APPLICATION OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) IN LIBRARIES OF RESEARCH AND DEVELOPMENT ORGANIZATIONS IN CHENNAI

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Abstract:

Data and correspondence innovation (ICT) is a top need in structure the new worldwide economy and build quick changes in the public arena. The successful utilization of ICT in research advancement libraries and data focuses has improved the ways and procedures of research data controlling. The primary target of Research and Development Institutions (R&D) libraries is to suitable procedure and recover the data and to make accessible the much-expected data to the exploration network. This examination uncover the execution and usage of Information Communication and Technology (ICT) strategies in R&D libraries in Chennai, and the dimension of the degree of ICT in these libraries and furthermore recommended the cutting edge systems to be actualized. Information can be partitioned in to two classes in particular express and implied. This paper prospects how ICT and related frameworks can keep up libraries yearn towards exceed expectations organization of ICT the board framework. The outcomes demonstrate that ICT could assume a vital job in the library framework, to be utilized extensively in the R&D libraries. Government and semi-government foundations benchmarks can improve radically through this ICT empowered libraries, with the goal that the specialists can utilize this examination data recovery through ICT devices. According to the reviewed administrators, this paper proposes that progressively current innovation can be utilized in the R&D libraries which can contribute increasingly fruitful ICT application use to the exploration network. This innovation has rolled out broad improvements in every single one, control and information. In that situation these days the library and data science is likewise requesting consequently in that activities. Indeed, even these days ICT capability and abilities required for the execution of the data and learning based library client society in the district of Chennai.

The ICT apparatuses have these days turned into an essential innovation in R&D libraries as it assumes an exceptionally huge job in meeting data prerequisites of the exploration networks and organization in general. This examination has distinguished the ICT structure and usage in R&D libraries crosswise over Chennai,

Keyword- *Information , Communication, Technology, R&D Libraries, Chennai*

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1.   Introduction

The Information and Communication Technologies (ICTs) have incredible job in every aspect of innovative work libraries. Clients are given as prime significance in the whole library exercises; particularly R&D library relies on the accessibility of right contact between the correct client and the correct book at the ideal time. The curators need to receive every single current instrument of ICT dependent on their client's desire and future needs.The accomplishment of good innovative work in R and D organizations to a great extent rely on the data sources accessible and their use in Libraries. The imperative improvements in the zone of ICT have made creative changes in every aspect of data. Libraries are stores of information and no special case to this is ICT improvement. The ICT apparatuses have these days turned into an essential innovation in R&D libraries as they assumes a huge job in meeting data necessities of the exploration networks and organization overall.

2.   Application of ICT in Research and Development Libraries

Data and correspondence innovation, which is prominently, alludes to as ICT in short have had extensive effect on all circles of human condition. The effect has been somewhat notable if there should arise an occurrence of administration exercises, for example, banking, wellbeing, transportation, training and libraries. As per Patel (2012) in library case, ICT has hugely changed the administration of databases or housekeeping tasks just as the manner in which administrations are conveyed. He further expressed that ICT has conveyed uncommon changes and remaking to library and data benefits, client's administrations. In another measurement, Islam and Islam (2006), thought about ICT and Information Technology (IT) as a parallel idea that indicates a solitary unit of innovation as well as a gather of advances like correspondence hardware, information handling gear, semi-conductors, buyer gadgets and so on .The rise of ICT has acquired huge changes library and data science. Utilization of data innovation (IT) to library and data work has transformed the customary idea of libraries from a storage facility' of books to a 'scholarly data focus' suggesting the idea of computerized library. In no uncertainty, it has opened up another part in library correspondence and encouraged worldwide access to data crossing the land confinements.

With the creation of ICT, libraries presently utilize different kinds of advances to help the administration been rendered. Consistently, new innovative advance affects the manner in which data is dealt with in libraries and data focuses. ICT has affected on each territory of library science particularly as library database improvement systems, library structure and consortium. ICT present a chance to offer some benefit added data administrations and access to a wide assortment of computerized based data assets to their customers.

In their investigation on review of the utilization and use of data and correspondence innovation in innovative work libraries in Tamil Nadu, Murugesan and Balasubramani (2011), recommended that the innovative work organizations should offer need to consortia based membership and lift the assets and enlistment ofinformation innovation prepared staff for better ICT based administrations and item to their library clients.

Krubu and Osawaru (2011) had in their own investigation attempted to find out the effect of ICT on Nigerian scholarly libraries. The specialist landed at an end that ICT has satisfy alters guarantee in scholastic libraries, that there is striking ascent in the utilization of ICT. This has prompted the speed on library activities. ICT has likewise help to offspring the issue of data blast in this data period. Quadri (2012) likewise opined that today libraries are moving their job from the caretaker of customary data assets to the supplier

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of administration arranged computerized data assets. Far reaching utilization of PCs, expanded dependence on PC systems, quick development of the web and blast in the quality and amount of data has constrained libraries to receive new methods and strategies for the capacity, recovery and scattering of data.

3.   Objectives of the study

The principle goal of the examination is to investigate the utilization and use of ICT in Research and Development libraries of Chennai. So as to satisfy this point, the accompanying explicit targets were identified.

❖ To know the different zones of utilizations of data correspondence innovations in Research and improvement libraries.
❖ To comprehend the utilization of current data correspondence innovations in Research and improvement libraries.
❖ Identify the requirements in gaining data and correspondence innovation (ICT) aptitudes by library experts working in Research and Development Libraries in Chennai.
❖ To survey the ebb and flow best in class ICT Infrastructure and physical offices inside the innovative work libraries in Chennai.

4. Nature of libraries in R&D institutions

Major research area wise nature of libraries in R&D institutions of Chennai -Table -1

From the above table, it has been construed that in designing, 56.25% of the libraries have a place with focal government division though 31.25% have a place with private segment. In medication, 64.28 % of the libraries from private areas and 21.42% of the libraries from state government segments while 14.28% of the libraries from focal government divisions. In science, 87.5% of the libraries have a place with focal government division while 12.5% of the libraries have a place with private area. In sociology and financial matters 71.42% of the libraries have a place with private segment and both 14.28% of the libraries have a place with state and focal governments segment. In horticulture, 66.66% of the libraries have a place with private segment while 33.33% of the libraries have a place with state government part.

Distribution of librarians according to gender and research organizations

Table- 2

		Research organization										
		Agriculture		Engineering		Medicine		Science		Social Science and Economics		Total	
		n	%	n	%	n	%	n	%	n	%	n	%
Gender	Female	0	0.0%	2	4.2%	7	14.6%	2	4.2%	1	2.1%	12	25.0%
	Male	3	6.3%	14	29.2%	7	14.6%	6	12.5%	6	12.5%	36	75.0%
	Total	3	6.3%	16	33.3%	14	29.2%	8	16.7%	7	14.6%	48	100.0%

$\chi2$=7.429; DF=4; P-value=0.115 (NS)

Table 4.3 gives sex astute dispersion of bookkeepers in various research associations as incorporated into the examination. Out of all out 48 bookkeepers, 36 (75%) were guys and 12 (25%) were females. The extent of bookkeepers from Engineering discipline was most extreme for example 16 (33.3%), trailed by 14 (29.2%) in Medicine, 8 (16.7%) in Science, 7 (14.6%) in Social Science and Economics and 3 (6.3%) in

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Agriculture. Out of absolute 48 people, the extent of guys in Engineering was most noteworthy (29.2%), trailed by Medicine with both male and female extents of 14.6% each. In Science and Social Science discipline, the extent of guys was equivalent for example 12.5%. By and large, the male extent was higher crosswise over controls; be that as it may, the distinction in the sexual orientation astute dispersion crosswise over orders was measurably irrelevant as demonstrated by P-estimation of 0.115 (χ2=7.429).

Descriptive statistics for age of librarians according to nature of institutes

Table -3

	Nature of institute								
	Central Govt			Private			State Govt		
	n	Mean	SD	n	Mean	SD	n	Mean	SD
Age in years	19	46	7	22	40	12	7	44	4

P-value: 0.0879 using one-way ANOVA

The descriptive statistics like mean and standard deviation of age of librarians according to nature of institutes is given in Table 4.6. The highest mean age was observed in Central government (46 ± 7 years), followed by State government (44 ± 4 years), followed by 40 ± 12 years in Private sector. The difference in the means was statistically insignificant with P-value of 0.0879 as obtained using one-way ANOVA.

Gender wise distribution of respondents in each specialized area

Table -4

Gender	Area of Specialization										Total
	Agriculture		Engineering		Medicine		Science		Social Science		
	N	%	N	%	N	%	N	%	N	%	N (%)
Male	52	52.52	94	66.67	58	51.32	38	70.37	44	65.67	286 (60.34)
Female	47	47.48	47	33.33	55	48.68	16	29.63	23	34.33	188 (39.66)
Total	99	100	141	100	113	100	54	100	67	100	474 (100)

Chi-square: 11.786; P-value: 0.019

Table 3 provides the distribution of users according to gender in each specialized area who participated in the study. The gender distribution was statistically significantly different in the areas as indicated by P-value of 0.019. In the science stream, the female proportion was significantly smaller as compared to other streams.

Rating of dimension towards ICT according to Gender

Table-5

S.No	Dimensions	Chi-Square Value	df	Sig.
1.	Digital Library	10.171	3	0.017*
2.	Open access journals	6.217	4	0.184
3.	Library consortium	13.182	3	0.004*
4.	Library networking	11.713	4	0.020*
5.	Institutional repositories	48.263	4	0.000*
6.	e-dissertations	37.614	4	0.000*
7.	Databases	2.853	3	0.415
8.	RFID based library Functions	10.754	4	0.029*
9.	Android based apps for using library functions through mobile phones	3.324	3	0.344

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10.	Web 2.0 tools	7.433	4	0.115
11.	Barcode technology	26.065	4	0.000*
12.	Smart card technology	1.808	4	0.771

significant at 0.05 % level

Table 4.61 depicts among the 12 subordinate elements identifying with dimension of ICT exposures measurement, the components, for example, Digital Library, Library consortium , Library organizing , Institutional stores , e-papers, RFID based library Functions and Barcode innovation demonstrates huge association with sexual orientation of the respondents, since their importance esteem is not as much as 'P' esteem (0.05%). Consequently the invalid theory is rejected. In the above cases, the above Hypothesis is acknowledged. The other 5 factors are, for example, Open access diaries, Databases, Android based applications for utilizing library works through cell phones, Web 2.0 devices and Smart card innovation are don't demonstrate a critical connection between the sex of the respondents. Thus the invalid theory is acknowledged, which implies that distinctive sex gathering of the respondents are overall does not have a similar dimension of feeling on dimension of ICT exposures factors in specific viewpoints.

Rating of attitude of user towards ICT according to qualification of the respondents

Table – 6

User's Attitude		Sum of Squares	df	Mean Square	F	Sig.
Library should automate all its library housekeeping functions	Between Groups	6.987	4	2.329	3.398	.018*
	Within Groups	322.112	470	.685		
	Total	329.099	474			
Provide Web- OPAC access to library users	Between Groups	20.282	4	6.761	9.873	.000*
	Within Groups	321.830	470	.685		
	Total	342.112	474			
Provide facilities to access available journals (hard copy) in digital form	Between Groups	32.802	4	10.934	10.846	.000*
	Within Groups	473.824	470	1.008		
	Total	506.627	474			
Provide document delivery services to users	Between Groups	4.020	4	1.340	1.270	.284
	Within Groups	495.769	470	1.055		
	Total	499.789	474			
Provide electronic bulletin board service to users	Between Groups	3.661	4	1.220	1.091	.353
	Within Groups	525.900	470	1.119		
	Total	529.561	474			
Library staff should learn how to use online databases / offline databases themselves for guiding the users	Between Groups	2.177	4	.726	.722	.539
	Within Groups	472.348	470	1.005		
	Total	474.525	474			
Digitization of library materials in the library for sharing and improving usage	Between Groups	24.038	4	8.013	6.852	.000*

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	Within Groups	549.658	470	1.169		
	Total	573.696	474			
Campus networking required for connecting all the department to library	Between Groups	1.606	4	.535	.551	.647
	Within Groups	456.328	470	.971		
	Total	457.935	474			
Provide appropriate linkages for resources available in the OPAC to access through LAN	Between Groups	12.201	4	4.067	2.965	.032*
	Within Groups	644.753	470	1.372		
	Total	656.954	474			
Library should have high speed internet connectivity	Between Groups	2.182	4	.727	.764	.514
	Within Groups	447.177	470	.951		
	Total	449.359	474			
Enhance the skills of ICT tools and techniques to the library staff members	Between Groups	7.237	4	2.412	2.372	.070
	Within Groups	477.919	470	1.017		
	Total	485.156	474			
Training should be provided to the end users for using ICT tools	Between Groups	8.425	4	2.808	2.913	.034*
	Within Groups	453.162	470	.964		
	Total	461.586	474			
Wifi-facilities should be available in the campus	Between Groups	15.824	4	5.275	5.247	.001*
	Within Groups	472.455	470	1.005		
	Total	488.278	474			
Remote access facilities available for research users	Between Groups	8.425	4	2.808	2.913	.034*
	Within Groups	453.162	470	.964		
	Total	461.586	474			

Table 5 depicts that to break down the components identifying with the disposition of client towards utilization of ICT execution measurement, out of 14 factors 8 factors, for example, Library robotization, Web-OPAC get to offices to library clients, offices to get to accessible diaries in advanced structure, Digitization of materials in the library for sharing and improving use, Provide fitting linkages for assets accessible in the OPAC to access through LAN, Training ought to be given to the end clients to utilizing ICT instruments, Wifi-offices ought to be made accessible in the grounds, Remote access offices accessible for research clients demonstrate a noteworthy relationship with the capability of the respondents, since the determined esteem is not exactly the 'P' esteem (0.05%)., the invalid speculation is rejected. Henceforth the speculation is acknowledged. The other 6 factors, for example, arrangement of rapid web availability, improve the abilities of ICT instruments and strategies to the library staff individuals, give report conveyance administrations to clients, electronic notice board administration to clients, Library staff ought to figure out how to utilize online databases/disconnected databases themselves for managing the clients, grounds organizing required for interfacing all the division to library are don't demonstrate a noteworthy connection between the capability of the respondents.

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Findings

There are 60 R&D associations in and around Chennai. Out of 60, just 51 R&D associations were built up library. Out of 51 foundations, just 48 custodians were reacted. Larger part (33.3%) of the innovative work libraries are has a place with designing order, pursued (29.16%) by medication discipline libraries. Almost 75% curators were male. Among the 25% of female administrators, 14.6% are working in therapeutic R and D associations. Lion's share of the (45.83%) of the innovative work libraries is private, trailed by focal government (39.58%) innovative work libraries. Most (56.3%) of the library experts are post graduate. 31.3% of the experts have obtained PhD in the wake of entering the library calling. Larger part of the PhD holders are working in focal government organization libraries. Lion's share (27.16%) of the administrators are having PGDCA capability alongside LIS. As respects E-diaries, the high need (22.9%) is seen in building discipline. Print books are the most elevated need (16.7%) with drug libraries. Out of the 474 respondents, 286 (60.3%) were male and 188 (39.7%) were female. About 152 (32.1%) were UG capability; 220 (46.4%) PG and 102 (21.5%) were Ph.D. holders. Among the 474 respondents, 291(61.4%) were Scientist; 39 (8.2%) were specialized; 14 (3.0%) were understudies and 130 (27.4%) were different experts

Conclusion

The ascent of ICT has repositioned the boondocks of Library assets, process, and services just as desires for the clients. Furthermore, the greater part of the Libraries have still not actualized the Open access archive of their own for example the pattern is rapidly moving toward the creating nations. Use of ICT in libraries guarantees library benefits nonstop, remote access to high – request or limited materials for numerous simultaneous clients. More endeavors by the custodians are expected to teach clients to adequately utilize the e-Resources to their organizations. Furthermore, according to the exploration theory its demonstrate that the R and D bookkeepers have great involvement in utilizing ICT devices and abilities to apply in their libraries to give more and new ICT based administrations.

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