Application of Information Communication Technology (ICT) in Research and Development Organizations Libraries of M.P.: A Critical Study

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Abstract

Information communication technology (ICT) plays a vital role in enhancing efficiency in development of library service. The paper deals with application and designing of information communication technology in selected research and development organizations of M.P. Today library are equipped to accomplish the newly information communication technology based services. ICT based services fulfill the information needs of the users at the right time in the right place to the right person.

Keywords

Information communication technology (ICT), Online databases.

Preamble

Information is indispensable source in information world. Library professional should be aware of latest and advance technologies to continue and maintain the importance of service offerings utilization of ICT services in present research and development libraries is optimistic to gain right information at the right time in the right place and at the right cost. ICT helps to progress the research activities of organization through library and it condense the work stack of the library personnels. The e-resources (both online and offline) have occupied a considerable space in the library collection, the transaction of library materials are fully automated, new web based services are offered by libraries to attract users participation in redesigning the library system and services

and so on. These changes are mainly due to the development and impact of Information Communication Technology (ICT) in libraries which have also made sea changes in all walks of life. The ICT tools and services are being used in libraries to mange libraries more efficiently and to cater users demand properly.(1)

Definition

The term Information and communication technology (ICT) is more commonly used. Whilest Information Technology (IT) has been the accepted term in the UK and USA, it is not the universal term Telemetric is widely used in France, and Information is also used elsewhere in this sense.(2) ICT deals with the use of electronic computers and software to store, convert, process, retrieve, communicate and transmit information.

Information and communications technology or information and communication technology usually abbreviated as ICT, is often used as an extended synonym for information technology (IT), but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage- and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In other words, ICT consists of IT as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions.(3)

Scope and Limitation

The scope of the study is limited to selected research and development organizations library users, namely- Bhaba Engineering Research Institute (BERI), Bhopal, Regional Research Laboratory (RRL), Bhopal, Tribal Research Institute (TRI), Bhopal, Tropical Forest Research Institute (TFRI), Jabalpur, State Forest Research Institute (SFRI), Jabalpur and National Research Centre for Soya Bean (NRC-SOY), Indore.

Literature Review

Haneefa, Mohamed (2007) investigated in the study the application of information and communication technologies (ICT) in special libraries in Kerala (India) and revealed that ICT based resources and services were not reaching the users to the expected extent. A good number of the library users were not satisfied with the application of ICT in their libraries and indicated inadequate ICT infrastructure as their major reason for dissatisfaction.

Bulu Maharana,Choudhury (B K) and Dutta (Syamshree) (2004) revealed about the policies and practices of development and management of e-resources in the selected R&D libraries of kolkatta city. Depicts the current state of e-collection, policy statements and management practices under vogue. Feasible recommendations have been put forth for the development of a balanced collection of electronic resources and its effective management.

Objectives

- Provision of services with ICT application.
- To know the place preferred by users to access ICT services.
- To identify the problems with ICT application.
- To analyse the possible reasons for not using ICT services in library.

Research Methodology

This paper is based on questionnaire method. The questionnaires were personally distributed to the students of Research and development organizations libraries. A random sample of 200 students was selected. The questionnaires were distributed to the students who were present in library premises and library reading room. 160 filled in questionnaires were returned by users with the overall response rate being 80%. The collected data were analyzed, classified and tabulated by employing statistical methods.

Data Analysis

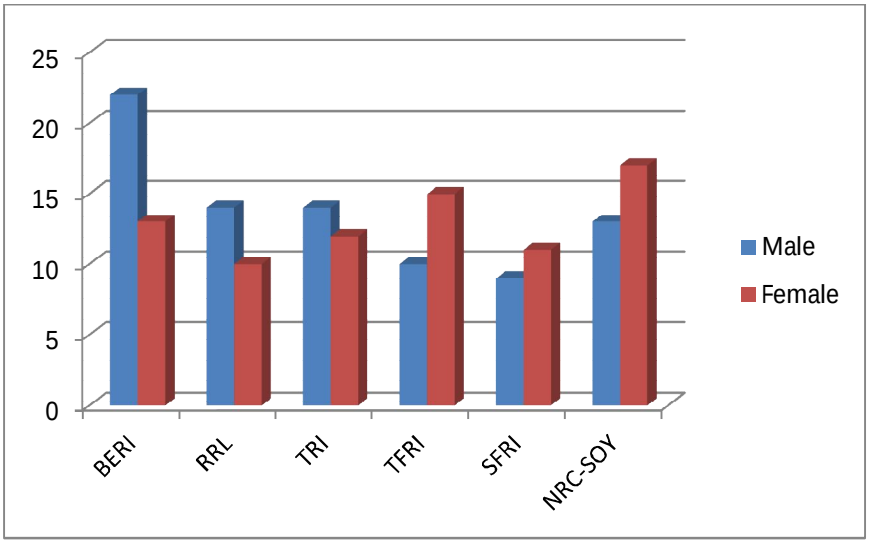
An attempt has been made to analyse the research data collected from students of selected research and development organizations libraries of M P and interpret the results, which provides valuable source of information to the research libraries of M P region and other underdeveloped regions in designing and developing a suitable strategy in promoting ICT based services for the better utilization of information sources in the libraries.

Gender wise Distribution

Table 1 shows that predominance of male with 51.25%, though percentage of female user is comparatively lower than male. Institution wise data analysis presents that both males and females are equally dominant in 3-3 institutes. Male users constitute 62.86% in BERI, 58.33% in RRL and 53.85% in TRI whereas females are predominant in TFRI, SFRI and NRC-SOY with 60.0%, 55.0% and 56.67% respectively.

Table 1: **Gender wise Distribution**

Sex	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
Male	22 (62.86)	14 (58.33)	14 (53.85)	10 (40.0)	9 (45.0)	13 (43.33)	82 (51.25)
Female	13 (37.14)	10 (41.67)	12 (46.15)	15 (60.0)	11 (55.0)	17 (56.67)	78 (48.75)
Total	35 (21.88)	24 (15.0)	26 (16.25)	25 (15.63)	20 (12.5)	30 (18.75)	160 (100.0)



Distribution of Respondents Age-wise

In table 2 data analysis revealed that a higher proportion of users are in the age group of 25-30 years 40.0% followed by 30-40 years with 28.75% and 18-25 years 26.25% respectively. A less percentage of users belong to the age group 40-50 years and 50-60 years i.e. 2.5% respectively.

Table 2: **Distribution of Respondents Age-wise**

Age Group	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
18-25	8 (22.86)	5 (20.83)	10 (38.46)	7 (28.0)	5 (25.0)	7 (23.33)	42 (26.25)
25-30	12 (34.29)	9 (37.5)	8 (30.77)	12 (48.0)	8 (40.0)	15 (50.0)	64 (40.0)
30-40	13 (37.14)	6 (25.0)	8 (30.77)	6 (24.0)	7 (35.0)	6 (20.0)	46 (28.75)
40-50	2 (5.71)	-	-	-	-	2 (6.67)	4 (2.5)
50-60	-	4 (16.67)	-	-	-	-	4 (2.5)
Above 60	-	-	-	-	-	-	-
Total	35 (21.88)	24 (15.0)	26 (16.25)	25 (15.63)	20 (12.5)	30 (18.75)	160 (100.0)

Frequency of the Library Visits

Table 3 pertains the data regarding the frequency of library visit of the users which reveals that 37.5% users visit daily followed by 27.5% users visit as and when needed. Similarly 16.88% twice a week, 14.37% once a week, 1.87% once a month, 1.25% rarely and 0.63% fortnightly respectively.

Table 3: **Frequency of the Library Visits**

Frequency	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
Daily	13 (37.14)	10 (41.67)	7 (26.92)	9 (36.0)	9 (45.0)	12 (40.0)	60 (37.5)
Twice a week	8 (22.86)	3 (12.5)	4 (15.38)	6 (24.0)	1 (5.0)	5 (16.67)	27 (16.88)
Once a Week	4 (11.43)	2 (8.33)	5 (19.23)	3 (12.0)	3 (15.0)	6 (20.0)	23 (14.37)
Fortnightly	-	1 (4.17)	-	-	-	-	1 (0.63)
Once a month	-	3 (12.5)	-	-	-	-	3 (1.87)
Rarely	-	-	-	-	-	2 (6.66)	2 (1.25)
As and when needed	10 (28.57)	5 (20.83)	10 (38.46)	7 (28.0)	7 (35.0)	5 (16.67)	44 (27.5)
Never	-	-	-	-	-	-	-
Total	35 (21.88)	24 (15.0)	26 (16.25)	25 (15.63)	20 (12.5)	30 (18.75)	160 (100.0)

Time Spent on Each Visit by Respondents

The data analysis according to table 4 shows that 73.75% respondents spent 0-1 hour in the library followed by 25.62% respondents 2-3 hours. On the other hand 0.63% respondents only spent on their each library visit.

Table 4: **Time Spent on Each Visit**

Time Spend	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
0-1 hour	28 (80.0)	19 (79.17)	22 (84.62)	19 (76.0)	8 (40.0)	22 (73.33)	118 (73.75)
2-3 hours	6 (17.14)	5 (20.83)	4 (15.38)	6 (24.0)	12 (60.0)	8 (26.67)	41 (25.62)
4-5 hours	1 (2.85)	-	-	-	-	-	1 (0.63)
6 hours and above	-	-	-	-	-	-	-
Total	35 (21.88)	24 (15.0)	26 (16.25)	25 (15.63)	20 (12.5)	30 (18.75)	160 (100.0)

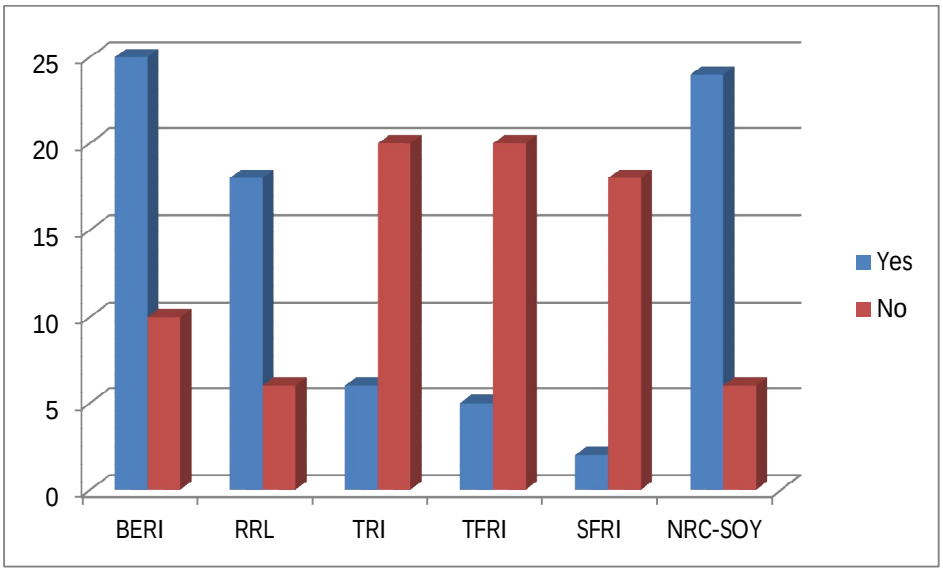
Institution wise analysis shows an overwhelming majority of users spent 0-1 hour in the library except SFRI where users reported 2-3 hours on their each visit.

Services with Application of ICT

Data analysis in the table 5 shows that 50.0% of respondents were of the opinion that their libraries provide ICT services. According to the table analysis of data presents that 80.0% NRC-SOY users followed by 75.0% RRL and 71.42% BERI users reported that there libraries are providing services with ICT application whereas 90.0% SFRI, 80.0% TFRI and 76.93% TRI users reported the unavailability for the same.

Table 5: **Services with Application of ICT**

Services with Application of ICT	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
Yes	25 (71.42)	18 (75.0)	6 (23.07)	5 (20.0)	2 (10.0)	24 (80.0)	80 (50.0)
No	10 (28.57)	6 (25.0)	20 (76.93)	20 (80.0)	18 (90.0)	6 (20.0)	80 (50.0)
Total	35 (21.88)	24 (15.0)	26 (16.25)	25 (15.63)	20 (12.5)	30 (18.75)	160 (100.0)



The above analysis reveals that some organization like BERI, RRL and NRC-SOY are adopting ICT application to render services to the users whereas rest of the organizations are still following the traditional modes of services.

Place Prefer to Access ICT Services

In Table 6 reveals that 52.5% respondents prefer computer lab to access ICT services whereas 21.25% prefer department, 9.37% use library and cyber café and only 7.5% prefer home/ hostel respectively.

Table 6: **Place Prefer to Access ICT Services**

Place Prefer to Access ICT Services	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
Department	7 (20.0)	2 (8.33)	6 (23.07)	7 (28.0)	5 (25.0)	7 (23.33)	34 (21.25)
Computer Lab	18 (51.42)	15 (62.5)	20 (76.92)	10 (40.0)	12 (60.0)	9 (30.0)	84 (52.5)
Library	2 (5.71)	1 (4.16)	-	4 (16.0)	-	8 (26.66)	15 (9.37)
Cyber Café	6 (17.14)	2 (8.33)	-	2 (8.0)	2 (10.0)	3 (10.0)	15 (9.37)
Home/ Hostel	2 (5.71)	4 (16.66)	-	2 (8.0)	1 (5.0)	3 (10.0)	12 (7.5)
Total	35 (21.88)	24 (15.0)	26 (16.25)	25 (15.63)	20 (12.5)	30 (18.75)	160 (100.0)

Individual data analysis depicts the same. Respondents of all the groups i.e. BERI 51.42%, RRL 62.5%, TRI 76.92%, TFRI 40.0%, SFRI 60.0%, NRC 30.0% preferred to access ICT services in the department. Data analysis shows that respondents of TRI either use department or computer lab as their preferred place. Lowest proportion of Respondents of SFRI i.e. 5.0% used home/ hostel whereas percentages of users are nil to use library in SFRI for the same.

The above analysis reveals that percentages of users to access ICT services in the library are very less as compared to other places.

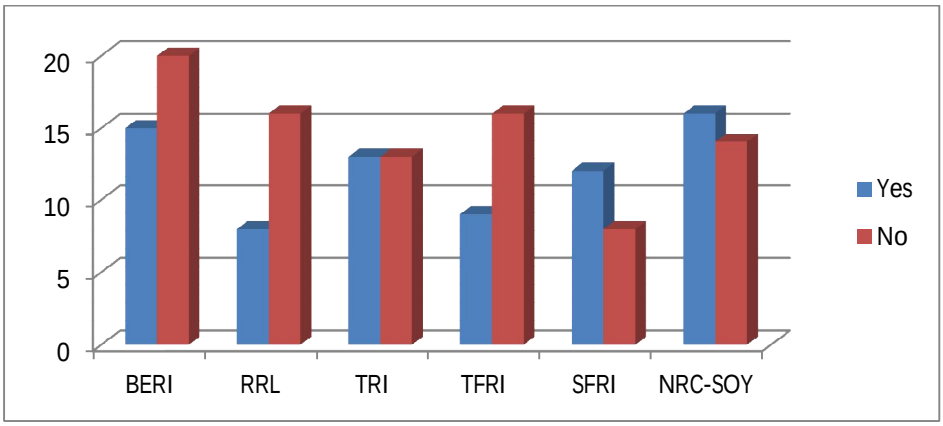
Problems in Accessing Information in ICT Environment

The analysis of data shows that a good proportion 54.37% of respondents reported that they don't have problem in accessing information in ICT environment. As per table 7 majority of respondents of BERI 57.14%, RRL 66.67%, TRI 50.0%, TFRI 64.0% don't have

problem with the same whereas SFRI 60.0%, NRC 53.33% and TRI 50.0% of respondents clearly mentioned that they face problem while accessing information in ICT environment.

Table 7: **Problems in Accessing Information in ICT Environment**

Problems in Accessing Information in ICT Environment	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
Yes	15 (42.86)	8 (33.33)	13 (50.0)	9 (36.0)	12 (60.0)	16 (53.33)	73 (45.63)
No	20 (57.14)	16 (66.67)	13 (50.0)	16 (64.0)	8 (40.0)	14 (46.67)	87 (54.37)
Total	35 (21.88)	24 (15.0)	26 (16.25)	25 (15.63)	20 (12.5)	30 (18.75)	160 (100.0)



Reasons for not Using the ICT Services

From the above analysis it is clear that 46.63% users were facing problem in accessing information in ICT environment Some of them have reported some reasons for not using the ICT services which depicted in the table 8 which shows that 23.78% respondents were not using ICT services due to lack of infrastructure, 21.92% of respondents have lack of knowledge in browsing in digital resources, 17.8% of

respondents have problem with unfriendly attitude of library staff, 16.44% reported lack of training. Similarly 13.69% were not aware with digital resources, 2.73% of users lacks own timing, and also reported too much information is available, 1.36% claimed lack of quality information.

Table 8: **Reasons for not using the ICT Services**

Reasons for not Using the ICT Services	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
Lack of infrastructure	-	-	3 (23.08)	6 (66.67)	4 (33.33)	4 (25.0)	17 (23.28)
Lack of training	3 (20.0)	-	2 (15.38)	-	3 (25.0)	4 (25.0)	12 (16.44)
Lack of your timing	-	-	-	-	-	2 (12.5)	2 (2.73)
Lack of knowledge in browsing in digital resources	7 (46.66)	4 (50.0)	-	3 (33.33)	-	2 (12.5)	16 (21.92)
Unfriendly attitude of library staff	5 (33.33)	1 (12.5)	4 (30.76)	-	3 (25.0)	-	13 (17.8)
Lack of quality information	-	-	-	-	-	1 (6.25)	1 (1.36)
Not aware about digital resources	-	3 (37.5)	4 (30.76)	-	2 (16.67)	1 (6.25)	10 (13.69)
Too much information is available	-	-	-	-	-	2 (12.5)	2 (2.73)
Time consuming	-	-	-	-	-	-	-
Downloading takes time	-	-	-	-	-	-	-
Slow net connection	-	-	-	-	-	-	-
Old PC / Number of PC are less	-	-	-	-	-	-	-
Total	15 (42.86)	8 (33.33)	13 (50.0)	9 (36.0)	12 (60.0)	16 (53.33)	73 (100.0)

As per table 46.66% and 50.0% of respondents in BERI and RRL recorded for lack of knowledge in browsing in digital resources whereas 30.76% in TRI reported for both unfriendly attitude of staff and not aware about digital resources. However 66.67% in TFRI and 33.33% in SFRI reported lack of infrastructure in their library and 25.0% in NRC-SOY reported for both lack of infrastructure and lack of training.

It is obvious from the above analysis the causes are different however effecting the services of the library and its users.

Access to Online Searching National and International Databases

Table 9 reveals 60.63% respondents are those who indicated that their libraries are provided with the facilities. However 39.37% reported unavailability of online searching of national and international databases in their libraries.

Table 9: **Access to Online Searching National and International Databases**

Online Searching of National and International Databases	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
Yes	26 (74.28)	18 (75.0)	15 (57.69)	10 (40.0)	6 (30.0)	22 (73.33)	97 (60.63)
No	9 (25.71)	6 (25.0)	11 (42.31)	15 (60.0)	14 (70.0)	8 (26.67)	63 (39.37)
Total	35 (21.88)	24 (15.0)	26 (16.25)	25 (15.63)	20 (12.5)	30 (18.75)	160 (100.0)

Over 70.0% of respondents in BERI, RRL, NRC-SOY and 57.69% of TRI reported provision of online searching of national and international databases whereas 70.0% SFRI and 60.0% in TFRI reported unavailability for the same.

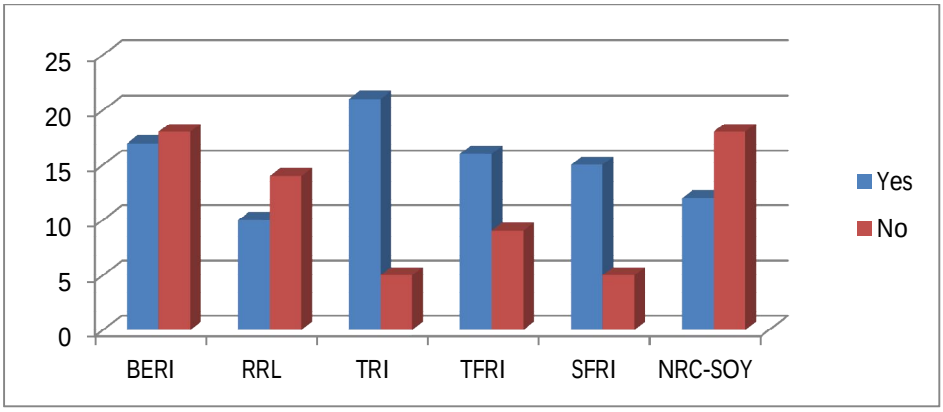
Need for User Education

Table 10 represents the comments recorded to find out the need for user education. Data analysis shows that 56.87% respondents reported for the need of user education.

Table 10: **Need for User Education**

Need for User Education	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Total
Yes	17 (48.57)	10 (41.66)	21 (80.77)	16 (64.0)	15 (75.0)	12 (40.0)	91 (56.87)
No	18 (51.42)	14 (58.33)	5 (19.23)	9 (36.0)	5 (25.0)	18 (60.0)	69 (43.13)
Total	35 (21.88)	24 (15.0)	26 (16.25)	25 (15.63)	20 (12.5)	30 (18.75)	160 (100.0)

80.77% TRI, 75.0% SFRI, 64.0% TFRI respondents expressed the need for user education whereas 60.0% NRC-SOY, 58.33% RRL and 51.42% BERI are not in the favour of user education.



Need for Formal Training

Table 11 depicts clearly about the users who needed formal training and the areas in which they need training. Table 11 presents that 21.97% of respondents were needed training in search query formulation followed by 18.68% of respondents needed in advance searching and data mining from digital library.

Table 11: **Need for Formal Training**

Areas/ Levels of Formal Training	BERI	RRL	TRI	TFRI	SFRI	NRC-SOY	Row Total
Fundamentals of computer	-	-	3 (14.28)	2 (12.5)	3 (20.0)	1 (8.33)	9 (9.89)
Database searching	2 (11.76)	2 (20.0)	2 (9.52)	3 (18.75)	3 (20.0)	1 (8.33)	13 (14.28)
Internet based information resources and services	-	1 (10.0)	2 (9.52)	4 (25.0)	1 (6.66)	1 (8.33)	9 (9.89)
Advance searching	4 (23.52)	2 (20.0)	4 (19.04)	5 (31.25)	1 (6.66)	1 (8.33)	17 (18.68)
Search query formulation	3 (17.64)	2 (20.0)	6 (28.57)	3 (18.75)	3 (20.0)	3 (25.0)	20 (21.97)
Data mining from digital library	4 (23.52)	3 (30.0)	2 (9.52)	3 (18.75)	2 (13.33)	3 (25.0)	17 (18.68)
OPAC training	4 (23.52)	-	2 (9.52)	1 (6.25)	2 (13.33)	2 (16.66)	11 (12.08)
Total	17 (48.57)	10 (41.66)	21 (80.77)	16 (64.0)	15 (75.0)	12 (40.0)	91 (56.87)

Data analysis of each group reveals that 23.52% of respondents in BERI needed training in three areas namely- advance searching, data mining from digital library and OPAC training. 30.0% in RRL mentioned there need in data mining, 28.57% TRI respondents are curious to have training in search query formulation, 31.25% TFRI respondents need

to train in advance searching, 20.0% SFRI respondents needed training in fundamentals of computers, Database searching and search query formulation and 25.0% NRC-SOY respondents needed training in search query formulation and data mining.

Conclusion and Findings

Presently libraries are changing very fast and continuously by ICT based services and product. Research and development libraries of M.P. need more attention towards modernization and adoption of ICT based services and resources. Thus the world is stepping forward with the development of ICT and change is enforced by ICT. On the basis of data analysis, the study highlighted and puts forth important findings as-

- The majorities of the respondents visits the library daily and are in habit of using the library for 0-1 hour.
- The analysis revealed that female respondents visit the library maximum.
- The institution wise analysis revealed that Tribal Research Institute (Bhopal), Tropical Forest Research Institute (Jabalpur) and State Forest Research Institute (Jabalpur) lacking ICT application in their libraries whereas majority of respondents indicates that other three libraries of M.P. are providing services with ICT application.
- The study indicates that majority of respondents prefer computer labs to access ICT services.

- It has been found that the majority of users indicated that their libraries have the provision of online searching of national and international databases.
- The analysis revealed that majority of users stated lack of infrastructure as the reason for not using the ICT service in library.
- The study revealed that the users of M.P. expressed the need of user education. Of those who responded for user education, the majority of users 21.97% of users in M.P. needed training in search query formulation.

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