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Use of Information Communication Technology College Libraries: A Study

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Abstract:

The concept "Information Explosion" is developed in this world. ICT (Information & Communication Technology) is playing a significant role in housekeeping activities and information retrieval in libraries. ICT consists of three terms Information, Communication & Technology. The paper highlights the use of ICT in college libraries. For collecting data, questionnaire method is adopted. The findings of the study shows that, the highest percentage of libraries (80.56%) have printer in libraries followed by photocopy machines (75%), CD/CD-ROM drive (72.22%), scanners (70.37%), and barcode scanners (54.63%). Further, 39.29% libraries have partially automated. Only 32.94% have completely automated and 15.48% college libraries have started the process of automation. In this context, the study recommends that there is need to mobilize funds for library automation by undertaking projects, convincing the management to start self-financed courses and also requesting different funding agencies to implement library automation.

Key Words: ICT, College Libraries, Automation, N-List, Digital Library

Introduction:

Now a day's information is most valuable thing in the world. Information is a commodity wealth & product. Information technology has transformed the whole world into a global village with a global economy which is increasingly dependent on the creative management, services and distribution of information ICT has been more essential need to progress in the life of a nation during the 21st century in addition to basic human needs. ICT may be defined as technology which is used to store, progress & communicate the required information on demand or in anticipation. ICT is a very broad term in the field of information technology which is brought to use in information & its communication. (Patil, 2018)

Developments in ICT have made considerable impact on all spheres of human environment. The impact has been rather well-known in case of service activities such as banking, health,

transportation, education and libraries. For the Libraries, ICT's has massively changed the Management of Databases or House Keeping Operations as well as the way services are delivered. Information and communication Technology has been considered as the most instrumental factor for endow with a library services. Due to information explosion it is very difficult to handle large information with traditional library tools like manual catalogue, bibliographies, etc. In today's library environment, to provide the right way, is not possible without ICT application. ICT has become necessity and need. Information and Communication Technology (ICT) has transformed library services globally. Most current information are recorded in electronic format, ICT has also contributed immensely to the performance of librarians in the discharge of their duties such as in cataloguing, reference services, circulation management, serials control etc. ICT has contributed to the library in the following specific ways. (Patel, 2012)

Review of Literature:

A plethora of literature available in the area of use of ICT in college libraries. In the year 2007 Haneefa (2007) examined the current state-of-the-art ICT infrastructure and the use of electronic information resources in special libraries in Kerala. The study reveals that special libraries in Kerala have hardware, software and communication facilities to some extent, the ICT based resources and services are not reaching the users to the expected extent. This has severely affected the provision of Information Communication Technology based resources and services.

Sampath and Biradar (2010) studied the use of Information Communication Technology (ICT) in 31 college libraries in Karnataka, India by investigating the ICT infrastructure, the current status of library automation, barriers to implementation of library automation and also the librarians' attitudes towards the use of ICT.

Pusad *et al* (2010) investigate the status of library automation and problems in its implementation in special libraries of Indore city, Madhya Pradesh. Sivakumaren, *et al* (2011), investigate the Attitude towards ICT among library professionals in and around Chennai. The study found that the majority of library professionals have positive attitude on ICT and some of them were not able to update their knowledge and skills on ICT. The study has further recommended for ICT based programmes to train the library professionals.

Jayamma and Krishnamurthy (2015) have highlighted the status of library automation in the college libraries of Bangalore city in Karnataka state. Kamble (2015) conducted a study on "Status of library automation in the Institutions of Higher Studies in Punjab" gives an overview of major facets of library automation activity and surveys the current state of ICT application in 6 areas of library work. He discussed each area and briefly indicated the motive of automation and describes current dominant approaches citing examples of representative products and services. Naveen and Nagesh (2016) in their study entitled "Status and Problems of Library Automation in Govt. First Grade Colleges of Hassan District, Karnataka: A Study. The study clearly shows that only 23% of Libraries are automated and main problems for library automation are lack of infrastructure, inadequate staff, insufficient funds and lack of training to library staff. It is evident from the study that out of 17 libraries 14 (82.35%) libraries are using e-

granthalaya, in this some of the libraries are partially completed and some of are in the initial stage. Further, about 3 (17.65%) colleges are using Easy Lib Software.

Samshika & Subarna (2019) in their study entitled "ICT infrastructure in college libraries of Darjeeling District of West Bemgal, India: A survey, clearly shows that the status of ICT infrastructure and services of the degree colleges of Darjeeling district were at different stages of development. Most of the libraries lacked sufficient hardware and software facilities and did not have sufficient internet nodes and bandwidth.

Scope and Limitations of the Study:

The scope of the study focuses only on the application of ICT in Government first grade college libraries of Karnataka State. However, professional colleges i.e. Law, B.Ed., Engineering, Management, Information Technology etc. are excluded from the study.

Methodology:
Study Area

The study is confined to the Government First Grade College Libraries in Karnataka State, India. There are 407 Government First Grade College Libraries in Karnataka State. Out of 407 colleges only 301 librarians are working in the college libraries rest of college libraries running without librarians and the library charge given to the senior teachers or Physical Education Instructor or in some college's office staff has taken the library charge.

Study population

There are various formula for calculating the required sample size based upon whether the data collected are to be of a categorical or quantitative nature. For this study, we followed the formula given by Krejcie and Morgan (1970):

$$S = \frac{x^2 NP(1-P)}{d^2(N-1)+x^2 P(1-P)}$$

Where:

S - Required sample size;

x^2 - the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841);

N - The population size;

P - The population proportion (assumed to be 0.50 because this would provide the maximum sample size); and

d - The degree of accuracy expressed as a p (i.e. margin of error = 5.0 per cent).

$$S = \frac{3.841 \times 407 \times 0.50(1-0.50)}{(0.05)^2(407-1)+(3.841)(0.50)(1-0.50)}$$

The target populations of this study were all the 407 Government First Grade college libraries of Karnataka State. The sample size has been calculated using the above-mentioned formula. The required sample size was 252 (degree of accuracy/margin error =0.05 and

confidence =99 per cent). A structured questionnaire form was used as the tool for the survey. The questionnaire has been developed by consulting a number of previous surveys. The questionnaires were sent to the Librarian and to the college libraries through post and mail. Some questionnaires filled through direct observation and face to face interview methods.

Objectives of the Study:

Major objective of the study are

a) To find the availability of ICT infrastructure in the college libraries.
b) To identify the use of various ICT tools for providing services in the college libraries.
c) To determine the attitude of the library professional towards use of ICT
d) To ascertain the level of automation in college libraries.
e) To know sources of finance for the development of ICT infrastructure in the college libraries.

Data Analysis:

Data collected from the respondents through questionnaires and interviews and observations was evaluated and analyzed to find the results. The data was processed using Microsoft Excel and Statistical Package for Social Sciences (SPSS). In this research the raw figures were converted to percentages and tabulated. The responses were analyzed according to their relevance to the research questions.

Location of the First Grade Colleges:

Table-1: Location of the First-Grade Colleges

Location	No. of Colleges	Percentage
Urban	91	36.11
Semi-urban	53	21.03
Rural	108	42.86
Total	**252**	**100.00**

Table-1 indicates the location of the college in which they exist. It is clear from the above table that the highest percentages of colleges (42.86%) are in rural areas. Whereas 36.11% of colleges are in urban areas and it is followed by semi-urban areas (21.03%). Hence, it can be clearly stated that the study has covered the highest number of Government First-Grade Colleges having a rural background.

Use of various ICT Tools:

Table-2: Use of various ICT tools

ICT tools	Location of the library					
	Rural	Percentage	Urban	Percentage	Semi-urban	Percentage
CD/CD – ROM drive	78	72.22	67	73.63	45	84.91
DVD / VCD	48	44.44	44	48.35	26	49.06
Printers	87	80.56	81	89.01	42	79.25
Scanners	76	70.37	77	84.62	44	83.02
Desktops	108	42.85	91	36.11	53	21.03
Library servers	19	17.59	21	23.08	19	35.85
Telephone	1	0.93	2	2.20	4	7.55
Fax	46	42.59	45	49.45	25	47.17
Reprography machines	81	75.00	69	75.82	43	81.13
Internet	35	32.41	31	34.07	19	35.85
Library website	29	26.85	24	26.37	20	37.74
Barcode printers/scanner	59	54.63	56	61.54	31	58.49

Another question has been asked to know whether libraries possess ICT tools in their activities or not? It is clear from the table 2 that every library (100%) had at least one computer for their routine work. The table-2 also shows that of the 108 rural college libraries, the highest percentage of libraries (80.56%) have printer in libraries followed by photocopy machines (75%), CD/CD-ROM drive (72.22%), scanners (70.37%), and barcode scanners (54.63%).

Of the 91 urban college libraries, the highest percentage of libraries (89.01%) have printers followed by scanners (84.62%), photocopy machines (75.82%), CD/CD-ROM drive (73.63%) and so on. Further analysis indicates that of the 53 semi-urban college libraries, the highest number of college libraries i.e. 45 libraries (84.91%), scanners (44 libraries - 83.02%), photocopy machines (43 libraries - 81.13%), and printers (42 libraries - 79.25%). It is evident from the above table that printers, scanners, photocopy machines, CD/CD-ROM drive are the most commonly available ICT tools in first-grade college libraries. Few a good number of libraries also have photocopy machines, barcode readers/printers. Comparatively very less number of libraries belonged to college with different background have a telephone, library website, and laptops.

Table-3: Sources of Special Grants for the development of ICT

Source of Special grants received	Location of the college					
	Rural (N=24)	Percentage	Urban (N=22)	Percentage	Semi-urban (N=16)	Percentage
State Government	12	50.00	14	63.64	11	68.75
UGC Grant	7	29.17	6	27.27	2	12.50
RUSA	12	50.00	12	54.55	8	50.00
Other	1	4.17	-	0.00	-	0.00

Of the 252 colleges selected for this study only 161 colleges have received the grants. Table-3 shows the sources of finance available for library ICT development. It is clear that of the 108 college libraries, 24 have received the special grant for library ICT development. Of 24 college libraries belonged to the rural area, 12 libraries received special grants from state government (50%) as well as RUSA (50%) followed by UGC (29.17%). Similarly, of the 22 college libraries in urban areas those received special grants for library ICT development, 14 libraries (63.64%) received special grants from state government (50%) followed by RUSA (54.55%), and UGC (27.27%).

Further, of the 16 colleges belonged to semi-urban areas and those received special grants for library ICT development, 11 libraries (68.75%) received special grants from state government followed by RUSA (50%), and UGC (12.50%). The analysis of the above table indicates that the special grants for library ICT development are released mainly by the state government followed by RUSA.

Use of various operating systems:

Table-4: Use of various operating systems

Operating systems	Location of the library					
	Rural	Percentage	Urban	Percentage	Semi-urban	Percentage
Windows	106	98.15	90	98.90	53	100.00
Unix	3	2.78	4	4.40	2	3.77
Novel Netware	1	0.93	1	1.10	0	0.00
Linux	2	1.85	14	15.38	1	1.89

Table-4 indicates that of the 108 rural college libraries, the highest number of colleges i.e. 106 (98.15%) use Windows operating system followed by Unix (2.78%), Linux (1.85%), and Novel Netware (0.93%). Further analysis shows that of the 91 urban college libraries, 90

libraries use Windows operating system (98.90%) followed by Unix (4.40%), and Linux (15.38%). Simultaneously, windows are preferred by all libraries (53 libraries) of semi-urban colleges. Of the 53 colleges, 2 college libraries (3.77%) use Unix and 1 college library (1.89%) use Linux.

Evidently, it can be arguable that windows are the predominant operating system used by First-Grade College libraries belonged to rural, urban, and semi-urban areas. This is due to the user-friendly natures and easy availability of the operating system in the Indian software industry (Divya and Krishna Kumar, 2016). However, a good number of college libraries in urban areas preferred Linux operating system compared to rural and semi-urban areas.

Status of library automation:

ICT has been widely used in academic libraries to automate library activities. The automation brings quickness, efficiency in the activities and develops reliability about the system of working. A previous study conducted by Sampath Kumar and Biradar (2010) opined that the librarians of first-grade college libraries in Karnataka have a positive attitude towards the automation of libraries. This study also made an effort to know the status of library automation in 252 first-Grade college libraries. Table-7 reveals the status of library automation in libraries.

Table-5: Status of library automation in First-Grade College libraries

Status	Number of colleges	Percentage
Completely automated	83	32.94
Partially automated	99	39.29
Initial stage	39	15.48
Yet not started	31	12.30
Total	**252**	**100.00**

It is evident from table-5 that of the 252 college libraries, 99 libraries (39.29%) have partially automated. It is followed by 83 libraries (32.94%) have completely automated. Despite partial automation, 39 college libraries have started the process of automation which accounted for 15.48%. It is also evident that 31 libraries (12.30%) have not started the process of library automation. The above table indicates that the status of library automation in first-grade college libraries is not satisfactory. Nearly 70% of libraries are having the challenge of completing the library automation before them.

Library automation software:

The use of library automation software in the first-Grade college libraries is presented in table-6.

Table-6: Use of various Library automation software

Automation Software	Location of the library					
	Rural	Percentage	Urban	Percentage	Semi-urban	Percentage
E-Granthalaya	15	13.89	27	29.67	18	33.96
NewGenLib	7	6.48	8	8.79	11	20.75
Koha	1	0.93	4	4.40	5	9.43
Easy-lib	5	4.63	29	31.87	12	22.64

The data provided in table-6 shows that the highest number of libraries with rural background use E-granthalaya (13.89%) followed by NewGenLib (6.48%), Easylib (4.63%), and Koha (6.48%). Similarly, for the highest percentage of libraries with the urban background (31.87%) use Easylib followed by E-granthalaya (29.67%), Newgenlib (8.79%), and Koha (4.40%). Of the total semi-urban college libraries, 18 libraries (33.96%) are using E-granthalaya followed by Easylib (22.64%), Newgenlib (20.75%), and Koha (9.43%). The above table clearly indicates that E-granthalaya is the most used library automation software followed by Newgenlib and Easy-lib. Even though the Koha is completely integrated open sources library automation software, the numbers of first-Grade college libraries using it are very less.

Use of Internet in housekeeping Operations:

Table-7: Use of the Internet in housekeeping operation

Library operations	Location of the library					
	Rural	Percentage	Urban	Percentage	Semi-urban	Percentage
Acquisition	67	62.04	52	57.14	42	79.25
Serial Control	20	18.52	19	20.88	12	22.64
Budgeting	10	9.26	11	12.09	6	11.32
Cataloguing	53	49.07	40	43.96	37	69.81
Collection Development	0	0.00	0	0.00	0	0.00
Circulation	66	61.11	50	54.95	42	79.25
OPAC	55	50.93	42	46.15	34	64.15

Table-7 shows the use of the Internet for various library operations in first-Grade college libraries. Of the 108 rural college libraries, the highest number of libraries (67 libraries) use the Internet for acquisition followed by circulation (66 libraries), OPAC (55 libraries), and cataloguing (53 libraries). Meanwhile, of the 91 urban college libraries, the highest number of libraries use the Internet for acquisition (52 libraries) followed by circulation (50 libraries), OPAC (42 libraries), and cataloguing (40 libraries). Further, it is observable that of the 53 semi-urban college libraries, 42 libraries use the Internet for acquisition and circulation activities. It is

followed by 37 libraries used the Internet for cataloguing and 34 libraries used it for OPAC. The analysis of the above table indicates that the use of the Internet has become inevitable in first-Grade college libraries so that the sharing of data related to the library activities is possible.

Digital Library:

Table-8: Availability of Digital documents

Digital Documents	Type of digital document	Number of colleges (N=29)	Percentage
Digitized documents	Bound Volume	4	13.79
	Books	20	68.97
	Theses	5	17.24
	Project reports	6	20.69
	Reports	7	24.14
	Others	-	0.00
Digitally born documents	E-books	1	3.45
	E-journals	25	86.21
	e-theses	10	34.48
	E-project reports	10	34.48
	e-reports	9	31.03
	Other	-	0.00

It is found that of 252 colleges only 29 college libraries have setting the digital library. Another question has also been asked to know the availability of digitized documents as well as born-digital documents in 29 libraries. It is clear from the table-8 that 20 libraries (68.97%) have digitized books followed by reports (24.14%), project reports (20.69%), and theses (17.24%). Whereas the born-digital documents are concerned, 25 libraries (86.21%) have e-journals in their digital library collection followed by e-theses & e-project reports (accounted for 34.48% each). Nine college libraries (31.03%) have e-reports. The analysis of the data in the above table clearly shows that the born-digital documents are highly managed by libraries compared to digitized documents. This may be due to the high cost and skilled manpower requirements to develop a digitized collection than accessing born-digital documents.

Subscription of N-List:

N-List (National Library & Information Services Infrastructure for Scholarly Content) is an initiation by INFLIBNET with an intention to support the academic and research activities of the colleges and universities. It is a joint venture by e-shodhsindhu, INDEST-AICTE consortium, IIT Delhi to provide accessibility to e-resources. It was calculated that more than 3000 colleges with 12b status have access to N-List (About NLIST, 2019). This study has made an attempt to know the number of first-Grade colleges accessing N-List database. The details are provided in table-9.

Table-9: Subscription of N-List

N-List subscription	Location of the college					
	Rural	**Percentage**	**Urban**	**Percentage**	**Semi-urban**	**Percentage**
Yes	36	33.33	56	61.54	32	60.38
No	72	66.67	35	38.46	21	39.62
Total	**108**	**100.00**	**91**	**100.00**	**53**	**100.00**

It is clearly shown in table-9 that of the 108 first-Grade colleges with rural background, only 36 college libraries (33.33%) have subscribing N-List whereas, 72 college libraries (66.67%) have not subscribed it. Further analysis shows that of the 91 urban college libraries, 56 college libraries (61.54%) have subscribed N-List database while remaining 38.46% of college libraries have not subscribed it. Whereas 53 semi-urban college libraries are concerned, 60.38% of college libraries have subscribed N-List database and the rest (39.62%) have not subscribed it. It is clear from the analysis of the above table that the majority of colleges with rural background have no subscription to N-List, whereas the majority of colleges with urban and semi-urban background have a subscription to N-List.

Table 10: Attitudes of college librarians towards ICT:

Attitudes	Attitudes of Library Professionals on ICT		
	Agree	**Disagree**	**No Response**
You like to know more about ICT	239 (94.84%)	6 (2.38%)	7 (2.78%)
You can apply ICT in your work environment	213 (84.52%)	17 (6.74%)	22 (8.74%)
Find it easy to select appropriate ICT resources related to work environment	187 (74.2%)	46 18.25%)	19 (7.55%)
ICT motivates the library staff to learn effectively	231 (91.66%)	7 (2.77%)	14 (5.57%)
ICT saves the time of library staff in many ways	236 (93.65%)	7 (2.77%)	9 (3.58%)

It is found from table-10 that majority of respondents with 94.84% were interested to learn more about ICT applications in the libraries, followed by the respondents 93.65% with the opinion that ICT saves the time of library staff in many ways. Further, 91.66% of respondents were found that ICT motivates the library professionals to learn more effectively. The respondents with 74.2% were finding it easy to select appropriate ICT resources related to work environment.

Discussion and Conclusion:

The result of the study has come out with various interesting findings. Of the 252 college libraries, the highest percentage of colleges (42.86%) are belonged to rural areas followed by 36.11% of colleges belonged to urban areas and semi-urban areas (21.03%). The study has witnessed that Microsoft Windows is the predominant operating system used by First-Grade College libraries belonged to rural, urban, and semi-urban areas. Of the 252 college libraries, 99 libraries (39.29%) have partially automated. It is followed by 83 libraries (32.94%) have completely automated. The study found that the status of library automation in first-grade college libraries is not satisfactory. Nearly 70% of libraries are having the challenge of completing the library automation. E-granthalaya is the most preferred library automation software followed by Newgenlib and Easy-lib. Of the 252 libraries, 29 libraries (11.51%) have set-up digital libraries and a very large number of libraries (88.49%) have no digital library set-up. Of the 29 libraries with digital library set-up, 20 libraries (68.97%) have digitized books followed by reports (24.14%), project reports (20.69%), and theses (17.24%). Meanwhile, 25 libraries (86.21%) have e-journals in their digital library collection. The special grants for the development of the library ICT infrastructure are released mainly by the state government followed by RUSA. The study found that of the 108 first-Grade colleges with rural background, only 36 college libraries (33.33%) have subscribing N-List, of the 91 urban college libraries, 56 college libraries (61.54%) have subscribed N-List database whereas of the 53 semi-urban college libraries, 60.38% of college libraries have subscribed N-List database. The study revealed that the library professionals showed a positive attitude towards implementation of ICT in the libraries.

First priority for the Government first grade colleges need to get 12B, 2F recognition by the UGC. Government first grade colleges should undergo NAAC accreditation. Implementation and maintenance of library automation costs money. Librarians may mobilize funds for library automation by undertaking projects, convincing the management to start self-financed courses and also requesting different funding agencies to implement library automation. All government first grade college libraries need to restructure their budget policy by allocating a part of their annual budget for ICT infrastructural development and training for library professionals. The library professionals are required to update the knowledge and skill in information and communication technology (ICT). The librarians need to encourage the library professionals to attend various programs such as seminar, conference and workshop on ICT.

ICT is changing the work of libraries and information centers. More than ever, the Government first grade college libraries need this technology. An increased number of users, a greater demand for library materials, an increase in the amount of material being published, new electronic formats and sources, Insufficient of ICT base trained staff, Insufficient of E-journals, and e-database are some of the reasons for the growing need for ICT in Government first grade college libraries. The availability and use of IT infrastructure in government first grade college libraries in Karnataka state has become a necessary in meeting their day to day requirements of their users. Most of these libraries have developed minimum IT infrastructure over a period of

time. But still many libraries do not have even minimum requirement of ICT in their libraries. Include policies that facilitate and guide, sustained funding, appropriate equipment, networking of first grade college libraries, improved expertise and management to deliver adequate ICT accessibility for academic purposes. In order to reach out ICT applications, Government First Grade college libraries of Karnataka state should strive hard for getting ICT infrastructure, making use of the existing ICT infrastructure and update with newer technologies to provide value added information services to their clientele.

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