

# ANALYSIS OF DIGITAL LIBRARY SERVICES AT ENGINEERING COLLEGES IN KARNATAKA : A STUDY

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## Abstract

The study evaluated the digital services provided by the engineering college libraries in Karnataka affiliated to Vishveswararaya Technological University (VTU). The study used survey research design and the data collected was analysed using descriptive statistics. Findings from the study revealed that most of the librarians are providing digital resources which itself is a service. Majority of them are providing many personalized service like information search service, email alerting service, digital reference service, current awareness service, and selective dissemination service.

**Keyword:** Digital Library, Digital Library Services, Services, Library Service, Digital Resources, E-Resources.

## 1. INTRODUCTION

New and advanced technologies have brought significant changes in the education systems. Almost all the countries of the world have adopted the new technologies for teaching and learning process where India is not an exceptional one. As a part of educational system libraries have also influenced by the exhaustive innovations in information technology, computer technology and communication technology. These technologies have transformed the way librarians are collecting, organizing, storing and disseminating information. At the same time increase of knowledge as an intangible asset, various information resources, endless ways of communication and countless devices to access information has provided opportunity to users to adopt the digital materials/resources easily. Thus it is important to provide best digital information resources and services that can be accessed from users devices 24/7 at the shortest time and adopt the concept of digital library, hybrid library and library without wall. These new library concepts have been adopted by many engineering colleges in

Karnataka and are providing digital resources and service to their clients. Vishveswararaya Technological University (VTU) and governing body like All India Council for Technical Education (AICTE), understanding the technological changes; importance of digital resources and services, have made mandatory subscription to e-journal database/s and provision to access National Programme on Technology Enhanced Learning (NPTEL) Lecture notes to affiliated institutions. In this way they have enforced engineering college libraries to acquire and manage digital collection time to time and cater to the needs of teach savvy users, who are always in need of information on their fingertips.

### 1.1. Objectives

1. To know whether engineering college libraries have subscribed to e-books and e-journal databases as per AICTE Norms
2. To know whether they have provided access to online lecture notes
3. To know whether they have used any tools for enhancing use of digital resource
4. To know the digital services provided by engineering college libraries

### 1.2 Scope

Our Study emphasizes on different digital library services that are provided by engineering college libraries affiliated to VTU in Karnataka, which are spread around the area of 191976 Square Kilometers.

### 1.3 Need for the study

Academic libraries are continuously working to support teaching system by providing pinpointed information and services according to the needs of the users. These days, users are craving for digital resources and services to fulfill their information need, as it is easily accessible and searchable. So it was important to conduct the study to know the services provided by engineering college libraries and to know the implementation status of AICTE and VTU Norms, for highlighting the status of digital library service in engineering colleges in Karnataka.

## 2. Review of Literature

To provide digital library service (Xiao, 2010) explained an overall methodology and case study for the innovation and extension of a digital library. Author used the three-dimensional structure theory (resources, services and organisations/librarians) of the information service industry and combined with the comprehensive analysis with the practical experiences, in order to provide document delivery services (DDS). Further (Shabani *et al.*, 2012) have attempted to present the prerequisites for establishing DDS and investigated the facilities offered by many libraries for the clients in academic and research institutes. (Moore 2005) created digital map collection and provided digimap service to assist users in making full use of cartographic material, which helped users to produce map extracts at a set scale, to generate their own maps online or download map data to use with appropriate application software such as CAD, GIS etc. (Roda *et al.*, 2005) developed digital image library by digitizing images with the help of professional slide/film scanner to overcome preservation, access and reuse problem and they provided access to images through a web-based interface for easy and interactive activity. (Solbakk, 2012) provided digital newspaper service at The National Library of Norway free of charge in collaboration with Norwegian newspaper, who provided high quality

digitized newspaper content. (Joint, 2006) illustrated how there are common ways of managing both digital libraries and VLEs (virtual learning environments) and analyzed that the intrinsic natures of VLE and digital library are similar, so it gives an opportunity to manage and implement them in similar way for providing the services. (Kurilovas, 2007) created an open source e-learning content and services system which is referred as Digital Library of Educational resources and services (DLE). He has also created European Learning Resource Exchange (LRE) system for schools and has investigated flexible approach to DLE creation and development. Continuing the research (Hunter *et.al* 2010) highlighted on the research computing lab service where they have merged the traditional IT services with traditional library services to blur the boundaries between traditional and e-Science Librarianship. They have provided the service by established strategic partnerships with publishers. (Peters and Bell, 2006) implemented instant messaging service at the Galludet University, that supported to provide better reference service to deaf students. They found that students thrives on technology and social tools and suggested to use other cutting edge techniques in addition to chat-based reference service to reach out to the growing student base that feels most comfortable in a technological environment. Further they suggested that podcasting and using wikis are two ways that academic librarians can enhance their services. Further (Rios, 2004) built personal digital assistant services (PDAs) to connect students, researchers, clinicians and staff with the biomedical information which users need to advance the education, research, patient care and public service programs of the University of Virginia Health System. He highlighted that evidence-based literature search could be performed on a PDA and summarized answers to clinical questions could be downloaded and read. He recommended to use PDAs to record, transcribe dictating and also for fully interacting with the patient record. (Higgs 2013) explored how Geographical Information Systems (GIS) can be utilized to provide digital service and how it support to take decision on opening and closure of library services. He suggested that a network-based GIS system can be used, in conjunction with detailed qualitative information based on user preferences and experiences, to plan digital services. (Zhang, 2011) mentioned about website service that was designed to provide access to China Digital Library for Visual Impairment. She designed website abiding to WCAG2.0 (Web Content Accessibility Guidelines) and applied blind screen reading software, which allows users to interact easily. Through huge response he found that the service was successful. Resources play a great role in digital library services. Providing digital resources itself is a service so (Monopoli *et al.*, 2002) evaluated e-journals usage and found that academic researchers and staff used e-journals more.

### 3. METHODOLOGY

The survey method was adopted for the study. The study used questionnaire tool to collect data, which was consisted of 26 structured questions. 11 questions were regarding demographic characteristics and educational background and 15 closed ended questions were on digital library services. Targeted population was 197. Though sample size of 130 was enough 150 duly filled questionnaires was collected to make up for non-response error or attrition or the likes, 147 engineering college librarians and 3 Post Graduation Center librarians responses were considered for analysis.

### 4. DATA ANALYSIS AND INTERPRETATION

The data collected from the questionnaire were coded and analyzed using statistical package for social sciences (SPSS). Descriptive statistics using frequencies and percentages was used to analyse the variables. To compare the variables Chi Square ( $X^2$ ) test was applied and contingency coefficient was observed using Statistical Package for the Social Science (SPSS) v.20.

To know the various designations of the professionals working in various engineering college libraries, librarians were asked to state their designation, which is presented below in Table 1:-

	Designation			Total	Test statistics
	Senior or Senior Grade	Librarian or Chief Librarian	Assistant Librarian		
Frequency	14	126	10	150	$X^2=173.440$ ; $p=.000$
%	9.30%	84.00%	6.70%	100%	

**Table 1. Total sample**

Of the 150 sample selected, majority of them were librarians/chief librarians (84.0%), 9.3% of them were senior or senior grade librarians and remaining 6.7% of them were assistant librarians. When chi-square test was applied to these groups of frequencies, chi-square value of 173.440 was observed further confirming that majority of the sample were librarians/chief librarians.

Subscription to E-Journal Database	Frequency and Percentage	Designation			Total	Test statistics
		Senior or Senior Grade	Librarian or Chief Librarian	Assistant Librarian		
Yes	F	14	121	10	145	$X^2=130.667$ ; $p=.000$
	%	100.00%	96.00%	100.00%	96.70%	
No	F	0	5	0	5	
	%	0.00%	4.00%	0.00%	3.30%	
Test statistics		CC=.081; $p=.611$				

**Table 2. Response on subscription to e-journal database/s**

To know how many engineering colleges are subscribing to e-journal database/s, response was collected and found that 96.7% of the samples have specified that they subscribe to e-journal database/s in their library and remaining 3.3% samples have specified that they did not subscribe to e-journal database/s. Chi-square test revealed that largely significant number of libraries have subscribed to E-journal databases and contingency coefficient revealed that the subscription to E-journal databases was same in different designations of librarians. It is clear from the study that all most all the engineering colleges are in support of the e-journals and abiding to the VTU and AICTE norm, which states that subscribing to e-journal database/s is desired.

Access to E-books	Frequency and Percentage	Designation			Total	Test statistics
		Senior or Senior Grade	Librarian or Chief Librarian	Assistant Librarian		
Yes	F	5	43	3	51	$X^2=15.360$ ;
	%	35.70%	34.10%	30.00%	34.00	

					%	p=.000
No	F	9	83	7	99	
	%	64.30%	65.90%	70.00%	66.00%	
Test statistics		CC=.025; p=.956				

**Table 3. Access to E-books**

To know how many engineering colleges are subscribing to e-books, response was collected and found that, 34.0% of the samples have specified that they provide access to E-books at their library and remaining 66.0% samples have specified that they have not provided access to E-books. Chi-square test revealed that most of the libraries are not providing access to E-books. Contingency coefficient revealed that the access to E-books provided was same in different designations of librarians. These days E-books are gaining lot of importance, the study by (Zickuhr, et.al., 2013) shows rising popularity of e-books is helping to transform American's reading habits. So it is important to take necessary actions to provide e-books in India.

Suggestion on Lecture Notes	Frequency and Percentage	Designation			Total	Test statistics
		Senior or Senior Grade	Librarian or Chief Librarian	Assistant Librarian		
Yes	F	14	122	10	146	X <sup>2</sup> =134.427; p=.000
	%	100.00%	96.80%	100.00%	97.30%	
No	F	0	4	0	4	
	%	0.00%	3.20%	0.00%	2.70%	
Test statistics		CC=.072; p=.676				

**Table 4. Suggestion to utilize lecture notes to users**

Lecture notes have become one of the major part of the digital resource and gaining importance in engineering education. Efforts from IIT's, IETE IISc and Government of India are continuously made since 2000 to provide and popularize lecture notes in engineering field. Above table shows efforts of librarians in educating users about lecture note.

It is found that 97.30% of the samples have specified that they suggest users to utilize lecture notes and remaining 2.70% samples have specified that they have not suggested users to utilize lecture notes. Chi-square test revealed that largely significant number of librarians is suggesting utilizing lecture notes to users. Contingency coefficient revealed that the suggestion to utilize lecture notes to users was same in different designations of librarians. Further confirms that all categories of librarians are aware of lecture notes and popularizing the online learning.

Access To NPTEL Lecture Notes	Frequency and Percentage	Designation			Total	Test statistics
		Senior or Senior Grade	Librarian or Chief Librarian	Assistant Librarian		
Yes	F	9	76	3	88	$X^2=4.507$ ; $p=.034$
	%	64.30%	60.30%	30.00%	58.70%	
No	F	5	50	7	62	
	%	35.70%	39.70%	70.00%	41.30%	
Test statistics		CC=.155; p=.156				

**Table 5. Provision of access to NPTEL lecture notes**

It is important to provide access to lecture notes apart from suggesting. 58.7% of the samples have specified that they provide access to NPTEL lecture notes and remaining 41.3% samples have specified that they do not provide access to NPTEL lecture notes. Chi-square test revealed that most of libraries are providing access to NPTEL lecture notes. From the above table we can interpret that, many colleges may not have the proper audio facility, good internet speed at library and sufficient budget to purchase DVD's or copy the lecture notes to hard disk.

IR Facility	Frequency and Percentage	Designation			Total	Test statistics
		Senior or Senior Grade	Librarian or Chief Librarian	Assistant Librarian		
Yes	F	11	69	6	86	$X^2=3.227$ ; $p=.072$
	%	78.60%	54.80%	60.00%	57.30%	
No	F	3	57	4	64	
	%	21.40%	45.20%	40.00%	42.70%	
Test statistics		CC=.139; p=.229				

**Table 6. Provision of Institutional Repository (IR) Facility**

Archiving digital resources is an important activity of library for current and future use of resources. Above table shows 57.3% libraries have provided IR facility to users and remaining 42.7% libraries have not provided IR facility. Chi-square test revealed that distribution of IR facility is same among the group. (McGrogy et al., 2007) Have analyzed that archiving digital resources provides timely access and greater choice of information resource so it is important to provide IR facility using any of the digital resource management software.

Variable	Response	Frequency and Percentage	Designation			Total	Test statistics
			Senior or Senior Grade	Librarian or Chief Librarian	Assistant Librarian		
	<b>Yes</b>	F	13	94	7	114	$X^2=40.560$ ;p=.
		%	92.90%	74.60%	70.00%	76.00%	
	<b>No</b>	F	1	32	3	36	
		%	7.10%	25.40%	30.00%	24.00%	
Test statistics			CC=.128 ; p=.285				
<b>Information Search Service</b>	<b>Yes</b>	F	14	116	9	139	$X^2=109.22$ 7;p=.000
		%	100.00%	92.10%	90.00%	92.70%	
	<b>No</b>	F	0	10	1	11	
		%	0.00%	7.90%	10.00%	7.30%	
Test statistics			CC=.092 ; p=.527				
<b>Email Alerting Services</b>	<b>Yes</b>	F	10	91	6	107	$X^2=27.307$ ;p=.000
		%	71.40%	72.20%	60.00%	71.30%	
	<b>No</b>	F	4	35	4	43	
		%	28.60%	27.80%	40.00%	28.70%	
Test statistics			CC=.067 ; p=.713				
<b>Digital Reference Service</b>	<b>Yes</b>	F	10	75	2	87	$X^2=3.840$ ; P=.050
		%	71.40%	59.50%	20.00%	58.00%	
	<b>No</b>	F	4	51	8	63	
		%	28.60%	40.50%	80.00%	42.00%	
Test statistics			CC=.212; p=.029				
<b>Online Chat Service</b>	<b>Yes</b>	F	7	51	2	60	$X^2=6.000$ ; P=.014
		%	50.00%	40.50%	20.00%	40.00%	
	<b>No</b>	F	7	75	8	90	
		%	50.00%	59.50%	80.00%	60.00%	
Test statistics			CC=.122 ; p=.323				
<b>CAS</b>	<b>Yes</b>	F	11	83	1	95	$X^2=10.667$ ;P=.001
		%	78.60%	65.90%	10.00%	63.30%	
	<b>No</b>	F	3	43	9	55	
		%	21.40%	34.10%	90.00%	36.70%	
Test statistics			CC=.292 ; p=.001				
<b>SDI</b>	<b>Yes</b>	F	9	74	2	85	$X^2=2.667$ ; P=.102
		%	64.30%	58.70%	20.00%	56.70%	
	<b>No</b>	F	5	52	8	65	
		%	35.70%	41.30%	80.00%	43.30%	
Test statistics			CC=.197 ; p=.049				

<b>Subject Gateway / Portal</b>	<b>Yes</b>	F	6	54	1	61	X <sup>2</sup> =5.227; P=.022
		%	42.90%	42.90%	10.00%	40.70%	
	<b>No</b>	F	8	72	9	89	
		%	57.10%	57.10%	90.00%	59.30%	
Test statistics			CC=.165 ; p=.124				
<b>FAQ</b>	<b>Yes</b>	F	8	47	2	57	X <sup>2</sup> =8.640; p=.003
		%	57.10%	37.30%	20.00%	38.00%	
	<b>No</b>	F	6	79	8	93	
		%	42.90%	62.70%	80.00%	62.00%	
Test statistics			CC=.153 ; p=.167				
<b>Instant Messaging Service</b>	<b>Yes</b>	F	5	52	3	60	X <sup>2</sup> =6.000; p=.014
		%	35.70%	41.30%	30.00%	40.00%	
	<b>No</b>	F	9	74	7	90	
		%	64.30%	58.70%	70.00%	60.00%	
Test statistics			CC=.164 ; p=.738				

**Table 7. Digital library services**

Digital library services enable users to access information on their own so it is important for libraries to provide digital library services. In order to know the services provided by libraries above data was collected. From above table it is clear that website service is provided by 76% librarians, information search service is provided by 92.7% librarians, email alerting service is provided by 71.3% librarians, digital reference service is provided by 58% librarians, current awareness service is provided by 63.3% librarians, selective dissemination service is provided by 56.7% librarians, online chat service is provided by 40% of the librarians, subject gateway / portal service is provided by 40.7% librarians, frequently asked question service is provided by 38% librarians and instant messaging service is provided by 40% librarians. It clear from the study that maximum numbers of librarians are providing information search service, website service and email alerting service and less number of librarians are providing personalized services like online chat service, subject gateway / portal service, frequently asked question service and instant messaging service.

Variable	Response	Frequency & Percentage	Designation			Total	Test statistics
			Senior or Senior Grade	Librarian or Chief Librarian	Assistant Librarian		
<b>Open URL</b>	<b>Yes</b>	F	8	63	5	76	X <sup>2</sup> =.027;p=.870
		%	57.10%	50.00%	50.00%	50.70%	
	<b>No</b>	F	6	63	5	74	
		%	42.90%	50.00%	50.00%	49.30%	
Test statistics			CC=.042; p=.878				
<b>Link Resolver</b>	<b>Yes</b>	F	2	11	1	14	X <sup>2</sup> =99.227;p=.000
		%	14.30%	8.70%	10.00%	9.30%	

	<b>No</b>	F	12	115	9	136	
		%	85.70%	91.30%	90.00%	90.70%	
	Test statistics		CC=.056; p=.792				
<b>Aggregator Search Engine</b>	<b>Yes</b>	F	2	37	3	42	$X^2=29.04$ 0;p=.000
		%	14.30%	29.40%	30.00%	28.00%	
	<b>No</b>	F	12	89	7	108	
		%	85.70%	70.60%	70.00%	72.00%	
	Test statistics		CC=.098; p=.486				
<b>Federated Search Engine</b>	<b>Yes</b>	F	2	34	1	37	$X^2=38.50$ 7;p=.000
		%	14.30%	27.00%	10.00%	24.70%	
	<b>No</b>	F	12	92	9	113	
		%	85.70%	73.00%	90.00%	75.30%	
	Test statistics		CC=.124; p=.311				
<b>Links in Online Catalogue</b>	<b>Yes</b>	F	4	30	3	37	$X^2=38.50$ 7;p=.000
		%	28.60%	23.80%	30.00%	24.70%	
	<b>No</b>	F	10	96	7	113	
		%	71.40%	76.20%	70.00%	75.30%	
	Test statistics		CC=.46 ; p=.853				

**Table 8. Use of Search Engine Optimizer Tool**

Open URL, link resolver aggregator search engine and federated search engine enables internet users to more easily find a copy of a resource that they are allowed to access and thus enhances the utility of digital resources. So it is important to provide such tool. In order to find how many libraries are providing such tool above data was collected and found that open URL tool was provided by 50.7% librarians, Link resolver tool was provided by 9.3% librarians, aggregator search engine tool is provided by 28% librarians, federated search engine tool is provided by 24.7% librarians and online catalogue tool is provided by 24.7% librarians. This study reveals that open URL tool is adopted by many librarians to enhance the utility of the digital resource.

## 5. DISCUSSION

- E-journal database/s are very rich source of information and every professional college must provide this resource. It is very encouraging to observe that 96.7% of libraries have subscribed to e-journal database/s which indicates that most of the libraries are encouraging research activities and supporting students to undertake projects
- compared to e-journal database/s e-book database/s subscription has given less prominence, which suggest that, there is need for creating awareness about e-book importance among users and authorities.
- Online learning has gained lot of importance among users and about 97.3% of librarians are supporting and encouraging users to use lecture notes,
- 41.3% of the libraries are not providing access facility to NPTEL lecture notes though AICTE has made mandatory to provide, access to NPTEL Lecture notes at library. So librarians have to

work on providing access to lecture notes and also Governing bodies should play a key role and pay more attention towards implementation of the rules.

- IR facility is provided by 57.3% of the libraries which indicates most of the librarians have given prominence to archive the intuitional output and other important digital resources for current and future use.
- 76% of the librarians have indicated that they are providing website service, which shows that most of the libraries making use of website as a digital channel as library website is a gate way for many of the digital service.
- From study it is clear that information search service is provided by maximum libraries compared to other service. May libraries are also providing email alerting service, digital reference service, current awareness service, selective dissemination service.
- Online chat service, subject gateway/portal service, frequently asked questions and instant messaging service are provided by minimum number of institutions. Librarians should work to provide these services extensively as, these services have great importance in digital world.
- It is clear from study that maximum librarians are using Open URL tool for optimizing the access to digital resources through search engine.

## 6. FURTHER RESEARCH

As the survey conducted was confined to only VTU, Karnataka, results may vary if research is conducted taking into consideration all the universities. So further research may be conducted taking into consideration all the universities in India. Further user study may also be conducted to know the satisfactory level and expectations of users about the digital library services.

## 7. CONCLUSION

Providing library services is the important activity of librarians. The effort to acquire, organize and preserve learning, teaching, and research resources is to provide services and cater to the need of the users. In the digital era it is important to provide digital service. From the study it is clear that librarians are providing digital resources which itself is a service. They are also providing many of the personalized service like information search service, email alerting service, digital reference service, current awareness service, and selective dissemination service. Services like Online chat services, subject gateway/portal service, frequently asked questions and instant messaging service are given less prominence. They have to make efforts to provide these services as it is need of the day and many users would appreciate these services and they are quite popular service in developed countries. Governing bodies like AICTE, VTU and professional bodies in developed countries should support librarians by educating them through workshops on providing the digital services and also fund the institutions in providing infrastructure like Short Messaging Service (SMS) software, which is useful for providing SMS services. Currently AICTE and VTU are not providing funding for research in libraries. AICTE and VTU must pay attention and provide funding for research on libraries, which is the thrust area.

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