SUGGESTIONS

AND

CONCLUSION
Chapter 7
Suggestions and Conclusion

Academic libraries of engineering institutions are prominent information organisations and play a crucial role in fulfilling the information needs of the users of engineering disciplines. In the fast-emerging and ever-growing information explosion it is very difficult to make sure that everyone is happy and satisfied with the library and the information resources and services. Recent advances in the field of information technology contribute significantly to improve the services of the libraries. Now-a-days libraries are seen not only with printed and electronic documents, but also with computers. The impact of technologies such as Internet, online resources, computer networks, and digital libraries are leading to a paperless society. Engineering college libraries have started subscribing to electronic resources and digitization of important documents as a response to the current digital age. In this critical situation, library professionals should have a clear understanding of their users' needs. Unless the needs are precisely determined, it is difficult to satisfy their requirements and develop an appropriate information system.

Various studies have examined the information needs of engineering professionals, the skills with which those needs are met, and the sources utilised to satisfy those information needs of the user community. This research study focuses specifically on the information requirement and their assessment of information resources, facilities, and services by the students, faculty members, and research scholars. Further, the study makes an attempt to know systematically, and argue that different types of uncertainties are associated with the use of information resources and services. The explosion of new and different search tools, sources and channels of information, continues to be a significant factor in the search process and to access quality information.

While information needs have changed little over the years, the means of accessing information have changed dramatically. Science and technology librarian may
have to act as a facilitator, intermediary, and end user trainer. Hence, on the basis of the findings of this study the following suggestions are made.

7.1 Suggestions

After a systematic and methodological analysis of the responses of the engineering college students, faculty members, and research scholars, the data regarding their views on their information need and information seeking pattern, and their opinion about the use of information resources, facilities, and services in fulfilling their need, the following proposals are made:

**Deliver Current Information through Books and Journals (Print/Online)**

It is revealed that text books, newspapers and magazines, followed by online journals are the most preferred information resources among the respondents. Students prefer print resources more compared to faculty members and research scholars. The purpose of seeking information is for their academic and research work. This result also corroborates the findings of Onuoha and Awoniyi (2011) and Parvathamma and Anandalli (2010). Though they are interested to use more books, the respondents found that text books and e-books are inadequate. Current issues of subject journals (printed) are not received on time in the library. According to the AICTE norms, there should be 1000 titles with 4000 volumes in each branch of engineering. In subjects like mathematics, physics, chemistry, and humanities, etc., there should be a total of 1000 volumes. Every year 25 titles and 100 volumes are to be added in each branch of engineering. In case of journals, there should be 6 national journals in each branch of engineering. Subscription to international printed journals is desirable. Every engineering college should subscribe for electronic resources (e-books and e-journals) recommended by the AICTE in its norms. (AICTE, 2013). Hence the study suggests that:

- Strengthen the text books collection with new editions and new titles with sufficient number of multiple copies and subscribe online resources (e-books and e-journals) as per AICTE norms.
• Renew and make available the subject journals (printed) in time and keep the respondents current in their subject field.
• Make available the theses/dissertations of recently completed research scholars immediately in the library.
• Sufficient and separate budget should be allocated for subscribing to online journals.

Provide Value Added Library Services Through Latest Technology

It is found that though the respondents are satisfied with the services provided by their respective libraries they are unhappy with the current awareness service and inter-library-loan service offered by their respective libraries. The study by Amarnath (2006) reflected the same results.

The library must provide online database service, current awareness service, and inter-library-loan service to the respondents since according to the findings these services are not provided by a few libraries. Current awareness keeps the researcher abreast with the latest developments in their respective fields. The advent of computer and information technology tools, have helped the libraries to better organize the information resources and render value-added services effectively and faster. It is therefore suggested that current awareness services through library portals, blogs, RSS feeds, e-mail alert services, mobile phones, face book, e-newsletters/bulletins, creation of databases, and library website/webpage should be enhanced employing the technology. To assist the respondents through inter-library-loan service, the librarian must network with other colleges, organisations, industries, and individuals to facilitate resource sharing of science and technological information. Though the DELNET facility is available in most of the colleges, majority of the respondents are not aware of the facility. IT trained library staff should be employed to provide library services effectively. The authorities should allocate sufficient funds to the libraries to acquire the latest equipments to provide IT-based services.
Provide Access to Every Document in the Library through Library Web-OPAC

Information is a basic resource and majority of the respondents use the library catalogue/OPAC to locate the required information resources from the libraries. A few libraries have not provided access to their catalogue in the campus due to poor IT infrastructure in the library. So it is suggested to develop Web-OPAC and enhance the visual impact of the library catalogue. There are many websites such as Google, Flipkart and Amazon, because of which students choose to bypass the library and seek information elsewhere. In order to compete, library catalogues need to be transformed into something usable to the respondents. It would also be advisable to add contents to the library catalogue along with other functions such as self-renewal, overdue alerts, new arrivals, etc. Adding such functions to the library catalogue, will make the OPAC a good source of information. Merge the library catalogue with that of DELNET which can be used as a union catalogue for better utilisation of the resources in a national and international wide.

Provide Essential Facilities and Enhance the IT Infrastructure of the Libraries

The study found that lack of computers with IT infrastructure was one of the problems faced while searching information by respondents in their respective libraries. It is suggested to discard the old outdated systems, and provide sufficient modern equipments with IT infrastructure like printing, scanning, Internet, etc. It is also observed that only two colleges under study are functioning in an independent building. It is advisable to have a planned independent building with provision of pleasant, natural and electrical light, soothing interior, comfortable furniture, general reading room for combined study with personal text books, and other such facilities. The study found that respondents are not much satisfied with essential facilities such as toilets, drinking water and equipments facilities provided by their respective libraries. The study by Kumar (2010) revealed the same result. It is suggested to provide the essential facilities such as drinking water and toilet facility inside the library. The reference services should be
extended beyond the working days. This will increase the use of information resource and services.

Promote and Optimize the Use of Internet

Internet has emerged as a powerful educational and informational tool. It is found that followed by friends/colleagues; the Internet is the preferred channel of seeking information by the respondents. The Internet is seen to promote inquiry and creativity through interaction of various forms of knowledge such as text, multimedia, graphics, photos, music, video, sound, animation, etc. (Karisiddappa, 2002). In this context, it is rightly said-The Sun can only shine on half of the globe at a time, while Internet delivered education can cover entire globe and around the clock with knowledge (Kostopoulos, 1998). Faculty members and students use the Internet to search specific information required for their academic activity and for e-mail communication, whereas research scholars use it to browse online journals regularly, because it provides easy access and instant results. Hence it is suggested that sufficient number of computer systems with Internet facility should be provided in the library, hostel, and departments so that it is possible to utilise the electronic information resources efficiently. The timings of the digital library should be extended round the clock. Necessary training should be provided to the respondents to make use of the information resources on the Internet. Today the Internet has become one of the important sources of information and effective communication, and a retrieval tool in the libraries. Therefore the engineering college libraries should take steps to promote the use of the Internet.

Boost the use of Electronic Resources with Web 2.0 Technology

Consortium based access to electronic resources has been provided in most of the engineering colleges under study. The respondent colleges have spent a huge amount on the subscription of electronic resources through INDEST-AICTE. But the usage of the electronic resources by the respondents is not satisfactory. Most of the faculty members and research scholars prefer to use the electronic resources to keep abreast in their field of subject. Majority of the respondents have not heard the name of INDEST-ACITE. Those who are aware preferred to use IEL, Springer Link, and Science Direct database to
search articles required for their academic and research work. More than 95% of the respondents opined that using electronic resources improved the quality of their study, teaching and research. Therefore, to utilise the electronic resources effectively by the respondents, the library should develop new techniques and methods to empower the users. The latest technologies, i.e., web 2.0 have led the way to effective use of electronic resources and empowered the users [Goria 2012]. Therefore the study suggests the following web 2.0 technologies for an effective and optimal utilisation of the electronic resources under the consortium mode.

a. RSS (Really Simple Syndication or Rich Site Summary) Feeds alert: RSS feeds and e-mail alert technologies have emerged as a substitute for CAS. It is one of the most useful techniques to get update from current content and selected information which are published in electronic resources. Most of the publishers of e-journals provide free of cost access of contents up-to-date abstract level. So the RSS feeds can also be subscribed for e-journals, which do not have full text access right.

b. Email alert: It is another way to update the users of current and selected information through e-mail search alert facility of the electronic resources. The users are required to create an account on the electronic resources website. All the newly published information on a particular search will be updated automatically on the users e-mail from the electronic resources. Users can set the alert updating daily, weekly or monthly, etc.

c. Delicious: Nowadays it is very difficult to remember all the required web addresses for users because web resources have increased daily in every field of knowledge. Delicious is a very popular social bookmarking site which provides free of cost facility to store and manage the desired e-journal web site addresses.

d. Google Reader: It is a Web-based aggregator developed by Google. It is used for reading and managing RSS feeds.
**Extend the Working Hours of the Library on Sundays and Public Holidays**

It has been discovered in the study and also by the suggestions given by the respondents that one of the main barriers for not using the information resources and services of the library is lack of time. It is not possible for the respondents to spend more time in the library on working days due to class assignments and laboratory work. To make use of the library resources beyond the working days, it has been suggested to extend the reference service and digital library service on Sunday and Public Holidays, too. This way the respondents can get access to their resources at any time.

**Embed Information Literacy Course in the Curriculum**

Lack of time, lack of computers with IT infrastructure, too much information retrieved, lack of awareness of library resources, lack of information search skills are some of the dominant barriers in information seeking. Engineers need current information. Due to information explosion in various formats, it is difficult for them to keep up with new procedures and techniques. Since engineers typically value accessibility over quality when choosing information sources, it seems even more important to teach them how to critically evaluate the material. Information literacy skills cannot be developed in the isolation of library context and practices. Many of the respondents solve the problem while accessing the information resources by themselves or through the help of friends. Therefore they should be equipped with the necessary search skills. Information literacy course should be made a part of the curriculum of all courses in order to produce independent individual literates. Respondents must be able to cope with the rapidly changing information environment and possess information literacy skill to survive the information age. The need of the hour is that the faculty and the librarian should collaborate to develop and demonstrate tutorials, orientation courses, lectures and to aware the respondents about the new technology and techniques for effective use of the information resources. Therefore libraries should come forward to provide information literacy to its users by teaching the users in searching and accessing the library resources, especially the electronic resources effectively. Library professionals also can take the initiative to improve and expand the Internet searching and use. Librarians might prepare a list of subject websites, data useful to researchers, link to free...
online databases, and so on, and place them on the library website. An information literacy program by the library in accessing and using Internet based information is also crucial to expand the knowledge and activities of the faculty members, students and research scholars.

**Provide User Education and Training**

Majority of the respondents expressed that they need instructions on the area of library resources and services, and in the use of library catalogue/OPAC. Although the respondents are aware of most of the information resources, majority of them do not utilise the electronic resources. The students’ usage to electronic resources is very low compared to faculty members and research scholars. They opined that the online resource does not give answers for syllabus related problems. Lack of awareness, lack of time, and lack of search skills may be the reason for their less usage of information resources. To be acquainted with the available resources properly orientation programmes are necessary. Hence, it is suggested that advanced training for users at different levels should be started. The content of the training programme should be: a) Basic introduction to library resources, facilities and services; b) Using OPAC; c) Methods and tools for searching information resources; d) Using the Internet; e) Using online and CD/DVD ROM databases; f) using electronic journals through demonstrations; g) introducing reference books; h) how to write references and citations; i) introducing appropriate indexes and abstracts. Users should be discouraged from merely browsing the shelves. They should be encouraged to use OPAC before going to the shelves.

**Conduct Training Program for the Library Staff**

Library staff, both professional and semi-professional, needs to be fully conversant about the information resources of the library. Knowledge about the information resources among the library staff members plays an important task in assisting the users towards their information. Although majority of the respondents are satisfied with the attitude of the library staff, a few of the respondents faced the problem of lack of staff assistance while searching for information. Majority of the respondents
expressed that their problems are moderately considered by the librarian/library staff. This may be because lack of instruction skills among the staff or lack of knowledge about the information resources of the library. It is therefore suggested that the library staff should be encouraged and deputed by the authority to attend seminars, workshops, conferences, training/orientation programs on library management software, IT tools, search techniques, and literacy skills to perform competently in an automated and digitised environment. The computer lab staff should be trained to navigate the various electronic resources by which they can provide better services to the users.

**Provide Desktop access for Information**

It is found that due to lack of time, majority of the faculty members and research scholars prefer departments and hostel/home to access the Internet for accessing electronic resources. Therefore college authorities should strengthen the IT infrastructure of the departments and hostels for the effective use of the electronic resources.

**Initiate Digitization of Important Information Resources**

Engineering college libraries possess vast store of information in the form of books, bound volumes of journals, university question papers and information generated by the students, faculty members, and research scholars. It is important to preserve these important and valuable sources of information. The direct access to this huge source of information can be made available all over the world only by digitisation. Digital library is a way of making educational and research data and information available to faculty members, research scholars, and students and others at the institution and worldwide. Digital libraries provide easy access to digital collections of documents where users can search and retrieve the documents of users’ interest in networked environment. The study found that most of the respondent college libraries have automated their content by creating database and providing services through library management software, making availability of OPAC or Web OPAC. A few libraries are on the way of digitisation. They are digitising the university question papers, contents of bound volumes of journals, CD/DVD ROMS etc. Digitisation has been important for engineering college libraries aiming the digitisation of theses, bound volumes of journals, CD/DVD ROMS, question
papers, conference/seminar proceedings and special collections. Digitisation of these will be proved profitable for users. Engineering college libraries need to build digital information resources and services using the modern information technology to satisfy the users need.

Create Institutional Repository

Institutional repositories are becoming essential tools for engineering colleges. The open source movement, coupled with greater network collaboration among researchers, gives rise to discipline-specific federated repositories hosted by institutions, research projects or professional associations. Students and faculty members increasingly recognize the need to store their intellectual output in the form of personal collections and make available the results of their work within and outside the institution. The library digital contents can also be stored in these repositories. The content of these repositories can be made available for integration with the library management systems and can also be made available to faculty members, research scholars, and students in the institution as well to the general public. The long-term impact of the institutional repositories is likely to change many of the basic assumptions about how intellectual output is managed by individuals, their colleagues, and the academy, and how research itself is conducted. One of the most important jobs of a library is to provide its users with access to a wealth of knowledge relevant to their interests and needs. The institutional repositories are becoming essential tools for engineering colleges. Therefore, the authorities have to give due attention towards the establishment and maintenance of institutional repositories for catering to the needs of the users and the engineering colleges.

Promote the Use of Information Resources and Services

It is found that one of the barriers on use of the information resources and services is the unawareness of its existence in the library. It is also found that majority of the respondents have never heard about INDEST-AICTE Consortium and DELNET. Libraries should inform their users about the materials that are available in their collection and how to access that information. Promotion is essentially the means to create awareness among the users and thus leads to increased usage, increased value in
the organisation, education of users, and changed perceptions. Hence it is suggested to carry out the following measures to promote the library resources and services. They are:

**a. Develop a Dynamic Library Website/Webpage:** It is observed that, majority of the research scholars consider library website/web pages as the most preferred mode of communication. Library web page provides the facilities of dissemination of library information through the World Wide Web. It provides a venue for one-way communication to the library. The library web page dedicated to give the facilities to the reader to they can access the whole range of library resources and services i.e. conference alert, recent bibliographies, new arrivals, Web OPAC, browsing brochures of the library, browsing online journals, databases, reading newspaper, browsing bulletin, CAS services and list of websites and email of resource libraries, different department heads, librarians etc. It is extremely helpful for the distance user or remote user to know about different type of online library resources and its activities through the Internet. Thus library website/web page is a good way of promoting library information services and resources. Many libraries allow access to their bibliographies, offer users guidance as well as full-text electronic versions of materials that can be accessed from home. The library web sites can use web-based user education for imparting training to users in teaching basic library skills along with a glossary of library terms, using the library OPAC, locating books, magazines, biographical data and other library materials, understanding how to navigate the libraries website and how to select the most relevant database, instructions for searching CD/DVD ROM and guidance in locating web-based databases and other electronic resources, and instructions on subject searching training, using Boolean operators, and searching internet resources through search engines.

**b. Perform Marketing of Library Resources:** Libraries should develop a comprehensive marketing strategy to advertise library resources and services. In todays changing world, marketing library services has become a necessity. Many respondents are simply unaware of the types of materials and services the libraries offer. Respondents mostly approach friends/colleagues and Internet and they attend or approach them because they know them. For the publicity of the library resources and services following strategies may be applied:
- Use library walls to display the language usage study tools, important library website addresses, user guidelines to the electronic resources, announcement of upcoming events, conferences/seminars, introduction of new services, and a timetable should be scheduled and displayed for the training programmes.

- Use information brochures containing the library's services and products that are distributed, both to real users and to those coming into the library without being subscribers.

- Publish newsletters or bulletins to publish the articles, new additions in the library, etc.

- User awareness quiz should be conducted frequently and more library facilities to the participants should be extended which will increase the use of library materials. As a token of appraisal, best user of the library should be honoured on institution day. By doing so other users will be encouraged to use the information resources of the library.

- Book exhibitions of new publications on important dates and important occasion may be organised in the library by the publishers. This helps to provide an opportunity for users to know the various types of new titles available in their field of subject so that they can recommend to the library. This will help the users and to keep updated with the latest development in various subject fields.

- The library should host conferences, seminars, and workshops to promote the information resources and services

**Evaluate the Library Resources, Facilities and Services Regularly to Meet the Changing Needs of the Users**

After providing the entire basic resources, infrastructural facilities, and services, the library should judge its performance in accordance with the user needs and demands
though some user surveys. The information professionals of the library should be aware of the current needs of their users, which may vary from one user to other user from time to time. Therefore, libraries should carry on user surveys regularly, re-evaluate the current library user and their information needs, and involve the user’s participation in decision making about the library services. This will help the libraries to develop their collections and services according to user requirements.

Suggestions for the Management

- AICTE should involve academic institutions in the selection of online journals, so that the required journals can be identified.
- Provide multiuser access to the important IEL online resource to use it effectively.
- Encourage students to access electronic resources by giving assignments so that they may be forced exploit the e journals more efficiently.
- Involve librarians in the HOD’s meetings.
- Introduce library surveillance system (CCTV) in the libraries.
- Introduce RFID technology at the security.
- Establish general reading room for group discussion; take personal books for reading and laptops.

7.2 Recommendations for Future Research

Suggestions for related and future research would be:

1. Information seeking behaviour of engineering students, faculty members, and research scholars.

2. Information seeking behaviour of medical students, postgraduates, faculty members, and research scholars. Information resources and their use by medical college users, law, social sciences, that is other major disciplines and subjects.

3. Use of electronic information resources in engineering disciplines.
4. Evaluation of information literacy among the students, postgraduates, faculty members, and research scholars among different disciplines and subjects.

7.3 Conclusion

The main objective of the study is to determine the information requirements of the students, faculty members, and research scholars and their assessment of the resources, facilities, and services provided by the engineering college libraries. The results of this survey suggest that there are differences in the information need and information seeking among the respondents. Information seeking is motivated by a wide variety of needs, including personal, educational and recreational, professional needs, etc. In summary, the respondents need to keep up with new techniques for academic and research work. They seek other type of information less frequently. Innovation is an important factor. Previous work has repeatedly found that the engineers' primary sources of information are their friends/collèagues within the organisation and the major reason for this is that colleagues are easily accessible. The study found that students and faculty members rely heavily on friends/collèagues, whereas research scholars seek through the Internet if the needed information is not available in their library. The result of the study discloses that respondents seek diverse information from various sources, both print and non-print. A well equipped library with up-to-date collection, organised on modern lines is a sine-quo-non for study and research in any discipline, particularly in the field of engineering and applied sciences. Hence, the study revealed that there is an indispensable role for a library to play as an information centre with efficient library services with a professional librarian to fulfil the user's academic and research requirements. Books, electronic resources, and Internet are becoming a valuable asset in the library and information centre. However, in addition to this it is important to note that in this IT and networked era a significant percentage of respondents depend on print resources in their library. As the study has revealed students prefer print resources more than electronic resources. The respondents considered text books, newspaper/magazines and online journals as the most important information resources for their academic and research work. They believe that the information available in the online journals is beyond their curriculum. Proper user education in the area of awareness and training in the search
skills of information will enable them to make use of the information resources of the library effectively.

Today the Internet has become one of the important sources of information and effective communication and retrieval tool in libraries. The respondents in this survey reported that they make use of the Internet services to search specific information, e-mail, and to browse online journals for their academic and research work. The results of this study emphasise the belief that the Internet is becoming a valuable asset to the engineering profession. Through the internet they access online journals which is a preferred media of information for research scholars because it gives instant results. The study revealed that, though the electronic resources are made available through INDEST-AICTE and DELNET, it has been not utilised by a majority of the respondents due to a lack of awareness. Though the students are smart enough to access the Internet its potential in supporting curricular requirements has not been realised by the students. The use of the Internet in the library is being made by very few respondents and this needs to be increased. Factors like absence of well trained staff, time allotted, number of nodes available, facility of printing/downloading affected the use of Internet and online resources in the library. This has led to the low usage of the electronic information resources by the respondents. These obstacles have to be overcome by promoting the use of the Internet and training in the Internet search strategies.

Traditional models of library services are insufficient to meet the current requirements of users. The respondents opined that they are more concerned about the speed and easy accessibility to the current information they search for. The increasing online environment is resulting in users who are more technology savvy, demanding and expecting more from the library. This study revealed that, respondents are not satisfied with the current awareness service, inter-library-loan service, online database service, and user education services offered by their libraries. It is necessary to create new modes of delivery services to the user desktops even outside the campus. As more resources are created via the web, issues arise related to licensing, archiving, security, and access. Respondents would like to see their library on the Internet able to meet their all information needs not only on demand, but also in anticipation of demand. Besides they
would also expect to get comprehensive information on a broader range of disciplines, while an engineering college library could have a good collection only in their specific discipline. To overcome this problem engineering college libraries may share their collections by resource sharing with other organisations and institutions and shall have to offer IT based value added library services to the respondents.

The successful operation of the library depends to a large extent on the choice of the library collections. The collection should meet the needs and requirements of the users. User surveys at regular intervals may be of help to the authorities to assess the adequacy and effectiveness of the library collection and services which may help them to take necessary measures to provide better services to the users. Education of the users in the science and technology community is an essential service that the information professional has to provide in the present information environment. They have to provide instructions about information resources and assist the users in acquiring skill in locating and evaluating the information using a variety of methods. The findings of this study indicate that the use of the library may be motivated by training in the area of awareness to information resources, particularly electronic resources and services for the effective use of library and information resources and services.

Library professionals should act as technology application leader. Redefining and re-engineering of library and information systems for the modern era is the need of the moment. They should be a part of the information system access tools. Library professionals must change and adapt to the new electronic information environment. They should provide instructions and support to users to cope-up with the changing information environment, so that optimum use of information sources become possible for users. The transition of traditional collection to digital or virtual collections presented the library professionals with new opportunity to play a new dynamic role and serve the information based society in a better way than hitherto, especially in the field of science and technology which is very sensitive to the changes. Science and technology librarians may have to act as a facilitator, intermediary, and end user trainer. They may have to provide a semantic web by searching, controlling, filtering and sense making the chaotic information resources. This can be achieved by strategic and operational planning,
acquiring new knowledge, skill, ability and collaborating with faculty members as well reshaping and strengthening their relationship with the computer specialists and technologist in their institutions. Finally to conclude, the information resources and services in the engineering college libraries in Dakshina Kannada and Udupi districts are being used to the maximum and have been organised on modern lines to the great extent, however the above mentioned suggestions and recommendations if implemented would definitely enhance the use of library to the optimum level.
References


