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## India's Research on Information Seeking Behaviour of Agricultural Scientists: A Literature Survey

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Information seeking behaviour is an essential component in designing and developing of need based information centers for meeting the information requirements of users. The study undertaken is an output of doctorate research in the field of agricultural sciences scanned in Indian context. The study covers various facets of information seeking behaviour of agricultural scientists and their conceptual meanings. It includes about forty researches undertaken by Indian researchers in the field of agriculture and its allied areas. The findings of the studies are grouped into information needs; users characteristics; information seeking; and information seeking behaviour.

### 0 INTRODUCTION

Literature search plays a very important role in research activities, as it forms the very first step of research pursuit. A thorough review of related literature is very essential in conducting a new research. The main function of review of literature to determine the work both theoretical and empirical, which has been done before, should assist in delineation of problem of area. It provides a basis for conceptual framework, insights into methods and procedures, suggests operational definitions of major concepts and also provides a basis for interpretations of findings. The study of related literature implies locating, reading, and evaluating reports of research as well as reports of casual observation and opinion that are related to the planned research project. In any worthwhile study, the researcher must have an adequate knowledge of the work that has already been done or going on in the area of his/her proposed research. The literature search must be conducted in a systematic way to achieve optimum results. Otherwise the search may lead to the wastage of labour and time and poor retrieval of relevant information.

According to Best and Kahn<sup>1</sup> "Since effective research is based upon past

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knowledge, review of related literature helps to eliminate the duplication of what has been done and provide useful hypothesis and helpful suggestions for significant investigation. It is valuable guide to defining problem, recognising the significance, suggesting and premising data gather devices, appropriate study of design and source of data. This also helps to sharpen the understanding the existing knowledge in the problem and provides background for research project. Hence review of related literature forms in this context is worth noting. "The review of educational research gives you an excellent overview of the work that has been done in the field and helps to keep up with recent developments. It helps to move further in the right direction".

The information seeking behaviour (ISB) study named variedly as information needs studies, use-studies, information transfer studies, communication behaviour studies, dissemination and utilization studies are closely related, and are often not precisely defined. The first basic user study in the broader sense was undertaken by Menzel<sup>3</sup> and defined information seeking behaviour from three angles:

- (i) when approached from the point of view of the scientists or technologists, these are studies of scientists' communication behaviour;
- (ii) when approached from the point of view of any communication medium, they are use studies; and
- (iii) when approached from the science communication system, they are studies in the flow of information among scientists and technologists.

Hence, the terminology depends much on the approach and the angle from which one sees.

It may be noted that in the area of information seeking behaviour the psychologists, the sociologists and the behavioural scientists have made significant contributions to the area of research in addition to library and information science professionals. Further, there are very wide variations in the scope of user-studies. These studies touch upon many peripheral areas of library and information science research such as bibliometric studies, citation studies, content analysis, and user studies. It is very difficult to make an accurate estimate of total studies world over in the agriculture sector. But, in this study sincere effort has been made to identify, discover and synthesize literature concerning to the various aspects of information seeking behaviour studies conducted at national level in the field of agricultural sciences. In order to serve agriculture scientists better and design and develop need based information systems and its surrogates. It is an urgent need to focus on the information seeking behaviour of the agriculture scientists covering all facets of their information seeking behaviour. To have a clear understanding the various concepts related to information seeking behaviour of agriculture scientists and life scientists in general, the findings of the study organized into following broad categories:

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1. information needs;
2. information needs and use patterns;
3. users characteristics;
4. information seeking; and
5. information seeking behaviour.

## 1 INDIAN SCENARIO

While reviewing the literature on 'user studies' and its various facets namely, information needs, information gathering habits, information seeking behaviour, etc. It has been observed that no single comprehensive 'users study' has been reported in Indian context particularly in agriculture sciences. It is also encountered that one striking feature of the Indian literature on 'user studies' and its various facets on user research is that there are various studies that stressing the need for user studies quoting the findings of the studies of either USA or UK, and also suggested further area of research unfortunately, without any data or observations of its own (Sharma and Ojha)<sup>4</sup>. In the light of above statement it is stated that this statement may be relevant during their time but few studies on information seeking behaviour in Indian context are worth mentioning e.g., A study conducted by Dr M S Sridhar on information seeking behaviour is a wonderful work.

The topic related to information needs, gathering habits, seeking, and use has been discussed in India since 1962 onwards when the users and library and information services formed one of the topic at the second IASLIC seminar held in 1962. Ranganathan<sup>5</sup> (1970) has given a sound framework and foundation of user behaviour studies in Indian context when he discussed the psychology and the nature of work of users. In another study related to information seeking behaviour, Gopinath<sup>6</sup> (1984) also has given a bird's eye-view of latest trends in information sources, information transfer and communication as well as a review of significant studies of information seeking behaviour. The following significant studies on information seeking behaviour of scientists in general and agricultural scientists in particular are comprehensively reviewed.

### 1.1 INFORMATION NEEDS

People often talk about information needs when, in fact they are referring to want or use. While both are primarily manifestations of need. Information needs arise out of a desire to meet one or other of three basic human needs i.e., physiological needs (need for food, shelter, etc.), psychological needs (need for domination, security, etc.) and cognitive needs (need to plan, learn a skill, etc.). In the information dependent age the lack of information could certainly have serious or even perilous consequences for the Individual. Hence, the modern phrase 'information rich and information poor' are latest addition to information needs. Pioneered Indian studies on the information needs are:

Girja Kumar<sup>7</sup> (1990) while defining the information need stated that 'the information need may be expressed as input-process - output- model'. Further he pointed out the basic component of the system is:

- (i) problem;
- (ii) problem solving process; and
- (iii) solution.

Subbaiah<sup>8</sup> (1982) at the Marathwada Agricultural University Library, Parbhani (Maharashtra) has conducted a study and identified the five levels of information needs of agriculture scientists. This study was based on his experience of classifying the micro literature of agro biological subjects. The study reveals that retrieval of information is effective through a systematic organization pattern of information sources based upon users information needs.

Krishan Kumar<sup>9</sup> (1982) in a study entitled 'user survey: identification of users and their information needs in health science libraries' has stressed the need for user-studies and development of expertise within the country and also present a programme for determining information needs of health science users. In a separate study he defines, information needs versus information seeking behaviour, which is a pre-requisite in designing an information system. It should be planned on the basis of user studies, he argues.<sup>10</sup> (1982)

Namponya<sup>11</sup> (1986) in a study has emphasized the role of extension worker in the dissemination of information in developing countries for research, teaching, training and development activities. He suggested that libraries should regularly conduct the survey on users in order to determine the information needs, and seeking behaviour of extension workers so that the need-based collection in the libraries could be developed.

In another study Subbaiah<sup>12</sup> (1988) conducted a survey and found that there is a significant association between age and professional experiences of agricultural scientists and their information needs. He stated that need for information increases with the age and professional experience of agricultural scientists. The study further indicated that majority of the agricultural scientists depend upon their institutional libraries and information centres for their literature and information requirements research and education both current as well as retrospective sources of information.

Malhotra<sup>13</sup> (1990) has conducted a user study in the libraries of agriculture universities namely Haryana Agricultural University (HAU), Hissar and Punjab Agricultural University (PAU), Ludhiana to determine the role of faculty in promoting library use among postgraduate students. He identified and ranked statistically a total nine variables which could be used to predict whether the method of instructions used by faculty teacher is library based or otherwise. Malhotra<sup>14</sup> (1990) in other study also found that the relationship between the

adequacy of library collections and the amount of daily library use by the faculty members was satisfactorily in the libraries of Haryana Agricultural University (HAU), Hissar and Punjab Agricultural University (PAU), Ludhiana.

Devi and Lahiri<sup>15</sup> (1997) while evaluating the sources of information in agriculture, the tasks of agricultural agencies in India, and the means and media used by Agricultural Extension Agency officers in obtaining current information. Reports on the results of a questionnaire survey distributed to all 113 extension officers and their assistants in the state of Manipur, which achieved an 85 per cent response. The study reveals that extension officers working in the Manipur state rely heavily on the Department of Agriculture for their current information, as the attached library system to agricultural extension centers have inadequate resources and technology. Thus researchers strongly made recommendations for improvements of library system attached to the agricultural extension centres.

#### 12 INFORMATION NEEDS AND USE PATTERNS

Pruthi and Nagpaul<sup>16-17</sup> (1978, 1979) have conducted two separate studies through questionnaires and structured interviews in order to determine the relationship of communication-pattern to individual's status, educational level and social relations, to study the role of formal and informal communications in problem solving, and idea generation. The findings of the research stated that the predominately internalized communication activity within the project team of research & development scientists and little inflow or outflow of information in smaller projects than bigger projects and the 'gatekeeper-construct' gets diluted with the increase of team size. They have further found a significant effect of work relationship on communication.

A review study on 'information requirements and information gathering habits of scientists' conducted by Satyanarayana<sup>18</sup> (1985) based basically on the findings of studies already done elsewhere on the two general topics namely, assess their information needs, sources and use of information.

Korah and Devarajan<sup>19</sup> (1991) have conducted a study 'information needs and use pattern of agricultural scientists utilizing literature on rubber at Rubber Research Institute of India (RRII) 'in 1995 and published in the IASLIC Bulletin. The study was conducted to examine the use pattern of different types of materials, adequacy of library collection and services, information retrieval strategies and related aspects of the rubber scientists and technologists of the RRII. The study reported that there is an emergent need to expand the library services in areas like procurement of journals in foreign languages, organizing user education programmes and build up of dissertation/thesis collection. They also stressed to introduce of modern gadgets of information communication technology for the efficient and effective storage, processing, retrieving and disseminating information.

Sasikla<sup>20</sup> (1999) presented the findings of the study at the 19th All India Conference of the Indian Association of Special Libraries and Information Centres (IASLIC), held at Ranchi, 26-29 Dec 1993. The study reported the results of a study of the information and library use behaviour of 436 managers in three groups (senior, middle, and junior) from 20 industrial organizations including agricultural in Andhra Pradesh. The findings of the study shows that: managers seldom visit libraries, they try to satisfy their information needs from other sources than libraries, managers need data type information firstly and descriptive information on specific topics secondly. Moreover, they collect information to keep abreast of current knowledge, to solve immediate practical problems, and additional information relating to the job form informal information system. And there are relatively differences in search and use behaviour among the three groups of managers.

Bairathi and Sharma<sup>21</sup> (2002) have conducted a study of the communication climate and its dimensions as perceived by the respondents of various categories such in teaching, research, extension, and administration work in agricultural sector. The study revealed the maximum number of respondents favoured the communication climate prevailing in the agricultural universities and the various dimensions of communication climate like general communication, superior's openness, upward communication opportunity, and quality of information were also perceived from moderately to highly satisfactory. The study further indicated that the highest perception of general communication by administrators might be attributed to the fact that these people have the maximum opportunity to communicate with all categories of employee in the agricultural university.

Chakraborty<sup>22</sup> (2003) has conducted a study on the information requirements and use pattern of agricultural scientists in universities and institutions of UP. The study reveals that agriculture scientists rely more frequently on scientific/technical journals than on teachers. The findings of the study also revealed that formal information sources, teachers rely more on monographs/text books, personal research record/information file and reference books than scientist, whereas scientists more rely on journals, indexing and abstracting sources that teachers.

### 13 USERS CHARACTERISTICS

In order to maximize the impact of library services and maximum use of library resources it is essential to LIS Professionals that they should know about their users properly so that they can deliver content based information services. The user characteristics are an important component of the communication systems in any information system are for their use. The user characteristics are innumerable and could be clustered in different groups in various ways.

Sridhar<sup>23</sup> (1995) classifies the user characteristics ranging from integral or external to individual, sociological demographic, psychological personality (work related), organizational, professionals, etc., are: age, gender, experience,

educational qualification, performance, productivity, creativity, motivation, emotional suitability, interest, personal idiosyncrasies, communication, various roles, responsibility and status.

Devrajan<sup>24</sup> (1995) pointed out eight levels of user characteristics such as, functional, reading, visual, personality, capacity, satisfaction, interest, variability and vocational advocational.

In a study of 'information seeking behaviour of researchers in history and political science in Delhi' conducted by Neena Talwar Kanungo<sup>25</sup> (1997), the characteristics of user have been studied into three groups: demographic (age, gender); institutional (designation/status, institution); and professional (educational qualifications, subject of specializations, current research, language known, and interdisciplinary approach).

#### 14 INFORMATION SEEKING

Information seeking is a human process that requires adaptive and reflective control over the afferent and efferent actions of the information seeker. Information seeking is a dynamic and changeable process despite its formal problem solving attributes. It depends on the situation, but also large extent on the individual performing it. Information seeking greatly influence of personality (personality is a pattern of characteristics thoughts, feelings, and behaviour that distinguishes one person from other). In the study of information seeking behaviour, the discovery of people's strategies, expectations, attitudes, and anxieties promotes the relationships as they live and work with other information users. Information seekers should begin with finding out what is stopping progress, creating an information gap/vacuum. An important aspect of sense making as a process in the struggle of people to understand a problem that drives them to seek meaning for in many situations and many circumstances they are content to take no such action. Information seeking is distinguished from information retrieval (IR). Information retrieval does not involve persistence, continuous or regular human attention, i.e. retrieval may aim to yield an intermediate value that is applied and then forgotten. Information retrieval may be automated and embedded in the larger information-seeking process. There is a progress during an information-seeking process, this is a product of information seeker attributes, informational environment attributes, and the communication channel over which information flows.

National Information System for Science and Technology (NISSAT)<sup>26</sup> (1983) had undertaken a research project in order to examine the information seeking and communication behaviour of Indian scientists. The study found that there is no significant difference in information gathering/communication behaviour of Indian scientists in the science disciplines. Study further stated that there is a close resemblance to findings from similar surveys conducted elsewhere, even though informal resources.

Harpal Kaur<sup>27</sup> (1996) studied the reading materials used by the postgraduate students in the agricultural universities based upon the replies received from the respondents of two agricultural universities namely, Haryana Agricultural University (HAU), and the Punjab Agricultural University (PAU), Ludhiana. The study dealt with kinds of reading materials used, frequency used for different kinds of reading materials, number of scientific and technical periodicals read frequently and user demand for the reading materials and the level of satisfaction.

#### 15 INFORMATION SEEKING BEHAVIOUR

The information seeking behaviour essentially refers to the strategies and actions undertaken to locate discrete knowledge elements. It is concerned with the interactive utilization. Information seeking is a human process that requires adaptive and reflective control over the afferent and efferent actions of the information seeker. Information seeking behaviour (ISB) resulted from the recognition of some needs, perceived by the user, who as a consequence makes demand upon a formal system such as libraries and information centres, or some other person in order to satisfy the perceived information need. The information seeking behaviour essentially refers to locate discrete knowledge elements. It is concerned with the interactive utilization of the three basic resources namely, people, information and system.

According to Girja Kumar<sup>28</sup> (1990) 'the information seeking behaviour is mainly concerned with who needs what kind of information and for what reasons; how information is found, evaluated and used, and how the need can be identified and satisfied. According to him the following process involves in information seeking behaviour:

- (i) identifying objective;
- (ii) defining needs;
- (iii) accessing information system;
- (iv) establishing sources of information;
- (v) use of information; and
- (vi) satisfaction/dissatisfaction

Swarnlata and Lahiri<sup>29</sup> (1982) have conducted an extensive survey on 'information seeking behaviour of agriculture extension workers'. They have reported that agricultural extension workers mostly depend on the Department of Agriculture for meeting the current information needs. It is also reported that in regarding use of reading materials for information their responses are seemed to be vague. The study further noted that use of the library by the agriculture extension workers is almost negligible as they mostly depend for their information need on agricultural offices.

Garg and Ashok Kumar<sup>30</sup> (1984) have conducted a study and found that most

of the scientists collected information keeping more than one objectives in view, such as writing a review article, preparing proposal for a new project or procedural information for design and development. The researchers further indicated that the periodicals are highly used sources of information by the scientists particularly published from USA, UK, and the international societies.

Rajagopalan and Rajan<sup>31</sup> (1984) presented an account of programme and activities on user studies conducted in India with emphasis on the success and shortcomings. They tried to deduce the five laws of library science and a conceptual framework for user and user studies. The study also stocktaking of Indian user studies, user education programmes, and user promotion studies.

Sridhar<sup>32</sup> (1987) in his study 'information seeking behaviour of the Indian space technologists of a single organization' tried to relate various aspects of information seeking behaviour to their characteristics like status, experience, nature of work, qualifications, specialization, professional activities and achievement. The study revealed that space scientists were found to visit the library more during departmental review of promotion. In another study Sridhar<sup>33</sup> (1987), found that less than one-fourth of the space technologists have had participated in collection development of the library in subsequent analysis.

Ras<sup>34</sup> (1987) analyzed the information seeking behaviour of scientists (heterogeneous users) of the National Institute of Nutrition, Hyderabad by a questionnaire method. Information was sought with regard to their information seeking behaviour with reference to current information sources both, documentary and non-documentary. Emphasis was laid on non-documentary channels: formal and informal, such as mass media, flow of communication among scientific groups and gatekeeper scientists. The study concludes that non-scientists' information seeking behaviour is mostly non-documentary and non-formal in character.

Sridhar<sup>35</sup> (1995) in other study entitled 'information seeking behaviour of Indian space technologists' found that there is no significant difference between the men and the women space technologists in time spent and dependence on formal and informal sources of information, intra organizational communication, use of bibliographic references, degree of delegation of information gathering work and use of library document. Further it is stated that women tended to have fewer inter-organizational contacts, more consultations with colleagues for references, and more interactions with the primary library than space scientists. The women space technologists did not differ from men in making borrowed use of library documents but differed significantly in in-house use and interactions with library.

Lalitha<sup>36</sup> (1995) in this study described the results of a comparative study of the information seeking behaviour of medical and engineering personnel of five libraries in Thiruvananthapuram, India. Students, teachers, practitioners and

research workers in both fields were surveyed. It reported that neither professional group seemed to have completely understood the complex nature of their information needs or their information sources. The study also emphasized the need of the user education for medical and engineering personnel.

A study conducted by Reddy and Karisiddappa<sup>37</sup> (1997) reported the results of a survey of the information seeking behaviour of 160 professionals in the field of physically challenged users to determine the types of communication channels used to gather the latest information; the sources of information used in performing specific research activities; and the duration of the time spent in browsing and reading literature while performing research activities. The sample population included: special educators; psychologists; medical staff; vocational counsellors; and speech therapists. Sources listed as actually being used included: books; periodicals; subject bibliographies; abstracting and indexing services; current literature reviews; databases; meetings and conferences; discussion with colleagues; and personal files. The sources were ranked in terms of frequency of use and preference and results revealed that informal channels tend to be used more for information gathering than formal channels.

Prasad and Tripathi<sup>38</sup> (1998) revealed the results of a questionnaire survey, undertaken at the Banaras Hindu University to determine the similarities and differences between the information seeking behaviour of physical scientists and social scientists. The study also investigated the use of formal and informal channels of information, tools and techniques used for current awareness, publication output, use of materials available in languages other than English, types of information used and frequency of visits to the library. They conclude that there are significant differences in information seeking behaviour, and seeking strategies of the physical scientists and social scientists in meeting their information needs. They have further noted that there is no significant difference in their approach of information seeking process, information needs, and sources used for satisfying their information requirements.

## 2 CONCLUSION

After scanning through various studies on information theories, information use patterns, information needs and information seeking behaviour of scientists in science and technology, and agriculture science in particular, certain inferences can be drawn. It is found that agriculture as a discipline and a crucial sector for Indian economy and major livelihood of Indian population. The subject falls into an area of lesser investigation in India keeping the complexities and dimensions of information requirement of agriculture scientists and a presser of sustainability. Further, it is stated that, so far, no single comprehensive user- study covering all dimensions of information seeking behaviour of agriculture scientists has been reported in the country. Many piecemeal research works of varying qualities have possibly been done and only some of them have been published. Even with a liberal yardstick about the soundness of methodologies adopted, comprehensive

and adequate samples studies and rigorous analysis of the data, one can not find enough empirical studies covering many types of users and many aspects of information seeking behaviour of agricultural scientists keeping in view that Indian economy and Indian society is an agro-business based.

Moreover, the user studies conducted outside India particularly in the developed countries have been undertaken in different environments than India so the findings are not exactly suitable to Indian conditions. Therefore, it is imperative to undertake more and more studies on user studies honestly and genuinely in order to determine the various aspects of information seeking behaviour of agricultural scientists so that need based and object oriented collection could be maintained in the libraries/information centres of the agricultural institutions.

The present literature surveyed under this study certainly helped to narrow and to more clearly delineate the research plan, and helped to reveal overlooked conclusions and facts that ought to be taken into consideration before investigation of a new study in this field. Similarly, these reviews also helped in determining the degree of information needs and information seeking behaviour of agricultural scientists that have already been undertaken outside and in side India. The present study and their findings certainly will go a long way to serve as a base for future research studies in the agriculture sector and help in designing the agriculture information systems/centres based upon the information requirement of users.

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