصادر المعلومات

يهدف القسم الثالث إلى جمع البيانات ذات العلاقة بمصادر المعلومات التي تستخدمها عند حاجتك للمعلومات. الرجاء الإجابة في الفراغات المحددة للإجابة أو الإشارة بعلامة (☑) على الرمز الذي يعبر عن إجابتك. هذا ونؤكد لكم بأن جميع المعلومات التي سوف تساهمون بها سوف تحاط بالسرية التامة ولن تستخدم إلا لغرض البحث العلمي في هذا الموضوع.

1. ما الأسلوب الذي تتبعه للحصول على معلومات تتعلق ببحثك (اختر جميع الإجابات المناسبة)؟

- تصفح الدوريات المطبوعة
- تصفح الدوريات الإلكترونية
- تصفح الفهرس الآلي للمكتبة
- تصفح مجموعات المكتبة
- تصفح مواقع الإنترنت ذات العلاقة
- البحث في البليوغرافيات المتخصصة
- البحث في مجموعاتك الخاصة من الكتب والدوريات
- مراجع من الزملاء
- أخرى (الرجاء ذكرها) .....

2. ما اللغة التي تستخدمها عند البحث عن المعلومات؟

- اللغة العربية
- اللغة الإنجليزية
- أخرى (الرجاء تحديدها) .....

3. كم عدد الدوريات العلمية التي تحرص على استخدامها بانتظام (تتضمن الدوريات المطبوعة

والدوريات الإلكترونية)؟ .....

4. إذا كنت مشترك في دوريات أكاديمية، كم عدد هذه الدوريات؟ .....

5. ما الطريقة التي تتبعها لطلب مقالات الدوريات (اختر جميع الإجابات المناسبة)؟

- بالاشتراك في الدوريات المطبوعة
- قراءة النسخة الموجودة بالمكتبة
- نسخ المقال من الدوريات الموجودة بالمكتبة
- بالاشتراك في النسخة الإلكترونية
- قراءة النسخة الإلكترونية الموجودة بالمكتبة
- عن طريق الإعارة المتبادلة بين المكتبات
- تصفح الدوريات الإلكترونية المجانية
- عن طريق خدمة إرسال المقالات
- عن طريق طلبه من الزملاء
- أخرى (الرجاء تحديدها) .....

6. ما الطريقة التي تتبعها عند حاجتك لاسترجاع وثائق قديمة (اختر جميع الإجابات المناسبة)؟

- مشاهدتها من مكتبة الجامعة
- طلبها عن طريق خدمة إرسال الوثائق أو الإعارة المتبادلة
- تصفحها من المواقع الحكومية
- تصفحها من المواقع الأكاديمية
- تصفحها من المواقع العامة
- تصفحها باستخدام الميكروفيلم أو الميكروفيش
- زيارة مواقع الأرشيفيات لمشاهدة الوثائق المطبوعة
- أخرى (الرجاء تحديدها) .....

7. ما مدى أهمية مصادر المعلومات المختلفة (غير الإنترنت) لبحثك أو للإعداد للمحاضرات الأكاديمية؟

- ضرورية
- أساسية
- مهمة إلى حد ما
- ليست مهمة
- لا علاقة لها

8. اختر قواعد البيانات التي أنت على علم بوجودها (اختر جميع الإجابات المناسبة)؟

- PsychInfo
- ProQuest
- EbscoHost
- Lexis
- ERIC
- LISA
- Dissertation Abstract
- SCOPUS
- أخرى (الرجاء تحديدها) .....

9. ما قواعد البيانات التي تستخدمها بشكل دائم (اختر إجابة واحدة فقط)؟

PsychInfo

ProQuest

EbscoHost

Lexis

ERIC

LISA

Dissertation Abstract

SCOPUS

أخرى (الرجاء تحديدها): .....

لا استخدم قواعد البيانات (الرجاء ذكر الأسباب) .....

10. لو أعطيت الخيار للحصول على وثيقة مطبوعة أو إلكترونية، فأيهما تفضل؟

المطبوعة

الإلكترونية

11. حدد من بين القائمة التالية أكثر خمس مصادر معلومات من المكتبة تستخدمها حالياً للبحث

وإعداد المحاضرات؟

الكتب الغير مرجعية

الكتب المرجعية

الدوريات المطبوعة

الدوريات الغير مطبوعة

الأرشيف

معمل الحاسب الآلي

المواد السمعية والبصرية

الأقراص الممغنطة VHS \ DUD

الأقراص الممغنطة LP, CD

المواد المحجوزة وأشرطة الفيديو والكاسيت

قواعد البيانات الإلكترونية

الصحف المطبوعة و الإلكترونية

الإعارة المتبادلة أو الوثائقي

الخدمات المرجعية المسترجعة

أخرى (الرجاء تحديدها) .....

12. حدد من بين القائمة التالية أكثر خمس مصادر معلومات ليست من المكتبة تستخدمها حالياً للبحث وإعداد المحاضرات؟

- مجموعاتك ووثائقك الشخصية
- الببليوغرافيات
- الدوريات المطبوعة
- الدوريات الإلكترونية
- الأرشيف الحكومي وأرشيف المعاهد و الجامعات
- الإنترنت
- المواد السمعية والبصرية
- الأقراص الممغنطة / VHS
- الأقراص الممغنطة LP, CD وأشرطة الفيديو والكاشف
- قواعد البيانات الإلكترونية
- الصحف المطبوعة و الإلكترونية
- مكتبات الجامعات الأخرى
- مصادر أخرى ليست من مكتبات جامعية

13. الرجاء ترتيب الأساليب التالية لطلب المعلومات في مجال تخصصك حسب الأفضلية ؟  
(الرجاء وضع رقم 1 أمام الأسلوب الذي تفضله أولاً والرقم 2 أمام الأسلوب الذي تفضله ثانياً وهكذا):

الترتيب	أسلوب طلب المعلومات
1	سؤال أحد المكتبيين أو المتخصصين في مجال المعلومات <input type="checkbox"/>
2	حضور مؤتمر أو لقاء علمي <input type="checkbox"/>
3	قراءة أوراق المؤتمرات واللقاءات العلمية <input type="checkbox"/>
4	قراءة الدوريات المتخصصة المحكمة <input type="checkbox"/>
5	قراءة الكتب الدراسية في مجال تخصصي <input type="checkbox"/>
6	البحث في قواعد البيانات الببليوغرافية <input type="checkbox"/>
7	الحديث مع أحد الزملاء أو الخبراء في القسم الذي أعمل به <input type="checkbox"/>
8	البحث في محركات البحث المتاحة عبر الانترنت <input type="checkbox"/>
9	الكتابة إلى أحد الزملاء أو الخبراء من جامعة أخرى <input type="checkbox"/>

### القسم الرابع: استخدام مصادر المعلومات المطبوعة والإلكترونية

يهدف الجزء الرابع إلى جمع معلومات تتعلق باستخدام مصادر المعلومات المطبوعة والإلكترونية لأهداف بحثية وتدرسية. الرجاء الإجابة في الفراغات المحددة للإجابة أو الإشارة بعلامة (☑) على الرمز الذي يعبر عن إجابتك. هذا ونؤكد لكم بأن جميع المعلومات التي سوف تساهمون بها سوف تحاط بالسرية التامة ولن تستخدم إلا لغرض البحث العلمي في هذا الموضوع.

1. أي مصادر المعلومات التالية يعتبر أساسي بالنسبة إليك لتدريس طلبة البكالوريوس؟  
( اختر إجابة واحدة فقط )

- الكتب الإلكترونية
- الكتب الدراسية الإلكترونية
- الدوريات الإلكترونية
- المطبوعات الإلكترونية
- وثائق المؤتمرات الإلكترونية
- الكتب المطبوعة
- الكتب الدراسية المطبوعة
- الدوريات المطبوعة
- المطبوعات غير المنشورة
- وثائق المؤتمرات المطبوعة

2. إذا كنت تدرس طلبة الدراسات العليا، أي مصادر المعلومات التالية يعتبر مصدرا أوليا بالنسبة إليك لتدريس طلبة الدراسات العليا؟ ( اختر إجابة واحدة )

- الكتب الإلكترونية
- الكتب الدراسية الإلكترونية
- الدوريات الإلكترونية
- المطبوعات الإلكترونية
- وثائق المؤتمرات الإلكترونية
- الكتب المطبوعة
- الكتب الدراسية المطبوعة
- الدوريات المطبوعة
- المطبوعات غير المنشورة
- وثائق المؤتمرات المطبوعة

3. أي مصادر المعلومات التالية يعتبر مصدرا أوليا بالنسبة إليك للتعرف على آخر البحوث الجارية في مجال تخصصك؟ ( اختر إجابة واحدة فقط)

- الكتب الالكترونية
- الكتب الدراسية الالكترونية
- الدوريات الالكترونية
- المطبوعات الالكترونية
- وثائق المؤتمرات الالكترونية
- الكتب المطبوعة
- الكتب الدراسية المطبوعة
- الدوريات المطبوعة
- المطبوعات غير المنشورة
- وثائق المؤتمرات المطبوعة

4. أي مصادر المعلومات التالية يعتبر مصدرا أوليا بالنسبة إليك للتعرف على البحوث السابقة في مجال تخصصك؟ (اختر إجابة واحدة فقط)

- الكتب الالكترونية
- الكتب الدراسية الالكترونية
- الدوريات الالكترونية
- المطبوعات الالكترونية
- وثائق المؤتمرات الالكترونية
- الكتب المطبوعة
- الكتب الدراسية المطبوعة
- الدوريات المطبوعة
- المطبوعات غير المنشورة
- وثائق المؤتمرات المطبوعة

### القسم الخامس: العقبات والصعوبات

يهدف الجزء الخامس على جمع معلومات حول الصعوبات التي تقف عائقاً لطلبك للمعلومات. الرجاء الإجابة في الفراغات المحددة للإجابة أو الإشارة بعلامة (☑) على الرمز الذي يعبر عن إجابتك. هذا ونؤكد لكم بأن جميع المعلومات التي سوف تساهمون بها سوف تحاط بالسرية التامة ولن تستخدم إلا لغرض البحث العلمي في هذا الموضوع.

1. هل تلقيت أية تدريبات تتعلق باستخدام قواعد البيانات الإلكترونية المتاحة عبر موقع مكتبة الجامعة؟

نعم  لا

2. إذا كانت الإجابة بنعم في السؤال السابق، ما نوع التدريب الذي تلقيته؟ ( اختر جميع الإجابات المناسبة)

شرح بواسطة موظف أو أكاديمي متخصص في العلوم الاجتماعية

تعليمات مطبوعة على شكل مطويات أو منشورات

حلقة نقاش نظمت بواسطة موظفي المكتبة لاجتماع هيئة التدريس

حلقة نقاش نظمت بواسطة موظفي المكتبة للطلبة

تدريب غير رسمي من قبل احد موظفي المكتبة

قراءة التعليمات التي توفرها قواعد البيانات الإلكترونية

الإستعانة بملف Help في قواعد البيانات نفسها

أخرى (الرجاء ذكرها): .....

3. في حالة دخولك أي دورات تدريبية من تنظيم موظفي المكتبة، ما هو تقييمك لمدى فائدة مثل هذه الدورات؟

مفيدة جدا وساعدتني على زيادة إنتاجي البحثي

مفيدة إلى حد ما وساعدتني على زيادة إنتاجي البحثي

لم تساعدني مطلقا في زيادة إنتاجي البحثي

قلت من إنتاجي البحثي

4. أي نوع من التدريبات التالية تشعر بأنه أكثر فائدة؟ ( اختر جميع الإجابات المناسبة)

مطويات تشرح كيفية استخدام قواعد البيانات

حلقات نقاش موجهة للأكاديميين حول استخدام مصادر المكتبة المطبوعة

حلقات نقاش موجهة للأكاديميين حول استخدام مصادر المكتبة الإلكترونية

حلقات نقاش موجهة لطلبتك الدارسين حول استخدام مصادر المكتبة المطبوعة والإلكترونية

أخرى ( برجاء ذكرها): .....

5. أي من مصادر المكتبة المختلفة ترغب في إضافتها أو استحداثها في المكتبة مستقبلاً؟ ( اختر جميع الإجابات المناسبة)

- المزيد من قواعد البيانات
- المزيد من الكتب
- المزيد من الدوريات
- المزيد من الوثائق الأرشيفية المطبوعة
- المزيد من الوثائق الأرشيفية الإلكترونية
- المزيد من الصحف الأرشيفية
- المزيد من الخدمات المرجعية
6. ما مدى ثقتك في مصادر المعلومات الأكاديمية الإلكترونية؟

- أتق فيها جيداً
- أتق فيها إلى حد ما
- أشك فيها إلى حد ما
- أشك جداً فيها

- إذا كنت ترغب في الحصول على نسخة من نتائج الدراسة، الرجاء وضع عنوانك الإلكتروني أو عنوانك البريدي.

شكراً لك كثير على حسن تعاونك في الإجابة على الإستبانة

الباحث: محمد بن ناصر الصقري

School of Library and Information Management  
Emporia State University  
E-mail: malsuqri@emporia.edu



## APPENDIX C

### The Interview Guide (E-mail and Face-to-face)

**Title of Research Project:** Information Needs and Seeking Behavior of Social Science Scholars at Sultan Qaboos in Oman

**Researcher:** Mohammed Nasser Al-Suqri

#### Section 1: Demographic Information

1. Would you please introduce yourself, your gender, your college and department, your area of specification, and your native language?

#### Section 2: Use and Types of Information Resources

2. Please describe to me the types of information resources that are available to you in the University library?
3. How have research methods and information access changed since you began researching? How have these changes impacted your research?
4. Thinking about the sources of information that you normally use in your research, please tell me why you normally use these and what their advantages and disadvantages are?
5. How do you think the information resources available at Sultan Qaboos University library could be improved?
6. What are the implications for you when you are unable to find the information resources that you need for your work? How does this situation make you feel?
7. What could Sultan Qaboos University do to make information-seeking a more satisfying and enjoyable experience for you?

#### Section 3: Barriers

8. Do you feel the university library (not including databases) has sufficient materials to support your research? If no, what types of materials would improve your research experience?
9. How comfortable do you feel using library resources? Would additional classroom training or informational brochures help improve your use of the library resources? Why or why not?

10. In the previous survey, you estimated the importance of various information resources. Are there any barriers to obtaining these resources? If so, what are they? (for example, not knowing how to use the library resources, not sure where to locate sources).
11. Are there any barriers external to the library that prevent you from doing research or make it significantly more difficult? What are those barriers?
12. Thinking about your classroom experiences, how would you say most of your students conduct research? (for example, do they demonstrate a skilled understanding of locating resources? Too many Internet citations? Unusual citations?).

#### **Section 4: The Information Seeking Process**

13. When you begin searching for information for research purposes, how do you start your research process? Do you have quite a specific idea of what information you require, or are you scanning in your field (for new information)?
14. If you start with a specific idea, do you expect to find something on that specific topic or just something similar?
15. When searching for information for research purposes, to what extent do you usually rely on first-hand information such as personal experiences, your own resources or advice from colleagues? Are these generally important or unimportant in your information seeking?
16. Do you regularly monitor newspapers, journals and other sources for information relating to your specific areas of research? How?
17. Can you please describe briefly how you organize and store the information that you collect in the course of your research?
18. When you find useful sources of information, such as journal articles or books, how do you generally locate relevant information in them? For example, do you usually just skim them, read relevant parts only, or read the whole resource? Please describe the process you normally undertake.
19. Do you generally print Electronic resources for use in your research, or save or read them in electronic format?
20. Do you usually take action to obtain relevant resources as soon as you find them (e.g. by ordering books or articles or by printing electronic material) or do you usually wait until your search is complete and then obtain copies of the resources?
21. At the end of the information seeking process, what do you do with that information (produce a paper, book, conference presentation, or class lecture) please explain?

## APPENDIX D

### The Focus Group Guide

**Title of Research Project:** Information Needs and Seeking Behavior of Social Science Scholars at Sultan Qaboos in Oman

**Researcher:** Mohammed Nasser Al-Suqri

- 1) As best as possible, describe the steps you use to obtain information about the following topic .....
- 2) Thinking of the databases you normally use, what is it about those databases that appeals to you (for example, accuracy, ease of use, etc.)? Are there any barriers to use these databases
- 3) Describe how you would locate relevant research information using the Internet, and what criteria do you use for evaluating Internet resources?

APPENDIX E  
Coding Scheme

Areas of Interest	Main themes	Sub-themes
<b>KNOWLEDGE, OPINIONS AND FEELINGS</b>	Awareness of resources available in library	Print
		Electronic
		Other specified types
	Perceived changes over time in information seeking	Resources
		Methods
		Impact on searching
	All types of resources used	Printed books and journals
		Electronic journals
		On-line databases
		Personal collections
		Colleagues
	Implications of being unable to find resources	Feelings
		Actions
<b>BARRIERS TO INFORMATION SEEKING</b>	Views on adequacy of library resources	Positive
		Negative
		Specific issues
	Perceived own proficiency in use of library	Level of comfort
		Value of training
	Perceived student proficiency in research	
	Library-related barriers to effective research, and how to overcome these	Resource-related
		IT related
		Organizational
		Solutions
	Other barriers to effective research	IT-related
		Time-related
		Language/Culture-related
Other		
<b>THE SEEKING BEHAVIOR PROCESS</b>	Initiation	Consideration
		Preparation
		Expectations
	Exploration	Prioritization of sources
		Informal v formal sources
		Familiarity and knowledge
		Overcoming barriers

		Keyword searches
Monitoring		Types of resources
		Pro-activity
Categorization		Print resources
		Electronic resources
Sifting		Extracting
		Revisiting
Resources Selection		Judge
		Quality
		Validity
		Well-known
Collection		Print/Electronic
		Timing
Ending		Importance of pre-defining
		Specific outputs

## APPENDIX F

**Informed Consent to Participate in a Dissertation  
(English Questionnaire Survey)**

**Title of Research Project:** Information Needs and Seeking Behavior of Social Science Scholars at Sultan Qaboos University in Oman.

My name is Mohammed Nasser Al-Suqri. I am a doctoral student at Emporia State University's School of Library and Information Management.

You are being asked to participate in a research study investigating the information needs and information-seeking behavior of social science faculty at Sultan Qaboos University. This study is intended to (1) explore the ways in which social science scholars at this university locate and use relevant information for their research and teaching needs; (2) identify the formal and informal sources of information and electronic resources utilized by social science scholars in this university and (3) investigate the barriers to effective information-seeking. The results of this study will provide library managers with a better understanding of the ways in which they can support social science faculty in the University, including the types of information resources, training and assistance needed. The study will also provide a foundation for further research on academic information needs and information-seeking in Arab countries, which is needed to help ensure that libraries and other information services meet the needs of scholars in this region.

If you decide to participate, you will be sent a questionnaire for self-completion. This will include questions on your demographic characteristics and your academic work, your patterns of use of various electronic and non-electronic sources of information, and any difficulties you have experienced in meeting your information needs. The questionnaire will be in paper format and most of the questions will just require you to tick a box in response, or to write a short answer. You will be asked to complete the

questionnaire within a two week period, and return it to the researcher. Depending on your answers, you might be sent some follow up and clarifying questions, but you are under no obligation to answer these.

There is no potential risk to you as a subject. Your identity will be completely confidential, and will not be revealed either in terms of the fact that you participated in this study or in terms of your specific answers. The researcher and his committee members will only have access to the data. Surveys will be assigned a code number to conceal your identity and they will be stored in a locked cabinet.

Your participation in this study is entirely voluntary and that there will be no negative consequences if you decided not to participate or decided to participate but withdraw from the study at a later time.

You are welcome to ask any question at any time. If you have any question or would like to know more about this study, please contact the researcher at [malsuqri@stumail.emporia.edu](mailto:malsuqri@stumail.emporia.edu) or the chair of the dissertation committee, Dr. Linda Lillard at [llillard@emporia.edu](mailto:llillard@emporia.edu)

Please sign this form to show that you have agreed to volunteer as a research participant in this dissertation and that you have read and understood its contents.

Please keep a copy of this consent form for your records.

\_\_\_\_\_  
**Participant**

\_\_\_\_\_  
**Date**

## APPENDIX G

**Informed Consent to Participate in a Dissertation  
(Arabic Questionnaire Survey)**

**إشعار بالموافقة على المشاركة في الإستبانة**

الباحث: محمد بن ناصر بن علي الصقري- طالب دكتوراه بمدرسة إدارة المكتبات والمعلومات- جامعة مقاطعة إمبوريا- الولايات المتحدة الأمريكية.

عنوان الرسالة: سلوك الباحثين واحتياجاتهم من المعلومات في مجال العلوم الاجتماعية بجامعة السلطان قابوس بسلطنة عمان.

أرجو التكرم بالمشاركة في الإجابة على أسئلة الإستبانة والتي تدور حول سلوك الباحثين الأكاديميين واحتياجاتهم المعلوماتية في مجال العلوم الاجتماعية بجامعة السلطان قابوس.

تهدف هذه الدراسة لمعرفة سلوك الباحثين الأكاديميين واحتياجاتهم من المعلومات في العلوم الاجتماعية بجامعة السلطان قابوس. لذلك فهي تحاول التعرف على الأساليب والطرق التي يتبعها الباحثون في العلوم الاجتماعية

للحصول على المعلومات ذات العلاقة بمجال تخصصهم وكيفية استخدامها في مجال البحث العلمي والتدريس،

تحديد مصادر المعلومات التقليدية وغير التقليدية والمصادر الإلكترونية التي يمكن الاستفادة منها في مجال العلوم

الاجتماعية بالجامعة، والتعرف على الصعوبات التي تقف عائقاً أمام الحصول على المعلومات. هذا ويؤمل أن

تساهم نتائج هذه الدراسة في فهم وإدراك سلوك الباحثين احتياجاتهم من المعلومات من قبل المسؤولين في المكتبة

الرئيسية بالجامعة. بالإضافة إلى التعرف على احتياجات الباحثين من التدريب والتأهيل لضمان الاستفادة القصوى

من مصادر المعلومات. كما أن الدراسة ستمهد الطريق لظهور دراسات عربية تعنى بسلوك الباحثين في العلوم

الاجتماعية واحتياجاتهم من المعلومات التي تعتبر ذات أهمية خاصة لأنها تكشف عن مدى ملائمة مصادر

المعلومات والخدمات التي تقدمها المكتبات الجامعية للباحثين في المنطقة العربية.

الرجاء الإجابة على أسئلة الإستبانة المرفقة والتي تتضمن الإجابة على بعض البيانات الشخصية، أساليب

استخدام مختلف مصادر المعلومات الإلكترونية وغير الإلكترونية، والصعوبات التي تواجهها في الحصول على

مصادر المعلومات.

تتطلب الإستبانة المرفقة تحديد الاختيار المناسب من بين الأجوبة المتعددة أو الرد بإجابات قصيرة. الرجاء

الإجابة على أسئلة الإستبانة وإرجاعها إلى الباحث في مدة أقصاها أسبوعين. في بعض الحالات سيطلب منك

الإجابة على بعض الأسئلة التوضيحية والتي سترسل إليك في وقت لاحق، ولكنك غير ملزم بالرد عليها.



لا توجد هناك أي مخاطر مترتبة على إكمالك لهذه الإستبانة. سيتم التعامل مع بياناتك الشخصية بسرية تامة، حيث لن يتم الإفصاح عن هويتك فيما إذا قررت المشاركة في هذه الإستبانة من عدمها، أو حتى إجاباتك التي تقوم بتسليمها. يمتلك الباحث وأعضاء لجنة الدراسة (الأطروحة) فقط أحقية الإطلاع على البيانات. سوف يرمز لكل مشارك برمز خاص للحفاظ على هويته وعدم الإفصاح عنها، وسوف يتم الاحتفاظ بجميع الإستبانات المستلمة في مكان آمن.

إن مشاركتك في هذه الدراسة مشاركة تطوعية بحتة ولن تكون هناك أية تبعات في حالة عدم الرغبة في إكمال الإستبانة أو في حالة الانسحاب منها في وقت لاحق.

للاستفسار أو الإجابة على أية أسئلة متعلقة بالدراسة، يرجى الاتصال بالباحث على البريد الإلكتروني

[malsuqri@stumail.emporia.edu](mailto:malsuqri@stumail.emporia.edu) أو برئيسة لجنة الدراسة (الأطروحة) [llillard@emporia.edu](mailto:llillard@emporia.edu)

الرجاء التوقيع على هذا الإشعار إقراراً منك بالموافقة على ما جاء فيها من نقاط وعلى تطوعك بالإجابة على

أسئلة الإستبانة، كما يمكن الاحتفاظ بنسخة من هذا الإشعار.

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التاريخ

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توقيع المشارك

## APPENDIX H

**Informed Consent to Participate in a Dissertation  
(E-Mail Interview)**

**Title of Research Project:** Information Needs and Seeking Behavior of Social Science Scholars at Sultan Qaboos University in Oman.

My name is Mohammed Nasser Al-Suqri. I am a doctoral student at Emporia State University's School of Library and Information Management.

You are being asked to participate in a research study investigating the information needs and information-seeking behavior of social science faculty at Sultan Qaboos University. This study is intended to (1) explore the ways in which social science scholars at this university locate and use relevant information for their research and teaching needs; (2) identify the formal and informal sources of information and electronic resources utilized by social science scholars in this university and (3) investigate the barriers to effective information-seeking. The results of this study will provide library managers with a better understanding of the ways in which they can support social science faculty in the University, including the types of information resources, training and assistance needed. The study will also provide a foundation for further research on academic information needs and information-seeking in Arab countries, which is needed to help ensure that libraries and other information services meet the needs of scholars in this region.

If you decide to participate, you will be interviewed by e-mail. I will e-mail number of questions for completion online. This will include a number of questions regarding your experiences of using different types of electronic and non-electronic information sources in your research and teaching work. You will be required to type in the answers, and return them by E-mail to the researcher within a two week period.

Depending on your answers, you might be sent one or two sets of follow-up

questions, in order to provide the researcher with clarification or additional information about your information-seeking experiences.

There is no potential risk to you as a subject. Your identity will be completely confidential, and will not be revealed either in terms of the fact that you participated in this study or in terms of your specific answers. Direct quotes from the e-mail interview may be used in reporting the results, however, your identity will not be revealed in the reporting of the results.

Your participation in this study is entirely voluntary and that there will be no negative consequences if you decided not to participate or decided to participate but withdraw from the study at a later time.

You are welcome to ask any question at any time. If you have any question or would like to know more about this study, please contact the researcher at [malsuqri@stumail.emporia.edu](mailto:malsuqri@stumail.emporia.edu) or the chair of the dissertation committee, Dr. Linda Lillard at [llillard@emporia.edu](mailto:llillard@emporia.edu)

Please sign this form to show that you have agreed to volunteer as a research participant in this dissertation and that you have read and understood its contents.

Please keep a copy of this consent form for your records.

\_\_\_\_\_  
**Participant**

\_\_\_\_\_  
**Date**

## APPENDIX I

**Informed Consent to Participate in a Dissertation  
(Face-to-face Interview)**

**Title of Research Project:** Information Needs and Seeking Behavior of Social Science Scholars at Sultan Qaboos University in Oman.

My name is Mohammed Nasser Al-Suqri. I am a doctoral student at Emporia State University's School of Library and Information Management.

You are being asked to participate in a research study investigating the information needs and information-seeking behavior of social science faculty at Sultan Qaboos University. This study is intended to (1) explore the ways in which social science scholars at this university locate and use relevant information for their research and teaching needs; (2) identify the formal and informal sources of information and electronic resources utilized by social science scholars in this university and (3) investigate the barriers to effective information-seeking. The results of this study will provide library managers with a better understanding of the ways in which they can support social science faculty in the University, including the types of information resources, training and assistance needed. The study will also provide a foundation for further research on academic information needs and information-seeking in Arab countries, which is needed to help ensure that libraries and other information services meet the needs of scholars in this region.

If you decide to participate, you will be invited to a face-to-face interview by the researcher. The interview will be at a location that is convenient to you and will be tape recorded. The interview will include a number of questions regarding your experiences of using different types of electronic and non-electronic information sources in your research and teaching work. The interview is estimated to last between 40-50 minutes.

There is no potential risk to you as a subject. Your identity will be completely confidential, and will not be revealed either in terms of the fact that you participated in this study or in terms of your specific answers. Direct quotes from the interview may be used in reporting the results, however, your identity will not be revealed in the reporting of the results.

Your participation in this study is entirely voluntary and that there will be no negative consequences if you decided not to participate or decided to participate but withdraw from the study at a later time.

You are welcome to ask any question at any time. If you have any question or would like to know more about this study, please contact the researcher at [malsuqri@stumail.emporia.edu](mailto:malsuqri@stumail.emporia.edu) or the chair of the dissertation committee, Dr. Linda Lillard at [llillard@emporia.edu](mailto:llillard@emporia.edu)

Please sign this form to show that you have agreed to volunteer as a research participant in this dissertation and that you have read and understood its contents.

---

**Participant**

---

**Date**

## APPENDIX J

**Informed Consent to Participate in a Dissertation  
(Focus Group)**

**Title of Research Project:** Information Needs and Seeking Behavior of Social Science Scholars

My name is Mohammed Nasser Al-Suqri. I am a doctoral student at Emporia State University's School of Library and Information Management.

You are being asked to participate in a research study investigating the information needs and information-seeking behavior of social science faculty at Sultan Qaboos University. This study is intended to (1) explore the ways in which social science scholars at this university locate and use relevant information for their research and teaching needs; (2) identify the formal and informal sources of information and electronic resources utilized by social science scholars in this university and (3) investigate the barriers to effective information-seeking. The results of this study will provide library managers with a better understanding of the ways in which they can support social science faculty in the University, including the types of information resources, training and assistance needed. The study will also provide a foundation for further research on academic information needs and information-seeking in Arab countries, which is needed to help ensure that libraries and other information services meet the needs of scholars in this region.

If you decide to participate in this study, you will be asked to participate in a focus group with other social science faculty members at a location that is convenient to you. The focus group will be used to explore further depth issues arising in the study, and to understand more fully the experiences of and views on information seeking among social science faculty at Sultan Qaboos University. The focus group will be tape-recorded with your permission and is estimated to last 30-40 minutes.

There is no potential risk to you as a subject. Your identity will be completely confidential, and will not be revealed either in terms of the fact that you participated in this study or in terms of your specific answers. Direct quotes from the forum may be used in reporting the results, however, your identity will not be revealed in the reporting of the results.

Your participation in this study is entirely voluntary and that there will be no negative consequences if you decided to leave the focus group at any time.

You are welcome to ask any question at any time. If you have any question or would like to know more about this study, please contact the researcher at [malsuqri@stumail.emporia.edu](mailto:malsuqri@stumail.emporia.edu) or the chair of the dissertation committee, Dr. Linda Lillard at [llillard@emporia.edu](mailto:llillard@emporia.edu)

Please sign this form to show that you have agreed to volunteer as a research participant in this dissertation and that you have read and understood its contents.

\_\_\_\_\_  
**Participant**

\_\_\_\_\_  
**Date**

## APPENDIX K

**Permission to Reproduce Wilson's 1996 Information Seeking Behavior Model**

**From:** "Prof. Tom Wilson" <t.d.wilson@sheffield.ac.uk>  
**To:** Mohammed Al Suqri <malsuqri@emporia.edu>  
**Date:** Friday - September 21, 2007 10:55 AM  
**Subject:** Re: Permission to Reproduce Your 1996 Model (Information Seeking Behavior Model)

Dear Mr. Al-Suqri,

Thank you for your enquiry. Yes, you may reproduce the diagram illustrating the model of information seeking behaviour.

Sincerely,  
T.D. Wilson

Professor T.D. Wilson, PhD, Hon.PhD  
Publisher/Editor in Chief  
Information Research  
InformationR.net  
e-mail: t.d.wilson@shef.ac.uk  
Web site: <http://InformationR.net/>



## APPENDIX L

## Permission to Reproduce Ellis' 1989 Information Seeking Model

**From:** Professor David Ellis <dpe@aber.ac.uk>  
**To:** "Mohammed Al Suqri" <malsuqri@emporia.edu>  
**Date:** Monday - September 24, 2007 6:15 PM  
**Subject:** Re: Permission to Reproduce Your 1989 Model (Information Seeking Model)

Dear Mohammed,

Thank you for your e-mail, I would be very happy for you to reproduce my model in your dissertation and I would be most interested to see your results.

Very best wishes

David Ellis

## APPENDIX M

## Permission to Reproduce Kuhlthau's 1991 ISP Model

**From:** "Carol C. Kuhlthau" <kuhlthau@scils.rutgers.edu>  
**To:** "Mohammed Al Suqri" <malsuqri@emporia.edu>  
**Date:** Tuesday - October 9, 2007 9:13 AM  
**Subject:** [Fwd: Re: A Permission to Reproduce Your ISP Model]

Dear Mohammed Al Suqri,

I am pleased to give permission to reproduce my model of the ISP from my book *Seeking Meaning*, 2nd ed. published 2004 by Libraries Unlimited, in your doctoral dissertation.

Carol C. Kuhlthau

Carol C. Kuhlthau  
Professor II Emerita  
Library and Information Science  
School of Communication, Information and Library Studies  
Rutgers University  
Center for International Scholarship in School Libraries (CISSL)

50 Allison Road  
Princeton, New Jersey 08540

## APPENDIX N

Permission to reproduce the Information-Seeking Behavior and Web  
Moves Figure

**From:** Chun Wei Choo <cw.choo@utoronto.ca>  
**To:** "Mohammed Al Suqri" <malsuqri@emporia.edu>  
**Date:** Monday - September 17, 2007 10:56 AM  
**Subject:** Re: Permission to Reproduce A Figure

Dear Mohammed,

Yes, this would be fine, with the usual citation reference. Good luck with your thesis.

chun wei

I, Mohammed Nasser Al-Suqri, hereby submit this dissertation to Emporia State University as a partial fulfillment of the requirement for a doctoral degree. I agree that the Library of the University may make it available for use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying with involves potential financial gain will be allowed without written permission of the author.

M. Al-Suqri

Signature of the Author

11-30-07

Date

INFORMATION NEEDS AND SEEKING  
BEHAVIOE OF SOCIAL SCIENCE SCHOLARS  
AT SULATAN QABOOS UNIVERSITY IN  
OMAN: A MIXED-METHOD APPROACH

Title of Dissertation

Don Cooper

Signature of Graduate Office Staff Member

12-3-07

Date Received