

## Digital Reference Services in Select Academic Libraries of Engineering and Technology Institutions in Tamilnadu: A case study

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### **ABSTRACT**

*This study is to measure the users' awareness and their perception about Digital Reference Services (DRS) provided by the Academic libraries of Engineering and Technology institutions in Tamilnadu. It focuses on determining the significant relationship between user awareness of DRS provided by academic libraries of various categories of Engineering and Technology institutions and users' education level, users' age, users' gender, and users' stay. The research methodology employed was a case study approach that combined two data collection methods: questionnaires, and content analysis. This paper discusses the strength and weakness of existing digital reference services being provided by the academic libraries under study, and also concludes with some specific suggestions for improvement of digital reference services in Academic Libraries under study.*

**Keywords:** Digital Reference Services, academic libraries, user awareness, user perception.

### **I. Introduction**

Historically, libraries have been a part of social milieu. Most of the human activities like education and training, research and development, socio-economic growth, industry and business, trade and commerce, politics and international relations, arts and culture, government administration, need active support of libraries. Academic Libraries support learning, teaching, research and other educational functions appropriate to the parent institutions. These libraries play at different levels of educational process. Libraries are considered only as the storehouses of knowledge, have got a new outlook in the modern Information Communication Technology (ICT) era. The activities like reference services, which were carried manually in libraries with so much of pain and strain are being carried out

smoothly with the help of ICT with greater effectiveness. The impact of ICT on traditional libraries evolves digital libraries, which is consisting of digital materials and services. In current trends Digital libraries are a key connector to the information resources.

## **II. Literature Review**

Literature review is done based on the Indian experience on ICT in academic libraries. Dhanavandan, Esmail and Nagarajan (2011) analyse the ICT infrastructure facilities with reference to self-financing engineering college libraries in Tamil Nadu. The study traces out the status of electronic resources in terms of topology of library network, electronic access points, electronic database, e-journals, and electronic resources in the libraries. The study reveals that most of the engineering colleges in Tamil Nadu use the library application software in their libraries. The establishment of ICT infrastructure facilities in the self financing college libraries in Tamil Nadu can improve the efficiency of information support, the information retrieval and quality of education also. It is clear that technological change clearly affects library staff and there is a need to develop guidelines and policies to train the professionals in providing frontline services in academic libraries of India.

Kalra, Harinder Pal Singh. (2011) concluded that the Digital reference services constitute a rapidly growing extension of the traditional reference service offered to library users. The study highlighted real-time architecture is the latest technological supports that enable the libraries to provide reference services beyond traditional walk-ins, appointments, and telephone reference. For years, libraries have responded to questions via e-mail, however, e-mail can only answer unambiguous where step-by-step instructions are not required. It fails to work when the user and the librarian have to follow a series of steps to explain the scope and nature of the question.

M.Magamma (2013) highlighted the present status of Digital reference service in the engineering college libraries of Visakhapatnam, as well as discusses the strength and weakness of existing reference service being provided in engineering college libraries under study. The study revealed that all the ten selected engineering college libraries are providing online /digital services including Library Websites, Web-OPAC, Subject Portals, Web-Database, Collaboration with National International Network and Links to e-resources.

Archana Saxena and Dr. T. N. Dubey (2014) discussed the impact of digital technology and role of libraries in the age of knowledge and information societies. This paper also highlights the problems faced by the academic libraries in India in implementation of digital technology.

Based on the literature in today's academic library environment the role of reference librarians is totally transformed and need to be more teaching centred rather than stereotyped service centred. Now a days in academic libraries educating and guiding students in terms of accessing information through digital communication is the primary responsibility of reference librarians. The librarians would not be able to perform their duties well if they do not have sufficient knowledge on ICT and training on appropriate and up to date methods of library instruction and practices.

### **III. Statement of the problem:**

The total number of Engineering and Technology Institutions are around 573 in Tamilnadu state in the year 2015, including Anna University Constituent Engineering Colleges, Government Engineering Colleges, Government Aided Institutions, Self -financing Institutions. The 28 institutions out of 573 are autonomous and are affiliated to Anna University Chennai, Tamilnadu. And also most of the deemed universities out of 30 deemed universities in Tamilnadu are offering Engineering and Technology programmes. Every year more than 200000 students are joining undergraduate and post graduate engineering and technology programmes in these institutions in Tamilnadu. For the past few years Government of Tamilnadu is issuing free laptops for all higher secondary school students. Most of the students of engineering and technology institutions are having their own individual laptops.

According to World Internet Usage Statistics News and World Population Statistics which were updated in June 2014, there are about 3.035 billion users on the Internet. . The total number of Internet users in Tamilnadu is 20,416,458, as on 11.08.2014 ( Source : Lok Sabha Unstarred Question No. 4636, dated 11.08.2014).

According to IAMAI-IMRB report, usage of social media in rural India has grown by 100 percent during the last one year with 25 million users residing in that belt. However, urban India registered a relatively lower growth of 35 percent with the total number of users at 118 million as on April 2015, says the 'Social Media in India 2014' report by the Internet and Mobile Association of India (IAMAI) and Indian Market Research Bureau (IMRB) International. There are 143 million social media users in India as on April 2015. The report stated that the top four metros continue to account for almost half of the social media users in urban India. The report said the largest segment accessing social media consists of the college going students with 34 percent followed by young men at 27 percent. School-going children constitute 12 percent of the social media users. College-going students and young men still form the 60 percent of the social media users in urban India. The report further stated that 61 percent of these users access social media on their mobile device. The report highlights that "The fact that almost two-thirds of the users are already accessing social media through their mobile is a promising sign. With the expected increase in mobile traffic the number of users accessing social media on mobile is only bound to increase". The number for rural India stood at 25 million, up from close 12 million last year, showing a growth of 100 percent.

The ability that is necessary for the growth of research to disseminate and promote one's work and research is an important component of managing and communicating information. Digital Reference Service is an advancement of the traditional reference services that is emerging as natural solution to meet the user's information needs in the changing environment The Digital libraries and the Web have brought enormously powerful search mechanisms to the desktops or laptops of many researchers to do vast research, Magamma (2013). There is a huge requirement from the students, research scholars and faculty members to search for references such as articles, e-books, journals, magazines, etc., after the office hours of the institutions academic libraries. This study is the need of the hour to measure the effectiveness of Digital Reference Services provided by the academic libraries under study based on the feedback and perception of their users. And also this study is to find the research gap and to provide suggestions for improvement of Digital Reference Services in the Academic Libraries under study.

**IV. Scope of the study**

This study categorised various modes of Digital Reference Services such as e-mail, web-form, AskA Librarian, online or instant chat, teleconferencing and video conferencing, and collaborative digital reference, digital robots, remote login over 24/7, social media into five categories namely E-mail based Reference Services, Real-time reference services, Web-based reference services, Collaborative reference services, and Social network based reference services. The scope of this study is to describe Digital reference service with its new features and various forms like VoIP Service, Collaborative reference service, and Social network based services. The study will include the comparison of digital reference service is being provided by Academic Libraries of Engineering and Technology Institutions in Tamilnadu. In this study, institutions under study are classified into four categories namely Universities, Deemed to be universities, Autonomous affiliated institutions, and non-autonomous affiliated institutions. The questionnaire set 1000 copies are sent to users of academic libraries of all engineering and technology institutions in Tamilnadu. This study is based on the sample that is based on responses received from users, since till the responses are being received from users.

**V. Objectives of the Study**

The main objective of this study is to explore and to measure the effectiveness of Digital Reference Services in the Academic libraries of Engineering and Technology institutions in Tamilnadu based on users awareness. The objectives of the study can be summarized as follows:

- a) To identify the status of user awareness about digital reference services being provided by academic libraries of engineering and technology institutions under study.
- b) To determine how demographic variables are related to awareness, usage, and the perceived needs of digital reference services. Demographic variables in this context refer to category of institution, gender, age, user education level, stay.
- c) Comparative analysis of Digital reference service being provided by the academic libraries of various categories of institutions under study
- d) To recommend solutions pertaining to digital reference services in academic libraries.

**VI. Methodology**

In this study Case Study method, questionnaire and content analysis tools are used. Questionnaire are designed according to the information required for this study and data analysis. Around 1500 questionnaire are distributed to selected engineering and technology institutions in Tamilnadu, In this study, engineering and technology institutions in Tamilnadu are categorized in to four categories and about 1500 questionnaire were distributed to each categories of institution as follows - Universities (300) / Deemed to be University (300) / Autonomous Affiliated Institutions (300) / Non-autonomous Affiliated Institutions (600). The reason for more number of questionnaire were distributed to Non-autonomous affiliated institutions is the number of institutions in this category is high that is 545, where as other categories only around 30.

The relevant and required data are collected by fixing an evaluation criterion such as availability of Dedicated web-site for library, Online Public Access Catalogue, E-mail, Chat, Video Conferencing, Instant Messaging, DSpace Repository, Remote login, Social networking, collaborating networking etc., from the users of libraries under study. The data

thus obtained were categorized, analyzed, tabulated and interpreted for comparing digital reference services provided by selected academic libraries. Modes of digital reference service and Online Service criteria are selected for systematic evaluation of digital reference service in the libraries included in the study.

The purposive sampling method is used in this for data collection. Sekaran (2000) stressed that purposive sampling is confined to specific types of people who can provide the desired information either because they are the only ones who possess it or they conform to some criteria set by the researcher. According to Sekaran's (2000) statement, it is justified that the purposive sampling approach is suitable for this study. The users in this context includes teaching staff, research scholars, undergraduate and postgraduate students of the departments of Computer Science & Engineering and Information Technology in the institutions under study were chosen. The departments also have a similar structure in terms of staffing and resources, as well as physical facilities as per the general guidelines of regulatory bodies like All India Council for Technical Education (AICTE) and University Grants Commission (UGC). The data collected were analyzed using SPSS version 22.0 for Windows.

## **VII. Data Analysis and Findings**

The data collected from the users' of academic libraries of approximately 600 engineering and technology institutions (including deemed universities and colleges) in Tamilnadu has been prepared in the form of Tables and analysed using statistical software. The comparative analysis on Digital Reference Services provided by the institutions under study is made on the basis of various categories of institutions. Following tables and graphs shows the comparison between academic libraries of different categories of institutions under study according to the online services and various modes of digital reference services.

### **Demographic Data of Users**

The summary of the Demographic Data of users as follows; Demographic variables are category of institution, user education level, users' gender, users' age, and stay. Users include teaching staff, research scholars, post-graduate students and under-graduate students. Engineering and Technology institutions in Tamilnadu are categorized into four namely Universities, Deemed to be universities, autonomous affiliated institutions, non-autonomous affiliated institutions.

Table 1 : Number of Responses for Questionnaire - Institution wise

Institutions	Questionnaire Distributed (QD)	No. of responses received (RR)
University	300	113
Deemed to be university	300	187
Autonomous and affiliated Institutions	300	141
Non-autonomous and affiliated institutions	600	307
	1500	748

Table 2: Number of Responses for Questionnaire - User level and Gender wise

	Total	Teaching staff, Scholars	PG Students	UG Students	Male	Female
Institutions	RR*	RR*	RR*	RR*	RR*	RR*
University	113	15	29	69	46	67
Deemed to be university	187	21	55	111	106	81
Autonomous and affiliated Institutions	141	12	32	97	65	76
Non-autonomous and affiliated institutions	307	39	69	199	134	173
	748	87	185	476	351	397

\*RR - Number of Responses Received

Table 2 shows the details of number of respondents that is user level wise and gender wise. In user level, 87(11.63%) were teaching staff and research scholars, 185(24.73%) were post-graduate students, 476(63.64%) the majority were under-graduate students. The number of female respondents 397(53.07%) are more than the number of male respondents 351(46.93%).

Table 3 : Number of Responses for Questionnaire - Users' Age and Stay wise

	Total	Age < 21	21 - 24	Age > 24	Hostel	Outside the campus
Institutions	RR*	RR*	RR*	RR*	RR*	RR*
University	113	66	31	16	61	52
Deemed to be university	187	101	57	29	82	105
Autonomous and affiliated Institutions	141	89	30	22	53	88
Non-autonomous and affiliated institutions	307	188	72	47	92	215
	748	444	190	114	288	460

\*RR - Number of responses received

Table 3 shows that most of the respondents that is 444 (59.36%) were age below 21 years, followed by 190 (25.4%) were 21 to 24 years, followed by 114 (15.24%) were more than 24 years. And also it shows that most of the students 460 (61.5%) were staying off-campus and 288 (38.5%) were staying on-campus.

### Awareness of DRS

Respondents were asked whether they were aware of their academic library offering DRS. As can be seen in Table 4, totally 339 (45.32%) respondents were aware of their institution academic library offering DRS out of 748 users responded.

The analyses of cross tabulations and Chi-square tests were performed to identify the (a) significance of the awareness of DRS and Users from different categories of Institutions, (b) significance of the awareness of DRS and Users Education Levels, (c) significance of the awareness of DRS and Gender of User, (d) significance of the awareness of DRS and Users' Age, and (e) significance of awareness of DRS and Users' stay. The summary of results and findings from Chi-square tests of demographic variables are shown in Tables 4 - 8.

Users in Universities are well aware of DRS that is 92(81.42%) users are aware of DRS and 21(18.58% ) of users are unaware of the DRS, whereas in Deemed to be universities and autonomous affiliated institutions user awareness of DRS are 55.08% and 57.45% respectively. In case of Non-autonomous affiliated institutions, very few that is 20.52% of users are aware of DRS provided by their institutions' academic library. The reason is most of the Non-autonomous affiliated Engineering and Technology institutions in Tamilnadu are not providing DRS (K.Chandrababha, 2015).

Table 4 : Type of Institutions Vs Awareness

Type of Institution Vs Awareness					
Type of Institution	YES* - Frequency	YES - %	NO* - Frequency	NO - %	Row Totals
Universities	92 (51.21) [32.48]	81.42	21 (61.79) [26.92]	18.58	113
Deemed to be universities	103 (84.75) [3.93]	55.08	84 (102.25) [3.26]	44.92	187
Autonomous affiliated institutions	81 (63.90) [4.57]	57.45	60 (77.10) [3.79]	42.55	141
Non-autonomous affiliated institutions	63 (139.14) [41.66]	20.52	244 (167.86) [34.53]	79.48	307
<b>Column Totals</b>	339	45.32	409	54.68	<b>748 (Grand Total)</b>
The chi-square statistic is 151.1551. The P-Value is < 0.00001. The result is significant at p < 0.05.					
*Observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].					

The Chi-square value is calculated on the data collected from the questionnaire about the awareness of Digital Reference Services provided by the academic libraries using SPSS 22.0 software. The Chi-square value is 151.155, Probability value is less than 0.00001. Hence the Type of Institution and the Awareness of DRS is significant at p < 0.05.

Table 5 : Users' level Vs Awareness

<b>Users' level Vs Awareness</b>					
	YES* - Frequency	YES - %	NO* - Frequency	NO - %	<b>Row Totals</b>
Teaching staff and Research Scholar	73 (39.43) [28.58]	83.91	14 (47.57) [23.69]	16.09	87
Post-graduate students	124 (83.84) [19.23]	67.03	61 (101.16) [15.94]	32.97	185
Under-graduate students	142 (215.73) [25.20]	29.83	334 (260.27) [20.88]	70.17	476
<b>Column Totals</b>	339	45.32	409	54.68	<b>748 (Grand Total)</b>
The chi-square statistic is 133.5295. The P-Value is < 0.00001. The result is significant at $p < 0.05$ .					
*Observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].					

Table 5 shows the significant relationship between the Users' education level and the awareness. It is found that in the above three categories of users' education level, Teaching staff and Research Scholar category is well aware of DRS that is 83.91%, when comparing with other categories post-graduate students and under-graduate students the awareness percent is 67.03%, 29.83% respectively.

Table 6 : Users' Gender Vs Awareness of DRS

<b>Gender Vs Awareness</b>					
	*Yes - Frequency	Yes - %	No - Frequency	No - %	<b>Row Totals</b>
Male	158 (159.08) [0.01]	45.01	193 (191.92) [0.01]	54.99	351
Female	181 (179.92) [0.01]	45.59	216 (217.08) [0.01]	54.41	397
<b>Column Totals</b>	339	45.32	409	54.68	<b>748 (Grand Total)</b>
The chi-square statistic is 0.0251. The P-Value is 0.874147. The result is <i>not</i> significant at $p < 0.05$ .					
*Observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].					

Table 6 shows that there is no significant relationship between users' gender and awareness of DRS. The Chi-square test result shows p-value 0.874 which is greater than 0.05.



Table 7 : Users' Age Vs Awareness of DRS

<b>Users' Age Vs Awareness</b>					
	*Yes - Frequency	Yes - %	*No - Frequency	No - %	<b>Row Totals</b>
Less than 21 years	125 (201.22) [28.87]	28.15	319 (242.78) [23.93]	71.85	444
21 to 24 years	117 (86.11) [11.08]	61.58	73 (103.89) [9.18]	38.42	190
More than 24 years	97 (51.67) [39.78]	85.09	17 (62.33) [32.97]	14.91	114
<b>Column Totals</b>	339	45.32	409	54.68	<b>748 (Grand Total)</b>
The chi-square statistic is 145.8219. The P-Value is < 0.00001. The result is significant at $p < 0.05$ .					
*Observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].					

Table 7 shows the relationship between users' age and awareness of DRS. The chi-square statistic value is 145.82 and the p-value is less than 0.00001. Thus there is significant relationship between users' age and awareness of DRS at  $p < 0.05$ . It is found that in table 7, users with more than 24 years old are well aware of DRS that is 85.09%, where as in the other two categories that is less than 21 years and 21 to 24 years the percentage of awareness is 28.15% and 61.58% respectively. The reason is most of the teaching staff and research scholars are older than 24 years.

Table 8 : Users' Stay Vs Awareness of DRS

<b>Stay Vs Awareness</b>					
	*Yes - Frequency	Yes - %	*No - Frequency	No - %	<b>Row Totals</b>
In-campus	192 (130.52) [28.95]	66.67	96 (157.48) [24.00]	33.33	288
Off-campus	147 (208.48) [18.13]	31.96	313 (251.52) [15.03]	68.04	460
<b>Column Totals</b>	339	45.32	409	54.68	<b>748 (Grand Total)</b>
The chi-square statistic is 86.1077. The P-Value is < 0.00001. The result is significant at $p < 0.05$ .					
*Observed cell totals, (the expected cell totals) and [the chi-square statistic for each cell].					

Table 8 shows cross tabulation of users' stay and awareness of DRS. Users staying in campus are well aware of DRS when comparing with the off-campus days-scholars. There is a need for providing and educating users to access and avail the digital reference services in the academic libraries of the institutions under study.

**VIII. Conclusion and suggestions**

The results indicated that there is significant relationship between awareness of DRS and institutions type, users' education level, users' age, stay. The results also shows that there is no significant relationship between awareness of DRS and gender. Only Institutions type, Users' education level, Users' age and Users' stay were found to be significant in determining the awareness of DRS. The finding of this study are (i) The awareness of DRS among users of non-autonomous affiliated institutions is very low, (ii) Users under 21 years old are not well aware of DRS, (iii) users staying off-campus are also not well aware of DRS in numbers. It is found that most of the engineering and technology colleges are not providing dedicated website for libraries, remote login to users. The suggestion for improvement is, it would be efficient DRS if the academic libraries of all engineering and technology colleges provide dedicated website and remote login to every members. There is a good expectations from the users to avail the digital reference services from their academic libraries beyond the office hours through the use of remote login facility to access the digital library to avail the digital services. Anna University is proving affiliation to all the engineering and technology colleges in Tamilnadu. Anna University can insist all its affiliated institutions to provide digital reference services through dedicated website for their libraries and remote login facilities.

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