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Methods for Implementing Knowledge Management in the Select University Libraries of North India.

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Abstract

This research paper aims to explore the Methods used for Implementing Knowledge Management in the University Libraries of North. The methods outline the different methods of implementing KM in libraries and this paper seeks to know about the procedures to be followed for implementing KM, LIS professional's level of awareness about KM, benefits of implementation KM and the obstacles faced by LIS professionals during KM execution. A total of 280 LIS professionals working in 20 select state universities were approached for the collection of data. In order to obtain a large and representative sample of LIS professionals, stratified random sampling is being used. The study was delimited to the 20 Government state universities (having all disciplines) and listed on the University Grants Commission's website (Govt. of India) and comes under the northern region of India. The main libraries of the universities were covered in the study, whereas departmental libraries were excluded. It has been found that there was no significant difference regarding the awareness of KM between the Professional Assistants and the rest of the LIS professionals. It has been also noted that LIS professionals assumed that the major benefit of KM implementation that it helped to improve library services & operations. Furthermore, the major barriers to the implementation of KM are lack of training, lack of rewards / incentives for innovative performance, lack of human resources, lack of knowledge sharing culture, hesitation to adopt the change by LIS professionals and misunderstanding about the knowledge management on the part of the library staff to incorporate knowledge management practices.

Keywords: Knowledge Management Practices, LIS Professionals, University Libraries

1. Introduction

Knowledge management (KM) is the process of capturing, storing, distributing and effectively using knowledge. Davenport & Prusak (1998) stated that KM is systematic, organized and specified process for obtaining, classifying, maintaining, pertaining, distributing and restoring both the implicit and explicit knowledge of human resources to increase organizational performance and generate value. Every institute and multidisciplinary organization puts in all possible efforts to invest in their knowledge assets for the greater output and LIS (Library & Information Science) professionals in are no way separate from this. It's assumed that a well-built organization will make a good investment in its knowledge assets so that they can survive in the long run in this competitive time. In the present scenario, ICT tools have been evolved to help library professional in managing knowledge. Managing knowledge is different from managing information; there are a lot of transferable skills involved in the management of both (Webster 2007, p.77). Knowledge management is a fabulous term which determines the management of information and knowledge.

Tacit knowledge is considered as more valuable knowledge because it provides context for people, place, ideas and experiences. Explicit or Formal Knowledge is that which is expressed to others, orally or during a recorded form. Explicit knowledge is of the mind which is objective, theoretical and digital. Explicit knowledge is often considered as information or knowledge that has been codified. It takes the shape of documents, databases, teachings, lessons and similar documents founded on experiences. Example the minutes of meetings, authority files, patents, the best practices, written procedures, lessons learnt and research findings. Explicit knowledge is often categorized as either structured or unstructured. Structured knowledge is that when the information or set of information is organized during a specific way for future retrieval. It includes spreadsheets, documents and databases, etc. In unstructured knowledge, the contained knowledge they isn't referenced for retrieval, images, e-mails, training courses, and audio & video selections are some of the samples of unstructured knowledge.

The methods outline the different methods of implementing KM in libraries and this paper seeks to know about the procedures to be followed for implementing KM, LIS professional's level of

awareness about KM, benefits of implementation KM and the obstacles faced by LIS professionals during KM execution.

2. Review of Literature

The implementation of new methods and strategies to get greater output from earlier is refers to knowledge management. Numerous studies have been conducted by various authors on the methods applying for the implementation of knowledge management in academic libraries. There is no consensus among experts on the claim that knowledge management is a new field for academic libraries. The concepts and definitions of knowledge management vary with the field of study, confirming that knowledge management is multidisciplinary and that there is no universally accepted definition (Girard & Girard 2015).This has become an obvious barricade in the process of implementation of knowledge management methods in the university libraries. ICT-based tools and applications are widely used in libraries to facilitate networking and resource sharing, eliminate duplication of efforts, improve the speed of operations, increase access to information resources and improve the quality of information services. The role of the librarians has been changing from being information managers to knowledge managers (Jain, 2009).

Krishnamurthy (2013) have revealed that all the librarians were well familiar with the knowledge management and its basics, methods of KM and majority of LIS professional are well aware about the KM process from the different sources. Moreover, explored the major barriers faced by the librarians during the KM practices that were rewards/motivation, lack of training, etc. Similarly, Islam et al. (2015) examined the quality of service, methods and barriers to service innovation and approaches used by the LIS professionals to make sure the possibility of KM practices to facilitate service novelty in the libraries. Although, the study recommended the policies & discoveries have designed a conceptual framework for service innovation in the libraries.

The study conducted by Nazim and Mukherjee (2011) reported that LIS professionals had significant roles to carry out in KM programs and that KM could be applied to academic libraries by training & job oriented programmes, use of ICT, sharing knowledge and community of

practices. Besides, they stated that they are the essential methods for the management of knowledge in the university libraries.

Rao (2011) identifies KM applications in libraries and suggests that how methods of KM practices can be effectively implemented in university libraries for the supports of students, researchers and faculty by applying ICTs in universities. This makes it possible to hold the training programmes, courses.

Husain and Nazim (2013) 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. The study also 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.

Dhanavandan and Tamizhchelvan (2014) have analyzed the changing nature of the academic libraries & skills required by the library professionals to continue to exist in this paradigm shift. They explored that expertise is needed in managing e-info services, digitization, capture, access, e-reference services, knowledge of digital mining, management of and preservation of archives and access among the present generation of LIS professionals.

Islam and Ikeda (2014) have emphasized issues identified with the knowledge management concept based on digital library system that would sustain the creation, organization, storage, dissemination, and utilization of the digital knowledge assets of an organization. Besides, they discussed that basic process of knowledge management that was acquisition, organization, storage & retrieval, and dissemination of knowledge could be implemented in digital libraries by receiving feedback from the users. It was clear that joining KM could build a knowledge-sharing society, which could promote KM culture, and ultimately increase knowledge output of an organization and this helped to improve the library's expertise to guarantee higher profits and customer satisfaction. Whereas, Shropshire et al. (2020) reported that KM practice methods have been implemented in three categories for ease of use, which is communication, education and knowledge acquisition. In addition, research has shown that formal and informal communication can be done through emails, meetings and general conversations, distributed assignments, audio visual and cloud-based technologies, by soliciting feedback from outside groups.

Rao (2016) discovered that the only 34 percent of the university libraries in India are implemented 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. Whereas, Ghani (2009) study 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 & content management system. This study has dealt with the new tools and techniques of knowledge management by using web 2.0 technologies, additionally, it has recommended that by using these technologies, the practice of knowledge sharing and communication could be effectively performed.

Koloniari and Fassoulis (2017) have discussed how library employees saw knowledge management, also which KM tools and methods are embraced by academic libraries. The outcomes demonstrated that in spite of the fact that practitioners know about knowledge management and were keen to make use of its advantages for library execution as well as for LIS professionals' future profession choices. Besides, they has recommended that, academic libraries should make strides towards capturing the knowledge of their clientele and internal explicit knowledge; though, social practices for example, networks of training, which encourage tacit knowledge and expertise sharing is not embraced.

Oyedokun et al (2018) conducted a study on the perception and attitude of LIS professionals towards KM in Nigeria. This research recommends that governing bodies and library associations guide professionals through the conduct of conferences, research reports, seminars, symposia, and some other methods available to them regarding the status of LIS professionals in KM. Also, perceive that KM is another name for information management/librarianship. Similarly, Townley (2001); Blair (2002) and Gandhi (2004) reported that KM is a new name for what librarians or informational professionals have been doing for years.

Tiwari (2013) has performed a study on creating, managing and disseminating knowledge with the help of ICT. Therefore, the present study has focused on 'Sardar Patel University, Gujarat' to discover the probability of knowledge management by using ICT. The outcomes of the study reached the conclusion that digitization of libraries could work better to serve the stakeholders and therefore DSspace (open source software) was used as digital library software (DSL) for

disseminating knowledge in the form of the digital resources. The study has suggested that the universities need to propose websites of the universities to serve the community as a model. However, Roknuzzaman and Umemoto (2008) investigated that certain skills and competencies of knowledge management are required by librarians to actively participate in KM activities. Further, explore the purpose of implementing KM in university libraries is to promote current library services and operations for scholarly community.

Roy (2015) reports that knowledge and knowledge management is playing a very important role in academic libraries. Academic libraries can be achieved their goals by participating in knowledge, training programs, conferences, seminars and workshops, subscribing to catalog services, developing their own internal knowledge, classification, controlled vocabulary, online or virtual community of practice, with other libraries. Regarding the knowledge sharing methods, a blog post i.e. Document360 (2022) mentioned some important knowledge sharing methods such as peer assist sessions, after action reviews, storytelling, mentoring and coaching are the best practices for sharing knowledge among knowledge workers. Whereas, Roknuzzaman & Umemoto (2009); and Nazim & Mukherjee (2013) identified several problems in implementing KM in library operations like misunderstanding of KM concept, lack of resources, lack of knowledge capture and sharing culture, incentives, financial and IT infrastructure.

3. Need of the study

Information and knowledge are emerging in various forms which include information management, information science, human resource management and information & communication technologies (ICT). There is a need to manage the knowledge for the purpose of improving the quality of library services, enhancing the knowledge and experience, to get a better status of the library, reforming and combining of data from the different sources and saving the time of users so that a layman may also be able to get the benefit of that knowledge. Nowadays information has increasing manifold and even the information is being expressed in different terms and types. The technological discoveries have greatly influenced the library environment. The nature of the library's collection, functions, services and user needs has changed relatively (Raja et al., 2009). The librarians or information scientists are expected to provide the desired information in the desired format in the desired time and also put efforts to preserve knowledge for the future generation. Various university libraries came forward to pack the knowledge in the user required format, but managing the packed information and providing

the same is a tedious job for which skills are required at LIS profession's level. The aim of study is to examine methods of applying knowledge management in the university libraries of north India.

There is no study reported on the methods of applying KM in university libraries of north India. Therefore the present study has tried to bridge the gap and has proposed to conduct the comprehensive research on "Methods for implementing knowledge management in the university libraries of north India". Therefore, the present study is proposed to survey the select university libraries of North India.

4. Objectives of the Study

1) To know about the awareness about knowledge management among LIS professionals
2) To explore the methods applying knowledge management in the university libraries.
3) To identify the benefits of knowledge management in university libraries.
4) Barriers faced by LIS professionals during knowledge management implementation.

5. Scope and Population of the Study

A total of 280 LIS professionals working in 20 select state universities were approached for the collection of data. In order to obtain a large and representative sample of LIS 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).

There were 280 LIS 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 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 staff.

6. Delimitations and Limitations of the Study

The study was delimited to the 20 Government state universities (having all disciplines) and listed on the University Grants Commission's website (Govt. of India) and comes under the northern region of India. The main libraries of the universities were covered in the study, whereas departmental libraries were excluded. LIS professionals (Librarians, Deputy Librarians, Assistant Librarians, Library Assistants, Professional Assistants and Library Restorers) were selected on the basis of who were working in these libraries as a full time/ permanent and employee had minimum Master's degree in Library & Information Science. This was done keeping in mind that the professional qualification was included in the sample. The researcher could not cover all the universities come under northern region of India due to time and expense problem. Consequently the findings for the study cannot be generalized to all the university libraries of north India.

7. Research Methodology and Statistical Techniques Used

The investigation was quantitative in nature. The survey method was used for this study and this procedure is effective to find out the efforts put in, initiatives taken, methods adopted and barriers held in knowledge management practices. A well-structured questionnaire that included closed-ended and open ended questions was used as the data collection instrument to explore the level of awareness, methods adopted for management of knowledge and barriers faced during KM implementation from the viewpoint of the LIS professionals. The questionnaire tool was used with five point rating options. To prepare the research tool studies of Rao (2016); Ghani (2009); Oyedokun et al. (2018); Roknuzzaman & Umemoto (2008); Nazim & Mukherjee (2013); Shropshire et al. (2019); Husain and Nazim (2013) and Krishnamurthy (2013) were referred. The validity and reliability of the research tool was tested with Cronbach's Alpha test and found valid and reliable.

The collected data form the LIS professionals of the select state university libraries of Northern India through questionnaires, have been prepared, 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). ANOVA (Analysis of Variance) F-test, Post Hoc test (Multiple comparisons-Tukey HSD) to compare the relation between KM and LIS professionals at different levels in the light of research objectives.

8. Results and Discussions

This study was conducted to explore various aspects related to awareness, methods of implementing KM, benefits of KM and barriers faces by the LIS professionals in the university libraries of northern region of India. To achieve these objectives, diverse areas associated with KM were examined. The results and analysis of all aspects of KM explored in this study are presented as follows.

8.1 Awareness about the knowledge management

In order to know the awareness about knowledge management among LIS professionals, the respondents were asked to choose the level of extent about KM as shown in table 1.

Table 1: Extent of KM among the LIS professionals

Awareness about the Term "Knowledge Management"	Frequency	Percentage
Little extent	2	1.1
Some extent	49	26.7
Great extent	92	50.3
Very great extent	40	21.9
Total	183	100.0

Table 1 has revealed the extent of awareness among the LIS professionals to justify the right respondents in the light of the research objectives. The results have shown an acceptable frame of references and unit of analysis (Fowler, F. J., & Cosenza, C., 2008). Here, majority of the respondents i.e. 92 (50.3%) were aware up to a Great Extent, followed by 49 (26.7%) who were aware up to Some Extent, 40 (21.9%) were aware up to a Very Great Extent and minimum of number respondents i.e. only 2 (1.1) were aware up to a little extent. Only 1.1% of the respondents have responded a 'little knowledge' of KM, however, the rest of the respondents i.e., 98.9% respondents have some knowledge about KM. It has proved that the content of the questionnaire and its position in the questionnaire, well served the purpose (Billiet & Loosveldt, 1988; and Fowler & Mangione, 1990). An analysis of variance (ANOVA) was done later as shown in the Table 2.

Table 2: ANOVA analysis awareness about knowledge management among the LIS professionals

Respondents	Sum of Squares	df	Mean Square	F	Significant
Between Groups	14.383	5	2.877	**5.985**	**0.001**
Within Groups	85.071	177	.481		
Total	99.454	182			

The ANOVA results in Table 2 have revealed the F-test values F (5, 177) =5.985, p=0.001. Here, p value that is less than 0.05 expresses that there is a significant difference regarding the KM awareness among the library professionals. For the refined exploration of the level of difference another test i.e., Tukey HSD (Tukey's Honestly-Significant Difference) post-hoc test was performed. It has provided the important information as shown in the Table 3.

Table 3: Post hoc Test (Multiple Comparisons-Tukey HSD) regarding KM awareness among the LIS professionals

Designation of Respondents(I)	Designation(J)	Mean Difference (I-J)	Std. Error	Significant	Remarks
Librarian	Deputy Librarian	0.545	0.452	0.833	Not Significant
	Assistant Librarian	0.822	0.413	0.353	Not Significant
	Library Assistant	1.267*	0.407	0.026	**Significant**
	Professional Assistant	0.920	0.424	0.256	Not Significant
	Library Restorer	1.385*	0.444	0.026	**Significant**
Deputy Librarian	Librarian	-.545	0.452	0.833	Not Significant
	Assistant Librarian	0.277	0.233	0.843	Not Significant
	Library Assistant	0.722*	0.222	0.017	**Significant**
	Professional Assistant	0.375	0.251	0.669	Not Significant
	Library Restorer	0.839*	0.284	0.041	**Significant**
Assistant Librarian	Librarian	-.822	0.413	0.353	Not Significant
	Deputy Librarian	-.277	0.233	0.843	Not Significant
	Library Assistant	0.445*	0.128	0.008	**Significant**
	Professional Assistant	0.098	0.173	0.993	Not Significant
	Library Restorer	.0562	0.218	0.109	Not Significant
Library Assistant	Librarian	-1.267*	0.407	0.026	Significant
	Deputy Librarian	-.722*	0.222	0.017	**Significant**
	Assistant	-.445*	0.128	0.008	**Significant**

	Librarian				
	Professional Assistant	-.347	0.158	0.240	Not Significant
	Library Restorer	0.117	0.206	0.993	Not Significant
Professional Assistant	Librarian	-.920	0.424	0.256	Not Significant
	Deputy Librarian	-.375	0.251	0.669	Not Significant
	Assistant Librarian	-.098	0.173	0.993	Not Significant
	Library Assistant	0.347	0.158	0.240	Not Significant
	Library Restorer	0.465	0.237	0.370	Not Significant
Library Restorer	Librarian	-1.385*	0.444	0.026	**Significant**
	Deputy Librarian	-.839*	0.284	0.041	**Significant**
	Assistant Librarian	-.562	0.218	0.109	Not Significant
	Library Assistant	-.117	0.206	0.993	Not Significant
	Professional Assistant	-.465	0.237	0.370	Not Significant
***Significant at 0.05**					

Here Tukey (HSD) Post-hoc test was also applied to compare the groups as shown in Table 3.

Librarian: The results have shown that when Librarian was compared with Deputy Librarian, Assistant Librarian, Library Assistant, Professional Assistant and Library Restorer, the p-values were significant for Library Assistant and Library Restorer. These show that there is a significant difference regarding the awareness of KM between the Librarian and the Library Assistant (0.026) & the Library restorer (0.026) because the p-value is less than 0.05 (Hair et al. 2010).

Deputy Librarian: The comparisons of the Deputy Librarian with the Librarian, Assistant Librarian, Library Assistant, Professional Assistant and Library Restorer, have revealed the significant p-values for the Library Assistant and the Library Restorer. These have shown that there is a significant difference regarding the awareness of KM between Deputy Librarian and Library Assistant (0.017), and Deputy Librarian and Library Restorer (0.041).

Assistant Librarian: The Assistant Librarian was compared with the Librarian, Deputy Librarian, Library Assistant, Professional Assistant and Library Restorer. The results have shown the significant p-values for Library Assistant only. These have shown that there was a significant difference regarding the awareness of KM between the Assistant Librarian and the Library Assistant (0.008).

Library Assistant: The results have shown that when the Library Assistant was compared with the Librarian, Deputy Librarian, Assistant Librarian, Professional Assistant and Library Restorer, the p-values were significant for Librarian, Deputy Librarian and Assistant Librarian. These have shown that there is a significant difference regarding the awareness of KM between Library Assistant and Librarian (0.026), Deputy Librarian (0.017) and Assistant Librarian (0.008).

Professional Assistant: The results in the above Table have shown that when Professional Assistant was compared with the Librarian, Deputy Librarian, Assistant Librarian, Library Assistant and Library Restorer, the p-values were not significant for the rest of the LIS professionals. These have shown that there is no significant difference regarding the awareness of the KM between Professional Assistant and rest of LIS professionals as the level of significance (p-value) is greater than 0.05.

Library Restorer: The results have also shown that when Library Restorer was compared with the Librarian, Deputy Librarian, Assistant Librarian, Library Assistant and Professional Assistant, the p-values were significant for the Librarian and Deputy Librarian. These have shown that there is a significant difference regarding the awareness of KM between the Library Restorer and the Librarian (0.026), & the Deputy Librarian (0.041).

In Table 3 Post hoc Test has shown that there is significant difference regarding the KM awareness among LIS professionals except Professional Assistants.

This section has helped in comparing the difference among the groups regarding the extent of KM knowledge. The data collected was also analyzed to know the sources used by the LIS professionals for learning KM. The results have been shown in Table 4.

Table 4: Source to come to know about knowledge management by LIS professionals

Sources usedby LIS Professionals	Yes N (%)	No N (%)	Total N (%)
Personal Reading (Books & Journals)	62 (33.9)	121 (66.1)	183 (100)
Conferences & Workshops	134 (73.2)	49 (26.8)	183 (100)
Practical Field Work	125 (68.3)	58 (31.7)	183 (100)
LIS Curriculum	128 (69.9)	55 (30.1)	183 (100)
Internet	124 (67.8)	59 (32.2)	183 (100)

Table 4 has proved that all the respondents came to know about the term knowledge management through different sources like Personal Reading (Books & Journals), Conferences & workshops, Practical field work, LIS curriculum and Internet. The majority of the respondents i.e. 134 (73.2%) were familiar with the term KM through 'Conferences & workshops', followed by 128 (69.9%) who were aware from LIS curriculum, 125 (68.3%) were aware through Practical field work, 124 (67.8%) were aware from Internet and the minimum number of respondents knew about the term KM from 'Personal Reading (Books & Journals)' i.e. 62 (33.9%).

8.2 Methods of applying knowledge management in the university libraries

The respondents were asked about the KM methods applying in university libraries of north India. They were give five choices and asked to designate what they considered most suitable for implementation of KM to be. Descriptions of response are given in table 5.

Table 5: Descriptive statistics KM Methods applying in the university libraries

KM Methods	Mean	Std. Deviation	N
By utilizing ICT infrastructure	4.03	0.759	183
By providing training & education	4.30	0.763	183
By Incentives/Rewards	3.87	0.902	183
By creating knowledge database/ institutional repositories	4.27	0.777	183
By developing a culture of knowledge sharing	4.33	0.728	183
By creating digital libraries	3.96	0.780	183
Cronbach's Alpha=0.701 Mean= 24.75, Variance=, Std. Deviation=, N of Items=6. Inter-Item Correlations (Min=0.042; Max=0.452; Range 0.410			

Table 5 has given the descriptive analysis of LIS professionals' responses regarding methods of applying KM in the university libraries of north India. It has been found that the maximum mean value goes to Knowledge Sharing Culture was: 4.33 followed by Utilizing ICT: 4.03; Education & Training ranked: 4.30; Repositories and Databases: 4.27; Creating Digital Libraries: 3.96 and finally the minimum mean value was for Incentives/Rewards: 3.87. The scale was also tested for the reliability and the validity with correlation and Cronabach Alfa with statistically significant values as shown in the bottom of Table 5. Also, the mean of 24.75 out of 30 has shown 82.5 % construct agreement with the respondents. An ANOVA was also done for the responses as shown in Table 6.

Table 6: ANOVA of methods of applying KM in the university libraries of north India

Variables		Sum of Squares	df	Mean Square	F	Significant
Between People		270.989	182	1.489		
Within People	Between Items	34.678	5	6.936	15.584	**0.001**
	Residual	404.989	910	0.445		
	Total	439.667	915	0.481		
Total		710.656	1097	0.648		
Grand Mean = 4.13						

The ANOVA results have been shown in Table 6 that shows the values of the F-test are F (5, 182) =15.584, p=0.001. Here, the p-value is less than 0.05 and shows that there is a significant difference among the LIS professionals regarding the KM methods applied in the university libraries. This section has helped to explore the next research objective discussed in the next section.

8.3 Benefits of knowledge management in university libraries

This objective leads to the study of benefits while implementing the KM in their libraries. The scale reliability and statistics of benefits of KM implementation as shown in Table 7.

Table 7 Scale reliability and statistics of benefits of KM implementation

Benefits Of KM Implementation	Mean	Std. Deviation	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
KM leads to Better decision making	4.14	0.697	0.650	0.498	0.816
KM helps to Improve library services & operations	4.20	0.636	0.671	0.573	0.814
KM Improves Collaboration within different sections of library	4.01	0.868	0.703	0.568	0.803
KM Saves Processing Time by avoiding duplication of work	4.01	0.703	0.666	0.530	0.812
KM increases employees Acceptance of Innovations	3.70	0.826	0.612	0.468	0.828
Scale statistics (Cronbach's Alpha=.846; Mean=20.07; Variance=8.721; Std. Deviation=2.953; N of Items=5Inter-Item Correlations (Min=0.413; Max=0.667; Range=0.254)					

Table 7 has depicted the scale statistics of the benefits of KM implementation in university libraries. The mean values shown in Table 7 have shown that the maximum mean value of KM helps to improve library services & operations, it has been valued as 4.20, and similarly, KM

leads to better decision making with mean 4.14, followed by KM improves collaboration and saves processing time, assessed as 4.01, and the minimum mean value attained by KM increases the employees acceptance of innovations that is 3.70 related to the benefits of KM implementation in the university libraries of North India.

The results have indicated that the maximum mean value has been shown by 'KM helps to improve library services and operations', it has been assessed at mean value 4.20 and minimum mean value is of 'KM increases the employee's acceptance of innovations' that is 3.70.

Table 7 has shown the scale reliability and statistics of benefits of KM implementation, it has shown the scale statistics (Cronbach's Alpha=.846; Mean=20.07; Variance=8.721; Std. Deviation=2.953; N of Items=5; Inter-Item Correlations (Min=0.413; Max=0.667; Range=0.254). A mean value of 20.07 out of 25, if all items were loaded at 5 that explains 20.07/25=80.3% of construct. Also, the item-to-total correlation was more than 0.5 and scale reliability Cronbach Alpha=0.846 has explained construct reliability.

8.4 Problems faced by the LIS professional during KM implementation

This objective has helped in the study of the problems faced by LIS professionals while actually implementing the KM in their libraries. Scale statistics (Item-Total Statistics) and reliability of problems faced by the LIS professionals during KM implementation has been shown in Table 8.

Table 8: Scale statistics (Item-Total Statistics) and reliability of problems faced by LIS professionals during KM implementation

BARRIERS	Mean	Std. Deviation	Corrected Item-Total Correlation	Squared Multiple Correlation
Lack of training	3.90	1.211	0.705	0.618
Misunderstanding of KM	3.46	1.208	0.638	0.541
Lack of knowledge transformation	3.43	1.034	0.583	0.474
Lack of knowledge sharing culture	3.75	1.038	0.572	0.483
Lack of reward/ incentives for innovative performance	3.85	1.010	0.682	0.589
Insufficient human resources	3.85	1.107	.0520	0.607
Hesitation to adopt the change	3.30	1.182	0.565	0.424
Lack of capability to identify knowledge resources	2.90	1.196	0.580	0.489

Lack of financial resources	3.26	1.308	0.432	0.449
Lack of time to learn	2.96	1.328	0.470	0.410
Lack of identifying the proper IT tool	3.04	1.437	0.502	0.667
Lack of top management commitment to initiate KM	2.99	1.204	0.578	0.646
Scale Statistics (Mean=40.69;Variance=85.807;Std. Deviation=9.263; N of Items=12) Cronbach's Alpha=0.873; Inter-Item Correlations (Min=0.049;Max=0.727; Range=.678)				

From Table 8, it was clear that all the LIS professionals faced some barriers during the KM practices. The scale statistics and reliability has shown barriers during the KM implementation in university libraries.

The above Table has demonstrated that the maximum mean value 'Lack of training' has valued as 3.90, followed by, Misunderstanding of KM attained by 3.46, Lack of knowledge transformation i.e. 3.43, Lack of knowledge sharing culture i.e. 3.75, Lack of reward/ incentives for innovative performance & Insufficient human resources both rated as 3.85, Hesitation to adopt the change i.e. 3.30, Lack of financial resources, 3.26, Lack of identifying the proper IT tool i.e. 3.04, Lack of top management commitment to initiate KM i.e. 2.99, Lack of time to learn i.e. 2.96 and the minimum mean value rated to 'Lack to capability to identify knowledge resources' that is 2.90 related to the barriers faced by LIS professionals during KM implementation in the university libraries of North India.

Table 8 has shown the scale statistics and reliability of barriers faced by LIS professionals during KM implementation the scale statistics were (Mean=40.69; Variance=85.807; Std. Deviation=9.263; N of Items=12) Cronbach's Alpha=0.873; Inter-Item Correlations (Min=0.049; Max=0.727; Range=.678). It has explained that 40.69/60=67.81% construct if 12 items are loaded at 5. Also, item-to-total correlation was more than 0.5 and Cronbach's Alpha of 0.873 was statistically significant to explain the construct validity.

Table 9: ANOVA analysis for barriers faced by LIS professionals during implementation of knowledge management

ANOVA Analysis						
Barriers		**Sum of Squares**	**df**	**Mean Square**	**F**	**Significant**
Lack of training	Between Groups	18.547	19	0.976	0.640	0.871

	Within Groups	248.481	163	1.524		
	Total	267.027	182			
Misunderstanding of KM	Between Groups	36.699	19	1.932	1.376	0.145
	Within Groups	228.820	163	1.404		
	Total	265.519	182			
Lack of knowledge transformation	Between Groups	27.546	19	1.450	1.413	0.127
	Within Groups	167.208	163	1.026		
	Total	194.754	182			
Lack of knowledge sharing culture	Between Groups	37.612	19	1.980	2.038	0.009
	Within Groups	158.323	163	0.971		
	Total	195.934	182			
Lack of reward/ incentives for innovative performance	Between Groups	30.179	19	1.588	1.665	0.047
	Within Groups	155.536	163	0.954		
	Total	185.716	182			
Insufficient human resources	Between Groups	62.410	19	3.285	3.334	0.001
	Within Groups	160.607	163	0.985		
	Total	223.016	182			
Hesitation to adopt the change	Between Groups	29.668	19	1.561	1.134	0.322
	Within Groups	224.398	163	1.377		
	Total	254.066	182			
Lack of capability to identify knowledge resources	Between Groups	41.918	19	2.206	1.647	0.051
	Within Groups	218.311	163	1.339		
	Total	260.230	182			
Lack of financial resources	Between Groups	77.262	19	4.066	2.831	0.001
	Within Groups	234.148	163	1.436		
	Total	311.410	182			
Lack of time to learn	Between Groups	49.574	19	2.609	1.568	0.070
	Within Groups	271.158	163	1.664		
	Total	320.732	182			
Lack of identifying the proper IT tool	Between Groups	96.740	19	5.092	2.976	0.001
	Within Groups	278.910	163	1.711		
	Total	375.650	182			
Lack of top management commitment to initiate KM	Between Groups	35.929	19	1.891	1.352	0.158
	Within Groups	228.049	163	1.399		
	Total	263.978	182			

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =0.640, p=0.871. Here, p value was more than 0.05; it has shown that there was no significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to lack of training.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =1.376, p=0.145. Here, p value was more than 0.05; it has shown that there was no significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to misunderstanding of KM.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =1.413, p=0.127. Here, p value was more than 0.05; it has shown that there was no significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to lack of knowledge transformation.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =2.038, p=0.009. Here, p value was less than 0.05; it has shown that there was significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to lack of knowledge sharing culture.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =1.665, p=0.047. Here, p value was less than 0.05; it has shown that there was significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to lack of reward/ incentives for innovative performance.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =3.334, p=0.000. Here, p value was less than 0.05; it has shown that there was significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to insufficient human resources.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =1.134, p=0.322. Here, p value was more than 0.05; it has shown that there was no significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to hesitation to adopt the change.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =1.647, p=0.051. Here, p value was more than 0.05; it has shown that there was no significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to capability lack to identify knowledge resources.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =2.831, p=0.000. Here, p value was less than 0.05; it has shown that there was significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to lack of financial resources.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =1.568, p=0.070. Here, p value was more than 0.05; it has shown that there was no significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to lack of time to learn.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =2.976, p=0.000. Here, p value was less than 0.05; it has shown that there was significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to lack of identifying the proper IT tool.

The ANOVA results have been shown in Table 9. The values of the F-test are F (19, 163) =1.352, p=0.158. Here, p value was more than 0.05; it has shown that there was no significant difference between the groups regarding the barriers faced by the LIS professionals during KM practices as regarding to lack of top management commitment to initiate KM.

9. Major Findings of the Study

Followings are the major findings of the study carried out on the LIS professionals of north India to explore the awareness, methods for KM implementation, benefits and problems faced by LIS professionals during the KM implementation.

- With regard to the awareness about the term "Knowledge Management"the results have shown that maximum of LIS professionals were aware up-to a great extent i.e. 50.3%, and only 1.1% were aware up to a little extent (Table 1).
- The findings of Post Hoc Test (Multiple Comparisons-Tukey HSD) applied to compare categorical variables of the LIS professionals regarding the statement KM awareness. During the comparison of Professional Assistant with the rest of the LIS professionals, it is found that there was no significant difference regarding the awareness of KM between the 'Professional Assistants' and the rest of the LIS professionals at the significant level of 0.05. (Table 3)
- The findings (Table 4) have proved that the majority of the respondents were familiar with the KM through 'Conferences & workshops' that is 73.2% and the minimum number of

respondents came to know about the KM from 'Personal Reading (Books & Journals)' i.e. 33.9%.

- With regard to 'Methods for implementing KM in the university libraries' (Table 5) the maximum number of LIS professionals strongly agreed with that KM can be implemented by 'Knowledge Sharing Culture' and minimum number of LIS professionals agreed with the statement 'KM implemented by giving 'Incentives and rewards'.
- When complete sample was tested for ANOVA (Table 6) shows the values of the F-test are F (5, 182) =15.584, p=0.001. Here, the p-value is less than 0.05 and shows it that there is a significant difference among LIS professionals regarding the "Methods for implementing KM in the university libraries.
- The results (Table 7) have indicated that the maximum mean value flourished by KM helps to improve library services and operations, it has been assessed as 4.20 and minimum mean value of KM increases the employee's acceptance of innovations that is 3.70.
- Major outcomes from Table 8 have indicated that the maximum mean value 'Lack of training' has been valued as 3.90, and minimum mean value was rated to 'Lack of capability to identify knowledge resources' that is 2.90 related to the barriers faced by LIS professionals during the execution of KM in the university libraries.

10. Suggestions and Recommendations

On the basis of the findings of the study, following suggestions and recommendations are listed below:

- The participation and the role of the LIS professionals towards KM implementation in the university libraries can be potentially enhanced by providing training and education.
- All LIS professionals need to attend workshops/ seminars / hands-on training to learn how to use various tools to manage knowledge like DSpace, GreenStone etc.
- LIS professionals can update their awareness of the latest technological developments related to KM practices if the university administration conducts seminars/webinars conferences and

workshops from time to time that are related to implementation of KM in the university libraries.

- Map chart of the library's holdings should be available at the entry point of the university's library so that the users can easily find their required information with fewer efforts.
- The library system should have proper ICT equipment so that KM practices can be better executed.
- By promoting knowledge sharing culture in the existing work culture is another way of implementing KM to achieve the goals of the university libraries.

11. Conclusion

In the present study, an attempt was made explore the awareness about KM, methods for implementing KM, benefits of KM and barriers faced by the LIS professionals to during the implementation of KM in university libraries of north India. The outcomes of the study cleared that most of LIS professionals are aware about the KM. Similarly, majority of the respondents i.e. 73.2 % had got familiar with the KM through conferences & workshops. It has been found that there was no significant difference regarding the awareness of KM between the Professional Assistants and the rest of the LIS professionals. It has been also noted that LIS professionals assumed that the major benefit of KM implementation that it helped to improve library services & operations. Furthermore, the major barriers to the implementation of KM are lack of training, lack of rewards / incentives for innovative performance, lack of human resources, lack of knowledge sharing culture, hesitation to adopt the change by LIS professionals and misunderstanding about the knowledge management on the part of the library staff to incorporate knowledge management practices. There are some limitations to this research. As it has surveyed only 20 university libraries in North India; the sample may not accurately represent the entire population. For further research, a comprehensive study should include other university libraries, the study should be extended to other types of libraries to gain a new understanding of KM implementation in university libraries.

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