Use and Impact of ICT Applications on Knowledge Management Practices by Library Professionals in State University Libraries of North India

Baljinder Kaur[1]; Pankaj Kumar[2]

Assistant Professor, Department of Library and Information Science,
Punjabi University. Patiala, Punjab[1]; Librarian, Shaheed Kanshi Ram Memorial College,
Bhagoo Majra, Kharar, SAS Nagar, Punjab, India[2]

baljinderpup@gmail.com

ABSTRACT

This research paper aims to explore the use and impact of ICT applications on knowledge management (KM) practices by library professionals in the state university libraries of North Indian. A survey method was employed to collect the data. The major findings of the study have revealed that the majority of library professionals have implemented various ICT-based applications, including Intranet and Internet, such as knowledge portals, digital repositories, instant messaging, groupware, and web-based training, for capturing, organizing, and sharing knowledge. Furthermore, the study explored that ICT has a high impact on 'online reference services, such as creating subject portals/interactive online services' related to the influence factor of KM practices in the university libraries of North India. The use of ICT in KM practices in State University libraries of North India is still not fully implemented. So, library professionals should develop knowledge and skills among their colleagues to give the best impression in the areas of ICTs. The research findings are a valuable contribution to help practitioners and strategists for developing strategies, policies and to bridge the gap and provide some recommendations for library professionals engaged in KM activities to improve the use of ICTs in the state university libraries of Northern India..

KEYWORDS: ICT, Knowledge Management Practices, Library Professionals, University Libraries.

1. INTRODUCTION

In the age of knowledge economy; for the vocational training and lifelong education of librarians; libraries are very essential. This enhances their knowledge level and ability to acquire knowledge. The key purpose of ICT applications for implementing knowledge management (KM) in the university libraries is to ensure the holistic improvement of the capacity of library staff in the relationship between libraries and library users; it promotes the innovation of knowledge, strengthens the knowledge networking and internetworking and accelerates the flow of

knowledge. The atmosphere of each library attracts its clients. The use of ICTs and innovation gives organized libraries an up-to-date outlook. Contemporary libraries are concentrated on the global concept. Management of knowledge in the university libraries is a very important issue because the information has undergone rapid change due to new emerging ICT trends.

Nowadays the impact of ICT and using its applications is seen in managing library resources and services by library professionals like doing library automation, digitalization, making subject-based portals, an institutional repository, digital library services, consortia-based services, using QR Code, EM and RFID implementation, open access, outreach programs, reference management, open science, Virtual/Digital Reference Services, FAQ^s /Ask the Librarian, content management, CAS/SDI services, profiling system, discovery services, Web 2.0 and 3.0-based services, use of social media, green library concept, to help in ranking/accreditation, remote login, cloud computing, mobile-based library services, use of expert systems and robotics, internet of things, augmented reality tools and virtual reality tools, semantics, artificial intelligence and machine learning and how to be a smart librarian by smart involvement by using of ICT and helps to avoid replication of work, etc are used by library professionals.

Trends in managing library services, on the other hand, are changing as a result of ICT, changing patron needs, changing information environments, and Web/Google is attempting to replace reference librarians. Disruptive technologies are causing a shift from print to digital, as well as changes in forms, formats, and delivery systems, which is unavoidable. Due to ICT, there is a transformation in the needs of library patrons. Therefore, there is a change in the resources, services and products of the university libraries. Every educational institution is now trying to compete in the national and international rankings and with the changed roles and services, the libraries and librarians are playing a key role. University libraries and librarians face unparalleled challenges in this contemporary era, like changing user needs, multiple formats of information and the changing role of library professionals towards KM practices. Library professionals are not dealing only with documents or physical papers, but new emerging ICT-based information and KM practices are also used to develop an ecosystem approach to knowledge management regarding capturing, storing, disseminating and synthesizing knowledge in the university libraries. University libraries are now called the knowledge library or store house of knowledge and have the instruments of knowledge to provide this knowledge management. In the present academic libraries, the content of KM deals with the knowledge innovation management, dissemination management, applications management, housekeeping operations and human resource management.

2. NEED FOR THE STUDY

There is a paradigm shift from conventional librarianship to the present-day contemporary librarianship. The role of academic libraries has been changing from the storage of knowledge to managing knowledge and be creators of knowledge. Library professionals are commonly involved in the process of acquisition, processing, organizing and maintaining of documents in a library and providing various types of information services to the users, these services are based on the collection of documents with their experience. Lee (2000) stated that the intellectual assets of any library are the knowledge and experiences of its staff, which should be valued and shared. The role of the librarians has been changing from being information officers to knowledge managers or knowledge officers, which needs continuous updating of skills and knowledge to stay in the changing library

environment. It's a move from librarianship to cyberianship (Jain, 2009). Need for undertaking this study is to find how library professionals using ICT's in the implementation of KM in the university libraries; whether all library professionals are implementing same KM techniques/methods or not?; and to explore what techniques/methods library professionals of university libraries are adopting for implementing KM practices to capture, organize and share knowledge. For this study, literature on ICT application on knowledge management practices were consulted. A few relevant literature pieces have been thoroughly examined to understand the concept.

3. REVIEW OF LITERATURE

Nowadays, ICT's has become essential component for the management of both that is information and knowledge; furthermore automated system can support library professional's endeavor towards greater implementation of knowledge management in the university libraries (Raja *et al.*, 2009). According to Bhusare (2013) the use of ICT in enhancing KM processes can be valuable for higher education in a positive (enhancing and enabling) and negative (blocking and frustrating) ways. Similarly, Hendriks (2001) conferring, that knowledge is not organizationally relevant as such, but is relevant when and in the way an organization recognizes its relevance or mentally constructs it. The organization's vision, mission and competitive strategy, when organization's vision, mission and competitive strategy, are translated into KM policy should provide the criteria for assessing the organizational relevance of knowledge. On the other side Thanuskodi (2014) stated KM is just another fad like Total Quality management, another type of the respondents stated KM is a is a new term for what information professionals were already doing, 16.66 percent respondents stated that library and information management is just another aspect of KM. Only 10 percent of respondents stated that library professionals have important roles to play in KM programs. Stephen and Thanuskodi (2015) notified the importance of KM in higher education and indicate various ICT tools and networks like knowledge portals, E-document management system, Academic publishing, DBMS, Data warehouse. These things are very usefully in individual person or in an organization for KM processing.

3.1 ICT Applications for Knowledge Management

In the present period, knowledge has become a major source and the present-day academic libraries have become more attractive than the conventional libraries. In a study, Roknuzzaman and Umemoto (2009) found that type of knowledge and the level of understanding about the concept of KM among the library professionals were diverse. But most of the library professionals have gathered a shallow impression of KM for its consolidation into library practice that manages only explicit knowledge. Moreover, present research has discovered some reasons to respond to KM. e.g. the increase of the worth of knowledge in the knowledge economy, the function of information technologies and the prospects to advance library practices.

The traditional function of academic libraries is to collect, process, spread, store and use the information to provide services to the scholarly community. While the modern academic libraries uses ICT technologies (Expert Systems, 2020) and motivate the users to save time by providing content in digital layouts/formats (Saha, 2015). In this milieu, Information Technology (IT) serves as a powerful enabler and provides effective and efficient tools for all facets of knowledge management including capturing, sharing, and applying knowledge. Jain (2009) stated that ICT change, removal of hesitation to accept change, organizational limitations, communication networks and adoption of these challenges have significant role to gain success over the above mentioned barriers among the library

professionals in the contemporary era. Regarding the new trends in libraries services, Rajput (2016) reported that integrated library management software (ILMS), barcode and RFID technologies, e-resources and databases, knowledge repositories, digitization and preservation of the library documents are for the best use of library's assets.

3.2 Impact of ICT on Knowledge Management Practices

By improving information accessibility, storage, and distribution, ICT has a substantial impact on knowledge management (KM), which in turn improves organisational effectiveness and decision-making. ICT solutions make it simpler to manage and capitalise on organisational knowledge assets by facilitating the development, sharing, repurposing, and capture of knowledge. Ghani (2009) revealed that wikis are an accurate representation of such procedures. As a tool for knowledge management they look more like a cross between the groupware and content management system. He has suggested that by using these technologies, the practice of knowledge sharing and communication could be effectively performed. Whereas, Rao, (2011) recommended guiding principles for the future libraries that were to be; identify what type of knowledge is demanded by the users, analyse how we can add value to this knowledge, setting up actions to gain the above and review the usage of the knowledge by the users. Likewise Chaubey (2015) study explored that expertise and capabilities such as ICT abilities, management & communication skills; and the current trends of KM like, Semantic Web, Enterprises 2.0, Institution repositories, digitization of library material and web 2.0 and social media; wikis, blogs, twitters etc. similarly, Husain and Nazim (2015) stressed on utilization of modern ICT based tools of knowledge creation and sharing, like blogs, RSS feeds, social bookmarking, web discovery tools, wikis and social networking appears infrequent in the academic libraries of India. Rao (2016) discovered that the only 34 percent of the university libraries in India are implemented with KM in their libraries. Internet, intranet, help desk technologies and document management systems are the preferred KM tools in the decreasing order of importance in the academic institutions. His study also found that communication and messaging was observed to be the most important purpose of use of KM tools in the universities or the university libraries in India. Study conducted by Tsekea and Chigwada (2020) revealed that social media tools such Facebook, WhatsApp, Youtube and twitter are the main strategies and effective tool to communicate with the users.

The study also has laid stress on the use of digital libraries and the government websites instead of the unauthentic sources and stressed on the fact that the institutions should invest in ICT infrastructure for the libraries and continuously assist the librarians in offering their services. Kumar (2010) suggested developing their resources, access and share strategies from the printed media through the digital and electronic services. Libraries, constrained by resources, infrastructure, staff and space, must closely evaluate their users' needs and attempt to establish cooperative acquisition strategies to satisfy the users' needs. He has recommended that the libraries can use the existing management system and technologies, with minimal budget and human resources, to incorporate KM, Bottom-up or top-down instead. KM would help to improve the operating productivity of the libraries in an initiative and later to satisfy our clientele's ever growing needs. On the other side, Nazim and Mukherjee (2011) have exposed the strength and weakness of knowledge management practices. It meant that LIS professionals recognized that methodologies of KM such as training programme & profession oriented education: use of ICT for sharing knowledge and community of practices were the essential tools for the management of knowledge in information centers and libraries. In their study they explored that the major constraints to perform the KM activities in

educational libraries were attitude of top level management, lack of motivational factors like rewards & incentives, cultural barriers such as lack of knowledge sharing culture. Whereas Husain and Nazim (2015) study revealed that lack of ICT training to LIS professionals, illiteracy about potential benefits of ICT, lack of ICT's infrastructure and low level of ICT's competencies among library users were recognized as the major barriers of ICT applications in the academic libraries of India. Similarly, Mohiuddin, Al Azadb and Suc (2021) analysed the knowledge value chain of a center for continuing education which offering skill development related short courses and training for adult learners. Moreover, examines that how could be use ICTs for increasing the efficiency for effective knowledge sharing strategies among organizations. The outcomes of their study shows that encouraging administrative culture and knowledge management system (KMS), both are essential to implement a knowledge sharing strategy efficiently. Planned, organized knowledge management improves competition survival.

4. OBJECTIVES OF THE STUDY

To explore all the foremost issues involved in the knowledge management practices, the most important research question was "How are the state university libraries of North India managing the knowledge in their libraries? What are the practices followed by them for capturing, storing, sharing the knowledge in ICT environment; and what skills are being used by library Professionals". Managing knowledge is different from managing information; there are a lot of transferable skills involved in the management of both (Webster 2007, p.77). The aim of study is to examine the use and impact of ICTs for the knowledge management, how they see it and its applications in the process and practices of the university libraries in North India. Objective for this study has been taken as:

- To examine the use of ICT's applications on knowledge management practices by library professionals in state university libraries in northern India;
- To explore impact of ICT applications on knowledge management practices by library professionals in state university libraries in northern India.

5. HYPOTHESIS OF THE STUDY

Many researchers have explored the link between ICT Applications and its impact on KM (Jain & Alam, 2022; Burr et al., 2019; Mostafa et al., 2018; Massaro, et al., 2016; Goel et al., 2014; Stanisław, 2011). However, these studies have been conducted on different academic scope and domains. This study attempts to explore this link for State Universities of North India by conducting a structured questionnaire survey of library professionals. Discussions with the library practitioners have revealed that extensive efforts are needed to harvest ICT Application for greater impact on the KM. Finally, after exploratory factory analysis a confirmatory factor analysis is applied with sample size of 183 respondents to test the following hypothesis:

- Hypothesis H_01: There is no significant difference in practices for the capturing and sharing knowledge by the library professionals.
- Hypothesis H_02: ICT applications have no significant impact on knowledge management practices by the library professionals.

6. RESEARCH METHODOLOGY AND DATA ANALYSIS

In this research a systematized research process is applied to define the research problem, literature survey, development of research hypothesis, data collection, date analysis, and interpretation of results with research consonance. This has been explained in the following sections:

6.1 Sample and Sample size

A survey of state universities libraries in the region North India was conducted to address the objectives taken for study. A survey method is defined by Powell and Connaway (2004) as a research strategy that encompasses any measurement procedures that involve asking questions from the respondents concerning the current status of subject of the study. Survey method helps to collect primary data for describing a population too large to observe directly. There are total 31 state universities (having all disciplines) in the Northern India region, out of which 11 universities (which was newly established and not having enough ICT equipment) were excluded from the present study.

For this study only 17 state university libraries (Established or incorporated by a provincial Act or by a state Act) and 03 libraries from union territories (having all disciplines) in North India, Thus, the study was limited to the 20 state universities of the northern region India. These 20 university libraries were chosen on the basis of the collections, infrastructure, and services using stratified sampling methods in order to investigate the perceptions of the LIS professionals on KM and its applications in the academic libraries.

The library professionals of these select universities library were respondents and stratified random sampling technique was used to identify the university's libraries with the following criteria as: All those state universities having all disciplines existed in the region of Northern India.

Table 1. Library Professionals Working in State University Libraries of North India

S. N	State University	Librarian	Deputy Librarians	Assistant librarians	Library Assistants	Professional Assistants	Library Restorers	Total
1	Jammu & Kashmir	4	0	11	19	8	3	45
2	Punjab	2	2	9	20	10	18	61
3	Haryana	2	2	7	17	6	4	38
4	Himachal Pradesh	1	0	6	12	5	1	25
5	Chandigarh	0	2	9	25	0	2	38
6	Delhi	2	4	2	7	2	0	17
7	Uttarakhand	1	2	3	4	4	1	15
8	Uttar Pradesh	1	4	16	18	0	2	41
Total		13	16	63	122	35	31	280

Table 1 shows the total population of library professionals from state university libraries of north India is 280. Out of 280, librarians are 13, deputy librarians are 16, assistant librarians are 63, library assistants are 122, professional assistants are 35 and library restorers are 31. A total of 280 library professionals working in 20 State Universities

were approached for the collection of data. In order to obtain a large and representative sample of library professionals, stratified random sampling is being used. The recommended sample size was calculated from the population of 280 at margin error of 5%, confidence level 95%, and the sample proportion was set at 50% (*Raosoft's Sample Size Calculator (SSC) and Solvin's Formula Used to Derive the Sample Size*). These results have shown a sample of 164.7 respondents (Raosoft's SSC, 2018; & Tejada and Punzalan, 2012).

Well-structured questionnaire that included closed-ended and open ended questions was used as the data collection instrument to explore the ICT applications implemented to acquire, organize and share knowledge from the viewpoint of the library professionals. The questionnaire tool was used with five point rating options. The data for the present study was collected by personally visiting all the libraries, included in the study. Information regarding systems and services was collected through the websites and discussions with the library professional. But despite every effort, the data from some of the library professionals could not be obtained due to their unwillingness to participate in the study or their non-availability during the visits. There were 280 library professionals working in the select state university libraries of Northern India. Out of the 280 respondents, 183 participated in the study and majority of the respondents were working in the capacity of library assistants i.e. 86 (47%), followed by assistant librarians 45 (24.6%), professional assistants 25 (13.7%), library restorers 13 (7.1%), deputy librarians 11 (6%) and finally the least number of respondents were Librarians i.e. 3 (1.6%). This strata satisfies the requirements of stratified sampling technique.

The study did suffer from some limitations which may serve as opportunities to conduct further research on the topic. This study covered only 20 select State/UT universities libraries from North India. The sample population was the library professionals working in the state universities libraries. Still a lot of aspects were left unattended. Hence, the results acquired cannot be generalized with confidence to other institutions. Although the responses rate for the current study was adequate, yet the composition of the sample could have introduced elements of bias in the research findings.

6.2 Statistical Techniques Used

The collected data from the library professionals of the select state university libraries of Northern India through questionnaires, have been organized, analyzed, tabulated and interpreted by using simple percentages, Mean, Standard Deviation, Correlation, etc. by using SPSS(version-21). Significance level has been checked with p-value (probability value) and ANOVA (Analysis of Variance), to compare the relation between ICT based applications on KM practices and the LIS professionals at various levels in the light of research objectives.

7. RESULTS AND DISCUSSIONS

In this section, attempt was made to study first objective use of ICT's applications on knowledge management practices in the university libraries by the library professionals; whether all library professionals are implementing same KM techniques/methods or not?; and to explore what techniques/methods library professionals of university libraries are adopting for implementing KM practices to capture, organize and to share knowledge. The analysis of variance of the ICT-based applications in KM practices has been shown:

Table 2. Use of ICT Implemented to Capture, Organize and Share Knowledge

ICT based application	Mean	Std. Deviation	Corrected Item-Total Correlation	Squared Multiple Correlation
Scale statistics and reliability for use of ICT are implemented to capture, organize and share knowledge				
Search Engines	4.13	0.914	0.359	0.522
Intranet – Internet	4.43	0.682	0.289	0.329
Knowledge Portals/ Digital Repositories	3.60	0.983	0.564	0.537
Online Chat & Instant Messaging	3.76	0.993	0.575	0.475
Web based training/ E-learning	3.39	1.073	0.684	0.554
Expert System	2.97	1.311	0.724	0.710
Content Management System	3.05	1.164	0.690	0.591
Groupware	2.73	1.259	0.720	0.657
Teleconferencing/Webinars	3.66	1.136	0.277	0.405
Scale Statistics (Mean=31.72; Variance=40.270, No. of items=9, No of cases=183; Cronbach's Alpha=0 .836) Correlation (Minimum= -0.154; Max= 0.721; Range= 0.876)				

Table 2 has shown the scale statistics of the technologies that have been implemented to capture, organize and share knowledge. The mean values shown in Table 1 of Search Engines was 4.13, similarly for Intranet–Internet have been rated was 4.43, Knowledge portals/ Digital repositories have been rated as 3.60, Online Chat & Instant Messaging as 3.76, for Web based training/ E-learning it was 3.39, for Expert System it was 2.97, for Content management system it was 3.05, Groupware that was 2.73 and Teleconferencing/Webinars it happened to be 3.66. These were the scale statistics of the technologies are implemented to capture, organize and share knowledge in the university libraries of the North India. The results have indicated that maximum mean value attained by Intranet–Internet was 4.43 and minimum mean value for Groupware was 2.73.

Table 2 has indicated that technologies have been implemented in the university libraries, these have scale statistics (Mean=31.72; Variance=40.270, No. of items=9, No of cases=183; Cronbach's Alpha=0 .836); Inter-Item Correlation (Minimum= -0.154; Max= 0.721; Range= 0.876). If all items have been loaded at 5 the total score is 45. A mean of 31.72 explains 31.72/45=70.48% construct was explained. Also, the Cronbach Alpha=0.859 and item-total correlation explained valid construct reliability (Nunnally and Bernstein, 1994). These statistical constructs support the reliability and validity of the received data (Hair *et al.*, 2010). This section has helped to explore the next research objective discussed as to study the impact of ICT based applications on knowledge management practices.

In this section, attempt was second objective: to find the impact of ICT based applications on knowledge management practices, whether all the library professionals understand the same impact or not. This section will help to measure the impact of ICT application on knowledge management vis a vis with the emergence of ICTs, it initiating new information services, digital and online services, knowledge portals and is reducing processing time by avoiding duplication of work etc. Table 2 has shown this:

Table2: Use of ICT Applications in Knowledge Management Practices

ICT Based Applications Used in Libraries		Sum of Squares	df	Mean Square	F	Significant
Information Services	Between Groups	30.223	5	6.045	7.875	0.001
	Within Groups	135.854	177	0.768		
	Total	166.077	182			
Digital/Virtual Libraries	Between Groups	35.443	5	7.089	15.162	0.001
	Within Groups	82.753	177	0.468		
	Total	118.197	182			
Online Services	Between Groups	37.756	5	7.551	14.541	0.001
	Within Groups	91.916	177	0.519		
	Total	129.672	182			
Knowledge Portals/Institutional Repositories	Between Groups	30.755	5	6.151	8.152	0.001
	Within Groups	133.551	177	0.755		
	Total	164.306	182			
Reducing Processing Time	Between Groups	36.154	5	7.231	16.770	0.001
	Within Groups	76.316	177	0.431		
	Total	112.470	182			
*Significant at 0.05						

The ANOVA results for Initiating new information services such as creating subject based portals, interactive online services have been shown in Table 3 that shows the values of the F-test for the use of ICT-based applications on knowledge management. The values of the F-test for Information services are $F_{(5, 177)} = 7.875$, p=0.001. Here, the p-value is less than 0.05 and it shows that there is a significant difference among the different categories of library

professionals regarding the use of ICT-based applications 'Initiating new information services' in the university libraries.

The results for the 'Introducing digital/Virtual libraries' have been shown in Table 3, it has shown the values of the F-test to be F (5, 177) =15.162, p=0.001. Here, the p-value is less than 0.05 and it shows that there is a significant difference among the library professionals regarding the use of ICT-based applications 'Introducing Digital/Hybrid Libraries' in the university libraries. The outcome for Introducing online services reference services such as email alert, e-learning, answer to 'Frequently Asked Questions (FAQˢ)' have been shown in Table 3 and these show the values of the F-test to be F (5, 177) =14.541, p=0.001. Here, the p-value is less than 0.05 and it shows that there is a significant difference among the library professionals regarding the use of ICT-based applications 'Introducing Online Reference Services' in the university libraries.

The results for the 'Initiating knowledge portals/Institutional repositories' have been shown in the Table 3, these show the values of the F-test to be F (5, 177) =8.152, p=0.001. Here, the p-value is less than 0.05 and this shows that there is a significant difference among the library professionals regarding the use of ICT-based applications 'Initiating knowledge portals/Institutional repositories' in the university libraries.

The outcome for 'Reducing processing time by avoiding duplication of work' have been shown in Table 3 and it shows the values of the F-test to be F (5, 177) =16.770, p=0.001. Here, the p-value is less than 0.05 and it shows that there is a significant difference among the LIS professionals regarding the use of ICT-Based Applications 'Reducing processing time' in the university libraries. It has been found from the results of ANOVA that there is a significant difference among the different categories of library professionals regarding the use of ICT-based applications on the knowledge management.

Hypothesis H0[1]: There is no significant difference in use of ICT Applications in Knowledge Management Practices for the capturing, sharing and storing knowledge by the library professionals. For this hypothesis, the ANOVA values of p is less than 0.05 it has shown that there is a significant difference regarding the KM aspects of the practices to acquire KM in the libraries **,** similarly, ANOVA values for KM practices applied to store knowledge has shown that p value is less than 0.05. It has indicated that there is a significant difference regarding the KM practices applied to store knowledge and ANOVA values for share knowledge. Here, p value is less than 0.05; it shows that there is a significant difference regarding the KM used to share knowledge in the libraries of the universities among the library professionals. Hence H0[1] is accepted for all variables and it has been found that there is a significant difference in the practices for the capturing, sharing and storing knowledge by library professionals in the university libraries

7.1 Impact of ICT Applications on Knowledge Management Practices

In this section, attempt was second objective: To find the impact of ICT applications on knowledge management practices by library professionals, whether all the library professionals understand the same impact or not. This section will help to measure the impact of ICT application on knowledge management vis a vis with the emergence

of ICTs, it initiating new information services, digital and online services, knowledge portals and is reducing processing time by avoiding duplication of work etc. Figures 1 have shown this:
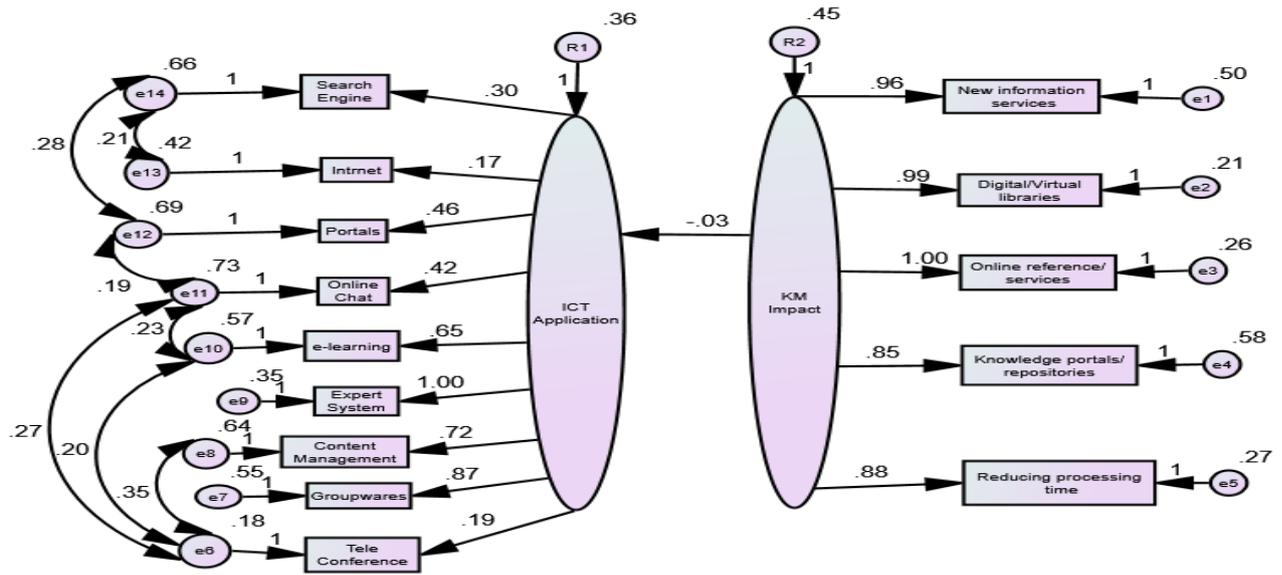

Figure 1: Impact of ICT Applications on Knowledge Management Practices

The fit indices of structural model as shown in Figure 1 are produced in Table 2. The results show level of significance (p≤0.05); CMIN/DF≤5; RMR≤0.08; RMSEA≤0.5. Also the values of NFI; IFI; TLI; and CFI are greater than 0.8 and closer to 0.9 showing good model fit (Hair et al., 2010)

Table 4: Fit Indices of Structural Model of ICT Applications and KM Practices

Model	NPAR	CMIN	DF	P (≤0.05)	CMIN/DF (≤5)	Chi-square	Degrees of freedom	Probability level (≤0.05)	RMR (≤0.08)	RMSEA (≤0.5)
Default model	36	233.116	69	.001	3.378	233.116	69	0.000	0.08	0.11
NFI=0.819; IFI=0.866; TLI=0.819; CFI=0.863										

Table 4 shown the structural path regression weights and level of significance for various paths as shown in Figure 1

Table 5: Regression Weights and Structural Path Level of Significance for ICT Applications and KM Practices

Variable	Path	Variable	Estimate	S.E.	C.R.	P	Path Remarks
ICT_Application	<---	KM_Impact	-.034	.147	-.230	.818	Not significant
Online reference/services (IMP3)	<---	KM_Impact	1.0	Fixed Loading			
Digital/Virtual libraries (IMP2)	<---	KM_Impact	.986	.089	11.088	***	Significant
New information services(IMP1)	<---	KM_Impact	.959	.107	9.001	***	Significant
Knowledge portals/repositories (IMP4)	<---	KM_Impact	.848	.107	7.899	***	Significant
Reducing processing time (IMP5)	<---	KM_Impact	.883	.087	10.188	***	Significant

Variable	Path	Variable	Estimate	S.E.	C.R.	P	Path Remarks
Expert System (AP6)	<---	ICT_Application	1.0	Fixed Loading			
Groupware (AP8)	<---	ICT_Application	.866	.066	13.158	***	Significant
Content Management (AP7)	<---	ICT_Application	.723	.064	11.271	***	Significant
e-learning (AP5)	<---	ICT_Application	.652	.060	10.926	***	Significant
Portals (AP3)	<---	ICT_Application	.460	.060	7.720	***	Significant
Online Chat (AP4)	<---	ICT_Application	.423	.061	6.919	***	Significant
Search Engine (AP1)	<---	ICT_Application	.297	.056	5.284	***	Significant
Tele Conference (AP9)	<---	ICT_Application	.192	.074	2.579	.010	Significant
Internet (AP2)	<---	ICT_Application	.169	.044	3.798	***	Significant

That all paths are significant but the structural path between ICT applications and KM impact is not significant. The results were further explored using effect estimates as shown in Table 6.

Table 6: Standardized effect estimates for structural paths of ICT applications and KM practices

Effects		KM_ Impact	AP1	AP2	AP3	AP4	AP5	AP6	AP7	AP8	AP9	IMP5	IMP4	IMP3	IMP2	IMP1
Total Effect	ICT_ Application	-.019	.393	.289	.544	.501	.711	.893	.727	.805	.202	0.0	0.0	0.0	0.0	0.0
Direct Effect		-.019	.393	.289	.544	.501	.711	.893	.727	.805	.202	0.0	0.0	0.0	0.0	0.0
Indirect Effect		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

The results in Table 6 shows that the 'Total Effect of ICT applications on KM' construct = -0.019 and not significant at 0.05 level of significance. It shows the need for more efforts to direct ICT applications for better KM practices. The total effect of ICT applications on KM practices like Online reference/services (IMP3); Digital/Virtual libraries (IMP2); new information services (IMP1); Knowledge portals/repositories (IMP4); and reducing processing time (IMP5) shows all values as 0.0 because no structural path has been shown for them in the structural model. The Total Effects of show the positive impact of ICT application on various variables under this

construct. The regression weights in the descending order shows- Expert System (AP6=0. .893); Groupware (AP8=0.805); Content Management (AP7=0.727); e-learning (AP5=0.711); Portals (AP3=0.544); Online Chat (AP4=0.501); Search Engine (AP1=0.393); Internet (AP2=0.289); and Tele Conference (AP9=0.202). Hence, all ICT applications positively and significantly contribute towards this construct.

Hypothesis H0^2: ICT Applications has no significant impact on Knowledge Management Practices - The findings have disclosed that, it was found that there is no significant difference among the library professionals with each other on the use of ICT based application on KM. Hence H0^2 is accepted and it is found that there is significant no difference in all ICT applications positively and significantly contribute towards this construct.

FINDINGS OF THE STUDY

- There are many ICT's techniques/ methods are used for KM implementation by library professionals in the university libraries such as by creating digital repositories/knowledge portals, intranet-internet, expert system, groupware, content management system and seminars/webinars.

- The findings reveal that the maximum number of library professionals assumed that ICT leaving a very high impact can be seen on "Introducing online Reference Services such as creating subject based portals and interactive online services" and causing a very low impact can be seen on the "Initiating Knowledge portals/Institutional repositories" concerning the impact of ICT-based applications on knowledge management.

- The findings have indicated that maximum 'Intranet–Internet' and minimum 'Groupware' are used to implement for 'capture organize and share knowledge' in the university libraries of the Northern India.

- Outcomes have indicated that maximum online reference services and minimum 'Knowledge portals/Institutional repositories' was concerning the impact of ICT-based applications on knowledge management in the university libraries of the Northern India.

- It has been found from the results there is a significant difference among the library professionals regarding the use of ICT-based applications on the knowledge management was applied regarding use of ICT-based applications on knowledge management information services like 'Digital/Hybrid Libraries; Online Reference Services; Knowledge portals/ Institutional repositories and Reducing processing time'.

- The findings reveal that the maximum number of library professionals assumed that ICT leaving a very high impact can be seen on 'Introducing online Reference Services such as creating subject based portals and interactive online services' and causing a very low impact can be seen on the 'Initiating Knowledge portals/Institutional repositories' concerning the impact of ICT-based applications on knowledge management.

- The use of ICT based applications on knowledge management has shown that there is a significant difference regarding the use of ICT based application on KM such as Initiating new information services such as 'creating subject based portals, interactive online services' between Librarian and Deputy Librarian, Assistant Librarian, Library Assistant, Professional Assistant and Library Restorer.

RECOMMENDATIONS AND SUGGESTIONS

The university libraries have to create KM culture/environment for multiple reasons, first of all to survive in the internet era, secondly to facilitate sharing across the boundaries for its users and thirdly to preserve this

knowledge for the next generation. It has been observed that the significance of Knowledge Management in UT/ States university library's activities and services in India seems inadequate, probably due to a variety of factors, like ICT factors, human factors and state of the infrastructural development of the country. Libraries around the world have been making and adopting the use of ICT based Knowledge Management activities to assist a wide range of technical and management processes etc.

Most of the university libraries have emphasized on their webpage linked with the university's website, but they are not making efforts to disseminate their preserved knowledge through web portals/subject based portals, group-wares, storytelling and cloud computing among the information seekers. It could be a great achievement of library professionals if they adopt such practices of KM.

Libraries need to come forward and start using the ICTs by developing library's apps or offering e-services. Librarians may develop FAQs for helping the users to find the answers of their queries. For offering online reference services, university libraries may establish help desks or Ask-a-Librarian services which will increase the usage of university libraries. All the library professionals should engage themselves in learning the use of technology for offering better services to their users.

There is need for training to support effective engagement with ICTs in Knowledge Management Practices. library professionals need to attend workshops/ seminars / hands-on training to learn how to use various ICT tools to capture, store and share knowledge by using 'social media, DSpace and Greenstone software' for digitization. Library professionals can update their competencies of the latest ICTs developments related to KM practices, if the university administration conducts seminars/webinars conferences and workshops from time to time that are related to the use and implementation of ICTs in KM in the university libraries.

CONCLUSION

The outcomes of the investigation of the present study show the majority of the library professionals give their consent to 'Intranet-Internet'; to capture, organize and share knowledge between each and other. Furthermore, the majority of the library professionals assumed that ICTs leaving a very high impact can be seen on 'Introducing online reference services, like as creating subject portals and interactive online services related to the impact factor of ICT-based application of the KM practices in the university libraries covered under the study. The limitation of the present study is that, it was conducted only in the northern region of India. To generalize the influence of the outcomes, it is suggested that this study may recur in all the medical, technical and agricultural universities of other regions of India, thus gaining a more detailed about the use and impact of ICTs on knowledge management.

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