
IMPACT OF ICT ON COLLECTION DEVELOPMENT OF R & D LIBRARIES IN KARNATAKA: A SURVEY

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Abstract :

The present study is an attempt to identify the impact of ICT on collection development of R & D libraries of Karnataka. For the purpose of data collection the researcher has selected twelve R & D libraries of Karnataka state and distributed questionnaires for the librarians of these institutes. It discusses the amount spent towards collection of print and E-resources from last five years. Further, the opinion of the librarians towards the impact of ICT on different areas of collection development is discussed. The measures taken to promote E-resources use, services providing by using ICT tools, advantages and disadvantages on the users by implementing ICT, the librarians opinion towards the E-resources collection out dated soon and the problems faced by the librarians while collecting print and E-resources are also covered. Finally, this study lists some of the major findings and fruitful suggestions.

KEYWORDS :

Collection development; R&D Libraries; ICT; E-resources; Karnataka; Survey.

INTRODUCTION:

Advances in computer applications during the past few decades have brought radical changes in the way information is gathered, store, organized, accessed, retrieved and consumed. The application of computers in information processing has brought several products and services to the scene. The Internet and the Web are constantly influencing the development of new modes of scholarly communication; their potential for delivering goods is quite vast, as they overcome successfully the geographical limitations associated with the print media. Further, the distribution time between product publication and its delivery has been drastically reduced. The Internet can be used for efficient retrieval and meeting information needs. This is very important for research and development libraries since most of them call for more and more research work. This important fact is convincing many libraries to move towards digital e-resources, which are found to be less expensive and more useful for easy access. This is especially helpful to distant learners who have limited time to access the libraries from outside by dial-up access to commonly available electronic resources, mainly CD-ROM, OPACs and Internet, which are replacing the print media. Libraries have witnessed a great metamorphosis in recent years both in their collection development and in their service structure. Over the last several years, a significant transformation has been noticed in collection development policies and practices. Print medium is increasingly giving way to the electronic form of materials (Poornima & Goudar, 2005). This study is conducted to know how and to what extent the ICT has affected on collection development of R & D libraries of Karnataka state.

REVIEW OF LITERATURE

Rao (1997) opines the impact of CD-ROM databases, internet and digital libraries on collection development is quite significant and argued that it is necessary to conduct a survey of available sources on various networks. Effective techniques are required to search and store the downloaded data. The policy for collection development should take care of recent advances in information technology and its impact. Seetharama (1997) discusses the impact of information technology on

collection development and collection management. Collection development policy methods, resource sharing and networking and collection evaluation in IT-based environment are explained in detail. In the study of Sharma (1999) outlines the features and impact of information technology (IT) on our society. Specifically the author discusses in detail the role played by IT in special library environment. The changing IT environment and matching role of the reference librarian in 21st century has been discussed. The author gives the complete spectrum of impact of IT on Defence Science Library (DSL), a specialized central library of DRDO functioning at DESIDOC. And discusses in detail the various library activities and services where DSL is making effective use of IT to provide better and enhanced Services to its users. Kannappanavar and Vijayakumar (2001) highlight the use of hardware and software facilities in University of Agricultural Science Libraries in Karnataka. They also highlight the access of networks, information services and barriers in information technology (IT)' applications. They found that none of the University libraries under the study is having databases and full implementation of IT applications in their libraries. Intner (2001) reports the Internet has changed librarian work, and six library directors speculated about future change. Findings confirm that responding bibliographers collect Internet resources and make broad use of the Internet as a collection tool, while the directors see their libraries as well-positioned for an uncertain future. In Mutula and Makondo (2003) opinion, the rapid and continuing evolution of information technology has occasioned large stocks of electronic resources in libraries and created pressure for both library professionals and users to continue learning in order to provide effective service and make adequate use of the new information materials. Dorner (2004) reports on a research project that used four focus groups and a Web-based survey to determine the impact of digital information resources on the roles of collection managers in research libraries in five major English-speaking countries. The author found that while the actual responsibilities of respondents varied, the levels of responsibility and time spent on activities related to digital resources have generally increased compared to 5 years ago, and those for non digital resources either have increased marginally, stayed the same, or gone down. Strong increases in consortia-related work featured prominently in the survey. Watson (2004) says that E-publishing has increased the ways libraries can add to their collections, and it has had particularly marked impacts on interlibrary loan, the decades-old method of mitigation of gaps in holdings. Two other E-based means of collection development establishment of institutional repositories and creation of other kinds of digital content by libraries also discussed. Jange and Sami (2006) argues that the Internet has been described as the gateway to a world of seemingly inexhaustible information resources and a valuable information tool to the library and information centers that supplements existing library resources. Anwarul Islam and Panda (2009) conducted a survey to assess the current status of special libraries of Bangladesh and their ability to adapt information technology (IT) in various library operations and services. A structured questionnaire was distributed among the special libraries of Bangladesh to cover the status of using IT by those libraries. Findings shows being a developing country, Bangladesh is confronted with certain problems to introduce IT-based services and other facilities in the special libraries. The authors have revealed the embryonic state of IT in the special libraries of Bangladesh. They suggest this study will help web researchers to obtain a precise picture of the application of IT in these libraries. It will also help researchers to acquaint themselves with IT applications in libraries in a third world country.

OBJECTIVES OF THE STUDY

- 1.To know the allocation of budget and expenditure made towards collection of print and E-resources during last five years
- 2.To seek the opinion of librarians towards the impact of ICT application on the collection development and related areas.
- 3.To know the measures taken to promote E-resources use.
- 4.To identify the services providing by using information and communication technology tools.
- 5.To collect the opinion of librarians of R&D institutions on advantages and disadvantages on library users by implementing ICT in libraries.
- 6.To elicit the information regarding the extent of library print v/s E-resources collections getting out dated soon.
- 7.To examine the Problems faced by the librarians while acquiring print and E-resources.

METHODOLOGY

For the present study the researcher has personally distributed a well-structured questionnaire for librarians of the R & D institutes of Karnataka. A total of 12 questionnaires were distributed among the librarians and all most all the librarians were positively responded. This constitutes 100 percent response rate. The researcher also visited and met all the institutes librarians covered under the study and interviewed them for clarifications. After collection of data the researcher has analyzed by using SPSS 19 version and presented using simple percentage techniques and Chi-square values.

Scope and Limitations of the study

The scope of the study has limited primarily to the collection development of print and electronic resources in libraries attached to R&D institutions and the impact of ICT on collection development. Geographically the study is limited to Bangalore and Mysore Cities in Karnataka state. The lists of libraries covered in the present study are listed below.

1	Indian Institute of Horticultural Research (IHR)	Bangalore
2	Indian Plywood Industries Research and Training Institute (IPIRTI)	Bangalore
3	Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)	Bangalore
4	Central Power Research Institute (CPRI)	Bangalore
5	Indian Institute of Astrophysics (IIA)	Bangalore
6	National Centre for Biological Science (NCBS)	Bangalore
7	Raman Research Institute (RRI)	Bangalore
8	National Aerospace Laboratories (NAL)	Bangalore
9	Central Sericultural Training and Research Institute (CSTRI)	Bangalore
10	Central Food Technological Research Institute (CFTRI)	Mysore
11	Defence Food Research Laboratory (DFRL)	Mysore
12	Central Sericultural Research & Training Institute (CSRTI)	Mysore

RESULTS AND DISCUSSION

Background information of the respondents

Table 1 shows the background information of the respondents.

Table 1
Background information of the respondents

Sl. No.	Background Information		Frequency	Percentage
1	Qualification	MLISC	6	50.0
		M. Phil	1	8.3
		PhD	4	33.3
		CS	1	8.3
		Total	12	100.0
2	Gender	Male	6	50.0
		Female	6	50.0
		Total	12	100.0
3	Experience	Between 5 and 10 years	2	16.7
		Between 10 and 15 years	2	16.7
		Above 20 years	8	66.7
		Total	12	100.0

Majority of the librarians were with MLISC qualification (50.0%), followed by 33.3% of them possessed Ph.D, and 8.3% of each of them possesses either M Phil or CS degrees. Further, the gender of the respondents' shows, out of 12 librarians, 6 (50%) librarians each of them are male and female respondents. Whereas, the work experience of the respondents is concerned, 8 librarians replied that they have more than 20 years of work experience, representing 66.7% and 2 librarians each responded that they have experience between 5 and 10 years and between 10 and 15 years, this accounts 16.7% each.

Form wise expenditure on document collection during last five years

An attempt is made to know the budget allocation and expenditure made towards procurement of various sources for libraries and the data collected is presented in the table 2 and figure 1.

Table 2
Form wise expenditure on document collection during last five years

Sl. No.	Year	Source	Mean	Std. Deviation
1	2008-09	Print	3438120.00	4551709.29
		E resource	3073995.00	3381204.83
		Total	3301573.00	4034207.47
2	2009-10	Print	3640397.00	4296891.17
		E resource	3687179.00	3402765.81
		Total	3657940.00	3864985.96
3	2010-11	Print	3903667.00	4653472.64
		E resource	5429650.00	5693502.19
		Total	4475911.00	4937647.51
4	2011-12	Print	3533558.00	3748613.97
		E resource	5810917.00	5602631.66
		Total	4387568.00	4493441.29
5	2012-13	Print	3430705.00	3827800.23
		E resource	6145213.00	5509003.37
		Total	4448645.00	4555188.66
F value for change over years =3.232; p=.019 F value for change over years with source= 3.019; p=.025				



Figure 1: Form wise expenditure on document collection during last five years

From the above table 2 and figure 1 it is clear that mean E-resource expenditure steadily increased from 3073995.00 to 6145213.00 from 2008-09 academic years to 2012-13 academic years. However, in the case of print resources, we see a different trend. Up to first 3 years there was increase in the expenditure on print resources i.e. from 3438120.00 to 3903667.00, however afterwards there was a decrease on the expenditure on print resources after 2011-12 to 2012-13. A decrease of 3903667.00 from 2011-12 to 3430705.00 was observed in 2012-13. Further, repeated measure ANOVA is indicated a significant change in the expenditure on resource collection from 2008-09 to 2012-13, irrespective of the type of the resources. When resource wise expenditure analysis was done, it was further, confirmed that expenditure on E-resources increased over the years linearly but not print resources.

Opinion of librarians on impact of ICT on Collection Development

The opinion towards the impact of ICT on collection development of research and development libraries is shown in the table 3.

Table 3
ICT application affects on Collection Development

Sl. No.	Opinion	Frequency	Percent
1	Yes	7	58.3
2	No	5	41.7
Total		12	100

It is observed from the table that, more number of the librarians i.e. 7 are opined that 'ICT application affected on the collection development' representing 58.3 percent of the total. Whereas only 5 (41.7%) librarians replied ICT application do not affected on the library collection development.

ICT affected areas

Information and Communication Technology affects various areas of collection development like regular budgeting, operational costs, annual maintenance cost of ICT products etc.

Table 4
ICT affected areas

Sl. No.	ICT affected areas	Response					
		Yes		No		NR	
		F	%	F	%	F	%
1	ICT takes major share from the budget	7	58.3	2	16.7	3	25
2	ICT affects the regular budgeting provision	6	50.0	4	33.3	2	16.7
3	Operational costs are exceeding year by year	4	33.3	1	8.3	7	58.3
4	Annual Maintenance Cost of ICT products affect the collection development	2	16.7	3	25	7	58.3
5	Leads to Balanced Collection Development	1	8.3	3	25.0	8	66.7
6	Higher salaries for a trained staff is also affecting the collection development	-	-	4	33.3	8	66.7

It is observed from the table 4 that more number of the librarians i.e. 7 (58.3%) agree that ICT takes major share from the budget, another 50% of the librarians opine that 'ICT affects the regular budgeting provision'. About 33.3% of the librarians state that the 'operational costs are exceeding year by year' because of ICT, another 2 (16.7%) of the librarians agree that the 'annual maintenance cost of ICT products affect the collection development' of print sources and one librarian accepted that the ICT leads to balanced collection development.

Reasons for not affecting on Collection Development

Reasons for not affecting ICT on collection development is shown in table 5 and

Table 5
Reasons for not affecting ICT on Collection Development

Sl. No.	Reasons	Yes (n=5)	
		F	%
1	Adequate funds are providing	5	100
2	Separate funds are provided only for the purchase of ICT products and for their maintenance	4	80
3	Recurring fund allocation is made every year	3	60

It is seen from the table that out of 5 librarians, all the 5 (100%) librarians replied ICT is not affecting on collection development because 'adequate funds are providing'. Another 4 (80%) of the respondents replied 'Separate funds are providing only for the purchase of ICT products and for their maintenance' and 3 (60%) librarians stated 'Recurring fund allocation is made every year' so that ICT has not affected on collection development of print resources.

Measures taken to promote E-resources use

The measures taken by the librarians to promote E-resources use in their libraries are given in the table 6.

Table 6
Measures taken to promote E-resources use

Sl. No.	Measures taken to promote E-resources	Response					
		Yes		No		NR	
		F	%	F	%	F	%
1	Provide links from home page	8	66.7	2	16.7	2	16.7
2	E-mail/Internet mailing link	8	66.7	2	16.7	2	16.7
3	Provide orientation program for users	7	58.3	3	25.0	2	16.7
4	Others	2	16.7	-	-	10	83.3

It is clear from the table that majority of librarians i.e. 8 librarians each (66.7%) replied that 'they provide links from the home pages' and 'E-mail/Internet mailing link' to promote use of E-resources in their libraries. Another, 7 librarians (58.3%) stated they 'provide orientation program for users and 2 (16.7%) of them promoted E-resources use by taking other measures.

Services providing by using information technology tools

Opinion of librarians regarding the services providing by using information technology tools are shown is table 7.

Table 7
Services providing by using information technology tools

Sl. No.	Services providing by using information technology tools	Response				C ²	P
		Yes		No			
		F	%	F	%		
1	Provide recent additions list	10	83.3	2	16.7	5.333	0.021
2	Provide access to library OPAC	9	75.0	3	25.0	3.000	0.083
3	Generate reminders for overdue books	9	75.0	3	25.0	3.000	0.083
4	Provide individual alert services	9	75.0	3	25.0	3.000	0.083
5	User can know their status of issue/return date etc.	9	75.0	3	25.0	3.000	0.083
6	Online access to databases	9	75.0	3	25.0	3.000	0.083
7	Access to internet in the library	9	75.0	3	25.0	3.000	0.083
8	Access to electronic journals service	9	75.0	3	25.0	3.000	0.083
9	Access to internet resources through library portals	9	75.0	3	25.0	3.000	0.083
10	CD – ROM database services	8	66.7	4	33.3	1.333	0.248
11	Contents pages services	7	58.3	5	41.7	0.333	0.564
12	Electronic references service	7	58.3	5	41.7	0.333	0.564
13	Access to other library database	7	58.3	5	41.7	0.333	0.564

It is clear from the table that majority of librarians state 'providing recent additions list' by using technology, representing 83.3% of the total. It is followed by, 9 (75%) of the librarians each replied that they 'Provide access to library OPAC', 'Generate reminders for overdue books', 'Provide individual alert services', 'User can know their status of issue/return date', 'Online access to databases', 'Access to internet in the library', 'Access to electronic journals service', and 'Access to internet resources through library portals' are the services providing using information technology tools. Another 8 librarians (66.7%) accepted that they provide 'CD – ROM database services' and 7 librarians each (58.3%) opine that

'Contents pages services', Electronic references service', and 'Access to other library database' are providing by using technology tools.

Implications of IT on Users (advantages)

Opinion of librarians about what are the advantages by using IT in the library is shown in the table 8.

Table 8
Implications of IT on Users (advantages)

Sl. No.	Implications of IT on Users (advantages)	Response			
		Yes		No	
		F	%	F	%
1	Users satisfied with the automation of library activities	11	91.7	1	8.3
2	Users feel comfortable in locating resources in the library	11	91.7	1	8.3
3	Users have become more time conscious	11	91.7	1	8.3
4	Users visit library frequently	8	66.7	4	33.3
5	Users are more and more demanding	8	66.7	4	33.3
6	Visibility of the library resources increased	7	58.3	5	41.7
7	Users are more quality conscious	6	50.0	6	50.0

It is observed from the table that, majority (11; 91.7%) of librarians agree with the advantages like 'Users satisfied with the automation of library activities', 'Users feel comfortable in locating resources in the library', and 'Users have become more time conscious' because of implication IT in libraries. Another 8 librarians (66.7%) each state 'Users visit library frequently', 'Users are more and more demanding' and 7 librarians opine that 'Visibility of the library resources increased', representing 58.3 percent of the total. While half of the librarians said that because of IT implications 'Users are more quality consciousness.

Implications of IT on Users (disadvantages)

Opinion of librarians about what are the disadvantages on users by using IT in the library is shown in the table 9.

Table 9
Implications of IT on Users (disadvantages)

Sl. No.	Implications of IT on Users (disadvantages)	Response					
		Yes		No		NR	
		F	%	F	%	F	%
1	Number of users coming to the library has decreased	7	58.3	-	-	5	41.7
2	Users feel uncomfortable with new system	2	16.7	6	50.0	4	33.3
3	Users cannot use the system independently	1	8.3	6	50.0	5	41.7
4	Feel traditional systems are better for access due to complexity in use	-	-	7	58.3	5	41.7

It is observed from the table 9 that, more number (7; 58.3%) librarians stated 'Number of users coming to the library has decreased' and 2 (16.7%) librarians state 'Users feel uncomfortable with new system' are the disadvantages by implementing IT in the libraries.

Librarian's opinion about extent of library collection getting out-dated

Librarians of R&D institutions were asked about the extent of library collection getting out date and the answers are presented in the below table 10.

Table 10
Librarian's opinion about extent of library collection getting out-dated

Sl. No.	Opinions	Books		E-books		Journals		E-Journals		Reference Collections		E-reference Collections	
		f	%	f	%	f	%	f	%	f	%	f	%
1	Highly	-	-	-	-	-	-	1	8.3		-	-	-
2	Moderately	5	42	-	-	5	42	1	8.3	4	33.3	1	8.3
3	Slightly	7	58	12	100	7	58	10	83.3	8	66.7	11	91.7
	Total	12	100	12	100	12	100	12	100	12	100	12	100
		$\chi^2=.333$ $P=.564$		0		$\chi^2=.333$ $P=.564$		$\chi^2=13.500$ $P=.001$		$\chi^2=1.333$ $P=.248$		$\chi^2=8.333$ $P=.004$	

Above table shows, out of 12 librarians, 7 (58%) of the respondents state that the books are outdated slightly against 5 (42%) of them replied the books are outdated moderately and in case of E-books all the 12 (100%) librarians agree that the E-books are outdated slightly. The journals and E-journals are concerned, 58% of the respondents state that the print journals outdated slightly and remaining 5 librarians agree that they outdated moderately, where as in case of E-journals 10 (83.3%) of them state they get outdated slightly, and 1 (8.3%) each of them agree that the E-journals get outdated highly and moderately. Regarding reference and E-reference collections, 8 librarians (66.7%) replied that, the print reference collections get outdated slightly and rest of the 4 librarians (33.3%) agree they moderately get outdated. Against to the E-reference collection most of them i.e. 11(91.7%) respondents agree 'slightly' and one librarian opine that they are moderately outdated. The chi-square value shows significant differences between the frequencies of responses for the sources E-journals and for E-reference collections and for remaining sources the chi-square test did not show significant differences.

Opinion about “Electronic information resources become out-dated soon”

Opinion about 'Electronic information resources become out dated soon' is shown in table 11.

Table 11
Opinion about E- resources become out-dated soon

Sl. No.	Options	CD's/DVD's		Web Based Resources	
		Frequency	Percent	Frequency	Percent
1	Fully agree	2	16.7	1	8.3
2	Agree to a considerable extent	3	25	1	8.3
3	Agree to a little extent	7	58.3	10	83.3
	Total	12	100	12	100
		$\chi^2=3.500$ $P=.174$		$\chi^2=13.500$ $P=.001$	

It is seen from the table that, majority 7(58.3%) of librarians state 'agree to a little extent' about CD/DVD's become out dated soon, 3 (25%) librarians state 'agree to a considerable extent' and only 2 librarians 'fully agree' regarding the statement. Similarly for the question 'Web based resources become out dated soon' majority 10 (83.3%) of the librarians and one librarian each stated 'Agree to a little extent' and 'Fully agree' with the statement.

Problems faced while acquiring Print and E-resources

Table 12 shows the problems faced while acquiring print and E-resources by the librarians of research and development institutions.

Table 12
Problems Faced while acquiring Print and E-resources

Sl. No	Opinion	Frequency	Percent
1	Yes	4	33.3
2	No	8	66.7
	Total	12	100

It is seen from the table that majority 8(66.7%) of librarians say 'No' and only 4 (33.3%) librarians replied 'Yes' regarding the problems faced while acquiring print and E-resources.

Type of Problems Faced while acquiring Print and E-resources

To know the type of problem faced while acquiring print and E- resources the data is collected and it is shown in table 13.

Table 13
Type of Problems Faced while acquiring Print and E-resources

Sl. No.	Problems	Response			
		Yes		No	
		F	%	F	%
1	Delay in supply	3	25.0	9	75.0
2	Lack of Budget	3	25.0	9	75.0
3	Frequent changes in exchange rates	2	16.7	10	83.3
4	Price variation	2	16.7	10	83.3
5	Other problems	1	8.3	11	91.7

It is clear from the table that, there is no problem regarding 'delay in supply' and 'lack of budget' where majority 9(75%) of librarians said 'No'. Only 3 librarians responded 'Yes' representing 25 percent of the total. Regarding the problem 'Frequent changes in exchange rates' and 'Price variation', majority of librarians replied 'No' scoring 10 (83.3%) of the total, only 2 librarians each opined 'Yes' for these problems.

SUMMARY OF FINDINGS

When resource wise expenditure analysis was done, it was further, confirmed that expenditure on E-resources collection is increased over the years linearly but not print resources.

It is clear from the study that, majority (7; 58.3%) of the librarians agreed that the ICT has affected on collection development of the libraries. According to the librarians of research and development libraries 'share from the budget', 'regular budgeting provision', and 'operational costs' are the major areas in which the application of ICT has affected. More than 41% of the librarians stated the ICT has not affected on collection development because 'adequate funds are providing'.

To promote E-resources use the libraries are taking measures like providing links from home page (8; 66.7%), E-mail/Internet link (8 ; 66.7%) and providing orientation program for users (8; 58.3%) for maximum utilization of E-resources.

More than 83% of the librarians stated that they providing recent additions list by using information technology tools.

More than 91% of the librarians replied that, by implementing IT in libraries they find many advantages on users like, users satisfied with the automation of library activities, users feel comfortable in locating resources in the library and users have become more time conscious.

The opinion of the librarians about the extent of library collection getting outdated, nearly 33% to 42% of the respondents replied that, the print collection of books, journals and references collections out dated to a moderate extent. Where as in case of E-books, E-journals and E-reference collections majority of the respondents (58% to 91.7%) replied they get slightly outdated. The opinion about CD's/DVD's and web based resources become out dated soon, nearly 58 % to 83% of the respondents stated they agree to a little extent.

The opinion of the librarians towards the problems faced while acquiring library collections, majority of the librarians (8; 66.7%) replied they did not face problems against 4 (33.3%) of the librarians agree that they face problems in acquiring library collections.

SUGGESTIONS AND CONCLUSION

It is suggested that, the R & D libraries have to organize regular training program for library staff to keep up with ICT and E-resources development through on-the job training, organizing workshops/seminars on use of ICT and E-resources collection development. The R & D libraries should recommend more grants for development of E-resources to improve ICT infrastructure facilities in the library. The libraries selected under the study should try to get more consortium based E-resources to provide more information to the research community of the institutions.

Further this study summarizes the opinion of the librarians about the impact of E-resources on collection development. The opinion of the librarians show the E-resources have made very significant impact on collection development of R & D libraries covered under current study. Particularly, the positive impact has been observed in the areas of collection of print and E-resources, fund allotment and expenditure made towards print and E-resources.

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