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Introduction:

Information is a human product. It is a knowledge developing resource. Information is considered as an important resource that contributes towards the development of a nation. It provides the core for the development of knowledge, the basis for innovations, the resources for informed citizenry, and as a result, it becomes a key commodity for the progress of a society. Acknowledging the significance of information in national development, Wasserman (1991, p. 38) noted that "it is not an accident that the developed nations are those in which information products and services have been brought into being and are widely exploited, first in conventional forms and later through computer intervention".

Members of a society acquire the needed information from a variety of sources. However, several of these sources are expensive, complex or difficult for individuals to acquire and use. Therefore, the role of libraries becomes vital in meeting the information needs of individuals in the society. Libraries develop their collections, facilities and services to meet the information needs of their patrons.

However, in order to accomplish this task effectively, libraries must have a thorough understanding of the information needs and information-seeking behavior of their users. Information seeking behavior is a broad term, which involves a set of actions that an individual takes to express information needs, seek information, evaluate and select information, and finally use this information to satisfy his/her information needs. Various factors may determine the information seeking behavior of an individual or a group of individuals. It is, therefore, desirable to understand the purpose for which information is required, the environment in which the user operates user’s skills in identifying the needed information, channels and sources preferred for acquiring information, and barriers to information.

Adequate knowledge of the information needs of users is imperative for libraries in re-orienting their collections, services and activities to synchronise them with the information seeking behaviour of their patrons. Bandara (1993, p. 19) noted that ‘if the library is to provide any meaningful information service, the user’s information seeking habits should be taken into consideration’.
Since the 1940s, numerous studies have been conducted investigating different aspects of this topic. Earlier studies primarily focused on scientists and technologists to assist in building information resources and systems to effectively meet their information needs. Earlier studies focused on scientists and engineers because of more interest in these libraries at that time and greater availability of funds. Later on, the scope of information seeking studies expanded to include scholars and academics from other disciplines. Many studies have been conducted to investigate the information-seeking behavior of library users based on their subject interest, occupation, information environment, and geographical location. Information needs and seeking behavior of academics have also been a popular area of research. Many earlier studies reported that scholars and academicians heavily used books and journals.

Sethi (1990) used a questionnaire to study the information-seeking behavior of 256 social science faculty members in Indian universities. It was found that respondents preferred journals, books, government documents and reference sources for meeting their information needs. The study also revealed lesser use of indexing and abstracting sources, book reviews, conference proceedings, dissertations and theses, newspaper clippings and other non-book sources. However, Prasad (1998) noted that in addition to journal articles, non-traditional literature such as unpublished conference and symposia papers, research proposals, policy guidelines, and project reports were equally popular among the scholars.

Many studies have shown that in addition to formal information sources, academics also have relied heavily on informal communication channels to meet their information needs. Academic staff considered seminar and conferences as the third important source of information after books and journals. It has been reported that scholars valued professional meetings for the purpose of gathering current information. Faculty members also considered interpersonal contacts, particularly off-campus contacts, as an important source for getting the needed information. Colleagues were preferred over other channels, as they were considered familiar, reliable, immediately accessible, inexpensive, and often provide a concise answer synthesizing the available information. In order to develop these informal contacts, libraries should facilitate informal meetings among scholars and compile up-to-date directories of local and international scholars in specialized disciplines. Many scholars in developing countries prefer informal channels for acquiring the needed information because of inadequate and irrelevant library
collections, lack of information infrastructures, ineffective library services, lack of money to use fee-based information services, inadequately trained and less co-operative library staff. The success of a library in meeting the information needs of its user plays an important role in the number of their future library visits. The information technology revolution is expected to bring significant changes in the information-seeking behavior of users.

Modern technology has resulted in new services, targeted at the specialized and unique information needs of users. The availability of electronic communication facilities such as e-mail, discussion groups, bulletin boards, electronic conferencing, and chit-chat groups, has opened new channels for communication. A review of literature showed that most of the studies on information-seeking behavior of academics have been undertaken in developed countries, and thus, reflect the information-seeking environment there. However, conditions in developing countries are considerably different, and they make it relatively difficult to befittingly apply data from the developed countries. Although a few isolated studies on the information-seeking behavior of academicians have been undertaken in developing countries, little headway has been made in understanding the complexity of information needs and the manner which academics in developing countries seek and use information.

Developments in computers, microelectronics, and communication technologies have radically changed the library and information environment. Gone are the days of stand-alone libraries, in which a library was judged less by the quality of its resources and services than by the quantity of materials it had available. Traditional libraries were dominated by print publications and the access mechanisms were also by-and-large manual. The paradigm shift from stand-alone libraries to library and information networks, available via the Internet, can provide end-users with connection to Internet-based services. Moreover, present generation are surrounded by automated, digital, and virtual libraries as well as by networked data, specialized networks, and library networks. Multimedia and the Internet have further made the job of library and information professionals more challenging. The influence of new technology on Information Seeking is also providing a new set of alternative models that more accurately describe the Information Seeking process as a dynamic activity. Reading in the 21st Century is no longer confined to reading print books. Electronic versions of many print materials have been made available on the World Wide Web. Some of the advantages of using electronic or digital
materials include their relative accessibility and flexibility in terms of time and space. Electronic materials also allows the inclusion of multi-media elements like sound and video clips, which cannot be presented in print books. These and other factors have contributed to growing acquisition rates of e-books and e-journals in academic libraries around the world.

1.1 Information Seeking and Retrieval:

Information seeking as a problem seems natural to augment with information retrieval ideas, but should be additionally leveraged with other user's information seeking behavior. At worst, information seeking and information retrieval can be scaffolded over each other to gradually build to a refinement of a user's information need. Information seeking is a process in which humans purposefully engage in order to change their state of knowledge. From a behavioral perspective, the primary difference between Information retrieval and Information seeking is searching vs. browsing. The focus of each domain is in the actions studied. As computer technology matures, information retrieval and information seeking studies are moving closer.

New technologies, such as the easy-to-use World Wide Web browser, will promote more information seeking, use and attracts new users every day and every hour. However, new interfaces alone will not help us to find everything we seek, but user might believe so as user often think electronic information is more accurate or complete. In a way, utilizing more collaboration between users can make up for some of the shortcomings of technical systems. Blending the different perspectives and experience levels of a pool of users can result in a larger body of resources discovered. Many authors are in the opinion that there are two styles of expert searchers, the operationalists who understand the system and use high-precision searches and the conceptualists who focus on concepts and terminology to then combine results to form more complete searches. This combination of users co-operating can form a powerful team to enhance each other's Information Seeking.

Different search techniques are undertaken by library users to search and locate relevant information. To understand how users of libraries search and locate relevant documents librarians must understand the search techniques and what resources and sources of information they generally use. There are many ways of looking at the information seeking process. Of the research viewed, each one had its own ideals and factors that shed new light on the activities conducted. Ford (1973) offers a conceptual
model for researching information needs and uses on the basis of information communication. The model has six components — sources or originators, methods or activities, messages, channels or media, recipients, and information. It is presented as:

(SOURCE) (METHOD) (MESSAGES)

"The source / writes or speaks / ideas, research results, etc. /which are trans-
(Channel) (Recipient) (Method)
mitted by / journal, meeting, etc, etc. / to the recipient, who reads or hears / the message and is thus informed. At this point the message is converted into INFORMATION”.

This view of information flow can aid in researching information seeking and retrieval practices by providing a basis to analyze interactions. The information seeking tasks are: initiation, an awareness of an information need; selection, the identification or selection of an approach or subject to explore; exploration, the investigation of information to gain understanding; formulation, where the person gains a perspective or point of view on the problem; collection, the gathering of the relevant information; and presentation, to fulfill the information need and conclude the search. Through these stages of information seeking, the individual is subject to feelings of uncertainty, optimism, confusion, frustration, doubt, clarity, sense of direction, confidence, and satisfaction or disappointment. Actions move from exploration to the documentation stage; thoughts move from being vague in the earlier stages to being focused as interest increases.

India, though one of the developing countries in the world in the sphere of education with its 66 percent literacy, has enormous specialist manpower in every possible area, and outstrips many developed countries in terms of scientists, technologists, software specialists, management experts, and so on.

Technical education in India contributes a major share to the overall education system and plays a vital role in the social and economic development of our nation. In its very broadest sense, the discipline of engineering is concerned with that body of theory and practice that is relevant to the design and construction of real-world artifacts arising from human endeavor. Engineering education is not only teaching in basic science, but also relies on training some personal and technical skills, modifying the student’s way of thinking in a more logical way to achieve creativity at the end.

India has the potential to be a global technology leader. The Indian economy has been growing at the rate of 8 to 9% per year. The Indian industry has also become
globe globally competitive in several sectors and can increase its global market share. A critical
effect in this will be the success of the technical education system in India. With
economic growth and the spread of technology, the demand for engineering has increased
manifold. This has been matched by an increase in enrolments in engineering as well as
rise in number of engineering institutions in India.

1.2 Nature and Characteristics of Technical Libraries

Education and library have been inseparables since centuries and civilizations.
Evidences are plenty where library has been one integral part of all education, more so in
the institutions of higher learning. The libraries since their existence have also adapted to
changes that have influenced them from outside as well as within. The moveable type
brought the first landmark change in the content of libraries. Since that time the libraries
started acquiring new media and also a new role to support academic programmes of all
educational Institutions. Libraries with changing media enhanced the needs and wants of
the learners and the facilitators of learning – the teacher and the librarian. This implies,
the changes seen in the education have definite impact and brought transformation in
every domain of libraries. The knowledge resources of libraries have changed from time
to time, the methods of handling have also undergone significant change, with the
changing media and the users also adopted this process of continuous change. Needless
to say that the new media in which knowledge resources are emerging are equally
accepted by the users of today.

A technical library of engineering or polytechnic college can be classed as a
special library. In the age of science and technology information services to students and
teaching faculty is the back bone of technical college library. Reference service in special
library must go beyond the state of informal personal aid to provide advanced information
to persons engaged in technical education and research. The modern library is definitely a
creation of the twentieth century, when the need was greatly felt for separate libraries
catering to the specialized needs of individuals and groups. Many private and industrial
organizations such as business firms manufacturing and engineering and specialized
enterprises, feel to have information facilities to cater their specialized interests. In recent
years to ensure the use of indigenous technical developments and in view of country’s
economic viability, government also realized the importance of technical libraries. The
library in a progressive technical college must seek to fulfill the following functions:
(a) To provide a comprehensive selection of literature covering the requirement of the course syllabus, together with a selection from the humanities to help a student to broaden his reading beyond his particular course.

(b) To enable students to be trained in seeking, collecting and applying information for them.

(c) To provide for the teaching staff a substantial nucleus of the more advanced and specialized works, together with the periodicals necessary to enable them to keep abreast of the latest developments in their subjects.

(d) To provide reference service as well as information service for students and staff to assist them in their studies and research activities.

(e) To cater to the needs of any post-graduate research that is being done in the college.

Besides the above functions the library should make available indexing and abstracting services in sciences and technology to the user. Apart from the usual library work of lending and reading room services, the technical college library should also provide inter-library loans and prepare documentation lists. Such services will bring ease and efficiency in research and avoid wastage of time and money to a considerable extent. The engineering college library's user community is a heterogeneous group of faculty categorized as Professors, Associate Professors, Assistant Professors, students who can be categorized as under graduates, post graduates and further according to their year of study and branch/subject of study, few researchers who are working to seek their formal research degree, and other non-technical staff working for administrative tasks who also use library facilities. Hence, the library has to analyze its customers and segment them into small homogenous groups may be by subject or by their cadre. Then only the library could meet the actual demands of users through various dissemination mechanisms. Some typical groups serviced by special engineering technical libraries are technocrats, engineering scientists, technicians, administrators and chemists, economists and engineers, whose professional tasks demands for latest and correct information. Books and journals are not the only medium of information dissemination. Other audio visual aids such as films, microforms, slides etc have been stocked and the information contained in them has been disseminated. The new media helps to create electronic publications which are available on magnetic and optical media. These information media required special containers for stocking and over new apparatus and methods for display.
With the growth of science and technology in the world every country however prosperous feels the necessity of getting information from the other countries. Hence, acquisition of foreign literature and developing proper bibliographic control measures became a part of present day technical library management. Some engineering college libraries in India are still handicapped in providing adequate reference services to user of the library for want of properly qualified and trained library personnel and adequate supporting staff, resources and library equipment. As such, in spite of development of technical education in India, the record of reference services provided in libraries in technical colleges are not very inspiring. The brief presentation of nature and function of the engineering college libraries indicates the ideal conditions of their performance. However, in reality, how far they are able to achieve their objectives have to be assessed individually. Such an evaluation will pave way for the identification of lacunae and improve their performance.

1.3 Statement of the Problem

In the above sections an attempt has been made to bring a relation between the technical libraries and their utility. It is also important to examine whether the technical libraries have the suitability, in terms of their structure and framework to adopt the contemporary changes and challenges. It is also necessary to investigate as how library users and professionals are prepared or getting prepared to these fast-changing events of technology. Hence, a research under the topic entitled “Information Seeking Behaviour of Teachers in Engineering College Libraries affiliated to Visvesvaraya Technological University: A Study” has been undertaken to study the problems under the purview of technical libraries.

1.4 Need for the Study:

Users constitute an inseparable and indispensable part of any library and information system. It is often remarked that a library is basically a service institution designed to provide information services to fulfill the information requirements of the community. Human-being is involved in certain activities which are complex and interdependent. This phenomenon gives rise to increasing need for information from some potential sources that are known to them. The information needs of library users are
varied in nature. They differ qualitatively, quantitatively and geographically. They also differ with regard to intellectual level, frequency and volume of information sources required. There are unlimited producers of information. Some of them are governmental organizations, others are non-governmental agencies, institutions and industrial firms. All these agencies add to phenomenal growth of volume and variety of information.

The growth of knowledge and increase in the number of documents published in various fields, growth in number of users, would create a greater demand of information with multidisciplinary in nature. The path breaking developments in the field of multimedia has provided the much-needed relief to overcome many problems in the libraries. The information needs are also in a state of constant flux. To meet the ever widening interests of the users, an unfailing alertness is required on the part of the information intermediary, the librarian or the information scientist. He has to be resilient so as to meet the challenges posed by the informed elasticity of the mind of the specialist user. Information needs remain as an essential tool for a library to make itself fit for the right user.

A library being a service institution is designed to provide necessary information services to its users. In order to make the services useful and the process effective, it is essential to know the information needs of the users. Hence, a library to be successful in achieving its very objective, must know its users information needs. To undertake such task of studying the information needs, it is the responsibility of the librarian to identify the factors that affect information needs so as to devise appropriate and more reliable methods of satisfying their needs. In the present situation where information technology prevails over the library environment, it is critical on the part of the information professional to study on information needs at regular intervals.

When a need is felt for anything, people take action in order to satisfy that need. They resort to different strategies or modes of action for their need fulfillment. The same applies for the satisfaction of information needs. In order to satisfy the need for information, the individuals pursue different paths. Information seeking behavior is mainly concerned with who needs what kind of information for what reason; how information is found, evaluated and used. It is one of the important areas in user studies. In the present day academic world, users want precise information within a short period of time. The libraries on the other hand cannot cope with the information need of the
users with their limited resources. The need of the hour is to make best use of the available resources and infrastructure facilities. Research on the study of information needs and information gathering habits of a particular community will assist an information centre to develop effective programmes and use the resources in optimum way. Thus, scientific studies of information seeking behavior of the users and user needs assume significance.

For any information system, the user is the central point. Unless information services effectively reach the user, the system intended to deliver the needed information is rendered ineffective. Any information system can become user friendly only when it understands the information seeking behavior of its users. Proper knowledge of users' information needs is one of the essential components for developing a proper information system. The review of literature reveals that a number of studies have been conducted on information seeking behavior of users belonging to various subject groups and various levels such as faculty, research scholars and students.

However, there is no systematic study reported on the information needs and information seeking pattern by the engineering faculty serving in the Engineering colleges of India. In the context of engineering education, one can notice prodigious growth of engineering colleges in India especially in the early nineties. Consequently, libraries attached with these institutions are growing year after year providing variety of new services in response to the emerging information and communication technology. However, there is unequal growth in the development of these colleges due to certain factors, such as social, economical, political, management policies. The emergence of enterprise culture, competition among the engineering institutions, challenges of dynamic changes and the mounting pressure for accountability to the ever changing trends in engineering education are some of the factors influencing the provision of library and information services. At this juncture, it is pertinent to make a systematic study of the information seeking behavior of the faculty in the engineering educational institutions which not only provide a bird's eye view on the functioning of engineering libraries but also provide an insight into the information needs and information seeking behavior of the faculty. All these factors have demanded for a comprehensive study and investigation of the information needs and information seeking behavior of the faculty attached to the Engineering Colleges affiliated to the Visvesvaraya Technological University, Karnataka.
1.5 Objectives

The study has been conducted with the following objectives:

(i) To trace the growth and development of engineering education in Karnataka;
(ii) To present an overview of the libraries of the engineering institutions in Karnataka;
(iii) To study the information seeking behavior pattern of the engineering faculty in Engineering Colleges affiliated to Visvesvaraya Technological University;
(iv) To analyse most sought sources of information by the engineering faculty;
(v) To evaluate the motivating factors for information seeking behavior by engineering faculty;
(vi) To examine the faculty opinions about the comprehensiveness of respective institution’s library collection;
(vii) To identify the various channels of information, the faculty makes use in information seeking process;
(viii) To analyse the extent of use and dependence on various sources of information for teaching and research in the internet era.

1.6 Hypothesis

1. There exists no uniformity in the information seeking behavior of the engineering faculty.
2. The designation of the faculty and institution where they work do influence the information seeking behavior.
3. The engineering faculty mostly depends on host/parent institution’s library for information.
4. The faculties of engineering are much satisfied with the resources of respective institution’s libraries.
5. The faculty of engineering avails and depends on more than one channel of information sources.
6. There exists heterogeneity in the motives for information collection.
7. Formal and documentary sources dominate the informal and interpersonal sources in the information seeking behavior.
8. Sharing of information among the faculty is prevalent in the engineering institutions.
9. The use of databases on the subject of engineering & technology is common among the faculty attached to universities.

1.7 Methodology

The study adopts a combined methodology of theory and fieldwork in order to examine the information seeking behavior of the engineering faculty. In this context an exhaustive survey of literature has been conducted.

Profuse use of published literature is made for the study. Several databases available like ERIC, LISA, and International Dissertations Abstracts etc are searched to get the published documents. Based on the review of literature, a structured questionnaire has been designed to collect data from the target engineering faculty drawn from various engineering institutions in Visvesvaraya Technological University of Karnataka State. A pilot study was conducted with sample of 50 respondents from various institutions and the results were tested. Based on the study, the questionnaire was further modified and developed to suit the stated objectives. Accordingly, revised version of the questionnaire was finally developed. The revised questionnaire was administered among engineering faculty with designation such as Assistant Professors, Associate Professors and Professors working in about 50 engineering institutions in Karnataka constituting a representative samples. Repeated visits are made to the selected libraries to make on the spot observation. Also, series of discussions were held with the professionals, experts and fellow researchers to get the clear picture of the concept and the related aspects. Therefore this research work has used multi methods to collect, analyze and consolidate the data.

The data collected from the questionnaire has been analysed to test the hypothesis framed and to fulfill the stated objectives. For this purpose, SPSS software package has been used for the statistical analysis techniques such as Frequency distribution, percentage analysis, Likert-scale, Chi-square Test etc., depending on the data collected from the respondents.
1.8 Limitations

The scope of this study is limited to the engineering institutions affiliated to Visvesvaraya Technological University in Karnataka State. Although there are about 186 engineering colleges, affiliated to VTU, this study is confined to the faculty working in about 50 engineering institutions in Visvesvaraya Technological University. Although these engineering institutions offer courses in other disciplines such as Management and Applied Sciences, this study covers the faculty in Engineering disciplines only.

1.9 Chapterization

The study is organized in six chapters. The brief account of each chapter is given below:

**Chapter 1:** Introduction, Need, Objectives, Hypotheses, Methodology, Limitation of the study;

**Chapter 2:** Review of Literature;

**Chapter 3** Growth and Development of Engineering Education in Karnataka;

**Chapter 4** Profiles of the Engineering College libraries

**Chapter 5** Data collection, Analysis and Interpretation.

**Chapter 6** Findings, Suggestions, and Conclusion.
1.10 Conclusion

Libraries these days are involved in a wide range of media, and the librarian is compelled to be aware of the emerging media. In fact the library of the recent past was not like the library of today, and obviously the library of the future will be quite different from what it is today. In the information society, Information has been considered as one of the key factors of production. A library is the main source of information. The purpose of this study is to study the information seeking behavior pattern of the engineering faculty in engineering colleges and to think seriously about information media and its optimum use for the promotion of engineering education and learning.

Technical libraries are in transition due to changes in socio-economic, cultural and technological fields. Recent trends have profoundly reshaped the library service landscape. As a dynamic institution, technical library must continue to evolve with reference to the changing scenario. For the past three–four decades the development of Information Technology has been responsible in changing every aspect of library services. Today library professionals must be proactive to new changes by maintaining the flexibility, creativity and making easy access to information to meet the increasing demands of the users at different levels. The age of Electronic libraries has arrived. The primary role of helping the users to find the needed information remains the same in the information age; also the importance of technical education and information literacy is widely recognized across the institutions of higher learning in the world.
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