Information Gathering and Searching Habits in digital environment among the Users: A study of selected engineering colleges in North Karnataka.

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Abstract - *Information seeking behaviour is important part of user studies, library staff have aware of users' information requirements as well as information gathering habits in digital environment, soas toenablethem toprovide better services. The aim of the Present study was to find the information gathering habits of students and teachers of engineering college under study. The structure questionnaire has designed based on the objectives was circulated to collect the needed information. The study examine the several aspects of demographic factors of the respondents, academic background of the users, general information about the library, awareness and use of information resources, searching methods and problem faced by the users in accessing of information. Finally the study concluded that users of engineering college library have better information searching skills in digital environment*

Keywords: Information seeking, information habits, E-resources, engineering Colleges, information gathering and searching habits.

Introduction:

Information a vital commodity, Crawford (1978) has described information as the fifth need of human beings ranking after air, water, food and shelter. It is also describe life blood of human being andcurrency of 21st century. Basic features of Information are Collection, transfer and use are all pervasive and universal in nature. Information brings people and thoughts together. It is the exchange of ideas, news and data makes a society what it is. Information is a very important element for the progress and development of any system. Library is one of the important resource centre for the information. Engineering college libraries have various types of information resources especially digital resources to meet out the information requirements of their users

Information Gathering

Information gathering is behaviour of human activity. Since it is behaviour, it is logical process. Psychologists try to determine why people need? What do they need? Why people

behave differently and how do they behave? Librarians, though differently involved in observation of information- seeking behaviour, on professional as well as personal level, have paid little attention to the psychological reasons for such behaviour. The information seeking behaviour is used here to include all activities comprising information seeking, information gathering, and information retrieving and communication activities performed in the library environment.

Review of Literature

A large number of studies have been conducted in the area of information needs and seeking behaviour over the last decade. Many researchers in this area in library and information science as well as in other disciplines have developed varying perspectives of information needs and seeking behaviour. These studies have significantly contributed to developments in information services, literacy, skills training, electronic resources, virtual libraries, and our understanding of individuals' behaviour towards information. As a result, a lot of literature in this field can be found in books, journal articles, theses and dissertations, reports, and magazines. The some of the important studies have been reviewed in the followingsection. Engineering college libraries have witnessed great changes in recent years in their collection and in their services. Significant development changes occurred in policies and practices (Mulla, K R and Chandrashekar). In another study by Kaur and Rajeev (2008) in their study on engineering college in Punjab and Haryana all the respondents make frequent use of the Internet because they have access either at college or at home. Satpathy, Sunil Kumari (2010) examined the faculty members in engineering and highlighted the problems by the users especially in the usage of e-resources and suggested remedial measures for its improvement. Puttaswamy and Krishnamurthy (2014) in their study in engineering colleges in Karnataka found that majority of teachers/scholars prefer to access e-resources for getting the latest information for their lectures, research work and for professional development. Sethi (1990) focused on the information seeking behaviour of Indian Social Scientists and reported that social scientists seeked their information from a wide network of channels and from a wide variety of sources; their information search was governed by a number of factors; they devoted certain amount of time in visiting places and attending conferences; they mainly depended upon documents and their dependence on certain library services was considerable.

Need for the study:

The knowledge is more powerful and information is needed for all human beings. The era of information technology changed the status of libraries in the 21st century. Right information to the right users at the right time with precision is becoming a need in an information society. Information seeking behavior involves personal reasons for seeking information, the kinds of information which are being sought, and the ways and sources with which needed information is being sought. Any kind of academic community users requires information on their subjects, this information play very important role in the career they required up todate andauthenticinformation in their specialization. The studyis examined the information seeking behaviour pattern of the users of the engineering college libraries of north Karnataka in a digital environment. In this context lot of studies has been conducted at developed countries mainly highlighted the information seeking behavior in conventional method for different set of target groups. The following can be observed from the review of literature.Hence, the present study an attempt has been made to examine the information needs and gathering habits of users of engineering college libraries in digital environment.

The study was also examined the awareness ,extent of use of e- resources and searching techniques used for accessing required information by the users of the library under study.

Scope of the study

The scope of the present study is limited to the study of information needs, gathering habits, information seeking patterns of users of engineering colleges in the digital environment. The present study is mainly based on the primary data collected from sample respondents and the following limitations have been identified. The present study is explorative in nature and was restricted to digital environment. Further its geographically confined to north Karnataka of Karnataka state. The study is based on the sample population of users of engineering college libraries under study. Further study is restricted to the extent of assessing the information needs, gathering habits, awareness and use level of information sources in a digital environment. The study is also restricted to the UG, PG students and teachers of the engineering college under.

Objectives of the study:

The study has the following primary objectives to ascertain the information seeking behaviour of users of engineering colleges in the digital environment:

1. To identify the information needs of users of engineering college libraries in digital environment
2. To investigate the type of channel used for gathering information in digital environment and purpose of seeking information
3. To identify the various e-information sources consulted and their extent of use of by the users of the library
4. To study the searching techniques used for getting required information in digital environment
5. To examine the extent of awareness of e-resources among the respondents
6. To trace the problems encounter while accessing the e-resources by the respondents.

Methodology:

In order to know the information gathering habits of users of engineering college libraries in the digital environment. The survey method of research was employed for the present study, where in structured questionnaire was used as a data collection tool to collect required data from the target population, the structured questionnaire was designed based on the objectives, hypotheses and background of the literature of the study.Further, Wilson model of information seeking behavior was applied to assess the skills of information gathering and searching habits among the students and teachers of engineering colleges under study. Further stratified random sampling method was adopted for the selection of the study population. Given target population was stratified into branch wise further semester wise and branch wise and category wise to derive the sample from the population. The designed questionnaire was circulated to collect needed information. Later the 680 responses collected, data was analyzed with the help of statistical tools like percentage, average mean, SD, to draw the meaningful conclusions and further substantiate through appropriate statistical tests and also testing the formulated hypotheses of the study.

Hypotheses:

1. There is a positive correlation is found between level of awareness and extent of use of electronic information resources among the students and teachers of engineering colleges.
2. There is a positive correlation is found between level of awareness , extent of use and level of satisfaction of electronic information resources among the students and teachers of engineering colleges.

Analysis and interpretation:

A sample of 1550 structured questionnaire were distributed to the students and teachers of the engineering colleges under study , of which 680 completely filled questionnaire was received from the five basic branches of engineering

Table-1 Gender wise distribution of respondents

Sl no	Gender	Frequency	Percentage
1	Male	430	63.24
2	Female	250	36.76
	Total	680	100

Table -1 shows the gender wise distribution of the study population under study, large majority of the study population belongs to male respondents and remaining 36.76% of the study population belong to female respondents.

Table-2 Age-wise distribution of users of the library

Sl no	Age	Frequency	Percentage
1	< 25 years	460	67.65
2	20-30 years	135	19.85
	30-40 years	60	8.82
	40-50 years	15	2.21
	More than 50 years	10	1.47
	Total	680	100

Table-2 shows the age-wise distribution of users of the library, it is observed that a large majority of the (67.65% -460) respondents are below the age of 25 years. While 19.85% of the respondents belong to the age group of 20-30 years. Hardly more than 10% of the respondents have more than 30 years of age y. It can be concluded that majority of the respondents are below the age of 25 years. It is quite obvious that majority of the respondents are undergraduate students and Post graduates, so their age may be less than 25 years.

Table-3 Qualification wise distribution of study population

Sl no	Social Background	Frequency	Percentage
1	BE	270	39.71
2	M.Tech	365	53.68
3	Ph.D	45	6.62
	Total	680	100.00

The study population is comprised of BE/B.Tech, M.Tech and PhD qualification of the respondents, the greater majority of the respondents are from M.Tech holders, followed by B.Tech holder, only a few of the faculty members under study have a doctorate degree. It can

be summarised from the above discussion that the majority of the study population having PG degree only.

Table-4 Branch wise distribution of respondents

Sl no	Branch	Frequency	Percentage
1	Mechanical engineering	120	17.65
2	Electronics and communication	221	32.50
3	Computer science	201	29.56
4	Civil engineering	75	11.03
5	Electrical engineering	63	9.26
	Total	680	100

The researcher has selected only five basic branches of engineering, these branches are available in almost all the college understudy. The study population is mainly comprised with Electronics and communication and Computer science engineering, which amounts to 62.06% (422) of the total population, the reasons for the more number of samples is that , these two branches are available in all the college under study.

Table-5 Frequency of visit to the library

Sl. No	Frequency of library visit	Frequency	Percentage
1	Every Day	88	12.94
2	Once in a Week	142	20.88
3	Twice in a Week	262	38.53
4	Fortnightly	136	20.00
5	Once in Month	27	3.97
6	Very rarely	22	3.24
7	Never	3	0.44
	Total	680	100

It may be seen from the table-5 that frequency of visit to the library is ranging from daily to occasionally by the users of the library. A significant number of respondents under study visits the library twice in a week. Nearly 20% of the respondents visit the library fortnightly and at the same time, equally percentage of the respondents also visit the library once in a Week. Only 12.94% of the respondents visit the library every day. It can be seen from the above discussion that a large majority of the respondents fairly visit their college library to fulfil their academic and research assignments.

Table-6 Purpose of visit to the library

Sl. No	Purpose of visit to the Library	Frequency	Percentage
1	To borrow books	450	12.93
2	To refer reference books	322	9.26
3	To read the textbook and other materials	231	6.64
4	To consult scientific journals	145	4.17
5	To use back volumes of journals	125	3.59
6	To request for interlibrary loan	53	1.52
7	To refer old question papers	201	5.78
8	To browse news/papers / magazines	261	7.50
9	To use the Internet	402	11.56
10	To refer e-resources	235	6.75
11	To prepare for competitive examination	54	1.55
	Total	3479	100

Researcher asked the question about purpose of visit to the library and responses are recorded the table-6. The students and teachers of the engineering college visit library most frequently to borrow the books (12.93%) and also to use the internet (11.56%) in the library. And they also visit the library to refer to reference books (9.26%) browse news/papers / magazines (7.50%). The students also visit for refer e-resources (6.75%) and read the textbook and other materials (6.64%).

Table-7 Access tools used for locating reading materials

Sl. No	Accessing tools	Frequency N=680	Percentage
1	By consulting catalogue	175	25.74
2	Browsing through Selves	138	20.29
3	With the help of Library staff	101	14.85
4	Self-searching	87	12.79
5	Through OPAC/ WEB OPAC	179	26.32
	Total	680	100

Table -7 describe the access tools used for location reading materials in their library, it is observed from the table-7 that large majority of the students and teachers consult (26.32%). through OPAC/ WEB OPAC to locate books and other reading materials in the library and then followed by consulting catalogue (25.74%). However, some of them also Browsing through Selves and some of them take the help of library staff for locating books and other reading materials.

Table-8 Extent of use of following resources by the students and faculty members understudy

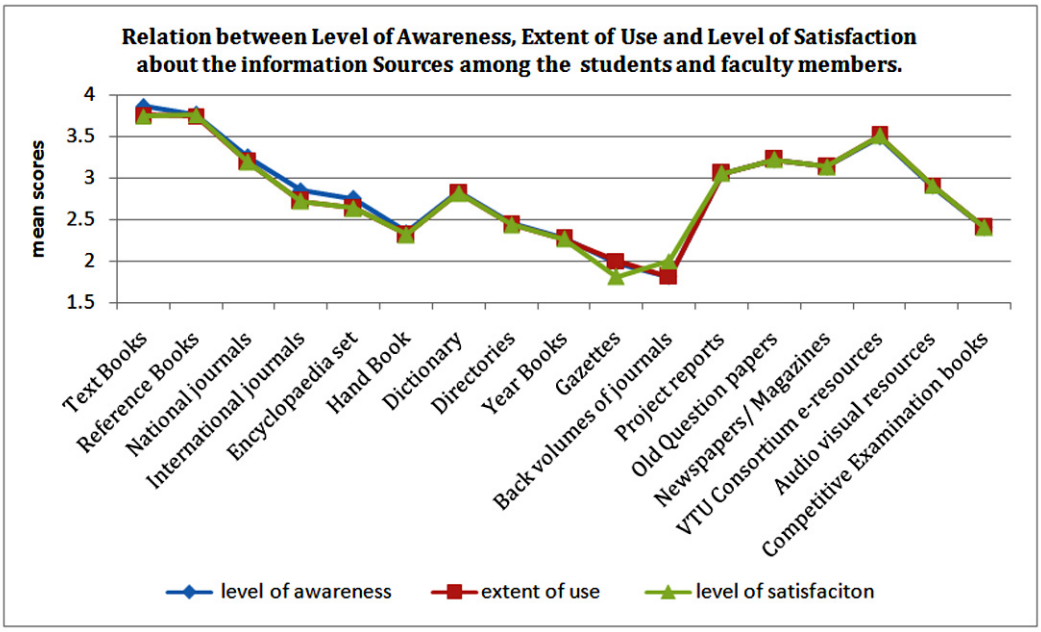
Sl. No	The extent of availability of resources N=680	Very Great extent	Great extent	Some extent	Little extent	No extent	Total scores	Mean	Rank
1	Reference Books	270 39.71	148 21.76	129 18.97	92 13.53	41 6.03	2554	3.76	1
2	Text Books	272 40.00	133 19.56	142 20.88	93 13.68	40 5.88	2544	3.74	2
3	National journals	173 25.44	119 17.50	138 20.29	161 23.68	89 13.09	2166	3.19	5
	International journals	72 10.59	98 14.41	218 32.06	150 22.06	142 20.88	1848	2.72	10
4	Encyclopaedia set	40 5.88	118 17.35	232 34.12	132 19.41	158 23.24	1790	2.63	11
5	Hand Book	52 7.65	71 10.44	142 20.88	188 27.65	227 33.38	1573	2.31	14
6	Dictionary	91 13.38	113 16.62	201 29.56	129 18.97	146 21.47	1914	2.81	9
7	Directories	39 5.74	89 13.09	173 25.44	208 30.59	171 25.15	1657	2.44	12
8	Year Books	41 6.03	59 8.68	133 19.56	253 37.21	194 28.53	1540	2.26	15
9	Gazettes	32 4.71	39 5.74	52 7.65	332 48.82	225 33.09	1361	2.00	16

10	Back volumes of journals	20 2.94	40 5.88	62 9.12	225 33.09	333 48.97	1229	1.81	17
11	Project reports	170 25.00	130 19.12	101 14.85	125 18.38	154 22.65	2077	3.05	7
12	Old Question papers	185 27.21	142 20.88	101 14.85	142 20.88	110 16.18	2190	3.22	4
13	Newspapers/ Magazines	163 23.97	135 19.85	141 20.74	111 16.32	130 19.12	2130	3.13	6
14	VTU Consortium e-resources	210 30.88	183 26.91	112 16.47	93 13.68	82 12.06	2386	3.51	3
15	Audio visual resources	80 11.76	143 21.03	208 30.59	133 19.56	116 17.06	1978	2.91	8
16	Competitive Examination books	70 10.29	92 13.53	108 15.88	179 26.32	231 33.97	1631	2.40	13

One of the main objectives of the study was to know the extent of the use of information resources by the students and faculty members of engineering college understudy. The list of resources as shown in the above table which has been asked in the five-point scale from highly used to not at all used by the students and faculty members under study. The frequency of each statement is multiplied with corresponding scale value, then the total score is calculated by summing of all the product values then divide by the sample size, based on the mean value ranks are assigned as shown in the table-8 shows the total scores and mean values and their corresponding scores of the level of extent, information resources among the students and faculty members of engineering Colleges of North Karnataka. it is observed that textbooks, Reference Books, VTU Consortium e-resources and old question papers are highly used resources by the students and faculty members having 1^{st}. 2^{nd},3^{rd} and 4^{th} rank respectively, the next more used information resources are National journals, Newspapers/ Magazines, Project reports having 5^{th}, 6^{th} and 7^{th} rank respectively. On the other hand Year Books, Gazettes and Back volumes of journals are least used resources having the rank of 15^{th}, 16^{th} and 17^{th} respectively among the students and faculty members of engineering colleges. From the above discussion, it can be summarized that textbooks, Reference Books, VTU Consortium and old question papers are highly used information sources by the students and faculty members under study.

H_0= There is no positive correlation exist among the Level of Awareness, Extent of Use and Level of satisfaction about the information Sources among the students and faculty members.

H_1= There is positive correlation exist among the Level of Awareness, Extent of Use and Level of satisfaction about the information Sources among the students and faculty members.



$$W = \frac{S}{\frac{1}{12}K^2(n^3-n)}$$

$$W = \frac{3656}{\frac{1}{12}3^2(17^3-17)} = \frac{3656}{3672} = .9956$$

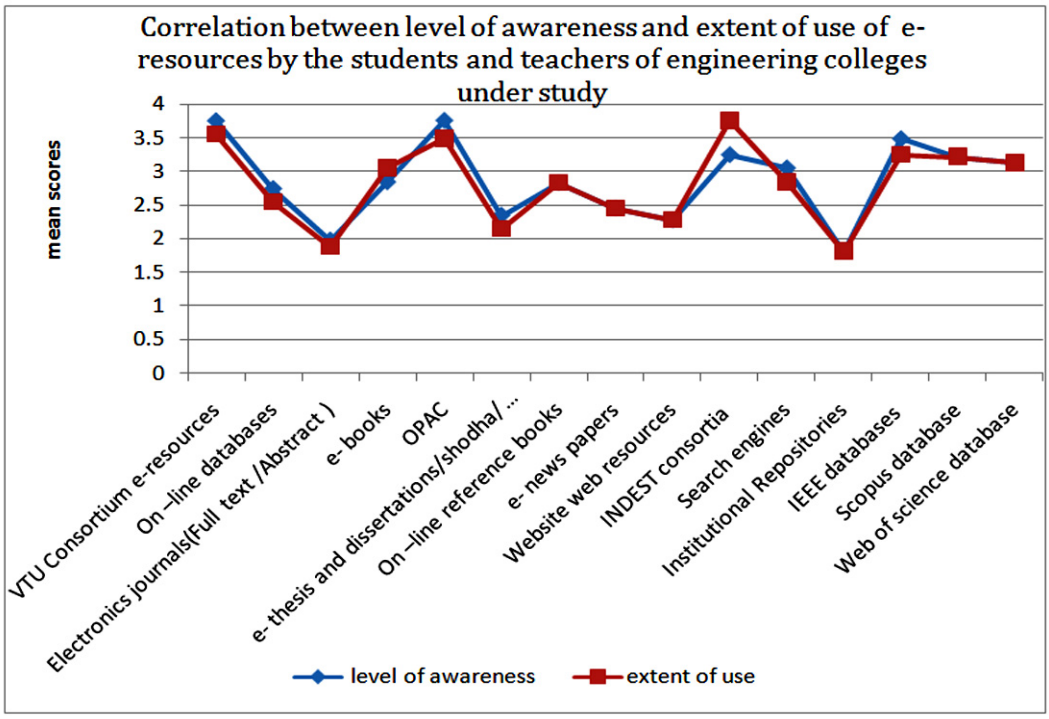
Hence, there is a high positive correlation coefficient (w=.9956) was observed among the Level of Awareness, Extent of Use and Level of Satisfaction of the information Sources among the students and faculty members of engineering colleges under study. It can be concluded that the extent of satisfaction of information sources is highly dependent on the level of use and level of awareness. Therefore, these three variables are moving in the same direction and they are highly correlated.

Table-9 Extent of use of the following e-resources by the students and teachers

Sl. No	Extent of use of e-resources N=680	Very Great extent	Great extent	Some extent	Little extent	No extent	Total scores	Mean	Rank
1	VTU Consortium e-resources	275 41.91	159 21.91	138 20.29	82 12.06	26 3.82	2625	3.86	1
2	On –line databases	65 10.03	121 18.32	212 31.18	130 19.12	152 22.35	1867	2.75	11
4	Electronics journals(Full text /Abstract)	41 5.09	33 4.85	74 10.88	332 48.82	220 32.35	1343	1.88	15
5	e- books	170 25.00	130 19.12	101 14.85	125 18.38	154 22.65	2077	3.05	7
6	OPAC	201 29.56	189 27.79	115 16.91	93 13.68	82 12.06	2374	3.49	3
7	e- thesis and dissertations/shodha/ Ganga/Gangorti	45 6.62	90 13.24	148 21.76	170 25.00	227 33.38	1596	2.35	13
8	On –line reference books	95 13.97	115 16.91	195 28.68	133 19.56	142 20.88	1928	2.84	10

9	e- news papers	42 6.18	93 13.68	170 25.00	202 29.71	173 25.44	1669	2.45	12
10	Website web resources	33 4.85	68 10.00	137 20.15	258 37.94	184 27.06	1548	2.28	14
11	INDEST consortia	272 40.00	150 22.06	125 18.38	92 13.53	41 6.03	2560	3.76	2
12	Search engines	98 14.41	101 14.85	210 30.88	140 20.59	131 19.26	1935	2.85	9
13	Institutional Repositories	20 2.94	40 5.88	62 9.12	225 33.09	333 48.97	1229	1.81	16
14	IEEE databases	180 26.47	122 17.94	145 21.32	155 22.79	78 11.47	2211	3.25	4
15	Scopus database	185 27.21	142 20.88	101 14.85	142 20.88	110 16.18	2190	3.22	5
16	Web of science database	163 23.97	135 19.85	141 20.74	111 16.32	130 19.12	2130	3.13	6

One of the main objectives of the study was to know the extent of use ofelectronic information resources among the students and faculty members under study. The list of e-resources as shown in the above table which have been asked in the five point scale from highly used to not at all used among the students and faculty members under study. The frequency of each statement is multiplied with corresponding scale value, then the total score is calculated by summing of all the product values, which is dividing by the size of sample, based on the mean value ranks are assigned as shown in the table. The above Table-9 shows the total scores and mean values and their corresponding scores of extent of use of electronic information resources among the students and faculty members of engineering Colleges of North Karnataka. it is observed that VTU Consortium e-resources, ,INDEST consortia, OPAC and IEEE databases are highly used e-resources among the students and faculty members having 1st. 2nd ,3rd and 4th rank respectively , the next more used electronic information resources are Scopus database, Web of science database and e-books having 5th, 6th and 7th rank respectively. On the other hand Website web resources,Electronics journals(Full text /Abstract) and Institutional Repositories are least used electronic resources having the rank of 14th, 15th and 16th respectively among the students and faculty members of engineering colleges . From the above discussion it can be summarized that VTU Consortium e-resources, INDEST consortia, OPAC and IEEE databases are highly used electronic information resources by the students and faculty members of engineering colleges under study.



H_1: There is no positive correlation found exist between level of awareness and extent of use of electronic information resources among the students and teachers of engineering colleges.

H_2: There is a correlation observed between level of awareness and extent of use of electronic information resources among the students and teachers of engineering colleges

$$r= 1- \left(\frac{\sum 6d^2}{n(n^2-1)}\right) \qquad r=1-\left(\frac{6X18}{16(16^2-1)}\right) = .973$$

To see the correlation between the level of awareness and extent of use of electronic information resources among the students and teachers of engineering colleges , a spearman coefficient correlation test was applied, it is observed that there is very high positive correlation (r=.973) observed at 5% level of significance. This indicates that there is a perfect agreement found between level of awareness and extent of use of electronic information resources among the students and teachers of engineering colleges.

Table-10 Types of information channels to access the needed information

Sl. No	Information Channels	Frequency N=680	Percentage
1	Library	248	36.47
2	Internet/Web	112	16.47
3	Medias	82	12.06
4	Institutions	72	10.59
5	Friends and colleagues	64	9.41
6	Social media	102	15

Students and Faculty members under study are used different types of channels to access the required information for their academic activities. It is evident from the table-30 that large majority of the students and faculty member 248(36.47%) used college library as channel of

information followed by 112(16.47%), of them said Internet/Web, 102(10.59%) of them said social media, 82(12.06%) of them said medias, 72(10.59%) of them said institutions, 64(9.41%) of them access through friends and colleagues.

Table-11Searching methods for consulting library catalogue by the respondents

Sl. No	Searching methods	Frequency N=680	Percentage
1	By author	334	49.12
2	By Title	409	60.15
3	By subject	68	10.00

It is observed from the table- that, Out of 680, 409(60.15%) students and faculty members used title of the documents to search the required material in library catalogue, Then followed by 334(49.12%) respondents considered author of the document for searching required information in library catalogue. Only 68(10.00%) respondents considered subject field to search the required information in library catalogue. It can be summarized that majority of the students and faculty members used title of the document to consult library catalogue then the author or subject of the document.

Table-12 Type of search option used in OPAC/web OPAC

Sl. No	Type of Search option used in web OPAC	Frequency N=680	Percentage
1	Basic search	292	42.94
2	Guided Search	186	27.35
3	Expert search	202	29.71

The above Table-12 a depicts the type of search option used in OPAC/web OPAC by respondents under study, out of 680 respondents, majority of 292(42.94%) of them use basic search option for searching OPAC/web OPAC, then followed by 202(29.71%) respondents have the knowledge of expert search. About 186(27.35%) respondents use expert search option for searching OPAC/web OPAC. It can be concluded that majority of the respondentshave very well versed with Basic search to search a needed information in OPAC/WEBOPAC.

Table-13 To Find a journal you would look into

Sl. No	To Find a Journal you would look into	Frequency N=680	Percentage
1	Library Catalogue	168	24.71
2	OPAC,WEB OPAC of library	217	31.91
3	Data Bases	143	21.03
4	Search Engines	152	22.35

The above Table-13 shows preference given by the students and faculty members to search journal articles in retrieval tools. Out of 680 respondents, 217(31.91%) of them prefer OPAC/WEB OPAC of library to search the required journal article. And then followed by 168 (24.71%) of them library catalogue, 152(22.35%) of them use search engines to search the journal articles. And 143(21.03%) of them use data bases to search the journal articles. The majority of the respondents under study use OPAC/WEB OPAC of library.

Table-14 Using a search engines to find the information what your search strategy

Sl. No	Using a search engines	Frequency N=680	Percentage
1	Type the required statement in search box	272	40.
2	Type the keywords in search box	210	30.88
3	Type the keywords using Boolean operators	100	14.71
4	Use wildcard/truncations	68	10.
5	Don't Know	30	4.41

The above Table-14 shows the search strategy used by students and faculty members to search information in search engine. Out of 680 respondents, 272(40%) students and faculty members type the required statement in search box to search information in search engine. Another 210 (30.88%) students and faculty members type the keywords in search box. Nearly 100(14.71%) students and faculty members type the required information keywords using boolean operators to search in search engine. 68(10%) students and faculty members use wildcard and truncations to search the required information in search engine, and 30(4.41%) of them said don't know. The above table shows that large majority of students and faculty members type the required statement in search box or use keywords in search engine to search required information.

Table-15 knowledge of Boolean Operators among the students and teachers

Sl. No	knowledge of Boolean Operators	Frequency	Percentage
1	Yes	560	82.35
2	No	120	17.65
Total		680	100.00

The study population under study were asked about the knowledge of Boolean operators used in searching methods, as many as more than 560 (82.35%) students and faculty members have knowledge of Boolean operators.

Table-16 Problems faced while of accessing E-resources

Sl. No	Constraints with e- Resources	Frequency N=680	Percentage
1	Lack of Funds	61	8.97
2	Lack of ICT Infrastructure	76	11.18
3	Frequent power failure	67	9.85
4	Lack of motivation from the authorities	62	9.12
5	Lack of information sources	67	9.85
6	Lack of Training	59	8.68
7	Lack of working hours	42	6.18
8	Lack of cooperation	44	6.47
9	Lack of skills	54	7.94
10	Problem with Speed	47	6.91
11	The problem of downloading articles	52	7.65
12	Problem over searching	49	7.21
	Total	680	100

One of the main objectives of the study was to know the problems faced by the students and teachers of engineering colleges while using e-resources. There are various constraints faced by the faculty members as listed in the above table-14. The majority of (11.18%) respondents expressed their opinion about Lack of ICT Infrastructure, (9.85%) of the said Frequent power failure, (9.85%) Lack of information sources, (9.12%) Lack of motivation from the authorities, (8.97%) Lack of Funds, (8.68%) Lack of Training, (7.94%) Lack of skills, (7.65%) The problem of downloading articles, (7.21%) Problem over searching (6.91%) Problem with Speed, (6.47%) Lack of cooperation and (6.18%) of them said Lack of working hours. It is observed from the above discussion that large majority of the students and teachers face the problems of Lack of ICT Infrastructure, working hours of the college library, Lack of Funds, Frequent power failure and lack of skills to use e-resources are the major problem.

Summary and conclusion

The analysis of the findings of the study on UG students, PG students and faculty members of the selected engineering colleges in North Karnataka, some suggestions have to be made in order to meet the information seeking behavior pattern of the students and teachers of engineering effectively and efficiently and to improve their information seeking skills. Librarian must understand information gathering and searching habits of users to redesigned their services and provide information efficiently. Hence, it can be conclude that information seeking pattern of students and teachers of engineering college is dependent on both traditional as well as digital sources of information. As they are already very familiar with modern technologies, they have more inclination towards the digital information seeking behaviors. It is high time that the library professionals to support their information seeking activities by providing state of-art facilities in the libraries to meet their information needs. It is the duty of the library professionals to provide proper guidance and support to boost their information seeking activities

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