INFORMATION SEEKING BEHAVIOUR OF SOFTWARE ENGINEERS OF CHENNAI CITY: A STUDY

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ABSTRACT

The present descriptive survey was conducted to investigate the information seeking behaviour of software engineers of select 5 IT companies of Chennai City. Out of 325 questionnaires distributed among the randomly selected respondents, 284 duly filled in questionnaires were received back and included for analysis. The study reveals that: A majority of 71.8 % (204) of the software engineers hold a BE / B.Tech Degree; A majority of 160 (56.3%) respondents are female software engineers; 'Updating knowledge' is the primary reason for seeking information among the software engineers (222, 78.2 %); A majority of 191 (67.3 %) software engineers are searching for the information on 'changes and new developments in their field of interest'. A majority of 247 (87.0 %) software engineers referred internet while 246 (86.6%) respondents referred Company library to get the information ; A majority of 150 (52.8 %) respondents prefer Digital / online information. A majority of 250 (88.0 %) respondents use Newspapers to a great extent followed by 238(83.8%) respondents using E-books; Among the informal sources used to a great extent by the respondents, E-mail tops the table (234, 82.4 %) followed by Conversations with Colleagues (197, 69.4%), Discussion with Librarian (182, 64.1 %) and Face to Face Discussion (172, 60.6 %) ; Google is the most used search engine among the software engineers ; Lack of time is the problem for the majority of software engineers working in software companies in seeking information ; Majority of 218 (76.8%) software engineers suggested that library may provide "Faster internet service" to the users followed by 175 (61.6%) software engineers suggesting the 'introduction of innovative practices in library services'.

Keywords: Software Engineers, Information Seeking Behaviour, Preferred format, formal sources, informal sources, Search Engines, Chennai.

1. INTRODUCTION

The term information is extensively used in the documents of Library and Information Science. It is used with variety of meaning. Some identify it with communication over transmission lines, measured by the statistical properties of signals, some identify it facts about any subject and some with the experience stored in human mind.

Information and Need

Information is recorded or communicated knowledge gained by man through experience, observations and experiment. Information is the product of human brain in action. It may be abstractor

Information includes data, texts, images, sound, voice codes, microfilm, computer generated microfiche and computer programs, software and databases concrete. Facts or figures ready for communication or use as distinguished from those incorporated in a formally organized branch of knowledge (Webster's Third New International Dictionary).

that convey meaningful facts, ideas, conditions, or knowledge whether tangible or intangible (Njoku, 2004).

Information need is not a psychological state of mind rather it is an

Information seeking is a process in which humans engage to purposefully change their state of knowledge. The process is inherently interactive as information seekers direct attention on adapt to stimuli, reflect on progress, and evaluate

Information seeking behaviour

With the growth of information deluge, each one needs information of increasing variety and diversity of level, frequency, volume and use. This complex situation appears to be ambiguous and heterogeneous in character as that, information needs of a particular group of users and information flow from a specific situation/ organization are difficult to

Information seeking behaviour is mainly concerned with who needs what kinds of information for what reasons, how

Information behaviours are those activities a person may engage in when identifying his or her own needs for

Information seeking behaviour is how a user goes about seeking and obtaining

➢ User education whether or not he has been taught how to use the products and services of information units.
➢ The accessibility to the units.
➢ His working conditions and amount of time available.
➢ His hierarchical status and socio-professional position.

It is in recent decades that systematic studies on the user community and the information seeking behaviour have been made. Some surveys on user needs were undertaken as academic studies for research

objective need oriented towards particular tasks problems, etc. (Prasad, 1991).

the efficacy of knowledge base of the information seeker. Information seeking is thus a cybernetic process in which knowledge state is changed through inputs, purposive outputs, and feedback (Gray, 1997).

determine. Again, the use of information is so complex that there cannot be a simple system to cope up with the task of effective retrieval without assessing their specific needs. This situation has given rise to the growing concept of information searching and the matter of determining. The pattern of searching is said *to* be considered information seeking behaviour.

information is found, evaluated and used (Girija Kumar, 1990).

information, searching for such information in any way and using or transferring that information (Wilson, 1999).

information, while his behaviour is influenced by a number of factors, such as

➢ How easily he gets on with people.
➢ How much competition is there among member of a group?
➢ The attitude of each individual and group to information and
➢ Previous experience and the like are the major criteria of the study.

purposes. Others were studied for fact finding and such perspective purposes. User surveys are extremely useful in assessing the success of existing library services and identifying the user need for new ones.

Software Engineers

Software Engineer is a person, who designs, writes and tests computer programs. These engineers typically fall into two categories: computer applications software engineer and computer systems software engineer. Typically a computer software engineer will work on a host of projects, including manufacturing, industry, government, and educational institutions.

2. REVIEW OF LITERATURE

Padma and Ramasamy (2017) conducted a study to analyze the digital information seeking behavior of lawyers of Madurai District Court Library, Madurai. Questionnaire method was used to collect data from 152 lawyers. The study reveals that: 137 (90.13%) respondents are male lawyers. Majority of the respondents i.e. 71 (46.71%) lawyers belong to above 40 age group. 97 (63.82 %) respondents have three year B.L degrees and 52 respondents (34.21%) have five year B.L degrees.Majority of lawyers i.e. 46.09% (70) of the respondents are specialized in handling Civil Cases and 40.79% (62) of the lawyers are specialized in handling Criminal Cases. 63 (41.45%) respondents are Junior Lawyers and 43 (28.29%) respondents are Senior Lawyers. 19 (12.50%) respondents have 16 to 20 years of experience. 125 (51.02 %) respondents get necessary information for their case references from the Bar Association library. 75 (49.34%) lawyers visit the library daily and 46 (30.26%) lawyers visit the library once a week. 84 (55.26%) respondents fully depend on library services for their professional work. 125 (82.24 %) lawyers visit the library for their Case preparation and 84 (55.26 %) lawyers visit the library for improving their personal knowledge.135 (88.82 %) respondents seek information to get to know / clarify their doubts on various Legal and judicial procedures. Law Books available in the Bar Association library are adequate for 98 (64.47%) respondents. 'Tamil' is the preferred language for reading legal information sources among 68.42 % (104) of the lawyers. 45 (29.61%) respondents suggest for the availability of more current legal materials. 112 (73.68%) respondents are satisfied with the quantity and quality of print information sources available in the Bar Association library.

Yoganantham and Padma (2017) tried to understand the e-resources seeking behaviour of the randomly selected 85 software professionals of Chennai City. The study reveals that :a majority of (34) software professionals hold BE/B.Tech degree followed by MCS/MSc (26) and M.S/M.E/M.Tech (25).83.33% (20) of delivery managers, 77.78 % (14) of Project/Tech/Module Leads, 76.19 % (16) of Project / Program managers and 68.18% (15) of Project/Software engineers are aware of e-resources.75% (18) of delivery managers, 61.90 % (13) of Project / Program managers 50 % (9) of Project/Tech/Module Leads, and 59.09% (13) of Project/Software engineers prefer e-resources than print resources.12 Project/software engineers, 8 project leads , 9 project managers and 12 delivery managers use the e-resources daily while 10 project engineers, 11 project leads, 8 project managers and 15 delivery managers use the e-resources 2-3 times a week. A majority of 36 respondents have been using e-resources for the last 1-4 years while 33 respondents are using e-resources less than a year. A majority of 48 respondents search for e-resources either using the name of the journal or the title of the article.68.18% (15) of the project

engineers, 77.78% (14) of the project leads, 76.19% (16) of the project managers and 83.33% (20) of the delivery managers use

Yoganantham and Padma (2017) evaluated the awareness and preferences of e-resources among the software professionals of Chennai City. Data was collected from 85 randomly selected respondents using questionnaires. The study reveals that : 83.33% (20) of delivery managers, 77.78 % (14) of Project/Tech/Module Leads, 76.19 % (16) of Project / Program managers and 68.18% (15) of Project/Software engineers are aware of e-resources.75% (18) of delivery

Patil and Patil (2015) undertook a study to investigate the information seeking patterns and types of information sources used by software professionals in western region of India. The study employed the descriptive research method, using questionnaire for data collection. The study

Padma, Ramasamy and Sakthi Renugadevi (2013) conducted a study with a sampling population of 50 post graduate students of School of Economics, Madurai Kamaraj University with a specific purpose to trace out their information needs and information seeking behaviour. A structured questionnaire was used as a data gathering tool. The findings of the study revealed that: 26% of the respondents use the internet of web pages and 24% of the respondents use the on line e-resources to get information; 22% of the respondents are using the internet daily in the library; 40% of the respondents use Google, 22% of the respondents use Yahoo and Alta vista and 16% of the respondents use other search engines; 24% of the respondents use OPAC

Onwuchekwa Chidinma (2013) conducted a study on the information seeking behaviour of final year law students in Ekiti State University. The research findings show that the respondents browse

library websites as a gateway to access e-resources.

managers, 61.90 % (13) of Project / Program managers, 50 % (9) of Project/Tech/Module Leads, and 59.09% (13) of Project/Software engineers prefer e-resources than print resources.44 respondents prefer to use Emerald database followed by 43 respondents who prefer IEEE package. While 41 respondents prefer to use e-journals, EBSCO database and ProQuest Database, 35 of them prefer e-books. The least number of 28 respondents prefer to use ACM package.

shows that software professionals have shown more affection to Library collection: they preferred Non print material with Internet. Software professionals are using Internet as a media to get the information which is followed by online databases.

(library catalogue) and 38% of the respondents use the book reviews to trace the relevant documents available; 40% of the respondents make use of keyword search, 22% of the respondents use 'Title search', 28% of the respondents use "author search" and 10% of the respondents make use of 'subject search' as their mechanisms; 30% of the respondents each feel 'lack of time due to abundant literature' and 'Inadequate resources /library online resources" are the main reasons for getting the required information belated; 48 %of the respondents make use of the internet facility at University library; 8 students are very fluent in using the e-resources available in the library and 21 of them (42 %) are good in using such resources.

library shelves, lack knowledge of library services and current resources, use the library for print materials while they browse in cybercafé, avoid the e-library and library facilities and avoid seeking assistance from

library staff because they perceive them as being harsh. Respondents were further found to be Google inclined, despite numerous complaints and difficulties they face in Google. The barriers found in this study were inadequate resources from the internet

Kumar, Gautam and Vijayaragghavan (2011) conducted a study on information seeking patterns of Defence Research and Development Establishment (DRDE) scientists which revealed an increase in research activities. The

Ansari and Zuberi (2010) in their research studies focused attention on information needs and information seeking behaviour of media practitioners in Karachi. They pointed that when individual requires

Muhammad and Kanwal (2009) investigated the information seeking behaviour and satisfaction level of teachers of National Textile University in Pakistan. It was found that the students prefer both

Mahajan (2009) conducted a study and explored the information-seeking behaviour of the undergraduates, postgraduate students and researchers in sciences, social sciences and humanities etc. Information-seeking behaviour differs among user groups. Academic libraries must understand the information needs of faculty

Martin (2008) investigated the information seeking behaviour of undergraduate majors to gain a better understanding of where they find their research information (academic vs. non-academic sources) and to determine if library instruction had any impact on the types of sources used. Majority of students

search, inability to select right resources needed for research, lack of knowledge on sites to use for information research, money, harshness from library officials and lack of Nigerian resources online.

satisfaction of need for accurate and pin-pointed information to the scientist has been an important task for the library. It was also found that internet was the most popular information seeking medium among the scientist.
information they consult information system, library or interpersonal sources for satisfying needs. The objective was to assess information needs of media practitioners working in radio, newspaper, TV etc.
electronic and printed formats equally. The users expressed the requirement for increase in library collection to meet their subject as well as leisure needs.

and students in order to address those needs. This study examines the kinds of academic information needed by respondents, resources they prefer, level of satisfaction with the library collections and the general pattern of information-seeking, with special reference to the influence of course of study.

surveyed find their research information on the freely available Web and they admit that academic sources are more credible. These results are supported by other studies that indicate that today's college students are using freely available internet sites much more than library resources.

3. OBJECTIVES OF THE STUDY
The following objectives had been formulated for carrying out the present study.

1. To present the socio-demographic profile the software engineers.
2. To study the primary purpose of seeking information among the respondents.

3. To trace out various types of information searched often among the respondents
4. To find out the Information resources available for the respondents in their workplace.
5. To find out various mode of access preferred by the respondents while seeking information.
6. To investigate the use of formal and informal information resources by the respondents.

7. To know the Search Engines preferred by the respondents.
8. To point out the problems encountered by the respondents in seeking information.
9. To offer suggestions towards having a new digital environment to seek and access information easily and effectively among the respondents.

4. METHODOLOGY

This study is a descriptive research. Survey method is employed. A well-structured questionnaire was used to collect the data. 300 randomly selected software engineers working in Chennai city form the sample. The quantum of 325 questionnaires were distributed among the software engineers of 5 software companies when they visit the library in such a way that each company was given 65 questionnaires and 284 filled in questionnaires were received back and taken for the analysis. The response rate is 87.38 %.

5. DATA ANALYSIS AND INTERPRETATIONS

Table 1: Educational Qualification of the Respondents

S.No.	Qualification	Frequency	Percent	Cumulative Percent
1	B.E / B.Tech	204	71.8	71.8
2	M.Sc.,(IT/CS)	45	15.8	87.7
3	M.E/M.Tech	35	12.3	100.00
	Total	**284**	**100.0**	

It is noted that a majority of 71.8 % (204) of the software engineers hold a BE / B.Tech Degree. While 15.8% (45) of the software engineers hold an MSc (IT/CS) degree, the least number of 12.3% (35) of the software engineers hold a M.E/ M.Tech degree (Table 1).

Table 2: Gender of the Respondents

S.No.	Gender	Frequency	Percent	Cumulative Percent
1	Male	124	43.7	43.7
2	Female	160	56.3	100.00
	Total	**284**	**100.0**	

Out of 284softwareengineers, a majority of 160 (56.3%) respondents are female software engineers and the remaining 124 (43.7%) respondents are male software engineers (Table 2).

Table 3: Primary purposes of seeking information

S.No.	Primary Purposes	Yes	%	No	%	Total
1	For Work presentation	109	38.4	175	61.6	284
2	For updating knowledge	222	78.2	62	21.8	284
3	For doing project / research	101	35.6	183	64.4	284
4	For promotion	55	19.4	229	80.6	284
5	For delivering talk	51	18.0	233	82.0	284
6	For knowledge transfer to colleagues	117	41.2	167	58.8	284
7	Papers for conference / workshop / seminars	44	15.5	240	84.5	284

'Updating knowledge' is the primary reason for seeking information among the software engineers (222, 78.2 %). "Knowledge transfer to colleagues" is the reason for seeking information among 117 (41.2 %) respondents while "Doing Project / Research" is the reason for 101 (35.6 %) respondents. "Work Presentation"is the reason for seeking information among 109 (38.4%) respondents while "preparing Papers for conference / workshop / seminars" is the reason among 44 (15.5%) respondents. Just 55 (19.4%) respondents seek information for getting promotions, 51 (18.0 %) respondents are seeking information for delivering talks (Table 3).

Table 4: Type of information searched often

S.No.	Information	Yes	%	No	%	Total
1	Background information	65	22.9	219	77.1	284
2	Government information	46	16.2	238	83.8	284
3	Information in specific area	158	55.6	126	44.4	284
4	Changes and new developments in the field	191	67.3	93	32.7	284
5	Social Problems	54	19.0	230	81.0	284
6	New research problems	73	25.7	211	74.3	284

A majority of 191 (67.3 %) software engineers are searching for the information on changes and new developments in their field of interest followed 158 (55.6%) respondents searching for Information in specific areas. While 65 (22.9%) respondents search for Background information, 73 (25.7%) respondents search for 'New research problems'. 54 (19.0%) respondents search for information on Social problems while the least number 46 (16.2%) respondents search for Government information. 238 (83.8%) software engineers are not interested in government information and 230 (81.0%) on Social problems,211 (74.3%) on New research problems and 219 (77.1%)on Background information (Table 4).

Table 5: Information resources referred in your work place (Software Company)

S.No.	Information Sources	Yes	%	No	%	Total
1	Company Library	246	86.6	38	13.4	284
2	Departmental Collection	138	48.6	146	51.4	284
3	Internet	247	87.0	37	13.0	284
4	Online databases	179	63.0	105	37.0	284
5	Annual reports / statistics	103	36.3	181	63.7	284
6	Personal collections	106	37.3	178	62.7	284

A majority of 247 (87.0 %) software engineers referred internet while246 (86.6%) respondents referred Company library to get the information and 179 (63.0%) professionals referred online databases to get the information. 138 (48.6%) professionals refer departmental collection while 106 (37.3%) professionals use personal collections and 103 (36.3%) respondents use annual reports and statistics reports to get information (Table 5).

Table 6: Preferred Format of information sought

S.No.	Mode of Access	Yes	%	No	%	Total
1	Print Mode	93	32.7	191	67.3	284
2	Digital / online	150	52.8	134	47.2	284
3	Audio / Video	75	26.4	209	73.6	284
4	Print and Digital/Online	72	25.4	212	74.6	284
5	Print and Audio/Video	34	12.0	250	88.0	284
6	Audio/Video and Digital/Online	53	18.7	231	81.3	284
7	All the three	68	23.9	216	76.1	284

A majority of 150 (52.8 %) respondents preferDigital / online information while 93 (32.7%) software engineers prefer print form information. 75 (26.4%) respondents prefer Audio / video form of information while 68 (23.9 %) prefer information in all three formats. 72 (25.4%) respondents prefer both Print and Digital/Online information and 53 (18.7%) respondents prefer both Audio/Video and Digital/Online information. The least number of 34 (12.0%) software engineers prefer both Print and Audio/Video form information (Table 6).

Table 7: Use of formal Information Sources

S. No.	Formal Sources	To a great extent		To some extent		To a very little extent	
		No.	%	No.	%	No.	%
1	Journal articles / Periodicals	150	52.8	94	33.1	40	14.1
2	Review articles	147	51.8	103	36.3	34	12.0

3	General books	227	79.9	49	17.3	8	2.8
4	Monographs	57	20.1	143	50.4	84	29.6
5	Research reports	54	19.0	146	51.4	84	29.6
6	Seminar/Conference Proceedings	55	19.4	149	52.5	80	28.2
7	Patents and Standards	46	16.2	151	53.2	87	30.6
8	Reference Sources (Such as Bibliographies, Databases, Handbooks,	83	29.2	144	50.7	57	20.1
9	Online Journals	220	77.5	58	20.4	6	2.1
10	E - Books	238	83.8	40	14.1	6	2.1
11	Internet	232	81.7	47	16.5	5	1.8
12	Audio/ Video	146	51.4	117	41.2	21	7.4
13	CD-ROM /DVD	131	46.1	120	42.3	33	11.6
14	News Papers	250	88.0	31	10.9	3	1.1

To a great extent

A majority of 250 (88.0 %) respondents use Newspapers to a great extent followed by 232 (81.7%) respondents using internet, 238(83.8%) respondents using E-books,227(79.9 %) respondents using General books and 220 (77.5%) respondents using Online Journals to a great extent. 147 (51.8%) respondents use Review articles and 146 (51.4%) respondents use Audio/ Video materials. 150 (52.8%)

To some extent

A majority of 151 (53.2 %) respondents use Patents and Standards to some extent followed by 149 (52.5%) respondents using Seminar/Conference proceedings and 146 (51.4 %) using Research reports. 143 (50.4 %) respondents use Monographs and 144 (50.7 %) respondents using Reference Sources (Such as Bibliographies, Databases, Handbooks,

To a very little extent

The formal information sources which are used to a very little extent are Patents and Standards (87, 30.6 %), Monographs (84, 29.6 %), Research reports (84, 29.6 %), Seminar/Conference proceedings (80, 28.2 %)and Reference

respondents use Journal articles / Periodicals while 131 (46.1%) use CD-ROM /DVD and 83 (29.2%) use Reference Sources (Such as Bibliographies, Databases, Handbooks, Indexing / Abstracting Sources etc.,). 54 (19.0%) respondents use Research reports. The least number of 46 (16.2%) respondents use Patents and Standards to a great extent (Table 7).

Indexing / Abstracting Sources etc.,) to some extent. While 120 (42.3%) respondents use CD-ROM /DVDs, 117 (41.2%) use Audio/ Videos, 103 (36.3%) use Review articles. 94 (33.1%) use Journal articles / Periodicals, 58 (20.4 %) use Online Journals, 49 (17.3 %) use General books and the least number of 40 respondents use (14.1%)E – Books (Table 7).

Sources such as Bibliographies, Databases, Handbooks, Indexing / Abstracting Sources etc., (57, 20.1 %). 40 (14.1 %) respondents use Journal articles / Periodicals to a very little extent followed by 33 (11.6 %) respondents using CD-ROM /DVDs, 34

(12.0%) using Review articles and 21 (7.4 %) respondents using Audio/ Videos to a very little extent (Table 7).

Overall Analysis

The WAM (Weighted Arithmetic Mean) values for various formal information sources are listed along with the respective ranks. Newspaper stands first with the WAM of 2.87 denoting the highest usage. It is followed by 4 sources with the WAM of more than 2.50. There are five other sources like audio/video, review articles, journal articles, CD-DVDs and References having the WAM ranging from 2.13 to 2.49. Four sources have the WAM of less than 2.0 the lowest being 1.86 for the patents and standards (Table 7A).

Table 7A: WAM Ranking of Formal Information Sources

Rank	Formal Information Sources	WAM
Rank 1	News Paper	2.87
Rank 2	E – Books	2.82
Rank 3	Internet	2.80
Rank 4	General books	2.77
Rank 5	Online Journals	2.75
Rank 6	Audio/ Video	2.44
Rank 7	Review articles	2.40
Rank 8	Journal articles / Periodicals	2.39
Rank 9	CD-ROM /DVD	2.35
Rank 10	Reference Sources (Such as Bibliographies, Databases, Handbooks, Indexing / Abstracting Sources etc.,)	2.09
Rank 11	Seminar/Conference Proceedings	1.91
Rank 12	Monographs	1.90
Rank 13	Research reports	1.89
Rank 14	Patents and Standards	1.86

Table 8: Use of informal Information Sources

S. No.	Informal Sources	To a great extent		To some extent		To a very little extent	
		Yes	%	Yes	%	Yes	%
1	E-mail	234	82.4	49	17.3	1	.4
2	Face to Face Discussion	172	60.6	105	37.0	7	2.5
3	Conversations with Colleagues	197	69.4	80	28.2	7	2.5
4	Meetings/Seminar/Conferences/Workshops	92	32.4	146	51.4	46	16.2

5	Consult with Managers	108	38.0	132	46.5	44	15.5
6	Discussion Forum	103	36.3	119	41.9	62	21.8
7	Private Correspondences	77	27.1	78	27.5	129	45.4
8	Discussion with Librarian	182	64.1	94	33.1	8	2.8
9	Consult with Knowledgeable person	153	53.9	122	43.0	9	3.2

To a great extent

Among the informal sources used to a great extent by the respondents, E-mail tops the table (234, 82.4 %) followed by Conversations with Colleagues (197, 69.4%), Discussion with Librarian (182, 64.1 %) and Face to Face Discussion (172, 60.6 %). While 153 (53.9 %) respondents consult with Knowledgeable person, 108 (38.0 %) Consult with Managers, 103 (36.3 %) take part in the Discussion Forum, 92 (32.4%) get information from Meetings/Seminar/Conferences/Workshops , just 77 (27.1 %) respondents use Private Correspondences to get required information (Table 8).

To some extent

A majority of 146 (51.4 %) respondents use Meetings/ Seminar/Conferences/Workshops to get required information to some extent. It is followed by 132 (46.5%) respondents who consult with Managers, 122 (43.0 %) who consult with Knowledgeable person, ,119(41.9 %) who take part in Discussion Forum and 105 (37.0 %) respondents who engage in Face to Face Discussion to get information to some extent. While 78 (27.5 %) respondents use private Correspondences, 94 (33.1 %) discuss with Librarians, 80 (28.2%) converse with Colleagues and 49 (17.3%) respondents use E-mail to get relevant information to some extent (Table 8).

To a very little extent

Private Correspondences are used to a very little extent by the respondents (129, 45.4%) followed by Discussion Forum (62, 21.8%), Meetings / Seminar/Conferences/Workshops (46, 16.2 %), Consultation with Managers (44, 15.5 %) and, Discussion with Librarian (8, 2.8 %) (Table 8).

Overall Analysis

The ranks of usage given to various informal information sources based on their WAM is given in the Table 8A. Email is the most used informal information source among the software engineers. It has the WAM of 2.82 followed by four other resources with the WAM ranging from 2.50 to 2.67. While three sources (consult with managers, discussion forums and meetings) have the WAM ranging between 2.14 and 2.23, the least used informal source is private correspondences with the least WAM of 1.82.

Table 8A: WAM Ranking of Informal Information Sources

Rank	Informal Information Sources	WAM
Rank 1	E-mail	2.82
Rank 2	Conversations with Colleagues	2.67
Rank 3	Discussion with Librarian	2.61
Rank 4	Face to Face Discussion	2.58
Rank 5	Consult with Knowledgeable person	2.51
Rank 6	Consult with Managers	2.23
Rank 7	Meetings/ Seminar/Conferences/Workshops	2.16
Rank 8	Discussion Forum	2.14
Rank 9	Private Correspondences	1.82

Table 9: Use of Search Engines

S.No.	Search Engines	Yes	%	No	%	Total
1	Google	264	93.0	20	7.0	284
2	Yahoo	31	10.9	253	89.1	284
3	Excite	7	2.5	277	97.5	284
4	Lycos	0	0	284	100	284
5	MSN	11	3.9	273	96.1	284

Google is the most used search engine among the software engineers under the study. A majority of 264 (93.0%) respondents use Google search engine followed by 31 (10.9 %) respondents using Yahoo and 11 (3.9%) respondents using MSN, The search engines like Excite and Lycos were the least used ones among the respondents (Table 9).

Table 10: Problems you encounter in seeking information

S.No.	Problems	Yes	%	No	%	Total
1	Specific information is not available	124	43.7	160	56.3	284
2	Library staff is not cooperative	34	12.0	250	88.0	284
3	Shortage of resources available in the library	107	37.7	177	62.3	284
4	Information is too scattered	90	31.7	194	68.3	284
5	Lack of time	169	59.5	115	40.5	284
6	Internet speed is too slow	94	33.1	190	66.9	284
7	Lack of sufficient library facility	57	20.1	227	79.9	284
8	Language barrier	43	15.1	241	84.9	284
9	Power supply and backup issues	47	16.5	237	83.5	284

Lack of timeis the problem for the majority of software engineers working in software companies in seeking information. A majority of 169 (59.5%) respondents felt so. 'Specific information is not available' is the problem for 124 (43.7%) respondents followed by other problems like 'Shortage of resources availablein the software company libraries' (107, 37.7%). 'Scattered Information' (90, 31.7%) and 'Low speed of Internet' (94, 33.1%). While 57 (20.1%) software engineers cited that 'Lack of sufficient library facility' is the problem in seeking information, 43 (15.1 %) respondents cited 'language barrier' and 'Power supply and backup issues' (47, 16.5%) as hindrances to access information. The least number of 34 (12.0 %) software engineers stated that the library staff is not cooperative (Table 10).

Table 11: Suggestion(s) towards having a new digital environment to seek and access information easily and effectively

S.No.	Suggestions	Yes	%	No	%	Total
1	Faster internet service	218	76.8	66	23.2	284
2	Resource sharing facilities	148	52.1	136	47.9	284
3	Introducing innovative practices in library services	175	61.6	109	38.4	284
4	User education programmes	112	39.4	172	60.6	284
5	Developing library collections as per user needs	166	58.5	118	41.5	284
6	Non-stop power supply	73	25.7	211	74.3	284

A Majority of 218 (76.8%) software engineers suggested that library may provide "Faster internet service" to the users followed by 175 (61.6%) software engineers suggesting the introduction of innovative practices in library services and 166 (58.5%) software engineers suggesting 'collection development as per user needs'. 148 (52.1%) software engineers suggested that Library may provides 'Resource sharing facilities' while 112 (39.4%) software engineers suggested that Library may conduct 'User education programmes'. Just 73 (25.7%) female software professionals suggested that library should have infrastructure to provide non-stop power supply (Table 11).

6. FINDINGS
The major findings of the study are:
➢ A majority of 71.8 % (204) of the software engineers hold a BE / B.Tech Degree.
➢ A majority of 160 (56.3%) respondents are female software engineers
➢ 'Updating knowledge' is the primary reason for seeking information among the software engineers (222, 78.2 %).

"Knowledge transfer to colleagues" is the reason for seeking information among 117 (41.2 %) respondents while "Doing Project / Research" is the reason for 101 (35.6 %) respondents.
➢ A majority of 191 (67.3 %) software engineers are searching for the information on changes and new

developments in their field of interest followed 158 (55.6%) respondents searching for Information in specific areas.

➢ A majority of 247 (87.0 %) software engineers referred internet while 246 (86.6%) respondents referred Company library to get the information.

➢ A majority of 150 (52.8 %) respondents prefer Digital / online information while 93 (32.7%) software engineers prefer print form information.

➢ A majority of 250 (88.0 %) respondents use Newspapers to a great extent followed by 232 (81.7%) respondents using internet, 238(83.8%) respondents using E-books, 227 (79.9 %) respondents using General books and 220 (77.5%) respondents using Online Journals to a great extent.

➢ Among the informal sources used to a great extent by the respondents, E-mail

tops the table (234, 82.4 %) followed by Conversations with Colleagues (197, 69.4%), Discussion with Librarian (182, 64.1 %) and Face to Face Discussion (172, 60.6 %).

➢ Google is the most used search engine among the software engineers.

➢ Lack of time is the problem for the majority of software engineers working in software companies in seeking information.

➢ A Majority of 218 (76.8%) software engineers suggested that library may provide "Faster internet service" to the users followed by 175 (61.6%) software engineers suggesting the introduction of innovative practices in library services and 166 (58.5%) software engineers suggesting 'collection development as per user needs'.

7. CONCLUSION

Software engineers play a vital role in the fast growing internet era. They have to analyze the problem, identify the reason and have to give proper action. To do so, Software Professionals needs proper channel of information. Software professionals need to keep them self-updated, with these changes. Software professionals also need, latest information and updated recent advances to keep themselves updated, in their relevant fields. The results of such kind of studies will enable the library and information science professionals to plan,

create, innovate, renew and modify their collections, services, ICT usage to reach the users with right information in right time. The study on the information seeking behaviour and information search pattern of software engineers will help the software companies to redesign their libraries to be equipped with all the necessary infrastructure in terms of resources, functions, activities, services and ICT tools to meet the ever growing information demands of software professionals.

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