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**THE FACULTY MEMBERS AND RESEARCH SCHOLARS ATTAIN  
ACADEMIC AND RESEARCH THOUGHTS BY ACCESSING  
ELECTRONIC INFORMATION IN THE UNIVERSITIES OF KERALA,  
INDIA**

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# THE FACULTY MEMBERS AND RESEARCH SCHOLARS ATTAIN ACADEMIC AND RESEARCH THOUGHTS BY ACCESSING ELECTRONIC INFORMATION IN THE UNIVERSITIES OF KERALA, INDIA

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## ABSTRACT

This study analyses the survey was undertaken among the academic community, they have been utilized Electronic Resources by the respondents from selected State Universities of Kerala, India. The analysis attempt to know the awareness of UGC-INFONET, purposes of use UGC-INFONET consortium resources, level of satisfaction, preference given to download the full text articles, use of databases and respondents observed constraints, barriers and limitations while access the UGC-INFONET services offered in the Select State Universities of Kerala. The respondents of the study were 421 from selected State Universities in Kerala State, India. The Respondents categorize include Teaching faculty, Research Scholars and PG Students, the analysis made effective use of Electronic resources in rely on academic research prevalence of their needs in the Six State Universities of Kerala. The results examined out of 421 respondents, 220 (52.3%) of them belong to Research scholar. majority of respondents 109 (25.9%) are post graduates and 75 (17.8%) are having PG with NET qualification. Mean value for 'To borrow books' was 3.86 and assigned the rank one. Majority of respondents 416 (98.8%) are searching for educational and research Information. The findings of the study could identify the various parameters while access Electronic resources by the academic community. The study would helpful to bring to access Electronic Information for momentum of gain research and academic ideas among the users.

**Keywords:** Information Communication Technology, Electronic Resources, Faculty, Research Scholars, Students and UGC- INFONET.

**Paper type** -Research paper

## 1.INTRODUCTION

Electronic Information are usually referred to as databases, books, journals, newspapers, magazines, archives, theses, conference papers, examination papers, government papers, research reports, scripts and monographs in an Electronic form (Adams & Bonk, 1995). Co-operation is the basis of library consortium. With limited budget, single library can't make available the entire Information requirements demanded by its patrons. Library cooperation is a solution to this problem. According to Allen & Hirshon (1998) "Library consortium is a generic term to indicate any group of

libraries that are working together towards a common goal, whether to expand cooperation on traditional library services (such as collection development) or Electronic Information services". It is now used perhaps too broadly, and encompasses everything from formal legal entities to Information groups that come together solely to achieve better pricing for purchasing Electronic Information." Dong, Elaine Xiaofen & Tim Jiping Zou (2009) discussed that a library consortium is an association of libraries established by formal agreement, usually for the purpose of improving services through resource sharing among its members." The advent of Information and Communication Technologies (ICT), Electronic Information are easily and readily available to users. Usage of Electronic Information is common in a university environment with the rapid advance of Information and communication technologies (Deng , 2010). The library and its clients of higher education segment have in a general sense affected with the articulated move from print resources to Electronic resources. The knowledge and its means of communication are also very complex nowadays. A library is a place where the communication of knowledge through user friendly devices, thus imparting Information, library plays a vital role. In India, application of ICT in libraries has not reached a very high level due to lack of budget, lack of manpower, lack of skilled staff and lack of training (Sampath Kumar, 2010). The concept of 'Library without walls' has much significance when we discuss about Electronic resources. The ready availability of thousands of Electronic databases demanded the proper management of these resources. Thus it results in better usage of these resources and quality improvement in higher education. A library consortium denotes the cooperation and collaboration among the libraries for sharing Information resources (Walmiki, 2010).

### **1.1 Library Consortia**

Aditya Tripathi & Jawahar Lal (2016) stated that no library is said to be complete in terms of collections, manpower, and finances. Libraries need to join hands to cope with these issues. Library cooperation is one of the earliest exercises of libraries to beat shrinking resources. Library cooperation is not new but the application to form library consortia in negotiations with publishers is not very old. Real-time access, changes in the publication industry, and demand for quality services have compelled libraries to form library consortia.

### **1.2 Consortia Pricing Models in India**

Goudar & Poornima, Narayana (2004) discussed that print journals continue to dominate both from user's point of view and publishers' revenue. The advent of e-publishing has brought a revolution in journal publication, subscription, and access and delivery mechanism. Print journals publishing costs include high article processing costs, high production and marketing costs. E-journal production and access costs are increased further due to infrastructure, customer support, IT savvy human resources, etc. While these costs form the base, other pricing factors include number of nodes, multiple campuses, access mode, training, perpetual access, etc. A study indicates that one of the US University Science Library spends 76 % of its journals budget on titles of 10 major publishers like Elsevier, Springer, Wiley, Harcourt, Kluwer, Plenum, Blackwell, AIP, Marcel Dekker and Taylor Francis. This holds good for most of STM institutions too.

The dwindling library budgets and growing number of journals force libraries to form consortia for accessing e-journals. The old concept 'consortia' means a strategic alliance of institutions having common interests. Neither libraries nor the publishers have sufficient experience or data to determine the appropriate unit cost of information, the effective return on investment, or the most appropriate economic model for charging or paying for electronic information. There are no universally acceptable e-journals pricing and licensing models. Current pricing models for e-information, which are developing during a period of experimentation, are not sustainable. Although it can not be generalized the learned society publishers are increasingly prepared to make all their non-subscribed journals available to consortia in return for a relatively small extra payment.

## **2. LITERATURE REVIEW**

Abels (1996) observed that the cost of reference services certainly related with the price of Electronic resources. The discussions in this paper give a historical viewpoint of pricing, pricing structures and its future from three different perspectives such as a database producer, online service provider and a commercial online consumer service provider. Reason Baathuli Nfila & Kwasi Darko-Ampem (2002) had traced the term "Library Consortium" as a form of co-operation and collaboration among libraries and Information centers. The paper highlights the reasons for starting consortia and give an idea of highly decentralized to highly centralized consortia models. The consortia movement currently becomes sharing of integrated library systems, Information databases, collection development, cooperative purchasing of e-journals and manpower sharing. With the establishment of consortium there are increased levels of services to patrons which were not having them before. Major advantage of forming such cooperation was cost savings, as the consortium shares the expenditure. Sathe (2002) investigated the impact of e-journals on research process. The study results pointed out that fellows, students, and residents prefer e-journals, and faculty prefer print journals. Users consider e-journals easy to access and search than print journals; however, they consider print journals are having good quality text and figures. Carol Tenopir (2003) examined the usage of Electronic resources and print resources in the library. The study was conducted in two levels. In the first level major studies on the usage of e-resources were examined and in the second stage, researches on users' preference for print and e-resources and services of library were studied. Even though there is no single system for collection development, users can be segmented to groups which shows similar preference and patterns of usage.

Farb & Angela Riggio (2004) attempted to examine the metadata standards, structures and schema significant for managing Electronic resources. The article pointed out, why e-resource management is so difficult and what metadata standards are required to manage e-resources. It reveals that currently there is no single standard or structure to tackle the difficulties of managing e-resources. Lack of existing metadata schema to manage the e-resources, there is a growing need for libraries to track the persistence and accessibility of the e-resources. Jane Secker (2004) deals with the current topic of e-resources and e-learning in the digital age. It starts by mentioning the changing 'Information environment' where the librarians presently work. It also discusses about the development of e-learning and its impact on higher education sector, the changing role of the librarians in supporting e-learning; the technical problems faced while connecting up library systems; the licensing and copyright of e-

resources; and, finally it offers tips for librarians. Murthy et.al (2005) observed that all educated system must have to depend on authentic, factual and up to date Information. University Grand Commission (UGC) initiated two projects viz, UGC-INFONET and UGC-INFONET E-journal Consortium. Dadzie (2005) observed that usage of computer general for accessing Information was high because of the University's state-of-the art IT infrastructure. Use of some e-resources was good, but the usage of scholarly e-databases was very low. The users are not well aware about the existence of these Electronic library resources. The study suggests for the introduction of Information literacy course in the curriculum and the provision of more computers in campus.

Blanca San Jose & Pacios (2005) found that acceptance of Electronic journals by the users is excellent. Consortia purchasing projects have become the basic tool for collection development. Librarians have to acquire negotiating skills to facilitate cooperative development. Prem Chand (2005) studied the development of internet in 1990's which paved the way for the Electronic journals. The factors which replaced by the e-journals are the low library budget and increasing cost of subscription of print journals. Thiyam Satyabati Devi and Murthy (2005) has examined that library consortium is considered as a vital part in the academic structure. The paper explains the policies, characteristics and internal structure and objectives of UGC- INFONET Consortium. Under UGC, this consortium is well known in the field of Higher education. Rupak Chakravarty & Sukhwinder Singh (2005) have analysed that Indian Libraries are facing the problem of shrinking the budget, but the rapid increase in the price of journals. UGC-INFONET and INDEST-Consortium are two major initiatives that have come to the rescue of academic libraries so that they can cater to the needs of patrons. Murthy et.al (2005) observed that all educated system must have to depend on authentic, factual and up to date Information. University Grand Commission (UGC) initiated two projects viz. UGC-INFONET and UGC-INFONET E-journal Consortium. The first one provides connectivity to Universities, whereas the later provide access to Electronic journals and data base. The program is funded by UGC and ERNET and execution of the project is done by INFLIBNET.

UGC-INFONET consortium resources were used among the respondents in Aligarh Muslim University. The data were collected through questionnaire supplemented with interview schedule. The sample size is 325 and was analyzed. The study also verifies the utilization and satisfaction level of users (Bharati & Mustafa Zaidi, 2008). Faizul Nisha, Naushad Ali & Tabassum Ara (2008) explained the significance and importance of INDEST-AICTE Consortium of MHRD and UGC-INFONET Consortium of INFLIBNET, UGC. They examined the use of these consortia by the users of IIT Delhi and Delhi University. 120 questionnaires were distributed among the library users of IIT (D) and Delhi University libraries. Out of 100 filled questionnaires 90 were chosen for analysis of data and 10 questionnaires were rejected because of incompleteness. Jyoti Bhatt & Nilesh Joshi, (2009) have examined that due to the impact of IT, ICT and Electronic Information are found compliments to Library Resources. E-Journals accelerated the usage of the research material in academic libraries. The Project focuses on the usage of Electronic Information accessible through UGC-INFONET Digital Library Consortium on the campus of The Maharaja Sayajirao University of Baroda. Jagdish Arora & Kruti Trivedi, (2010) have observed that the education system in India is large and complex. India plays an eminent role in higher education system in the world behind China and the United states. India has more than 471 universities, 22064 affiliated colleges and

5.21 lakhs faculty. In 2004, the UGC-INFONET Digital Library Consortium Launched. It provides access to 5790 journals to 160 universities. The study reveals the activities, operations and services of UGC-INFONET Digital Library Consortium. It explains the methods used for the promotion of Electronic Information amongst member universities. The article reveals the economics and future endeavours of the UGC INFONET Digital Library. Munira Nasreen Ansari & Bushra Adeeb Zuberi, (2010) have explained that Electronic Information is the best way for getting current and up-to-date Information. Electronic Information does not properly used by the academic community because of networking problems and lack of adequate training. A majority of people in academic area are quite satisfied with the Electronic Information but still they regard them as less reliable. Electronic Information produced by authentic organization is to be authentic and reliable. Baskaran and Ramesh (2019) analysed that 76 percent of the respondents are male and 26 percent of them are female observed from the study. 31 (6%) respondents have completed Arts, Science and Management studies graduates by the faculty members, 91 (17.5%) have completed graduation in Engineering. highest number of respondents that about 409 6(33%) makes this sources for use of e-journals among the respondents. The Large number of 263 (50.6%) of the respondents noticed that "Highly Satisfied" with the Lecturing materials, it followed by 257 (49.4%) of the respondents "Satisfied" with e-resources offering lecturing materials. Also found to be the Large number of 406 (78.1%) respondents reported "Highly satisfied" for them used Google as their search engine while 114 (21.9%) of the respondents said "satisfied". maximum number of 251 (48.3%) respondents rated that information sought from e-books are "Excellent. Binu & Baskaran (2019) discussed out of 421 respondents, 220 (52.3%) of them belong to Research scholar. majority of respondents 109 (25.9%) are post graduates and 75 (17.8%) are having PG with NET qualification. Mean value for 'To borrow books' was 3.86 and assigned the rank one. Majority of respondents 416 (98.8%) are searching for educational and research Information. The findings of the study could identify the various parameters while access Electronic resources by the academic community. The study would helpful to bring to access Electronic Information for momentum of gain research and academic ideas among the users. Prasad and Baskaran, (2019) found that Madurai Kamaraj University and Alagappa University have respondents of each 130 (34.21%), 85 (22.36%) respondents are belonging to Manonmaniam Sundaranar University, 35(9.22%) respondents are from Mother Teresa Women's University. 263(69.20%) male respondents and 117(30.80%) female respondents. Out of 263 male respondents, the majority of 259 (98.50%) respondents are got training from the University Library for accessing the E - Resources and Only 4 (1.50%) male respondents are not getting training from the University Library.

### **3. OBJECTIVES OF THE STUDY**

1. Analyses the University-wise respondents were responded from Six State Universities in Kerala.

2. Assess the Category, Educational qualification of respondents of the Six State Universities in Kerala.
3. Analyze the purpose of visit the University Library for obtaining various tasks fulfilled by the respondents
4. Searched Information from Internet and they frequency of use internet by the respondents.
5. The respondents retrieved the Information from various types of Information from UGC-INFONET consortium.
6. Assess the rating and factors on Information retrieved from Internet &
7. Level of satisfaction of Electronic Information Resources provided through UGC-INFONET consortium in the State Universities in Kerala.

#### **4. RESEARCH QUESTIONS**

1. Does University Libraries fulfill the services to the respondents in the Selected State Universities in Kerala?
2. Whether respondents require training to access the Electronic Information in the Selected State Universities in Kerala?
3. Does UGC@INFONET provide adequate information while retrieved the documents?
4. What type of formats preferences given by the respondents in the Selected State Universities in Kerala?
5. What type of Information retrieved by the respondents from UGC@INFONET?

#### **5. HYPOTHESES**

The following hypotheses framed to identify the problems where access Electronic Information by the respondents in State Universities of Kerala,

- H<sub>1</sub>:** There is no significant influence on constraint during accessing the Electronic Information as the standardised direct effect between the respondents they conveyed that Slow access Speed.
- H<sub>2</sub>:** There is no significant influence on access Electronic Information and the respondents noticed constraint to be Information Explosion.
- H<sub>3</sub>:** There is no significant influence on constraint during accessing the Electronic Information and the respondents felt as Read from Computer.
- H<sub>4</sub>:** There is no significant influence on constraint while access the Electronic Information and the respondents felt to be Limited access Terminal.
- H<sub>5</sub>:** There is no significant influence on constraint where accessing the Electronic Information and the respondents expressed that Lack of technical support.
- H<sub>6</sub>:** There is no significant influence on constraint during accessing the Electronic Information and the respondents noticed as Lack of Computer Literacy.
- H<sub>7</sub>:** There is a significant influence on constraint during accessing the Electronic Information and the respondents informed that Lack of insufficient full Text.

- H<sub>8</sub>:** There is no significant influence on constraint during accessing the Electronic Information and respondents reported are ability to access from any Location.
- H<sub>9</sub>:** There is no significant influence on constraint during accessing the Electronic Information and respondents replied that Unavailable Time.
- H<sub>10</sub>:** There is no significant influence on constraint during accessing the Electronic Information and respondents conveyed that many of the resources get abstract only.
- H<sub>11</sub>:** There is no significant influence on constraint during accessing the Electronic Information and the respondents reported that confused on IP based Network.
- H<sub>12</sub>:** There is no significant influence on constraint during accessing the Electronic Information and the respondents expressed that not conduct training Programme.
- H<sub>13</sub>:** There is no significant influence on constraint during accessing the Electronic Information and the respondents reported that Lack of Computer Training Programme.
- H<sub>14</sub>:** There is no significant influence on constraint during accessing the Electronic Information and the respondents expressed that Lack of Computer Training Programme.

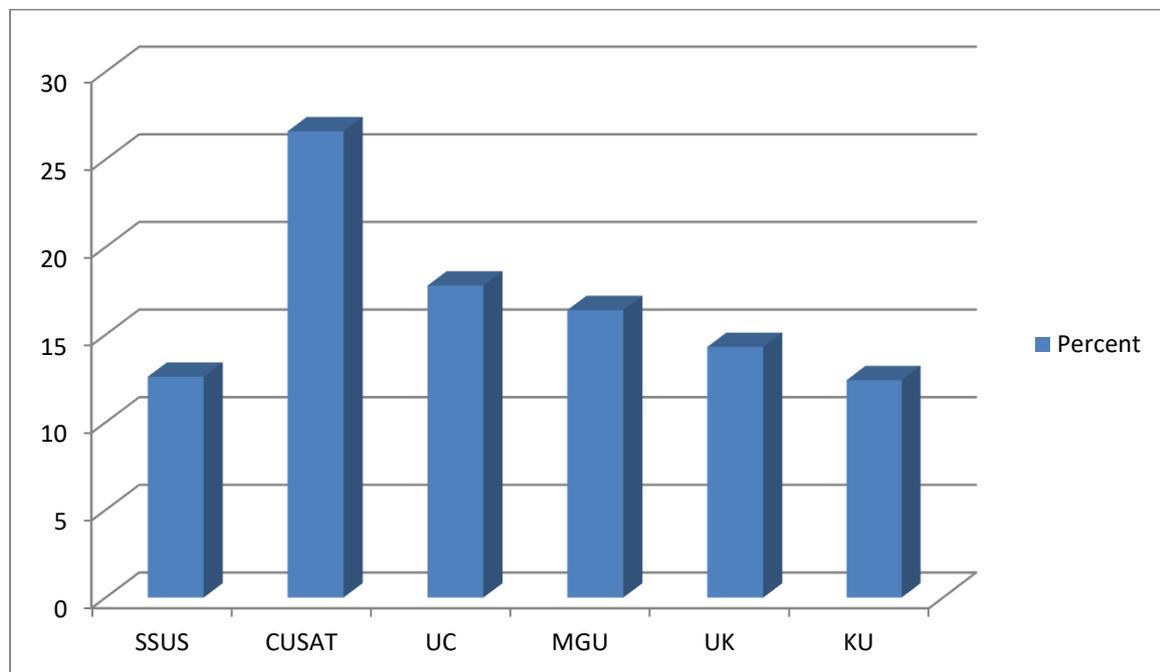
## **6. METHODOLOGY**

The survey was used for collecting data finds out a problem on use and effectiveness of Electronic Information among the respondents in selected State Universities of Kerala. The study discusses that identify the problems and usefulness to understand an impact of UGC-INFONET digital library consortium on higher education with reference to State Universities in Kerala. The present study has adopted data collection among Six Universities in the Kerala State with framing of structured questionnaire. A widespread literature survey about the research topic was carried out on the topic of the research. The study has done with the help of online databases, and other reference sources. The population of the present study comprises of the teaching faculty, research scholars and post graduate students in Selected Six State Universities in Kerala. The Data collection for present study was conducted from Sree Sankaracharya University of Sanskrit Kaladi, Cochin University of Science and Technology (CUSAT), University of Calicut, Mahatma Gandhi University, University of Kerala and Kannur University. The researcher conducted the study under non-random sampling method and questionnaire distributed to the respondents for the study. Total no. of 500 respondents selected from Six State Universities in Kerala, of which 421 (84.2%) of the respondents were returned back filled questionnaire to the researcher. from the selected Universities in Kerala, India for the present study. Further, Data exported to Statistical software (SPSS) for tabulation, subsequently several further analyses made in terms of %ile and Mean, ANOVA and F-test etc. conducted for the present study.

## 7. DATA ANALYSIS OF THE STUDY

### 7.1 University- wise respondents of the study

Data presented in Table 1, University wise distribution of the respondents of the study. Out of 421 respondents, 112 (26.6%) of them were reported from Cochin University of Science And Technology (CUSAT). It is followed by 75 (17.8%) of the respondents from University of Calicut, 69 (16.4%) of them from Mahatma Gandhi University, 60 (14.3%) of the respondents from University of Kerala, 53 (12.6%) of them from Sree Sankaracharya University of Sanskrit and 52 (12.4%) are from Kannur University (Fig. 1). Further, It could be noticed that 44.4 % of them two Universities shared together by Cochin University of Science And Technology (CUSAT) and University of Calicut. On the other hand, 55.6% of the respondents together responded from three Universities are Mahatma Gandhi University, University of Kerala and Sree Sankaracharya University of Sanskrit, the study reported in Figure 1.



**Figure 1** University- wise respondents of the study

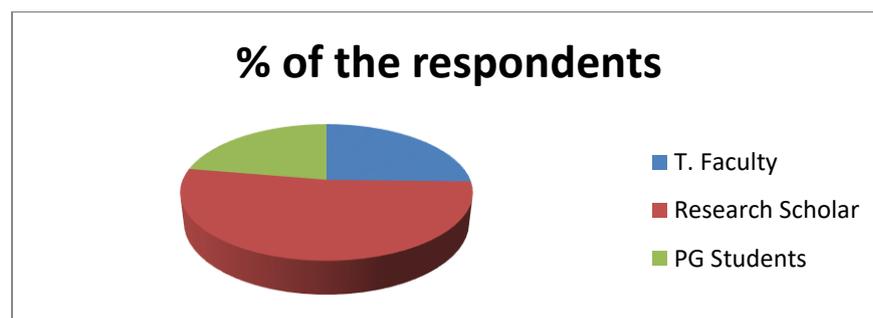
**Table 1** University- wise respondents of the study

Name of university	Frequency	%
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1. Sree Sankarachary University of Sanskrit Kaladi	53	12.6
2. Cochin University of Science and Technology	112	26.6
3. University of Calicut	75	17.8
4. Mahatma Gandhi University, and	69	16.4
5. University of Kerala	60	14.3
6. Kannur University	52	12.4
<b>Total</b>	<b>421</b>	<b>100</b>

## 7.2 Category-wise respondents

A study of data in Table 2 indicates the category wise respondents of the study. It is clear that out of 421 respondents, 220 (52.3%) of them under Research scholar category, 107 (25.4%) of them under Teaching category. In this study, 94 (22.3%) of the respondents are to be found in the Student category. It is concluded from figure 2, more than 50% of the respondents in the Research scholars category.



**Figure 2** Category-wise respondents of the study

**Table 2** Category-wise respondents

Category	Frequency	%
Teaching Faculty	107	25.4

Research scholars	220	52.3
PG students	94	22.3
<b>Total</b>	<b>421</b>	<b>100</b>

### 7.3 Educational qualification of the respondents

It is identified from the Table 3 the majority of respondents 109 (25.9%) are post graduates and 75 (17.8%) of the respondents were qualified PG with NET qualification. It is followed by 61 (14.5%) respondents with M. Phil and 54 (12.8%) having M. Phil with NET qualification. Among the total respondents 44 (10.5%) were qualified Ph.D and 32 (7.6%) have Ph.D with NET. 46 (10.9%) were Under Graduates.

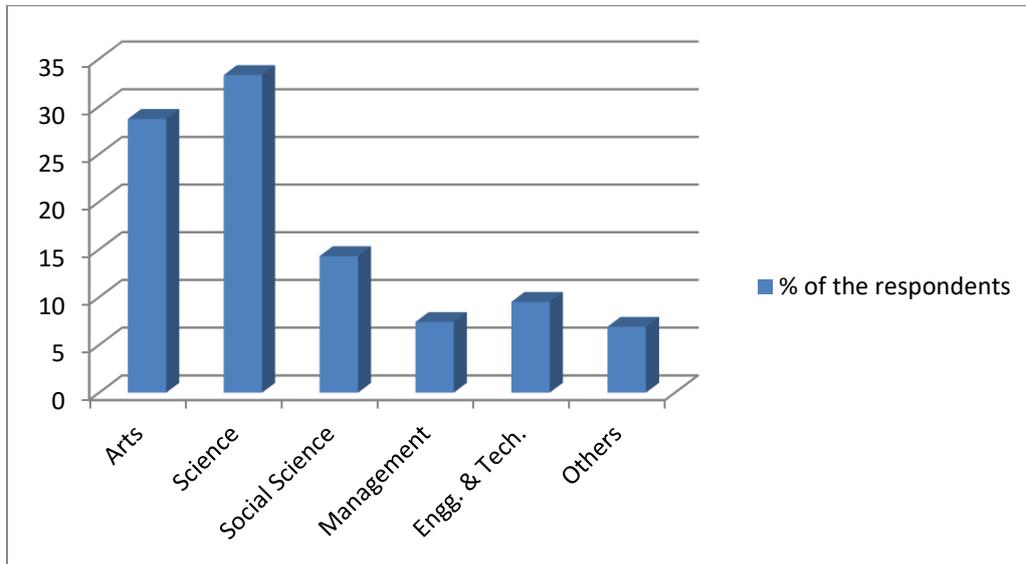
**Table 3** Educational qualification of the respondents

<b>Educational qualification</b>	<b>Frequency</b>	<b>%</b>
UG	46	10.9
PG	109	25.9
PG with NET	75	17.8
M.Phil	61	14.5
M.Phil with NET	54	12.8
Ph.D	44	10.5
Ph.D with NET	32	7.6
<b>Total</b>	<b>421</b>	

### 7.4 Discipline wise respondents of the study

A study of data in Table 4 describes those faculty wise respondents of the study. It is observed that out of 421 respondents, 140 (33.3%) of them responded from faculty of science. It followed by 121 (28.7%) of them reported from faculty of Arts, 60 (14.3%) of them belonging to Social Science, 40 (9.5%) of them responded from Engineering

and Technology, 31 (7.4%) are from Management and 29 (6.9%) are belonging to other faculty. It is concluded from figure 3, the majority of respondents are from science faculty.



**Figure 3** Discipline - wise respondents of the study

**Table 4** Discipline- wise respondents of the study

Faculty	Frequency	%
Arts	121	28.7
Science	140	33.3
Social science	60	14.3
Management	31	7.4
Engg. & Tech.	40	9.5
Others	29	6.9
Total	421	

### 7.5 Purpose of visit to the University Library by the respondents

Table 5 shows the respondents were claimed the purpose of "Visit to Library" on a rating scale of 1-5. The mean score of each purpose is computed on the basis of this rating and ranks were assigned to them based on mean. In the result analysis, mean value for "To borrow Books" was 3.86 and assigned the rank one, followed by "To read Journals/periodicals" (Mean 3.72) with rank two, "To consult Reference Books" (Mean

3.61) rank Third, “Using Electronic resources” (Mean 3.44) rank fourth and respondents visit University Library for “Other purposes” scored mean value 2.42 was ranked fifth.

**Table 5** Purpose of visit to the University Library by the respondents

<b>Purposes of visit</b>	<b>Mean</b>	<b>Rank</b>
To borrow books	3.86	1
To read Journals/periodicals	3.72	2
To consult reference books	3.61	3
Using Electronic resources (e-journals/e-books etc.)	3.44	4
Other purposes	2.42	5

## 7.6 Frequency of using internet

Table 6 presented the analysis of the respondents using of internet in the State Universities of Kerala. It is understood that 306 (72.7%) of the respondents are daily using internet. Respondents using internet weekly are 83 (19.7%). It is also seen that 21 (5%) are using internet monthly and 11 (2.6%) are rare users of internet. Further, altogether only 27.3% of the respondents were using internet except daily.

**Table 6** Frequency of using internet

<b>Frequency</b>	<b>No. of respondents</b>	<b>%</b>
Daily	306	72.7
Weekly	83	19.7
Monthly	21	5.0
Rarely	11	2.6
Total	421	

## 7.7 Training needful to access Electronic Information

It is understood from the Table 7, t out of 421 respondents 257 (61%) were getting adequate training for using Electronic resources. On the other hand, 164 (39%)

are not getting adequate training for accessing Electronic Information under UGC-INFONET.

**Table 7** Training needful to access Electronic Information

<b>Adequate training for using Electronic resources</b>	<b>Frequency</b>	<b>%</b>
Yes	257	61.0
No	164	39.0

### 7.8 Extent to which the retrieved Information from UGC-INFONET

The result exhibited in table 8, usefulness of UGC-INFONET e-resources among the respondents in the State Universities of Kerala. The respondents are very positively responded to the purposes asked in the questionnaire. The mean %age score for the first ten purposes such as preparing seminar/conference papers, curriculum update, finding relevant subject Information, guiding to student project, improve the subject knowledge, reference to research work, reference to funded project, teaching, writing journal article, obtain the subject Information, are in the interval 50 to 75% which means they are used at 'Large extent'. For the 'other purposes' the mean score is 49.8% which means 'Some extent'.

**Table 8** Extent to which the retrieved Information from UGC-INFONET

<b>Purpose</b>	<b>Mean</b>	<b>Mean %</b>	<b>Type of Extent</b>
Preparing Seminar/Conference Papers	3.5	70.0	Large Extent
Curriculum update	3.03	60.6	Large Extent
Finding relevant subject Information	3.59	71.8	Large Extent
Guiding to student project	2.93	58.6	Large Extent
Improve the subject knowledge	3.55	71.0	Large Extent
Reference to research work	3.51	70.2	Large Extent
Reference to funded project	2.84	56.8	Large Extent
Teaching	2.86	57.2	Large Extent
Writing journal article	3.18	63.6	Large Extent
Obtain the subject Information	3.28	65.6	Large Extent

Other purposes	2.49	49.8	Some Extent
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### 7.9 Preferences given to devices on read the full text articles

The analysis in table 9, the method of preferences for reading the full text articles reveals that the mean %age score for methods such as read from print out, from computer screen, using e-Book reader, from copied on USB, from preserved in Laptop, from maintained as E-print lies in the interval 50 to 75%. So these methods are used at 'Large Extent. Whereas the mean %age score for 'read from downloaded' is 79.6% which is above 75% and this method is used at 'Very Large Extent'. Other methods are used at 'some extent because the mean %age score was 49 %.

**Table 9** Preferences given to devices on read the full text articles

Method	Mean	Mean %	Type of Extent
From Printout	3.74	74.8	Large Extent
From Computer screen	3.67	73.4	Large Extent
Using e-Book reader	2.79	55.8	Large Extent
From downloaded	3.98	79.6	Very Large Extent
From Copied on USB	3.44	68.8	Large Extent
From preserved in Laptop	3.44	68.8	Large Extent
From maintained as E-print	3.04	60.8	Large Extent
Other methods	2.45	49.0	Some Extent

### 7.10 Information retrieved from the Internet: CFA- Model

Confirmatory Factor Analysis (CFA) is a type of structural equation modelling (SEM), it deals with specifically measurement models that is relationship between observed measures and indicators (Eg. Test items, test scores etc.) and the latent variables or factors. A fundamental feature of CFA is its hypothesis –driven nature. In CFA, the researcher specifies the number of factors and the pattern of indicator factor loading in advance, thus the researcher must have a firm prior sense, based on past

evidence and theory of the factors that exist in the data. CFA is used for four major purposes 1) Psychometric Evaluation of Measures (questionnaires) 2) Construct validation 3) Testing Method effects and 4) Testing Measurement in variance (across groups or population). It is observed from table 10, various CFA values provided as analysis made from the study by different types of Information searched from Internet.

**Table 10 Information retrieved from the Internet: CFA- Model**

Path	Regression Coefficient	C.R.	P	Variance explained (%)	Rank
Accessibility→ Rating of Information	0.532	12.536	<0.001	28.3	5
Accuracy → Rating of Information	0.795	22.937	<0.001	63.2	3
Authoritative →Rating of Information	0.882	29.276	<0.001	77.7	1
Consistency → Rating of Information	0.797	23.052	<0.001	63.5	2
Ease of use →Rating of Information	0.301	6.567	<0.001	9.0	6
Other features→ Rating of Information	0.788	22.541	<0.001	62.0	4

**7.11 Information searched from Internet by the respondents –CFA model**

Table 8 shows the respondents attempted to search the various type of Information from Internet by the respondents. It is clearly noticed that  $X^2 = 6.323$ , DF= 4 and P value is .176. Hence it is concluded that there is a significant difference between the respondents and they retrieved the information from Internet by the respondents in Selected State Universities Kerala, India.

**Table 11 Information searched from Internet by the respondents –CFA model**

	$\chi^2$	DF	P	Normed $\chi^2$	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Rating Information	6.323	4	.176	1.581	.995	.974	.994	.992	.998	.009	.037

**7.12 Information retrieved from UGC-INFONET by the respondents**

One of the objectives of the study is to find out the extent the retrieved Information from Electronic Information are useful to the user. For this the respondents are asked to answer the questions on a five point scale from 'Very Large Extent' to 'Less Extent'. The responses are scored from 5 to 1.

The mean value of the questions for all 421 respondents is found out, based on which we calculate the mean %age score  $\left[ \text{MPS} = \frac{\text{MeanScore} \times 100}{\text{Maximumpossiblescore}} \right]$  of each of the purpose.

This score is classified into one of the four groups as 'Less Extent' if the mean % score is less than 35%, 'Some Extent' if the mean % score is between 35 to 50 per cent, 'large Extent' if the mean % score lies in the interval 50 to 75% and 'very large Extent' if the mean % score is above 75%. The result is exhibited in the table 12. The study reveal that the mean %age scores for three purposes such as 'reference for research work', preparing study material' and 'Updating knowledge' are above 75% , so Information retrieved for this purpose is 'Very Large Extent'. Purposes like 'Project Work', 'to Write Article', 'preparing seminar/conference papers' and 'other purposes', the mean %age score is between in the interval of 50% to 75% and Information retrieved for this purpose is 'large Extent'.

**Table 12** Information retrieved from UGC-INFONET by the respondents

<b>Purpose</b>	<b>Mean</b>	<b>Mean % Score</b>	<b>Extent of the Information retrieved</b>
Reference for Research Work	3.96	79.2	Very Large Extent
Project work	3.55	71	Large Extent
Preparing Study Materials	3.77	75.4	Very Large Extent
To write article	3.53	70.6	Large Extent
Preparing Seminar/Conference Papers	3.75	75	Large Extent
Updating Knowledge	3.9	78	Very Large Extent
Other purposes	2.86	57.2	Large Extent

### 7.13 Satisfaction on Information resources by the respondents

The results shown in the table 13 clearly establish that the respondents are 'highly satisfied' with library Electronic Information like 'E-Journals' and 'E-Theses and Dissertations' as their mean %age score is above 75%. For all other library Electronic Information and services like CDs/DVDs, E-Books, E-Databases, E-Question Bank, Email alert services, OPAC, Institutional repositories, Digital Library services and any other

services, the mean %age score is between 50% to 75%, so the level of satisfaction is 'Satisfied'.

**Table 13** Satisfaction on Information resources by the respondents

<b>Library E-Resources/services</b>	<b>Mean</b>	<b>Mean % Score</b>	<b>Level of Satisfaction</b>
CDs/DVDs	3.25	64.99	Satisfied
E-Books	3.74	74.73	Satisfied
E-Journals	4.01	80.19	Highly Satisfied
E-Databases	3.65	72.97	Satisfied
E-Theses and Dissertations	3.80	76.06	Highly Satisfied
E-Question Bank	3.25	65.08	Satisfied
Email alert services	3.42	68.41	Satisfied
OPAC (Online Public Access Catalogue)	3.69	73.73	Satisfied
Institutional repositories	3.21	64.13	Satisfied
Digital Library services	3.61	72.26	Satisfied
Any other services	3.23	64.51	Satisfied

#### 7.14 Satisfaction on downloaded the documents

Table 14 presents the data analysis for the level of satisfaction while downloading the document formats. Mean %age score for DOC/Docx/RTF, HTML, JPEG and Other formats lies in the interval 50 to 75%. Hence, the level is 'Satisfied', for PDF and PPT format the level is 'Highly Satisfied' and it observed that mean %age score above 75%.

**Table 14** Satisfaction on downloaded the documents

<b>Sl No</b>	<b>Format</b>	<b>Mean</b>	<b>Mean % Score</b>	<b>Level of Satisfaction</b>
1	DOC/Docx/RTF	3.53	70.6	Satisfied
2	HTML	3.37	67.4	Satisfied
3	JPEG	3.57	71.4	Satisfied

4	PDF	4.23	84.6	highly Satisfied
5	PPT	3.76	75.2	highly Satisfied
6	Other formats	3.15	63.0	Satisfied

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## 7.15 Barriers and Limitations while accessed Electronic Information

Table 15 observed various constraints and Limitations while access the Electronic Information under UGC-INFONET as follows,

- H1: ‘Slow access Speed’:** There is no significant influence on constraint during accessing the Electronic Information under UGC-INFONET as the standardised direct effect between the respondents conveyed “Slow access Speed” It is calculated constraint during accessing the Electronic Information p value was 0.828, ( $< 0.05$ ).
- H2: ‘Information Explosion’:** There is no significant influence on access Electronic Information under UGC-INFONET and the respondents noticed constraint “Information Explosion” It is observed that constraints on access the Electronic Information p value were 0.759 ( $< 0.05$ ).
- H3: ‘Read from Computer’:** There is no significant influence on constraint during accessing the Electronic Information under UGC-INFONET and the respondents felt “ Read from Computer”. It could be found that p value of the constraint to access Electronic Information was 0.838 ( $<0.005$ ).
- H4: ‘Limited access Terminal’:** There is no significant influence on constraint while access the Electronic Information under UGC-INFONET and the respondents felt with” Limited access Terminal.” It could be observed that p value on constraint during accessing the Electronic Information was 0.855( $<0.005$ ).
- H5: ‘Lack of Technical Support’:** There is no significant influence on constraint where accessing the Electronic Information under UGC-INFONET and the respondents expressed that” Lack of technical support”. It is noticed that p value on constraint during accessing the Electronic Information was 0.853( $<0.005$ ).
- H6: ‘Lack of Computer Literacy’:** There is no significant influence on constraint during accessing the Electronic Information under UGC-INFONET and the respondents noticed that” Lack of Computer Literacy”. It is noticed that p value on constraint during accessing the Electronic Information was 0.853( $<0.005$ ).

- H7: ‘Insufficient full Text’:** There is a significant influence on constraint during accessing the Electronic Information under UGC-INFONET and the respondents informed that “Lack of ‘insufficient full Text’”. It is found that p value on constraint during accessing the Electronic Information was 0.853( $p>0.005$ ).
- H8: ‘Ability to access from any Location’:** There is a significant influence on constraint during access the Electronic Information under UGC-INFONET and the respondents informed that “Ability to access from any location”. It is observed that p value on constraint during accessing the Electronic Information was 0.852( $p<0.005$ ).
- H9: ‘Unavailable Time’:** There is a significant influence on constraint during access the Electronic Information under UGC-INFONET and the respondents they felt that “Unavailable time.” It is observed that p value on constraint during accessing the Electronic Information was 0.804( $p<0.005$ ).
- H10: ‘Many of the resources get abstract only’:** There is no significant influence on constraint during accessing the Electronic Information UGC-INFONET and respondents conveyed that “Many of the resources get abstract only.” It is observed that p value on constraint during accessing the Electronic Information was 0.852( $p<0.005$ ).
- H11: ‘Confused on IP based Network’** There is no significant influence on constraint during accessing the Electronic Information under UGC-INFONET and the respondents reported that “Confused on IP based Network.” It is observed that p value on constraint during accessing the Electronic Information was 0.855( $p<0.005$ ).
- H12: ‘Not conducted Training Programme’:** There is no significant influence on constraint during accessing the Electronic Information under UGC-INFONET and the respondents expressed that “Not Conduct Training Programme.” It is calculated that p value on constraint during accessing the Electronic Information was 0.888( $p<0.005$ ).
- H13: ‘Lack of computer facility in our Library/Campus’ :** There is no significant influence on constraint during accessing the Electronic Information under UGC-INFONET and the respondents reported that ‘Lack of Computer Training Programme.’ It is found that p value on constraint during accessing the Electronic Information was 0.778( $p<0.005$ ).
- H14: ‘Others Barriers/ Limitations’:** There is no significant influence on constraint during accessing the Electronic Information under UGC-INFONET and the respondents expressed that ‘Lack of Computer Training Programme.’ It is found that p value on constraint during accessing the Electronic Information was 0.928 ( $p<0.005$ ). It has also shown the provided Barriers and Limitations while accessed the Electronic Information Resources in figure 4.

**Table 15** Barriers and Limitations while accessed Electronic Information

Path	Regression Coefficient	C.R.	P	Variance explained (%)	Rank
Slow access speed → Constraints	0.828	24.16	<0.001	68.6	9
Information explosion → Constraints	0.759	20.32	<0.001	57.6	13
Read from computer → Constraints	0.838	24.83	<0.001	70.3	8
Limited access terminal → Constraints	0.855	26.06	<0.001	73.1	3
Lack of technical support → Constraints	0.853	25.91	<0.001	72.8	5
Lack of computer literacy → Constraints	0.817	23.47	<0.001	66.8	10
Insufficient full text subscription → Constraints	0.393	8.49	<0.001	15.5	14
Ability to access from any location → Constraints	0.852	25.83	<0.001	72.5	7
Unavailable time → Constraints	0.804	22.69	<0.001	64.7	11
Many of the resources get abstract only → Constraints	0.852	25.83	<0.001	72.6	6
Confused on IP based network → Constraints	0.855	26.06	<0.001	73.0	4
Not conducted training programme → Constraints	0.888	28.88	<0.001	78.8	2
Lack of computer facility in library/campus → Constraints	0.778	21.27	<0.001	60.5	12
Others Barriers/ Limitations → Constraints	0.928	33.61	<0.001	86.2	1

## 8. MAJOR FINDINGS

1. Majority 112 (26.6%) of them were reported from Cochin University of Science And Technology (CUSAT).
2. Majority 220 (52.3%) of them under Research scholar category, 107 (25.4%) of them under Teaching category.
3. Majority of respondents 109 (25.9%) are post graduates and 75 (17.8%) of the respondents were qualified PG with NET qualification.
4. Majority 140 (33.3%) of the responded from faculty of science among the selected Six State Universities in Kerala.

5. The Highest mean value for "To borrow Books" (3.86) which was assigned rank one, and second rank given to "To read Journals/periodicals" (3.72).
6. Majority 306 (72.7%) of the respondents are daily using internet among the selected Six State Universities in Kerala.
7. 257 (61%) were getting adequate training for using Electronic resources.
8. The highest mean %age score given to preparing seminar/conference papers and reported "Large Extent."
9. The highest mean to given preferences for reading the full text articles and take them print out as "Large Extent."
10. The highest mean score (79.2) given to Reference for research work and respondents suggested that "Very Large Extent" from UGC@ INFONET.

## **9. DISCUSSION AND CONCLUSION**

There is a need for creating awareness amongst user community about Electronic Information and its availability in the library to foster its usage. Most of the respondents are accessing Electronic Information under UGC-INFONET for scholarly Information from the library. So it is recommended to enhance the ICT facilities by adding more number of computers and speeding up of the internet connectivity in the library. Departmental libraries are to be strengthened particularly in terms of computer infrastructure and internet connectivity. User education and Information literacy programmes of the library need to be strengthened in order to have maximum use of Electronic Information available in the library. More hands on training programmes on Electronic Information searching techniques to be conducted by the library especially for the new users.

Apart from accessing e-journal and e-thesis, use of other Electronic Information need to be improved. Better awareness and use of Institutional Repositories (IR) and other digital library services of the library have to be promoted. Electronic Information always supplements the print resources and it never affects the reading habit of the users. As the Electronic Information have more advantages than the print resources, their use must be promoted. Instead of searching a particular topic on different websites and databases, there should be a federated search mechanism to allow the users to have simultaneous search in multiple databases. There should be a feedback mechanism from the faculty members and scholars to have good control over the subscription policy of the Electronic resources, as many packages subscribed under through the consortium are underutilized. In the case of Electronic Information subscription, Libraries should have more freedom to select from a wide range of Electronic Information under UGC-INFONET the consortia as suggested by its academic community. Users are of the opinion that lack of technical support, insufficient training programmes and limited numbers of computers etc. are major constraints of accessing e-resources. Libraries are to be taken care of these problems. The Electronic Information can be good substitutes for conventional resources, if the access is fast, and more computer terminals are installed to provide fast access to e-resources. Google is the most widely used search engine for locating Information Electronically. Margan Madhusudhan, (2009) observed that Census of Association of Research Libraries (ARL) to a sample of non-ARL Master's, Doctoral, and Research institutions. Of the 299

Libraries surveyed, 250 surveys were returned for a response rate of 83.6 %. Analysis of the responses emphasizes the number and types of computers available in libraries, Electronic Information in libraries, past and future cancellation decisions and archiving responsibilities.

The drastic development in the field of Information and communication technologies (ICT) transformed the Information seeking behaviour of academic community. There is a paradigm shift from using print Information resources to Electronic resources. This study has shed light on the importance of Electronic Information in the improvement of education and quality of research. The users are well aware about the availability of Electronic Information under UGC-INFONET Digital Library Consortium. It emerged as a crucial instrument to deliver up to date Information and helps Information centres in collection developments, preservation and Information retrieval processes. The study pointed out that in order to enhance the better use of Electronic resources, there is need for conducting more awareness as well as training programmes users. There is also the need for federated search mechanism which will enable the users to have simultaneous search in multiple databases.

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