

KNOWLEDGE MANAGEMENT PROCESS: AN EMPIRICAL EXAMINATION IN INDIAN HIGHER EDUCATIONAL INSTITUTIONS

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Abstract *Purpose – The purpose of the study is to identify the practices of knowledge management process in Indian higher educational institutions.*

Design/methodology/approach – The study involved 225 research scholars and 225 faculties' members from nine higher educational institutions. The respondents were required to respond to a five-point Likert scale from strongly agree to strongly disagree. The collected data were then analyzed using the SPSS 18.0 and AMOS 18.0 software packages. An exploratory factor analysis was conducted followed by confirmatory factor analysis. Descriptive and statistical data analyses were also performed on various dimensions of knowledge management process practices.

Findings – The research paper extracted that more than 0.5% of the respondents were strongly agreed and agreed towards each and every items of the knowledge management process dimensions. On the basis of the mean ranks for knowledge management process dimensions, respondents gave first preference to 'knowledge storing and sharing', followed by 'knowledge acquisition and creation'. 'Knowledge application' was found to be the least-preferred dimension on the basis of mean rank.

Keywords: *Mean Rank, Knowledge Management Process, Knowledge Management Assessment Instrument, Indian Higher Educational Institutions*

INTRODUCTION

Knowledge management is an emerging term. Intellectual capital and related knowledge need to be managed in order to best develop and leverage their value for the best of the organization (Pattanayak, 2009). Most of the people termed knowledge management as a management fad and had very low awareness towards the knowledge management concepts and its benefits in higher educational institutions. Knowledge management is termed as a key source of competitive advantage.

The processes of managing knowledge are the key for the success of knowledge management system in any organization. Many researchers have identified the various sequential and overlapping phases of processes for managing the knowledge. Ernst and Young (1998) have provided four knowledge management processes, which comprise planning, acquiring, applying, and assessing.

Demarest (1997) divided knowledge management processes into construction, embodiment, dissemination and use. Here, construction refers to the process of discovering or structuring a kind of knowledge; embodiment refers to the process of choosing a repository for knowledge; dissemination refers to the human processes and technical infrastructure that make

embodied knowledge available to the people within firm; and use refers to the ultimate objective of any knowledge management system that is to applied that acquired knowledge in order to create new products or services. Alavi and Leidner (2001) examined various characteristics and produced four broad dimensions of process namely creation, storage/retrieval, transfer, and application.

REVIEW OF LITERATURE

McAdam and Reid (2000) found knowledge construction, knowledge embodiment, knowledge dissemination, and knowledge use/benefit as key areas in the model of knowledge management in both public and private sectors. It is also concluded that both the public and private organizations have to achieve up to great extent by developing effective knowledge management system. Knowledge management is termed to be an effective driver to gain efficiency in all areas. Moreover, the six knowledge management processes in quantity surveying firms, namely acquisition, creation, storage, distribution, use, and maintaining, are identified. The knowledge creation was found to have the highest mean value; whereas, knowledge acquisition was having the least mean value in the quantity surveying firms. The lack of

specifically assigned staff for knowledge acquisition from external sources was found to be the hurdle in knowledge acquisition (Fong & Choi, 2009). Beckman (1997) proposed a process to knowledge management, which consisted of eight sequential stages: identify, collect, select, store, share, apply, create, and sell. Yap, Tasmin, Rusuli, and Hashim (2010) described that knowledge management practices in multimedia super corridor status organizations are at medium level. There are significant differences in knowledge management practices with respect to age of respondents and job designation. Sufficient attention should be given to culture, information technology, organization structure, and people to achieve success in knowledge management practices. Lin and Lee (2004) demonstrated that the specified research model in the study fitted the data well and the main determinants of knowledge sharing behaviour were found to be the encouraging intentions of senior managers. Furthermore, senior managers' attitude, subjective norms and perceived behavioural control were found to positively affect intentions to promote the knowledge sharing. Darroch and McNaughton (2002) elaborated that knowledge acquisition and responsiveness to knowledge are more significant for innovation. There is no formal or informal knowledge dissemination that was found to have a direct impact on the innovation. The findings also add that all innovations required more flexible and opportunistic organizations. Liu and Tsai (2009) found that knowledge-management capability, knowledge absorption capability, and innovation management capability possesses significant positive relationship with each other. Consequently, in order to sustain the operations of an organization, the organization must stress on its internal knowledge management capability and knowledge absorption capability as a result to expand its innovation management capability.

Lee, Lee, and Kang (2005) proposed a new metric for evaluating knowledge management performance. Knowledge circulation process (KCP) such as knowledge creation, knowledge accumulation, knowledge sharing, knowledge utilization, and knowledge internalization can influence the competence of work processes and performance of management activities. Knowledge management performance index (KMPI) is claimed to be measuring the quality of organizational knowledge and that it is related to management performance. The study reflects that there is no conflict between the effects of KCP and KMPI. When KCP efficiency increases, KMPI will also expand and enable the firms to become more knowledge intensive. Daud and Yusuf (2008) analyzed that the knowledge management processes have a significant relationship with the organization performance; whereas, knowledge acquisition is defined as the foremost process that contributes to the organization performance. Knowledge acquisition basically consists of accumulating, creating, acquiring, generating, capturing and collaborating activities that were exercised by small medium enterprises in acquiring new knowledge. Al-Zayyat,

Al-Khalidi, Tadros, and Al-Edwan (2009) perceived the perception of project practitioners that there is a positive relationship between the use of knowledge management and the improvement in the management of projects. The knowledge management processes was measured to be most effective in improving the management of projects. The knowledge creation with knowledge codification was sought to be most influential process followed by knowledge capturing with knowledge communication and then knowledge capitalization. Rahimi, Arbabisarjou, Allameh, and Aghababaei (2011) indicated that there is a positive and significant relationship between the different dimensions of knowledge management process (such as knowledge socialization, knowledge externalization, knowledge combination, and knowledge internalization) and creativity. In addition, there is no significant difference between faculty members' views regarding knowledge management process taking in view the variables of age, gender, and field of study; in addition, there is no significant difference among faculty members' views regarding creativity with regards to age, field of study, and employment status.

METHODOLOGY

Purpose

The purpose of the study is to identify the practices of knowledge management process in Indian higher educational institutions.

Participants

The sample size of the research consisted of 450 respondents. The researcher targeted 450 respondents in total, segregated it into 50 respondents from each of the nine institutions from three types of higher educational institutions, i.e., IIT, traditional universities and technical universities of North India. Out of 50 respondents from each of the institution, 50% were faculty members and rest of the respondents was research scholars.

Instrument

The Knowledge Management Assessment Instrument (KMAI), developed by Lawson (2003), was used in this research paper. The KMAI is considered in view of comprehensiveness in addressing all the dimensions of the knowledge management process. In this instrument, the knowledge management process has addressed six dimensions of knowledge management such as creating knowledge, capturing knowledge, organizing knowledge, storing knowledge, disseminating knowledge, and applying knowledge. Each dimension contains four descriptive statements utilizing a five-point Likert scale. For each

statement, the following scale is being used (strongly agree, agree, indifferent, disagree, and strongly disagree). A score of 5 for the response of 'strongly agree', 4 for 'agree', 3 for 'indifferent', 2 for 'disagree', and 1 for 'strongly disagree' is assigned. Each process makes up a component of dependent variables, which was used to study the knowledge management process in the higher educational institutions in India. Originally, there were 24 statements in total in the scale to study the process of knowledge management. The scale was adopted with the permission of the scale developer.

RESULTS AND DISCUSSIONS

Analysis of Knowledge Management Process Dimensions

The dimensions of knowledge management process is studied while considering the extracted factors viz. 'knowledge application', 'knowledge acquisition and creation', and 'knowledge storing and sharing' after applying EFA and CFA. For this purpose, the data have been subjected to appropriate tools and techniques. The researcher has presented the results applied by descriptive and statistical analysis.

Descriptive Analysis of Knowledge Management Process Items in Each Dimension

Descriptive analysis measures the frequency distribution of the responses. Table 1 illustrates the descriptive analysis regarding the knowledge management process items in each dimension.

Knowledge Application

The efficient use of knowledge is very much important in the process of knowledge management. Over 65% of the respondents strongly agreed and agreed that their institutions have methods to analyze and critical evaluate knowledge to generate new patterns and knowledge for future use, and 62% (strongly agreed and agreed) of them quickly linked sources of knowledge in problem solving as indicated in Table 1. Only 62% (strongly agreed and agreed) of the respondents believed that their institutions had mechanism to protect knowledge from illegal use; whereas, approximately 72% (strongly agreed and agreed) of the respondents realized that their institution had different methods to further develop the knowledge and apply them to new situations. About 63% of respondents strongly agreed and agreed that their institutions had integrating different sources and type of knowledge for their future usage.

More than half portion of the respondents admitted that their institutions provide feedback on their ideas and knowledge.

However, one fifth of the respondents gave indifferent response and 19.6% responded in the negative; whereas, about 70% (strongly agreed and agreed) of respondents stated that their institutions sent out appropriate information to them on time. This is also evident from the responses that about 62% of the respondents strongly agreed and agreed that their institutions had processes for applying knowledge learned from past experiences.

These findings reflected that more than half of the respondents strongly agreed and agreed to each and every statement about the application of knowledge in their institution. The institutions are having the processes of generating and developing the knowledge from past experiences in order to apply them into new situations, future challenges and problem solving.

Knowledge Acquisition and Creation

The responses to the questions related to knowledge acquisition and creation are tabulated in Table 1, which shows a number of observations as follows:

- Approximately 79% (strongly agreed and agreed) of the respondents encouraged for exchange of ideas and knowledge between individuals and group.
- Almost 85% (strongly agreed and agreed) of them conceded that their institution had mechanism for creating and acquiring knowledge from different sources.
- Over 71% (strongly agreed and agreed) of respondents concurred with the statement that their institution responded to their ideas and documented them for further development.
- About 73% (strongly agreed and agreed) of the respondents reported that their institution had mechanism for creating new knowledge from existing knowledge.
- Approximately 62% (strongly agreed and agreed) of the respondents acknowledged that their institution rewarded them for new ideas and knowledge.
- Almost 68% (strongly agreed and agreed) of the respondents believed that they could present and transfer their ideas and knowledge in the institution without fear.
- About 64% of them were strongly agreed and agreed that their institution had mechanism for converting knowledge into action plans.

The responses demonstrated the fact that most of the respondents identified the existence of the knowledge acquisition and creation process in their institution. The respondents rely on the fact that acquisition and creation of new knowledge are done through existing knowledge and from past projects in order to improve the successive projects.

Table 1: Descriptive Analysis of Knowledge Management Process Items in Each Dimension

Factor 1	Knowledge Application	SA	A	I	D	SD
V24	My institution has methods to analyze and critical evaluate knowledge to generate new patterns and knowledge for future use	90 (20.0)	200 (44.4)	103 (22.9)	45 (10.0)	12 (2.7)
V23	My institution applies knowledge to critical competitive needs and quickly links sources of knowledge in problem solving	88 (19.6)	191 (42.4)	114 (25.3)	48 (10.7)	09 (2.0)
V22	My institution has mechanisms to protect knowledge from inappropriate or illegal use inside and outside of the institution	99 (22.0)	179 (39.6)	105 (23.3)	54 (12.4)	13 (2.7)
V21	My institution has different methods to further develop the knowledge and apply them to new situations	117 (26.0)	206 (45.8)	83 (18.4)	32 (7.1)	12 (2.7)
V10	My institution has mechanisms for filtering, cross listing and integrating different sources and types of knowledge	90 (20.0)	193 (42.9)	97 (21.6)	59 (13.1)	11 (2.4)
V11	My institution gives feedback to us on our ideas and knowledge	85 (18.9)	184 (40.9)	93 (20.7)	66 (14.7)	22 (4.8)
V18	My institution sends out timely reports with appropriate information to us and other relevant institutions	134 (29.8)	176 (39.1)	81 (18.0)	49 (10.9)	10 (2.2)
V12	My institution has processes for applying knowledge learned from experiences and matches sources of knowledge to problems and challenges	91 (20.2)	185 (41.1)	115 (25.6)	47 (10.4)	12 (2.7)
Factor 2	Knowledge Acquisition and Creation	SA	A	I	D	SD
V2	My institution encourages and has processes for the exchange of ideas and knowledge between individuals and groups	166 (36.9)	186 (41.3)	66 (14.7)	27 (6.0)	05 (1.1)
V1	My institution has mechanisms for creating and acquiring knowledge from different sources	192 (42.6)	187 (41.6)	55 (12.2)	13 (2.9)	03 (0.7)
V5	My institution responses to our ideas and documents them for further development	113 (25.1)	206 (45.8)	68 (15.1)	47 (10.4)	16 (3.6)
V4	My institution has mechanisms for creating new knowledge from existing knowledge and uses lessons learnt and best practices from projects to improve successive projects.	130 (28.9)	198 (44.0)	80 (17.8)	36 (8.0)	06 (1.3)
V3	My institution rewards us for new ideas and knowledge	113 (25.1)	166 (36.9)	97 (21.6)	54 (12.0)	20 (4.4)
V6	My institution has mechanisms in place to absorb and transfer knowledge into the institution	91 (20.2)	219 (48.7)	91 (20.2)	41 (9.1)	8 (1.8)
V8	My institution has policies in place to allow us to present new ideas and knowledge without fear and ridicule.	128 (28.4)	180 (40.0)	85 (18.9)	47 (10.4)	10 (2.3)
V7	My institution has mechanisms for converting knowledge into action plans	88 (19.6)	199 (44.2)	101 (22.4)	46 (10.2)	16 (3.6)
Factor 3	Knowledge Storing and Sharing	SA	A	I	D	SD
V19	My institution has libraries, resource center and other forums to display and disseminate knowledge	263 (58.4)	156 (34.7)	23 (5.1)	06 (1.3)	02 (0.5)
V16	My institution has mechanisms to patent and copyright new knowledge	174 (38.7)	142 (31.6)	74 (16.4)	40 (8.9)	20 (4.4)
V15	My institution has different publications to display the captured knowledge	155 (34.4)	175 (38.8)	73 (16.2)	31 (6.8)	16 (3.8)
V20	My institution has regular symposiums, lectures, conferences, and training sessions to share knowledge	230 (51.1)	162 (36.0)	33 (7.4)	20 (4.4)	05 (1.1)
V14	My institution utilizes various written devices such as newsletter, manuals to store the knowledge what they capture	153 (34.0)	186 (41.3)	70 (15.6)	32 (7.1)	09 (2.0)
V13	My institution utilizes databases, repositories and information technology applications to store knowledge for easy access by all	170 (37.8)	178 (39.6)	59 (13.1)	31 (6.9)	12 (2.6)

Source: Survey Data

Note: Figures in the parenthesis represent percentage

Knowledge Storing and Sharing

Knowledge exists in a wide variety of formats in the institutions. This is well illustrated from the Table 1, which reveals that almost 93% of the respondents strongly agreed and agreed with the statement that their institution has libraries and resource centers to display and disseminate the captured knowledge. Approximately 73% (strongly agreed and agreed) of them stated that their institutions had different publications to display the knowledge and mechanism for patenting and copyrighting the knowledge in order to secure them for illegal use, which could be seen in Table 1.

Around 87% (strongly agreed and agreed) of the respondents said that their institution had regular symposiums, conferences, lectures and training sessions to share knowledge. About 77% (strongly agreed and agreed) of the respondents believed that their institution had various written devices such as manuals, newsletter, databases and repositories to store knowledge for easy access to all.

However, it is evident from the findings that the institutions are having proper sources of storing and sharing knowledge, which can be easily accessed by all with the proper application of information technology.

Statistical Analysis of Knowledge Management Process Items in Each Dimension

Statistical analysis includes mean, mean rank and standard deviation. As shown in Table 2, the total mean score for knowledge management process dimensions was 85.123.

For the eight items of the dimension of ‘knowledge application’, the dimension score was 29.555. For the eight items of the dimension of ‘knowledge acquisition and creation’, the dimension score was 30.898, and for the six items of the dimension of ‘knowledge storing and sharing’, the dimension score was 24.669.

The item with the highest mean score in factor 1 (knowledge application) was ‘my institution has different methods to further develop the knowledge and apply them to new situations’ (M = 3.853, SD = 0.974) and ranked at 1st place followed by ‘my institution sends out timely reports with appropriate information to us and other relevant institutions’ (M = 3.833, SD = 1.043), and ‘my institution has methods to analyze and critical evaluate knowledge to generate new patterns and knowledge for future use’ (M = 3.691, SD = 0.988). The item with the lowest mean score was ‘my institution gives feedback to us on our ideas and knowledge’ (M = 3.542, SD = 1.102). The item with highest mean score in factor 2 (knowledge acquisition and creation) was ‘my institution has mechanism for creating and acquiring knowledge from different sources’ (M = 4.227, SD = 0.821) and ranked at 1st place followed by ‘my institution encourages and has processes for the exchange of ideas and knowledge between individuals and groups’ (M = 4.069, SD = 0.923), and ‘my institutions has mechanism for creating new knowledge from existing knowledge and uses lessons learnt and best practices from projects to improve successive projects’ (M = 3.911, SD = 0.949). The item with the lowest mean score was ‘my institution has mechanism for converting knowledge into action plans’ (M = 3.660, SD = 1.018).

Table 2: Statistical Analysis of Knowledge Management Process Items in Each Dimension

Sr. No.	Factor and Variable	Mean	Mean Rank	Standard Deviation
Factor 1	Knowledge Application			
V24	My institution has methods to analyze and critical evaluate knowledge to generate new patterns and knowledge for future use	3.691	3	0.988
V23	My institution applies knowledge to critical competitive needs and quickly links sources of knowledge in problem solving	3.669	4	0.974
V22	My institution has mechanism to protect knowledge from inappropriate or illegal use inside and outside of the institution	3.660	5	1.039
V21	My institution has different methods to further develop the knowledge and apply them to new situations	3.853	1	0.974
V10	My institution has mechanism for filtering, cross listing and integrating different sources and type of knowledge	3.649	7	1.019
V11	My institution gives feedback to us on our ideas and knowledge	3.542	8	1.102
V18	My institution sends out timely reports with appropriate information to us and other relevant institutions	3.833	2	1.043
V12	My institution has processes for applying knowledge learned from experiences and matches sources of knowledge to problems and challenges	3.658	6	1.000
Knowledge Application Dimension Score-Total Mean		29.555		

Sr. No.	Factor and Variable	Mean	Mean Rank	Standard Deviation
Factor 2	Knowledge Acquisition and Creation			
V2	My institution encourages and has processes for the exchange of ideas and knowledge between individuals and groups	4.069	2	0.923
V1	My institution has mechanism for creating and acquiring knowledge from different sources	4.227	1	0.821
V5	My institution responds to our ideas and documents them for further development	3.784	5	1.047
V4	My institutions has mechanism for creating new knowledge from existing knowledge and uses lessons learnt and best practices from projects to improve successive projects	3.911	3	0.949
V3	My institution rewards us for new ideas and knowledge	3.662	7	1.111
V6	My institution has mechanism in place to absorb and transfer knowledge into the institution	3.764	6	0.936
V8	My institution has policies in place to allow us to present new ideas and knowledge without fear and ridicule	3.820	4	1.030
V7	My institution has mechanism for converting knowledge into action plans	3.660	8	1.018
Knowledge Acquisition and Creation Dimension Score- Total Mean		30.898		
Factor 3	Knowledge Storing and Sharing			
V19	My institution has libraries, resource centers and other forums to display and disseminate knowledge	4.493	1	0.698
V16	My institution has mechanism to patent and copyright new knowledge	3.911	6	1.141
V15	My institution has different publications to display the captured knowledge	3.938	5	1.049
V20	My institution has regular symposiums, lecturers, conferences and training sessions to share knowledge	4.316	2	0.874
V14	My institution utilizes various written devices such as newsletter, manuals to store the knowledge what they capture	3.982	4	0.981
V13	My institution utilizes databases, repositories and info technology applications to store knowledge for easy access by all	4.029	3	1.013
Knowledge Storing and Sharing Dimension Score-Total Mean		24.669		
Total Mean Score of Knowledge management process Dimensions		85.123		

Source: Survey Data

The item with highest mean score in factor 3 (knowledge storing and sharing) was 'my institution has libraries, resource centers and other forums to display and disseminate knowledge' (M = 4.493, SD = 0.698) with mean rank 1 followed by 'my institution has regular symposiums, lecturers, conferences and training sessions to share

knowledge' (M = 4.316, SD = 0.874), and 'my institution utilizes databases, repositories and info technology applications to store knowledge for easy access by all' (M = 4.029, SD = 1.013). The item with the lowest mean score was 'my institution has mechanism to patent and copyright new knowledge' (M = 3.911 and SD = 1.141).

Table 3: Mean, Mean Rank and Standard Deviation of Knowledge Management Process Dimensions

Sr. No.	Factor	Mean	Mean Rank	Standard Deviation
1	Knowledge Application	3.694	3	0.799
2	Knowledge Acquisition and Creation	3.862	2	0.746
3	Knowledge Storing and Sharing	4.112	1	0.703

Source: Survey Data

Tables 3 summarized the overall mean values and mean ranks of the knowledge management process dimensions. If the mean value of the statements is more than or equal to 3.5, the level of agreement with the statements measuring a particular variable is high. On the basis of these mean ranks, respondents gave first preference to 'knowledge storing and

sharing' with the mean value 4.112 and standard deviation 0.703. The findings were partially supported with Mohayidin et al. (2007) who found 'knowledge storing' with the highest mean score dimension of knowledge management process. 'Knowledge acquisition and creation' was ranked at second place with the mean value 3.862 and standard deviation

0.746. 'Knowledge application' was ranked at last place with the mean value 3.694 and standard deviation 0.799. 'Knowledge application' being the lowest rated dimension was consistent with the findings of Chin-Loy and Mujtaba (2007). The findings also supported the Ramachandran, Chong and Ismail (2009) who found 'knowledge storing' as highest mean rated dimension and 'knowledge application' with lowest rated dimension.

CONCLUSIONS

The study concluded that more than 0.5% of the respondents were strongly agreed and agreed towards each and every item of the knowledge management process dimensions. On the basis of the mean ranks for knowledge management process dimensions, respondents gave first preference to 'knowledge storing and sharing', followed by 'knowledge acquisition and creation'. 'Knowledge application' was found to be the least preferred dimension on the basis of mean rank. According to the study, the research scholars and faculty members found to be very much sincere about the knowledge dissemination but the main aim of knowledge management, i.e., application or the use of the stored knowledge were least adopted in Indian universities.

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