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## Information needs and Information Seeking Behaviour of Faculty and Research Scholars of the Department of Mathematics under the University of Burdwan – An Appraisal

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**Information needs and Information Seeking Behaviour of Faculty and Research Scholars  
of the Department of Mathematics under the University of Burdwan – An Appraisal**

**Amit Kumar Das\* & Dr. SukumarMandal\*\***

**Abstract**

**Purpose** – The study examines the aspects of information needs and information seeking behaviour of faculties and research scholar of the mathematics departments including methods applied for finding data. The academic status and research field of users with their information seeking behaviour was investigated.

**Methodology** – Data has been collected usingonline questionnaire survey from faculties and regular research scholars of the Department of Mathematics under the University of Burdwan faculties (80 per cent response rate) and research scholars (response rate 61.29%) participated in the online Google form survey.

**Findings** – The study reveals the comparisonamong regular faculties and Regular Research scholars of mathematics departments under the university of Burdwan in terms of information needs and information seeking behaviour, enlightened the need for reinvestigating the quality of library infrastructure and services within the disciplinespecific for a deeper understanding of the information behaviour of faculties and research scholars in mathematics departments under the university of Burdwan.

**Originality/value** – The study is the first study to deeply investigate the similarities of information-seeking behaviour of faculties and research scholar in mathematics departments under the University of Burdwan. It is also an up-to-date account of information needs and information seeking behaviour of faculties and research scholarsin mathematics department of the University of Burdwan.

**Keywords:- Information, Information needs, Information seeking behaviour, Information seeking behaviour – model, Mathematics, Faculty, Research Scholar, University of Burdwan**

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## **Introduction**

Information is the product of human brain in action. It may be abstract or concrete. When an individual begins to think, a variety of images and sensations flash across his mind. This makes some information to accumulate in his mind and his memory retains some piece of knowledge. The human need for information is boundless and endless. People need information for different purposes and objectives. They need information for making decisions, career development, conducting research, gaining more knowledge, confirming or refuting issues, and the list goes on. Thus, satisfying information needs plays a vital role in shaping human thinking, attitudes, behaviours, communications, and teaching process. Information is the data which can be transmitted between individuals, and each individual can make use of it. In the conduct of their day-to-day work of teachers and research scholars in higher education institutions make extensive use of communications through formal as well as informal channels. Inquiries how teachers' and researchers' information seeking practices intertwine looking for informing documents with looking for informed people are evidenced into LIS literature a lot. Since the recent emergence of electronic literature resources, teachers and researchers have begun to adopt new information-seeking strategies. The introduction of electronic journals and databases have led to drastic transformations in the literature search practices of faculties (Niu, et al., 2010; Rowlands, et al., 2008). Today, web-based electronic literature resources are the primary sources of scientific material in almost all fields of scientific research (Niu&Hemminger, 2012). The main drivers for new information-seeking practices are the widespread adoption of web-based electronic journals and the ease of finding articles on the web via free search engines (Hemminger& Lu, 2007). Science (from Latin scientia, meaning "knowledge" (OED, 2014) is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions about nature and the universe. This knowledge is determined through the

scientific method by experiments and observations, and may take the form of scientific facts, scientific models, or scientific theories. Physics, Chemistry, biology and Mathematics etc. are some of the major streams pursued in Pure Sciences. Pure sciences are one of the most interesting and research oriented fields. Pure science creates and establishes information to understand the nature of universe. The first institution of higher education in Burdwan, the University of Burdwan, was established in 1960. Students were enrolled in different departments, namely Physics (1960), Chemistry (1961), Mathematics (1960). Since its establishment, the science departments have undergone remarkable expansion and growth.

### **Department of Mathematics, the University of Burdwan**

The Department of Mathematics under the University of Burdwan established and taught Pure Mathematics and functioned from the premises of the Rajbati with three teachers, one office staff and 40 students in the year 1960. Now, Department of Mathematics locates in two contiguous buildings on the western side of a large pond at the Golapbag campus. The department offers PG courses in both Pure and Applied Mathematics and by incorporating frontier areas and emerging disciplines like Functional Analysis, Real Analysis, Topology, Algebraic Geometry, Numerical Analysis, Fluid Mechanics, Seismology, Manifold Theory and Computational Mathematics. Later, some emerging subjects like Quantum Mechanics, Optimization and Operations Research, Dynamical System, Computational Fluid Mechanics, Differential Geometry. The Department has excellent records of teaching and research. University Grants Commission has selected the Department for Special Assistance Programme DSA (Phase – I). The Department receives financial assistance for Departmental Library from National Board for Higher Mathematics (NBHM) since last twenty years. Department of Science and Technology (DST) raise financial help to the Department under FIST programme. The number of subscribed national and

international journals was raised to more than 30. The department set up a Numerical Laboratory backed by adequate PC's. The infrastructural facilities enriched with the new laboratories. The department receives grants from various reputed agencies like UGC, CSIR, NSA (now INSA), DST-FIST, DAE UGC-DRS and other sponsoring national/international agencies like UGC, CSIR, DRDO, DST (Govt. of India & Govt. of West Bengal), DDE(B. U.), KyungpookUniversity (South Korea) etc. The department has been get assistance from UGC in the areas of research on Solid Mechanics, Seismology, Fluid Mechanics, Analysis Optimization, Differential Geometry and Algebra.

### **Related works**

In this section, the related research works are segmented into three different concepts namely,

1. Information needs
2. Information Seeking Behaviour (ISB);
3. Models of Information Seeking Behaviour

### **Information needs**

An investigation was made on the information seeking behaviour of journalists. A study was made to investigate the role of digital information in journalism, usage latest information technology and new digital technologies sustain news reporting. The journalists' information searching behaviour was examined by means of major hierarchical aspects (Fabritius, 1997).

Another research revealed the information needs and seeking behaviour of lawyers in the United Kingdom (UK) on discovering the nature of information lawyers acquire, to find the ways how lawyers recognize and retrieve any information and to conclude the factors that manipulate their information needs and seeking habits (Otiike, 1999). A survey research is made on Parliamentary Information Needs assessment of a Pakistan perspective to evaluate the basic

information needs of graduate parliamentarians in Pakistan (Mahmood,2007).

### **Information Seeking Behaviour (ISB)**

The elements of Information-Seeking Behaviour on Pattern and Concepts within a model of information-seeking behaviour were discussed (Krikelas, 1983). Information-seeking behaviour, information needs, information gathering, information giving, source preference, user Information seeking behaviour and the user Characteristics in seeking information are two entities. These two entities are studied and have given emphasis on correlation of these two entities in information seeking (Sridhar, 1987). The information seeking behaviour and changing environment is discussed in the book (Marchionini, 1995). A survey was on decades of research on information needs and information-seeking behaviour (Bates, 1996). A report is prepared on the results of survey of information needs and information seeking behaviour of a national sample of the UK population (Marcella and Baxter, 1999). Another report is done on the findings of research conducted in UK to establish the impact of the Internet on information seeking behaviour in the media, specifically among journalists (Nicholas and Williams, 1999). There are two studies on information seeking behaviour on the Internet. Both investigated information seeking on the World Wide Web (Joinson and Banyard, 2002). An investigation is on the information needs of international students at the University of Malaya (Safahieh and Singh, 2006). Another study is made on the information seeking behaviour of distance education students (Thompson, 2007). Another study has observed the information seeking behaviour of college faculty in Uttar Pradesh (Ansari and Kumar, 2010).

### **Models of Information Seeking Behaviour**

The behavioral model for describing the information seeking process for higher education faculty members developed by Ellis (1993, 1989a, & 1989b; Ellis &Haugan, 1997; & Ellis, Cox, &Hall,

1993). Ellis' behavioral model and research methodology to the study of seventh grade students' searching behavior on the Internet has been adapted (Wolcott, 1998). A study is made on scientists and researchers employing cluster analysis involved in agricultural research (Palmer, 1991a & 1991b) by common characteristics and behaviors in information seeking activities. Another study was examined the information seeking behavior of faculty members in researching and teaching women's studies using similar to Ellis and Palmer's research methodology (Westbrook, 1999 & 1995). Another research is done on the information seeking activities of engineers, health care professionals, and attorneys (Leckie, Pettigrew, and Sylvain, 1996). A "general model" on improved throughout the course of an individual's life for describing information seeking behavior is developed (Brown, 1991). Another similar model was (Olaisen, 1984) developed similar to Brown's study of information seeking behavior of Norwegian scientists and scholars. In this model consists "cognitive," "affective," and "physiological" motivational factors depicted the individual's behavior in the information seeking process and search process with high school students and college students. One of the best known cognitive models of the information seeking process is developed (Kuhlthau, 1999, 1994, 1993, 1991, 1988, & 1983).

### **Objective of the study**

**The research question is:** "What type of information needs and information seeking behaviour is used and required of teachers and research scholars of mathematics departments in the University of Burdwan in 21st century?"

The four key research objectives are summarised as follows:

1. **To study the existing information needs and seeking behavior of the teachers and researchers of pure science departments in the university of Burdwan**

2. **To determine the priority of information needs of the teachers and research scholars of pure science departments during the course of their research work and daily life.**
3. **To identify the information sources selected by faculties and research scholars of sciences and the reasons behind their selection.**
4. **To investigate the information search strategies adopted by the teachers and researchers in seeking information through different sources.**
5. **To establish whether teachers and research scholars are satisfied with the effectiveness of the information systems in place.**

The faculties and research scholars of mathematics department under the University of Burdwan look to establish whether they are satisfied with their current information system and with the information provided. The faculty will outline the main problems experienced by the faculties and research scholars of mathematics department with their present information systems.

### **Methodology**

This study would be designed as a two-phase study to gain an in-depth understanding of the information needs and seeking behaviors of teachers and research scholars of mathematics department in the University of Burdwan. To achieve the objectives of the present study, data collection methods included survey method using online questionnaire method, and discussion with subject experts. Online questionnaire method represents a new approach of the special methods of data collection in social sciences research. A comprehensive literature survey about the research topic is carried out on the topic of research and other related fields.

**Research Sample:** The universe of the present study is the fulltime faculties and research



scholars of mathematics departments in the University of Burdwan. In this research study, online Google form questionnaire has been served to all the faculties (15) and registered research scholars (62) for the session (2011 -2020) of mathematics department under the University of Burdwan.

**Preparation of online data collection:** Two drafts of online questionnaires for data collections are designed. The items were arranged according to the objectives of the study. Two sets of data sets are prepared. One set is for fulltime faculties of mathematic departments under the University of Burdwan and another one set is for the registered research scholars.

**Data Analysis Techniques:**Data collected from the respondents through online data collection tool using Google Form are evaluated and analyzed by using Statistical Package for Social Sciences (SPSS V-25) to find the results. The data is interpreted and presented using tables, figures, and charts. The objectives of the present study demand the use of the following major statistical techniques. In this study, qualitative and quantitative methods are applied.

### **Limitations of the Study**

This study has a number of limitations. The subjects involved in this study were full time teachers and researchers attached to the mathematics departments under the University of Burdwan, during a particular period of time. Students and part time and guest lecturers were excluded from the study. The study also excluded students and lecturers attached to other literature, arts, humanities and social science departments. Another limitation is that the study was also conducted using online data collection using Google Form.

### **Data Analysis and Discussion**

Online questionnaire has been served to 15 faculties and 62 registered research scholars of

mathematics departments of the University of Burdwan. The response rate from faculties and research scholars are 80% and 61.29% respectively. Male female ratio of respondents among faculties and research scholars are 35:3 and 11:1.

		Self	Parents	Teachers
Group	Research Scholar	72.2%	87.5%	83.3%
	Faculty	27.8%	12.5%	16.7%
Total		100.0%	100.0%	100.0%

**Table 1 Motivation of using library**

From Table 1 shows that 72% research scholars have motivated of using library by self than the faculty members. They are also well motivated by their parents (87.5%) and teachers (83.3%) than their faculty members.

		Public Library	College Library	School Library	University Library
Group	Research Scholar	76.9%	66.7%	80.0%	66.7%
	Teacher	23.1%	33.3%	20.0%	33.3%
Total		100.0%	100.0%	100.0%	100.0%

**Table 2 Starting of Library use**

Table 2 shows that 76.9% research scholars start their library use from public library system for their information needs whereas only 23.1% faculty of mathematics department have using public library. 66.7% scholars use to start college library for information seeking whereas 33.3% faculty members use college library for their study. 80% researchers have taken library facilities from their school and only 20% teachers have fulfilled their needs from school library. It is highly noted that 66.7% research scholars have started university library facilities and only 33.3% faculties enjoy starting university library.

		Daily	1day/week	2day/week	3day/week	According to need
	Research Scholar	92.6%	40.0%	100.0%	66.7%	100.0%
	Teacher	7.4%	60.0%		33.3%	
Total		100.0%	100.0%	100.0%	100.0%	100.0%

**Table 3 how often you visit Library**

Table 3 shows 92.6% mathematics scholars visit daily to get their information from university library and only 7.4% faculty members visit daily. 40% scholars have visited university library once in a week whereas 60% faculties of mathematics department use to visit once in a week. Few research scholars use to visit library twice in a week and according to their need. 66.7% scholars want to visit for thrice in a week whereas 33.3% faculty members have visited thrice in a week.

		30 min	1hr	2hr	3hr	4hr	1.3hr
Group	Research Scholar	100.0%	100.0%	81.0%	64.7%	50.0%	100.0%
	Teacher			19.0%	35.3%	50.0%	
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**Table 4 Spending Time in Library**

Table 4 shows that most of the research scholars (100%) of mathematics department spend their time in university library for 30 minutes, one hour, and 1.30 hours in respect of faculties. 81% scholars love to spend library for two hours whereas 19% faculty members. Three and four hours spend by Research scholars 64.7% & 50% respectively where as 35.3% faculties spend three hours only. Research scholars and faculties have spent four equally.

		Yes	Total
Group	Research Scholar	76.0%	76.0%
	Teacher	24.0%	24.0%
Total		100.0%	100.0%

**Table 5 Do you Use Departmental Library**

Table 5 shows that 76% scholars visit regularly in departmental library whereas only 24% faculty members of mathematics visit departmental library.

		Yes	No
Group	Research Scholar	80.6%	64.3%
	Teacher	19.4%	35.7%
Total		100.0%	100.0%

**Table 6 Do you Visit Any Library Other Than Central Library**

Table 6 shows 80.6% mathematics research scholars and 19.4% faculty members have visited other than university library for their research works and study. 64.4% of scholars and 35.7% of faculty members never visit other library for their research works among all respondents.

		Not spend	weekiy 1 hr	weekiy 2 hr	weekiy 3 hr	weekiy 4 hr	monthly2 hr	monthly3 hr
Group	Research Scholar	80.0%	100.0%	68.4%	75.0%	66.7%	100.0%	50.0%
	Teacher	20.0%		31.6%	25.0%	33.3%		50.0%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

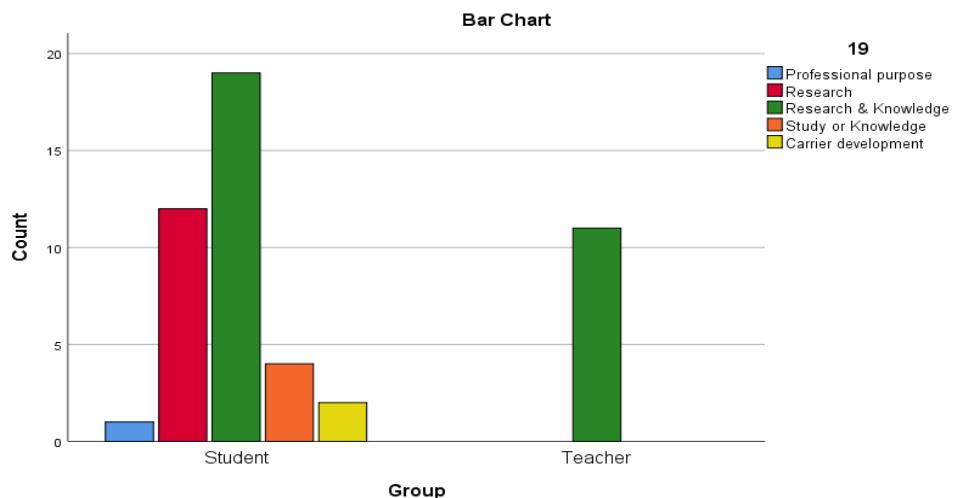
**Table 7 Spending on an average in other libraries**

Table 7 shows among all the respondents 80% mathematics scholars and 20% faculties have never spent time in other libraries. 100% of research scholars spend one hour and two hours in monthly in other libraries comparatively no faculty members spend one hour in other libraries. Among respondents, scholars spend two hours, three hours, four hours in a week 68.4%, 75%, 66.7% respectively whereas faculty members spend 31.6%, 25%, and 33.3% respectively. Research scholars and faculties have spent three hours in monthly equally among all respondents.

		Professional Purpose	Research	Study	Research and Study	Others
Group	Research Scholar	100.0%	100.0%	33.3%	56.5%	100.0%
	Teacher			66.7%	43.5%	
Total		100.0%	100.0%	100.0%	100.0%	100.0%

**Table 8 what are the main reasons of Information Needs?**

Table 8 shows that 100% of research scholars meet their broad information needs namely professional, research, and other purpose among all respondents whereas faculty members use to meet their needs for study and research. 33.3% scholars have only study the major information needs and 66.7% is for the faculties. 55.6% research scholars and 43.5% faculties of mathematics department use university library for research and study among all the respondents (show in fig – 1).



**Figure 1 reason of Information Needs**

		Study	Borrow books	All of above
Group	Research Scholar	100.0%	100.0%	75.0%
	Teacher			25.0%
Total		100.0%	100.0%	100.0%

**Table 9 Reasons for library visit**

Table 9 shows that 100% research scholars of mathematics department visit library for study and borrow books. 75% research scholars access all type of university library services and 25% mathematics faculties' access all the library services.

		New knowledge	Study/research work	All of above
Group	Research Scholar	50.0%	50.0%	78.3%
	Teacher	50.0%	50.0%	21.7%
Total		100.0%	100.0%	100.0%

**Table 10 Purpose of Information needs**

Table 10 shows among all the respondents, research scholars and faculty members have equally accessed to new knowledge and study and research work purpose of information needs. 78.3% scholars access all of the above purpose of information needs and faculties are 21.7%.

		Yes	No
Group	Research Scholar	80.9%	
	Teacher	19.1%	100.0%
Total		100.0%	100.0%

**Table 11 Consultation with faculty members**

Table 11 shows that 80.9% mathematics research scholars consult with faculty members for information needs and information seeking and only 19.1% faculties with their peers. But all the faculty members (100%) don't like to consult with their peers.

		Yes	No
Group	Research Scholar	73.9%	100.0%
	Teacher	26.1%	
Total		100.0%	100.0%

**Table 12 Day-wise information seeking**

Table 12 shows that among all the respondents 73.9% research scholars use to maintain day-wise information seeking study and research purpose whereas 26.1% faculty members maintain day-wise information seeking. It is noted that according to day-wise information seeking record maintenance all the research scholars (100%) does not maintain.

		Search engine	Documentary, Non Documentary, Library services used, ICT infrastructure used	All	Using key terms for finding
Group	Research Scholar	100.0%	100.0%	76.7%	33.3%
	Teacher			23.3%	66.7%
Total		100.0%	100.0%	100.0%	100.0%

**Table 13 Sources used**

Table 13 shows that among all respondents, all the research scholars of mathematics department use search engine, documentary, non-documentary, library services, and ICT infrastructure from university library. 76.7% scholars access all the resources and services of the university library

whereas faculty is 23.3%. Keyword searching is used by 33.3% research scholars. Most of the faculties (66.7%) use keyword searching for information needs and information seeking.

		100%	90%	80%	70%	60%
Group	Research Scholar	94.4%	71.4%	70.0%	50.0%	80.0%
	Teacher	5.6%	28.6%	30.0%	50.0%	20.0%
Total		100.0%	100.0%	100.0%	100.0%	100.0%

**Table 14 Success rate users**

Table 14 shows that most of the research scholars have got their needed information and information seeking success rate above 60%. Among all respondents, 94.4% scholars and 5.6% faculties have the hundred percent success rates for information needs and information seeking. 71.4% scholars have their 90 percent success for information needs and information seeking from university library and 28.6% for the faculties. 70% Research scholars find their information needs and information seeking success rate is 80% and in case of faculty members is 30%. 70% success rate for information needs and seeking research scholars and faculties are equally distributed.

		No dissatisfaction	No comments	Need more resource
Group	Research Scholar	86.4%	42.9%	76.2%
	Teacher	13.6%	57.1%	23.8%
Total		100.0%	100.0%	100.0%

**Table 15 Reasons of dissatisfaction**

Table 15 depicts that among all the respondents most of the research scholars (86.4%) and only 13.6% faculties agree on “no dissatisfaction”. 42.9% scholars and 57.1% faculty members give their view “no comments”. But 76.2% research scholars and 23.8% faculties demand for the need of more resources in university library.

		Yes	No comments
Group	Research Scholar	76.7%	71.4%
	Teacher	23.3%	28.6%
Total		100.0%	100.0%

**Table 16 Improvement needs for University library infrastructure**

Table 16 shows among all the respondents 76.7% scholars and 23.3% faculties express their views on improvements needs for university library infrastructure. 71.4% scholars and 28.6% faculty members said “no comments” for university library infrastructural improvement.

		Yes	No Comments
Group	Research Scholar	77.8%	60.0%
	Teacher	22.2%	40.0%
Total		100.0%	100.0%

**Table 17 Improvement needs for University library services**

Table 17 shows that among total respondents from math department 77.8% research scholars agreed for the improvement of university library services and 22.2% faculties also agreed. It has been noted that a major portion i.e. 60% research scholars and 40% faculty members have said “no comments” for the needs of improvement for university library services.

### **Conclusion**

Study of information needs and information seeking behaviour of research scholars and faculties is an important way of improvement of library infrastructure and services to make information available in a suitable format to the end users. The study found that majority of scholars and scholars access to information and services from university library and agree for improvement university library infrastructure and services. They also traced that more resources should be subscribed in library. The study suggests that ICT enabled web-based infrastructure and services



should be implemented in Burdwan University library system so that the information will reach them in a timely and effectively.

### **Practical Implications**

The study under investigation provides information about the information needs and seeking behaviour of faculties and research scholars of mathematics department in the University of Burdwan. This is a part of research study. Burdwan University Central Library (West Bengal) needs to review their policies they should set apart adequate IT based resources for collecting digital information. They should give top priority to quality education, staff training, and user education with regard to IT based resources and services. The sufficient identification and analysis of the information needs and seeking behaviour on faculties and research scholars in the University of Burdwan for decision makers, planners and policy makers in university library system in West Bengal as well as in India to design a modern library oriented educational system based on the need and demand of users.

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