REPORT OF THE STUDY ON INFORMATION NEEDS OF MONGOLIAN SCHOLARS

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INTRODUCTION

Information-seeking behavior of academic scholars has been the focus of inquiry within the library and information science community for decades. The vast majority of user studies carried out in developed countries are well documented and widely known. There are only a few studies on information needs and information seeking behavior of scholars in developing countries, including Mongolia.

User studies in library and information science are based on the premise that effective library services must begin with a clear understanding of the actual needs of information users (Illeperuma, 2002, p.22). As White (1975) states, if academic librarians are to attempt realistically to serve academic researchers, they must recognize the changing needs and the variations in information gathering which they generate and then provide the type of services that would be most useful to the researcher. So, it is very important to understand the actual information needs of Mongolian scholars before opening new services and expanding the existing information retrieval systems.

This report presents the first set of findings of a mixed method study, which intended to identify information needs and information seeking behavior of Mongolian scholars and explore options for meeting these needs. Specific goals of the inquiry were to determine how Mongolian researchers find necessary information about the latest advances in their respective disciplines and that supports their research tasks; their preferred format for the literature to appear; the language they prefer the literature to be in; what services and resources they expect from libraries; what barriers they encounter to get necessary information for their research activities.

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RESEARCH GOAL

The main purpose of this research study was to identify information needs and information seeking behavior of Mongolian scholars and explore options for meeting these needs. Specific goals of the inquiry were to determine how they find necessary information about the latest advances in their respective disciplines and that supports their research tasks; their preferred format for the literature to appear; the language they prefer the literature to be in; what services and resources they expect from libraries; what barriers they encounter to get necessary information for their research activities.

Hypotheses and expectations

Hypothesis 1: Information needs and information seeking behavior of Mongolian scholars will be different from their colleagues in other countries because of their social, political, economic, and work environment.

Hypothesis 2: The basic pattern of information need would be divided according to discipline.

Hypothesis 3: There will be some patterns or trends in information needs and information seeking behavior of Mongolian scholars, which could be associated with their age, seniority and experience.

METHODOLOGY

Considering the unique nature of political, economical and cultural setting of Mongolian scholars, naturalistic inquiry approach with grounded theory was used in this study. In-depth interview and survey were used as the main research methods for this study.

The population

The special meeting was organized by the Planning and Monitoring Department of the MAS in the end of June 2006. The science secretaries from all branch research institutions were invited to the meeting. At this meeting the research team presented about the goals of the study and distributed questionnaires. 170 surveys in the paper form were sent to all 17 research institutions and five MAS-affiliated health institutes. The secretaries of these institutions promised to make a copy of the questionnaire and distribute them in their institutions. On the request from the researchers, the survey questionnaire was also sent electronically to all respected institutions. In addition, 17 researchers from various research institutions from the MAS were interviewed between June and July of 2006. This report reflects the initial data analysis of the quantitative survey data.

The instrument

A questionnaire consisted of 21 closed and 11 open-ended questions (Appendix). This type of questionnaire was used to obtain data on information needs and information

seeking behavior of social scientists in the number of studies reviewed by Folster and more recently in developing countries, in information seeking behavior studies by Francis (2005), Lleperuma (2002) and Tiratel (2000). The survey instruments of these studies were modified for the purpose of the present study.

Pretest of the survey was conducted with five respondents from the different research institutions of the MAS prior to official data collection. Survey questions were checked for clarity. No major changes have been made to the questionnaire except one question about the project affiliation of the respondent.

Procedure

123 filled questionnaires were received in the paper form and 11 of them were received in the electronic form by July 10, 2006. Five responses from pretest were included as a part of main data collection since there was no change in the questionnaire. An adequate response rate is one of the keys to successful survey research. 134 scholars responded to the survey from about 700 scholars working in the Mongolian Academy of Sciences, which represents 19 % response rate. Altogether 134 researchers from 15 different research institutions responded to the survey.

DATA ANALYSIS

Quantitative survey results were coded and analyzed using SPSS v.14. The analysis of the survey data occurred in two stages. First, descriptive statistics was used to provide a clear picture of the results. Second, Chi-square analysis and t-test were used to test the hypotheses and investigate relationship between variables.

RESULTS

The survey asked respondents a number of demographic questions.

Research institutions

The medical institute had the most number of respondents to this survey. 16 % of respondents belonged to the Medical Institute, 10 % were from the Institute of International Studies, and 9 % - belonged to the Institute of Chemistry. The Institute of Astronomy and Institute of Paleontology had only respondent each. The low response rate from some institutions is related to the research nature of each field. The most researchers from the Institute of Paleontology and the Institute of Archeology were on the field trips for their own studies (*Table 1*).

Table 1

	Name of the institution	**Frequency**	**Percent**
1	Medical Institute	21	15.7
2	Institute of International Studies	13	9.7
3	Institute of Chemistry	12	9.0
4	Institute of Botanic	12	9.0
5	Institute of Informatics	11	8.2
6	Institute of Biology	10	7.5
7	Institute of History	9	6.7
8	Institute of Geology and Minerals	8	6.0
9	Institute of Geo-Ecology	9	6.7
10	Institute of Language	8	6.0
11	Institute of Physics	8	6.0
12	Institute of Archeology	6	4.5
13	Institute of Geography	5	3.7
14	Institute of Paleontology	1	0.7
15	Institute of Astronomy	1	0.7
	Total	134	100

Field of study

The study followed the classification system of research fields used by the MAS. Language, history, philosophy, sociology, international studies, national development study fields are counted as social science, all the rest of fields belong to natural science. 60 % of respondents were from natural science field and 40 %- from social science, which shows fairly equal distribution of scholars on their research field (*Table 2*).

Table 2

Name of the institution	Frequency	Percent
Social science	54	40
Natural science	80	60
Total	134	100

Degree

41 % of respondents held Master's degree, 34 % -Ph.D., 20%-Bachelor's degree and 5 %-Science Doctor degrees (*Table 3*).

Table3

Degree	Frequency	Percent
Bachelor	27	20.1
Master	55	41.0
Ph.D.	46	34.3
Science Doctor	6	4.5
Total	134	100

Gender and age

50% of respondents were male and 50 %- were female. One respondent did not answer to this question. In terms of age categories, 38 % of the respondents were under 30, 27 %- between 30 and 40, 14 %- between 40 and 50, 16%-between 50 and 60, and 5 %- above 60 years old. One respondent did not state his/her age. More than half of respondents were under 40 years old.

Employment with MAS

41 % of respondents had been employed within MAS under 5 years, 20 %-between 6-10 years, 8 %- between 11 and 15 years, and 31 %- more than 16 years. The four respondents did not answer to this question. Overall, about 60 % of respondents had been employed within MAS up to 10 years.

Number of publications

37 % of respondents had published up to five articles, 26 %- between 6 and 10 articles, 19 %- between 11 and 15 articles, and 18 %- more than 16 articles. The four respondents did not reply to this question. Decisions about which journals they should publish their research work were decided by the prestige of the journal in their field (87%), the audience to which the journal was addressed (21%), distribution of publication (5%), editorial board (3%), speed of publication (16%), other reasons (7%).

Number of hours spent for reading

Queried about the number of hours per week spent reading journal articles, 16 people did not respond to this question. Out of received 118 responses, minimum number of hours spent to read journal articles was 0 and the maximum number of hours was 72, which must be an outlier. According to the data, Mongolian scholars devote 7 hours per week to read journal articles. The frequency analysis shows that the majority (58%) of the researchers spend up to five hours per week.

Table3

Hours spent to read journal articles	**Frequency**	**Percent**
Up to 5 hours	68	58
5-10 hours	28	24
10-15 hours	11	9
15-20 hours	4	3
20-25 hours	5	4
30-35 hours	1	1
More than 35 hours	1	1
Total	118	100

Computer knowledge

Respondents were asked about their computer knowledge. 2 people did not answer to this question. The majority of respondents (54%) evaluated their computer knowledge as "good." 16% of them said they have "excellent," 25%-satisfactory, 5%-not satisfactory

Foreign language skills

Respondents were asked about their foreign language skills in speaking, writing and reading. Foreign language skill is an important factor to use different resources for research purpose. 84% of respondents speak, read and write in English, 83%- Russian, 6%-German, 4%-Japanese, 14%- other languages.

Internet usage in research activities

One respondent did not answer to this question. 84% of respondents said they use the Internet for their research activities.

General usage of the Internet

When the respondents were asked about their frequency of the Internet usage, 65% of them said they use the Internet daily. 24% of respondents use the Internet weekly, 7%-monthly, and 3% use it rarely. 2% of respondents said they never used the Internet. Three people did not answer to this question.

Library use

As for library use, 5 percent of respondents used the library every day, 27 percent two to three times per week, 47 percent two to three times per month, and 5 percent never used library. Four people did not respond to this question.

The questionnaire asked the respondents which library they used giving options of all possible libraries in Ulaanbaatar. 55 % of respondents use public library, 72%-library of own research institution, 31 %- new library of MAS, 18%-library of IT park, 17 %-other libraries.

Respondents were asked about their satisfaction with existing library services. 11 respondents did not answer to this question. The majority of respondents (61%) is

somewhere in the middle position between satisfied and unsatisfied. 27% of respondents said they are satisfied with library services and 13% said they are not satisfied with library services.

Research assistants

Since some researchers are able to delegate the process of searching for and finding information to research assistants, they were asked to indicate this use. 57 % of respondents have never had assistance with search of information, 32 %-sometimes had assistance, 11 %-always get help from research assistants. Nine respondents did not answer to this question.

Sources used for research

Respondents were asked to indicate which sources they used for research. One respondent did not answer to this question. Journals, followed by textbooks and monographs were preferred source of information for doing research activities (*Table 4*).

Sources used to support research *Table 4*

Sources (N=133, missing value-1)	**Percentage**	**Natural science**	**Social science**
Professional journals	**81**	**61**	**39**
Textbooks	**64**	**65**	**35**
Monographs	**61**	58	42
Preprints	10	**77**	**23**
Correspondence	41	**71**	**29**
Conference proceedings	38	53	47
Attendance at conferences	38	**64**	**36**
Newsletters/bulletins	29	58	42
Others	23	60	40

Cross tabulation of the preferred sources with the types of science field shows that 61% of researchers who prefer professional journals are from natural science and 39% of them are from social science. This trend is also similar in preference of textbooks. From of respondents who prefer textbooks 35% are from social science and 65% are from

natural science. 58% of respondents who prefer monographs are from natural science and 42% of them are from social sciences.

The Pearson chi-square was computed to determine if there was a significant relationship between the field of the discipline and various sources of information the researchers prefer to use. There was no significant difference in usage of journals, textbooks and monographs between social scientists and natural scientists. The analysis indicated that there was a significant relationship between the type of the discipline and correspondence, $\chi^2(1) = 4.529, p < .05$. Of those that use correspondence, the majority were from natural science (50%) whereas the majority of those researchers who did not chose correspondence were social scientists (70%).

The collected data were analyzed to see some patterns in information seeking behavior of Mongolian scholars, which could be associated with their age, seniority and experience. The Pearson chi-square was computed to determine if there was a significant relationship between the age and various sources of information the researchers prefer to use. There was no significant difference in usage of journals and textbooks in terms of the age of respondents. However, there was a significant relationship between the age and the usage of monographs, $\chi^2(4) = 12.08, p < .05$. Of those that use monographs, the majority of respondents were above 30 year-old (76%) whereas the majority of those researchers who did not chose correspondence were under 30 years old (57%).

In terms of seniority, there was a significant difference there was a significant relationship between the number of years worked for the MAS and the usage of monographs, $\chi^2(3) = 14.11, p < .05$. The majority of researchers who used monographs were researchers who worked for the MAS for more than16 years (78%) whereas the

majority of researchers who did not use monographs were researchers worked for the MAS between 11 to 15 years (60%).

When asked about the methods used to obtain journal articles, most respondents relied on their colleagues to find a copy of the article, followed by photocopy of library's copy (*Table 5*). Cross tabulation of the methods to obtain journal articles with the types of science field shows that 70% of respondents who subscribe journals personally are from social sciences. Social scientists also dominate in the subscription to the electronic copy of journal articles. 73% of respondents who subscribe to the electronic copy are from social science and 27% of them are from natural sciences.

Methods to obtain journal articles *Table 5*

Methods (N=133, missing value-1)	**Percentage**	**Natural science**	**Social science**
Personal subscription to print	15	**30**	**70**
Library's copy	51	60	40
Photocopy library's copy	52	49	51
Subscription to the electronic copy	17	**27**	**73**
Borrow from colleagues	55	**63**	**37**
Library's electronic version	21	57	43
Get a copy from colleagues abroad	42	62	38
Others	23	57	43

The Pearson chi-square was computed to determine if there was a significant relationship between the field of the discipline and the method of obtaining journal articles. The analysis indicated that there was a significant relationship between the type of the discipline and personal subscription to the journals, $\chi^2(1) = 8.44$, $p < .05$. The majority of those who subscribed the print journals were natural scientists (30%) whereas the majority of researchers who did not subscribe journals were from social sciences (73.9%). The analysis also indicated that there was a significant relationship between the type of the discipline and usage of library copy of journal articles, $\chi^2(1) = 6.73$, $p <$

.05. The majority of those who used the library copy of journals articles were social scientists (66%) whereas the majority of researchers who did not use the library copies were from natural sciences (57%).

In terms of seniority, there was a significant relationship between number of years worked for the MAS and the obtaining the journal articles through colleagues abroad, $\chi^2(3) = 10.51$, $p < .05$. Of those who obtained the journal articles through colleagues abroad, the majority of respondents were those who worked for the MAS between 11 to 15 years (70%) whereas the majority of those researchers who did not get the journal articles through their colleagues abroad were under five years (70%). There was no significant difference between the age and the method of obtaining the journal articles.

Respondents were asked about their preference of paper or electronic copy of journals. 61% of respondents said they would prefer the paper copy, and 52%- prefer e-copy.

Obtaining books

Respondents were asked how they obtain books related to their research. One person did not answer to this question. 68% of respondents said that they buy books personally, 59%-borrow from colleagues, 65%-borrow from library, 39%- obtain through colleagues abroad, 12%- in other ways. Cross tabulation and the Pearson chi-square was computed to determine if there was a significant relationship between the field of the discipline and researchers' the method of obtaining books related to their research. The analysis indicated that there was a significant relationship between the type of the discipline and personal purchase of books, $\chi^2(1) = 3.78$, $p < .05$. The majority of those who purchases

the books were social scientists (77%) whereas the majority of researchers who did not buy the books were from natural sciences (72%).

Usage of online databases

In order to find out the usage of online databases, respondents were given the list of databases available through the MAS. They were asked to state how often they had used the databases over the last six months (*Table 6*). Most respondents never used these online databases. Cambridge Journals was used most frequently by respondents (8%).

Use of online databases in the past 6 months *Table 6*

Religion	Code Variable >5 times	2-3 times	Once	Never	Never heard of
	Frequency of response (%)				
Cambridge Journals (N=116)	8	17	13	51	11
Oxford Journals (N=109)	3	20	16	49	13
Oxford Reference Journals (N=109)	5	13	11	57	16
Institute of Physics (N=97)	4	4	3	62	23

This low usage of online databases in Mongolia could be related to several factors. Qualitative data from the interview analysis will reveal more reasons for it.

CONCLUSION

The present report describes the information seeking behavior and information needs of Mongolian scholars.

According to the survey analysis, Mongolian scholars devote in average 7 hours per week to read journal articles. The frequency analysis shows that the majority (58%) of the researchers spend up to five hours per week. Scholars do not use library frequently. Only five percent of respondents used the library every day, 27 percent two to three times

per week, 47 percent two to three times per month, and 5 percent never used library. The majority of respondents use libraries of own research institution. Mongolian scholars are not satisfied with the existing library services.

To conduct research in their own field, Mongolian scholars prefer to use journals, followed by textbooks and monographs. This preference of sources is very similar to information needs of scholars in other developing and developed countries. As Francis (2005) stated "journal literature remains an essential resource" for scientists "regardless of the information environment in which they operate, whether in developed or developing country." (p.71). There was no significant difference in usage of journals, textbooks and monographs between social scientists and natural scientists. However, the analysis indicated that there was a significant relationship between the type of the discipline and correspondence, $\chi^2(1) = 4.529, p < .05$. Of those that use correspondence, the majority were from natural science (50%) whereas the majority of those researchers who did not chose correspondence were social scientists (70%).

To obtain journal articles, most respondents relied on their colleagues or on library's copy. In terms of books, 68% of respondents said that they buy books personally, 59%-borrow from colleagues, 65%-borrow from library. The Pearson Chi-square analysis indicated that there was a significant relationship between the type of the discipline and personal purchase of books, $\chi^2(1) = 3.78, p < .05$. The majority of those who purchases the books were social scientists (77%) whereas the majority of researchers who did not buy the books were from natural sciences (72%).

Despite a great effort of the Mongolian Academy of Sciences to introduce the advantage of using online databases, most scholars do not use online databases. The

survey analysis shows that most respondents never used these online databases. 61% of respondents said they would prefer the paper copy of journals. It indicates that scholars need to be trained more about usage of electronic databases and other resources. The ways of using of online databases by Mongolian scholars need to be investigated more thoroughly.

According to the survey analysis, 84% of respondents speak, read and write in English. The majority of respondents (54%) evaluated their computer knowledge as "good." 84% of respondents said they use the Internet for their research activities. These factors indicate that Mongolian scholars are capable of using online databases and research sources in English. It shows the potential of expanding online databases in Mongolia.

RECOMMENDATIONS

Clear understanding about the information needs and information seeking behavior of scholars is essential to expand the existing information and library services in Mongolia. It is evident from this study that local information and library services for scholars need to be strengthened to suit information needs of scholars. Policy makers and decision makers must recognize the changing needs and variations in information gathering to provide the type of services that would be most useful for researchers.

It would be important to consider the highlighted points of the present report in future activities of the Mongolian Academy of Sciences to build better information services for scholars in coordination with the American Center for Mongolian Studies and other international agencies in Mongolia. The foreign language skills and technology

knowledge should not be a barrier to introduce the online databases and increase their usage in scholarly communication in Mongolia.

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Appendix

Survey Instrument

This survey will collect data about the information needs and information seeking behavior of scholars working within the Mongolian Academy of Sciences including the sharing of information and the information needs and use of researchers. There are no right or wrong answers. All information that is collected will be kept confidential and the results will be reported in a consolidated manner with individual information available only for the research team. Your participation is voluntary, however it is very important for the quality of this study that you answer all questions of this survey. If you decide to withdraw at any time and for any reason, your information collected will be destroyed.

Name: _____

Please answer **all** of the following questions and return questionnaire in the envelope provided.

1. What research institution are you in?

2. Project team name:

3. What is your degree?
   __ Bachelor's
   __ Master's
   __ Ph.D.
   __ Science Doctor

4. What is your major area of research?

5. Which of the following do you use as your primary source of information for (a) teaching AND (b) research. Please put 'a' or 'b' next to those that apply.
   _ professional journals
   _ textbooks
   _ monographs
   _ preprints
   _ correspondence
   _ conference proceedings
   _ Attendance at conferences
   _ Newsletters/ Bulletins

_ Other (please specify)

6. Which of these materials are of particular importance to your research and why?

7. How many hours do you spend reading journal articles?

weekly	OR	monthly
__ hours		___ hours

8. Please list the five most important journals that you read in order to stay current in your field:

1)
2)
3)
4)
5)

9. Do you have a personal subscription to any of the five above? Please name.

10. How do you become aware of less recent journal articles?
    - _ citations at the end of journal articles
    - _ citations at the end of chapters of a book
    - _ searching of indexing/abstracting tools
    - _ personal communication
    - _ browsing older volumes
    - _ Other (please specify)

11. How do you obtain journal articles?
    - _ personal subscription to print
    - _ Library's copy
    - _ photocopy Library's copy
    - _ personal subscription to electronic version
    - _ Library's electronic version
    - _ document delivery
    - _ Other (please specify)

12. If you had a choice, in what format would you prefer to obtain journal articles?
    _ print copy _ electronic version

13. How do you keep abreast of current developments in your field?

_ current issues of journals

_ search online databases

_ personal communication

_ attendance at conferences / meetings

_ other (please specify)

14. What difficulties or problems do you face in finding, or looking for, information on your research topic(s)?

15. What do you do regarding the difficulties or problems you face in finding, or looking for, information on your research topic(s)?

16. Do you have a research assistant to help you with Library research?

__ always __ sometimes __ never

17. How often do you use the Library's collection?

_ daily

_ 2 - 3 times per week

_ 2 - 3 times per month

_ 2 - 3 times per year

_ never

18. Which library do you usually use?

_ Public Library(Researcher's Hall)

_ Library of own institute

_ New library of MAS

_ Library of IT Park

_ Other (please specify)

19. How are you satisfied with the library service?

_ Highly satisfied

_ Satisfied

_ Not satisfied

20. Please make other comments regarding library resources and services. Are there any services that you need which cannot be obtained at the MAS Library? What needs to be done at the library to meet your information needs? Are there any services that you miss at the library? (Please use an additional page if necessary)

21. How often have you used the following databases in the last six months?

(a) EBSCO

_ once

_ 2 - 3 times

_ more than 5 times

_ never

_ never heard of it

(b) Cambridge journals

_ once

_ 2 - 3 times

_ more than 5 times

_ never

_ never heard of it

(c) Oxford journals

_ once

_ 2 - 3 times

_ more than 5 times

_ never

_ never heard of it

(d) Oxford Reference Online

_ once

_ 2 - 3 times

_ more than 5 times

_ never

_ never heard of it

(e) Institute of Physics

_ once
_ 2 - 3 times
_ more than 5 times
_ never
_ never heard of it

22. Have you used any other database that is not listed above?

_ Yes
_ No.

If you used other database, which is not listed above, please specify the name of the database and your frequency of use in the last six months.

_ once
_ 2 - 3 times
_ more than 5 times
_ never
_ never heard of it

23. How do you decide on which journals you should publish your own work? Please tick all that apply.

_ standing of journal in your field
_ audience
_ distribution
_ editorial board
_ speed of publication
_ other (please specify)

24. How many articles have you published in the last six (6) years?

___ 0 - 5 ___ 6 - 10 ___ 11 - 15 ___ more than 16

25. How many years have you been a researcher at MAS?

_ 0 -5 years
_ 6 - 10 years
_ 11 - 15 years
_ more than 16 years

26. What foreign languages do you read, write, and speak?

27. How could you evaluate your computer knowledge?
    _ Excellent
    _ Good
    _ Satisfactory
    _ Poor
    _ Don't know

28. How often do you use the Internet?
    a. Daily
    b. Weekly
    c. Monthly
    d. Very rarely
    e. Never used

29. Do you use the Internet for research purpose?

30. If you answered Yes to the question 30, how do you use the Internet for research purpose?

31. What is your gender?

    _ female _ male

32. How old are you?
    - Under 30
    - 30-40
    - 40-50
    - 50-60
    - Above 60

Thank you for your participation!