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Ubiquitous Approach for Knowledge Management in Higher Education Institution: A Quantitative Analysis

Moyeed Rashid, Shankar Lal Bika
Central University of Punjab, Bathinda, India

Creativity and innovation is a great tool for a nation to prosper. For increasing the efficiency of educational work, there is a need for proper management of the knowledge created and the knowledge to be dispersed. Knowledge management is such procedure that safely stores the data and disseminates it to the concerned person. The fate of India widely depends upon the quality of education in higher educational institutions. To improve the quality, the government has introduced many provisions and has lately come up with NEP 2020. Thus for achieving the goals set up by the National Education Program 2020, Knowledge management is required. Knowledge management is expected to enhance the quality of higher education and improve the ranking of the higher education institutes in the global scenario. There are a number of factors that have an effect upon knowledge management. In this study four dimensions that are creation, storage, transfer, and application are explored in the context of knowledge management. The quantitative survey work was carried out in order to collect the response of social science teachers in regard to knowledge management. After scrutinizing the collected data for all the necessary checks such as reliability, validity, etc., the data were analyzed using the *t*-test and ANOVA. Upon analysis of the data to study the extent of knowledge management, it was concluded that there is no significant difference between the knowledge management practices in both government and private institutions. It was also observed that the knowledge management practices with respect to gender i.e. male and female were also not significant. However, there was a significant difference in Knowledge Management practices based on the level of experience of the social science teachers. The teachers with a higher level of experience were more likely to have knowledge management.

Keywords: knowledge management, higher education institution, creation, storage, transfer, application

Introduction

Knowledge management (KM) can be termed as an arrangement for the facilitation of compiling the knowledge available and disseminating this knowledge to the concerned stakeholders hassle-free at all times, for the development of society. Knowledge management is based on the advocacy that it is the previous knowledge only which provides a platform for the generation of new knowledge. Hence, the preservation of past knowledge is of utmost significance. Recently, knowledge is progressively considered as a critical component for organizations to be competitive, innovative, and sustainable (Poonkothai, 2016). Hence, knowledge management is the need of the hour for the efficiency enhancement of the various organizations such as businesses, government

Moyeed Rashid, M.Ed. Student, Department of Education, Central University of Punjab, Bathinda, India.
Shankar Lal Bika, Ph.D., Associated Professor (Head & Dean), Department of Education, Central University of Punjab, Bathinda, India.

organizations, industries, educational institutions, etc. KM is meant for the maximization of the organization's knowledge assets and guarantees more effective knowledge practices, improved organizational behavior, and better performance through knowledge acquisition, creation, refinement, storage, transfer, sharing, and utilization (King, 2009). KM in educational settings links people, processes, and technologies to help both upper management and employees promote policies and share knowledge (Petrides et al., 2003). The organizational knowledge in the respective organization can be successfully utilized for making the correct decision and promoting the best actions and for this knowledge management framework could be applied to various higher educational institutions (Bhusry & Ranjan, 2012).

Knowledge Management (KM)

The knowledge houses such as industries, research and development centers, and higher education academics from colleges to universities generate knowledge in their respective subjects of interest. Knowledge management believes that knowledge builds on the knowledge and past event helps in generating new knowledge. The three reasons why organizations implement KM practices and initiatives are: Firstly, the access of tacit and explicit knowledge would be easier throughout the organization. Secondly, KM helps to improve and support the sharing of individual knowledge. Finally, it encourages the creation and collaboration of organizational knowledge effectively (Davenport, De Long, & Beers, 1998). Thus, storage and flow of knowledge among these knowledge houses and students are of prime importance. Knowledge flows from teachers to students and new knowledge is created. The information generated is covered in different forms and sources like books, journal articles, thesis or dissertations, technical reports, fact finding reports, case studies, patents, development of test methods and standards, different scholarly communications, etc. Every academic institution contributes to knowledge. The generated information and knowledge is to be compiled at central place and disseminated among the society for further growth. It is observed that the generated knowledge in the academic institute is not stored or captured properly. It is also observed that many a times generated information or knowledge in the academic institute is not known to any one and remains as grey literature, which might be useful if proper recording is maintained in the organization. In fact, academic environment is treasure of knowledge but it is not organized properly and hence utility is also lacking which causes for the repetitions of the activity. Knowledge management (KM) in educational institution makes good sense and a good combination of intellectual output of the academic organization if preserved well using technology. The knowledge management efforts could be monitored by the libraries and disclose it along explicit knowledge to the users, but tacit knowledge compilation is difficult as it is preserved at individual level. But librarian could make better efforts in making available such kind of knowledge with the support of the knowledge developers using technology to capture tacit knowledge generated in the organization. In this, role of each and every staff and student is very important as it's not only sole responsibility of librarian. In India among many projects few projects like "Shodh Ganga", "Vidya Nidhi", "TKDL" projects, and scholarly communications in the form of different publications, are developed to communicate information to users.

Knowledge management consists of:

- Knowledge creation: developing new content within company's tacit and explicit knowledge (Schultze & Leidner, 2002); continuous transfer, combination, and conversion of the different types of knowledge, as users practice, interact, and learn (Nonaka & Takeuchi, 1995).

- Knowledge storage: storing, arranging, and structuring knowledge in forms of documents, reports, and databases in the most efficient and accessible way (Massey & Montoya-Weiss, 2006).
- Knowledge transfer: process through which organizational actors—teams, units, or organizations—exchange, receive, and are influenced by the experience and knowledge of others (van Wijk, Jansen, & Lyles, 2008; Skyrme & Amidon, 1997).
- Knowledge application: process of actualizing of knowledge, using knowledge to adjust strategic directions of the organization, increase efficiency, and decrease costs (Massey & Montoya-Weiss, 2006; Schultze & Leidner, 2002).

World Without Knowledge Management

Even before the formal concept of knowledge management was developed, the knowledge was being stored in various forms such as manuscripts, drawings, paintings, etc. which caused the preservation of knowledge and was passed down from generation to generation. But much-advanced knowledge was lost due to improper or no record management. For example, India was blessed with many advanced technologies such as in the field of astronomy, medicine, science, mathematics, and so on. Some of the groundbreaking achievements which were lost in the due course of time are discussed here. Indian medical science was very advanced in the earlier period. Sushruta who is considered the father of Indian Surgery made a contribution in the field of plastic surgery and cataract surgery in the 6th century BC. He also revealed his knowledge in a document named *Sushruta Samhita*. But due to inefficient knowledge management, this crucial knowledge too could not be propagated to the next generations. Historical evidence hints about the glorious past of India in the field of astronomy dated as back as 1400 BC. *Vedganga Jyotisha* was one of the earliest written books on astronomy. It included the details about the Sun, Moon, nakshatras, lunisolar calendar. This too was unable to flourish in the coming generations due to lack of knowledge management and proper transfer. In the same manner mathematical knowledge also suffered set back due to inefficient structure for knowledge storing and propagation. Hence, if we don't spend time on knowledge management activities, we run the risk of wasting even more time on unnecessary efforts that could have been avoided. We might repeat mistakes that others have already made, costing time, money, and even lives. And the results of our work will not be as valuable as they could have been if they had been influenced by the experiences and expertise of others.

Benefits of Knowledge Management in Organization

Knowledge management enables an organization to better:

- Share: Knowledge management in an organization keeps the record of all that has been learned, created, and disseminates to allow others to learn from the experiences of the organization. This provides a supply of knowledge.
- Innovate: Using this shared knowledge as the base, and incorporating new ideas and creativity results in new innovations and development. This creates new knowledge.
- Reuse: Knowledge management nurtures the reuse of intellectual capital, that is, what others have already learned, created, and proves to save time and money, minimize risks, and be more effective. This creates a demand for knowledge.
- Collaborate: Knowledge management helps in the creation of new knowledge by utilizing the expertise of various departments, since they are able to communicate within themselves through the shared knowledge

available due to a common accessible storage unit. It helps in the development of a new perspective and approach towards a problem which enables them to come up with better result. This allows knowledge to flow at the time of need, creates communities, and takes advantage of the strength in numbers.

- Learn by doing: Knowledge management also helps in making the right decision by learning from the shared experiences and by comparing our experiences with the shared one. This enables us to reflect upon our effort and make necessary changes in our approach or perspective.

Knowledge Management in Context of Higher Education Institutions

In the educational context, KM is explained as a set of practices that helps an institution to improve their teaching, research, and administrative roles and encourage the use and sharing of data and information in decision making (Petrides et al., 2003). KM strategy contributes to the development of the academic staff and allocates the resources of HEIs to be competitive, which results in an increase in organizational performance (Trivella & Dimitrios, 2015). So, in order to get benefit from the faculty and staff, sharing and dissemination of knowledge and its management, effective research, and implementation of KM in higher education are required (Gulavani & Joshi, 2013). Knowledge in HEIs can be divided into academic and organizational (Coukos-Semmel, 2003) which are generated and consumed by faculty, students, administration, and researchers. To ensure success in HEIs, it is crucial that the knowledge created, stored, and shared by each of the agents contributes to the effectiveness of the entire system (Rowley, 2001). HEIs create knowledge during their academic and administrative processes but still they find difficult to use the explicit and tacit knowledge as an integrated central resource to improve knowledge sharing and effective decision making (Kumar, & Kumar, 2015). The barriers for knowledge management in HEIs are identified as lack of policies and reward mechanisms, resources, data, funding, and time for research, leadership changes, lack of a KS culture, and weak industry-academia linkages. On the other hand, enablers were perceived to be qualified and experienced academic staff in public HEIs, information technology (IT) infrastructure, and the digital library (Veer Ramjeawon & Rowley, 2017). There is a significant relationship between KM processes and job performance (Masa'deh et al., 2017), hence, the scenario of knowledge management in HEIs must be explored.

Rationale of the Study

Educational institutions aim to generate knowledge and create innovations. An approach is required that integrates knowledge management practices into the organizational mission and vision in order to properly create and share knowledge within the learning environment (Arntzen, Worasinchai, & Ribiere, 2009). Knowledge management is very important for higher education, especially in this highly competitive and complex world. Educational institutions need more than just human capital in order to distribute and use their employees' knowledge effectively. They need a platform from which they can actively create and share knowledge. Effective use and management of knowledge might be expensive, even though the knowledge itself might not be. The current study is unique in the sense that it will fill the gap in previous research. Thus, from the literature review, we can conclude that for achieving the goals set up by the National Education Program 2020 we required knowledge management. For enhancing the quality of higher education and for improving the ranking of the higher education institutes in the global scenario, knowledge management is needed and it has great impact on society in large.

Statement of the Problem

The study aims to understand the cultural factors of knowledge management in higher education institutions. Hence the study is entitled "Ubiquitous Approach for Knowledge Management in Higher Education Institution: A Quantitative Analysis".

Objectives

The study under investigation has the following objectives:

- To study the knowledge management in higher education institutions of social science teachers in relation to the following dimensions:
  1. Creation
  2. Storage
  3. Transfer
  4. Application
- To compare the knowledge management in higher education with regard to private and government universities.
- To analyze the knowledge management in higher education institutions with regard to the gender of teaching staff.
- To examine the knowledge management in higher education institutions with regard to the teaching experience of social science teachers.

Method and Procedure

The survey method is found to be most suitable for the present study. Initially offline method of survey was adopted but due to the COVID-19 pandemic situation, the offline method was shifted to the online method. The henceforth online method of survey was utilized for conducting the full survey. The Google form tool was employed for conducting the remaining survey. The population was collected from government and private universities having UGC-recognized Universities in district Bathinda Punjab in India. The present study has been undertaken with the main objective of studying knowledge management in higher education university/institution of social science teachers in relation to the dimensions which are creation, storage, transfer, and application. The investigator used the stratified random sampling technique to select the sample of 47 social science teaching staff from two strata i.e. government university and private universities. The investigator used a self-made questionnaire for the purpose of collecting data from the social science teachers of the higher educational institutions in the Bhatinda district to explore the effect of four dimensions which were creation, storage, transfer, and application over knowledge management. The response patterns for each of these 19 questions were five-pointed i.e. strongly disagree, disagree, neither agree nor disagree, agree, strongly agree. Firstly, the investigator prepared a Google form of the self-made questionnaire on the knowledge management practices. Then, the investigator established a meeting with the social science teachers of the three universities through online modes like WhatsApp and phone calling to request the teachers to fill the Google form as per their knowledge and experiences. After that, the investigator sent the link of the Google Form to the concerned teachers through WhatsApp and Gmail. The respondents were requested to fill the questionnaire carefully by choosing the correct and possible alternative from the multiple choices. At last, after completing these formalities, the investigator collected data from the social science teachers of three concerned universities. The format of the Google form

used and the demography of the response. In order to answer all the research hypotheses on the basis of collected data the investigator used the *t*-test statistical technique for serial numbers 2 and 3. For serial numbers 1 and 4, the investigator made use of ANOVA.

Results and Discussion

The present study aimed to analyze the effect on knowledge management in higher education institutions of social science teachers in relation to the dimensions which are creation, storage, transfer, and application.

Table 1
Difference in Social Science Teachers w.r.t. Various Dimensions of Knowledge Management i.e., Creation, Storage, Transfer, Application (Overall)

Group	Sum of squares	df	Mean square	*F*	Critical value (0.05)	Remarks
Between groups	461.033	3	115.258	0.406	0.804	Not significant
Within groups	11937.605	43	284.229			

Table 1 indicates that the calculated *F*-value i.e., 0.406 with a df of 3 and 43 is found to be less than the table value i.e., 0.804 at a 0.05 level of significance. Hence, null hypothesis is accepted by the investigator. Therefore, it is concluded that on the basis of dimensions, there is no significant difference between different dimensions of knowledge management with respect to all social science teachers.

Table 2
Difference Between Social Science Teachers Working in Government and Private University/Institution w.r.t. Knowledge Management

Type of institution	*N*	Mean	SD	*t*-value	df	Critical value (0.05)	Remarks
Government institution	25	68.56	14.36	0.21	45	2.02	Not significant
Private institution	22	74	14.27				

Table 2 indicates that the calculated *t*-value i.e. 0.21 with a df of 45 is found to be less than the table value i.e. 2.02 at 0.05 level of significance. Hence, H_0 is accepted by the investigator. Therefore, it is concluded that there is no significant difference between the means of the knowledge management of social science teachers of government institution and private institution. Further, the above data is visualized in Figure 1.

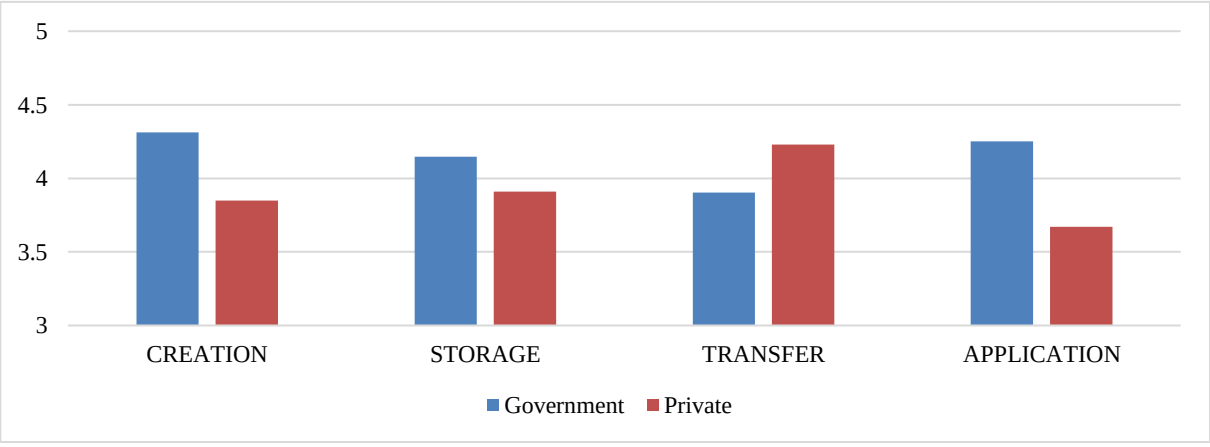

Figure 1. Mean of responses of dimensions on institute basis.

Table 3

Difference in Knowledge Management in Higher Educational Institution According to Gender

Gender	*N*	Mean	SD	*t*-value	df	Critical value (0.05)	Remarks
Male	32	69.94	15.64	0.43	45	2.02	Not significant
Female	15	73.6	11.58				

Table 3 indicates that the calculated *t*-value i.e., 0.43 with a df of 45 is found to be less than the table value i.e., 2.02 at 0.05 level of significance. Hence, H_0 is accepted by the investigator. Therefore, it is concluded that there is no significant difference between the means of knowledge management of male and female social science teachers. Further, the above data is visualized in Figure 2.

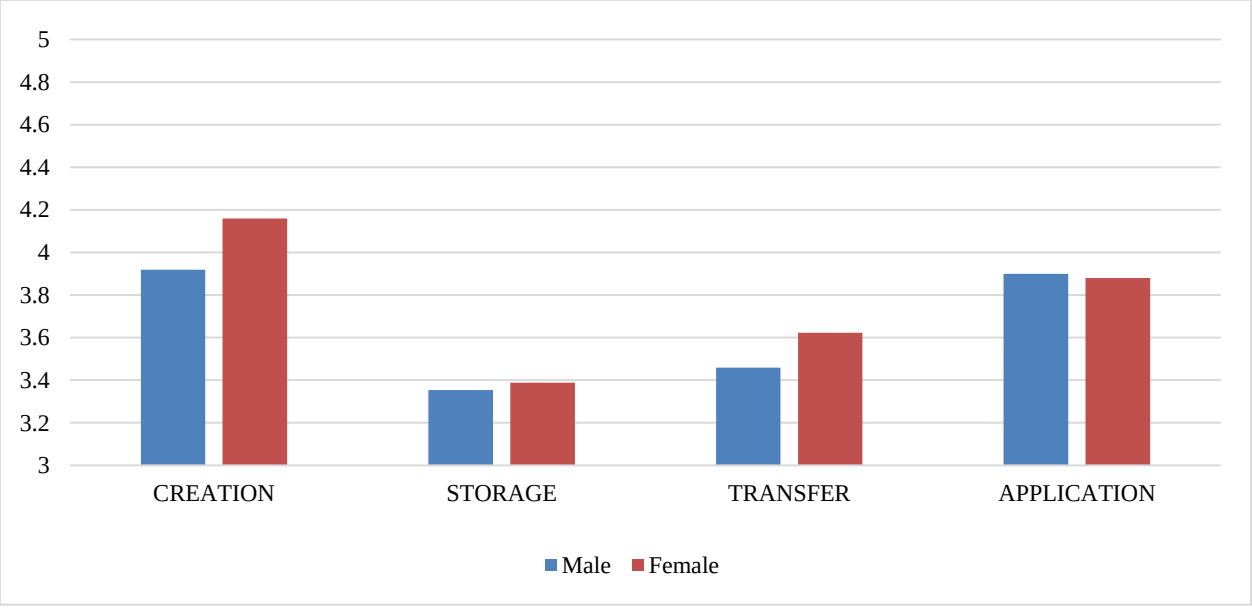

Figure 2. Mean of responses of dimensions of gender basis.

Table 4 indicates that the calculated *F*-value i.e., 0.406 with a df of 4 and 42 is found to be less than the table value i.e., 0.804 at 0.05 level of significance. Hence, H_0 is accepted by the investigator. Therefore, it is concluded that there is no significant difference between the differences in knowledge management in higher educational institutions based on the experiences of social science teachers.

Table 4

Difference in Knowledge Management in Higher Education Institution Based on Experience

Groups	Sum of squares	df	Mean square	*F*	Critical value (0.05)
Between groups	461.033	4	115.258	0.406	0.804
Within groups	11937.605	42	284.229		
Total	12398.638	46			

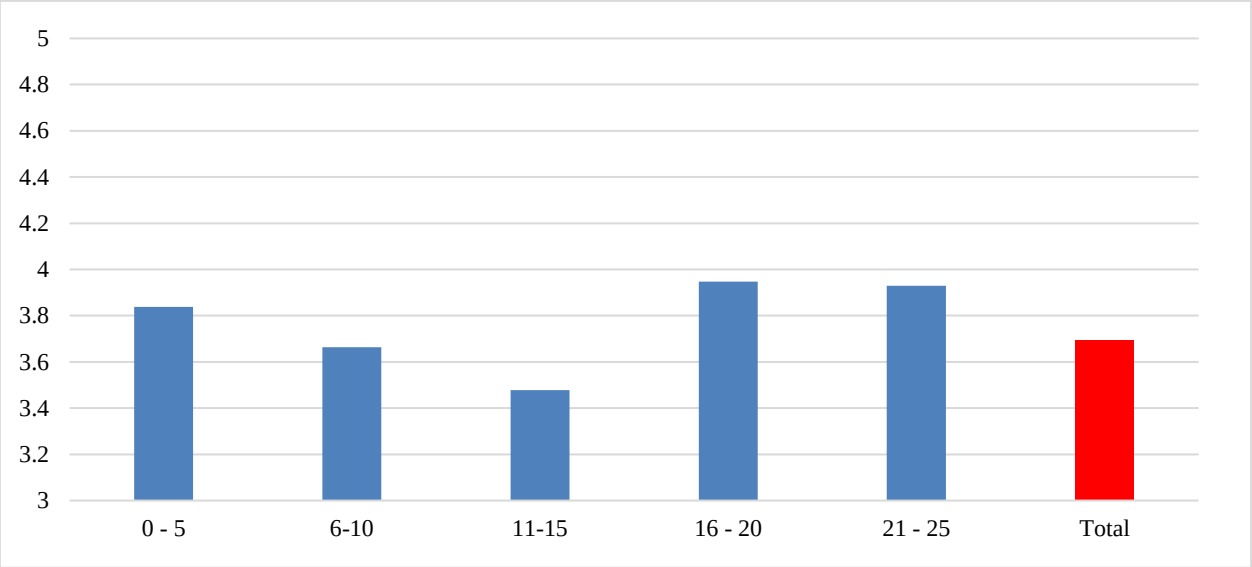

Figure 3. Mean of knowledge management on experience basis.

Major Findings of the Study

The survey responses were analyzed on three different bases including institution type, gender, and experience. Four different dimensions (Creation, Storage, Transfer, and Application) were used for quantification of knowledge management.

- The mean value of all four dimensions is higher in the private institution as compared to a government institution that indicates that knowledge management of the private institution is better than government institution although the difference is not significant.
- In gender comparison, the three dimensions (creation, storage, and transfer) have a higher mean value for females as compared to males while the application dimension shows an opposite pattern.
- In experience-based comparison it is observed that the lowest experience group (0 to 5 years) has high mean value compared to medium experience group (5 to 15 years) in all four dimensions. As the experience of responders increases above 15 years again their knowledge management skill increased due to increase in mean value of four dimensions.
- On the basis of dimensions, there is no significant difference between different dimensions of knowledge management with respect to all social science teachers.
- In overall comparative analysis among all three categories there are not any significant differences in knowledge management based on creation, storage, transfer, and application.

Conclusion

The survey responses were analyzed on three different bases includes institution type, gender and experience. Four different dimensions (Creation, Storage, Transfer and Application) were used for quantification of knowledge management. Upon exploring the knowledge management practices of the total social science teacher on the basis of dimensions, there is no significant difference between different dimensions of Knowledge Management is observed with respect to all social science teachers. Upon exploring the knowledge management practices of the total social science teacher on the basis of dimensions, there is no significant difference between

different dimensions of knowledge management that is observed with respect to all social science teachers. Social science teachers need a platform from which they can actively create and share knowledge. The current study is unique in the sense that it fulfills the gap in previous research. Thus the study having great implication towards achieving the SDGs goals 4 and National Education Program 2020 in India. For enhancing the quality of higher education and for improving the ranking of the higher education institutes in the global scenario, knowledge management is needed and important aspect of today's scenario.

Findings cannot be generalized due to small sample and coverage due to pandemic COVID-19. Further government institution needs to focus on their employee training and development for the improvement of knowledge management.

Data Availability

The data presented in this study are available on the request from the corresponding author.

Conflicts of Interest

The authors declare that they have no competing interests.

Author Contributions

Author conceived the study and prepared the initial draft, did the literature search and data analysis, reviewed the manuscript, and edited and provided critical comments, edited the final version of the manuscript.

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