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# Implementing Knowledge Management in Higher Educational Institutions in India: A Conceptual Framework

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***Abstract*** - Higher education institutions (HEIs) create and apply knowledge during their processes and activities. The growth in the number of HEIs in India in the last decade has increased competition and the pressures for performing better. This has forced the institutions to recognize the need for knowledge management (KM) initiatives which is a key asset. KM in HEIs involves the discovery capture of the knowledge created, its filtering and encapsulation and mapping it to the needs of the organization to derive value from its sharing throughout the organization. A competitive edge over others depends largely on the quality of KM that organizations are able to apply to their operations. The paper explores the functional domains of HEIs and the indicators that determine these domains. Further, the authors have evaluated the functional domains for information technology (IT) based knowledge management (KM) intervention and identified

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the benefits that are perceived. In order to reinforce the results, the authors have proposed a conceptual framework for the efficient capture, encapsulation, structuring, dissemination and employment of the organizational knowledge towards the organizational goals and objectives. If the framework is implemented, the authors feel it will result in enhanced transformation of organizational knowledge into decision making and actions.

***Keywords*** - Knowledge management, higher education, knowledge creation, knowledge encapsulation, knowledge structuring, knowledge dissemination

## INTRODUCTION

A knowledge management approach is the conscious integration of people, processes and technology involved in designing, capturing and implementing the intellectual infrastructure of an organization (Petrides 2004). It enables the people within an organization to share what they know, leading to improved services and outcomes. KM plays an important role in the improvement of organizational competitive advantage through sharing of best practices, achieving better decision making, faster response to key institutional issues, better process handling and improved people skills. In turn, this means less reinvention of the wheel, relevant and focused policies in compliance with institutional goals and objectives, the ability to access information more quickly, improved academic and administrative services, reduced costs and prevention of mistakes and failures. In practice, however, few HEIs achieve all or even most of these benefits. The apparent failure in KM initiatives is primarily caused of lack of sharing culture, lack of awareness of the benefits of KM and a failure to integrate KM into everyday working practices.

The voluminous growth in the number of higher educational institutions (HEIs) in India in the last decade has stressed the institutions with the extreme pressures of competition and the need to perform better. HEIs consist of a number of academic and administrative processes that produce knowledge during their activities. The question is what value is added to the products and services they deliver by the effective use this knowledge asset (Milam, John, 2001). The HEIs have to attune themselves to develop strategies for the utilization of

the institutional knowledge towards enhancing their activities and performance. This requires them to respond timely to the dynamic technologies and the increasing demands of academia (Nagad, Amin, 2006). For this, the knowledge in the organization needs to be identified, encapsulated, transformed and disseminated effectively. This paves the way to recognize the urgent need for knowledge management (KM) initiatives which is a key asset. The application of a KM approach will enable institutions to gain a more comprehensive, reflexive and integrative view of the institutional knowledge for application in cross functional issues – ultimately leading to improved knowledge sharing and more effective decision making, planning and enhancement in performance.

## Related Work

Significant work has been accomplished in the area of KM in higher educational system and many new contributions have been made by the researchers in this field. The table describes the work already achieved in this area and its relevance to the authors in their research.

| no. | Author(s) | Nature of Work | Relevance for proposed framework |
|---|---|---|---|
| 1 | Kidwell, et al. (2000, pp. 28-33) | Discussed why KM is vital to higher education systems and how an institution wide approach to KM can lead to exponential improvements in knowledge sharing – both explicit and tacit and the subsequent surge benefits | The work helped us to understand the benefits of various knowledge management applications on educational institution processes such as research, curriculum development, student and alumni services, administrative services and strategic planning. |
| 2 | Ranjan and Khalil (2007,pp. 15-25) | Argued that in order to build and develop a robust and thriving knowledge environment the instituted need to look beyond technology and develop the overall culture of accessing, sharing and managing knowledge. | The paper facilitated us to understand the role of technology as well as knowledge sharing culture towards developing a robust KM system in organizations. |

| | | | |
|---|---|---|---|
| 3 | Yeh (2005, pp.35-42) | presented the KM multi-modeling framework to propose four organizational strategies for higher education – culture, leadership, technology and measurement and three academic KM strategies – individual, institutional and network. | The paper guided us on the need for a blend of organizational and KM strategies for a robust knowledge management system. |
| 4 | Huveida, Shams, and Hoosh-mand (2008, pp. 695-702) | demonstrated the relevance of problem solving and decision making theory in assessing the purpose of organizational KM activities. | The work helped us to understand the importance of problem solving and decision making for conceptualizing KM practices. |
| 5 | Ashish and Arun (2006) | Showed that IT based KM interventions seem to be promising techno-management tools to help cast an impact over all the vital areas of Indian higher education system. | The research guided us to understand the urgent need for IT based Km intervention in higher educational institutions. |
| 6 | Nagad and Amin (2006, pp.60-65) | Concluded that in order to apply KM, knowledge and expertise must be readily accessible, understandable and retrievable. | The paper helped us to understand the importance of efficient accessibility of institutional knowledge for effective knowledge management. |
| 7 | Sedziuvi-ene and Vvein-hardt (2009, pp. 79-90) | Concluded that to create a KM system in higher educational institutions it is necessary to identify, capture, transform, consolidate, evaluate and disseminate the institutional knowledge. | The paper helped us to identify the important phases in the proposed KM framework. |
| 8 | Rowley (2000, pp. 325-333) | said that KM challenges lie in the creation of a knowledge environment and the recognition of knowledge as intellectual capital. | The paper helped us to understand that effective KM in higher education requires significant change in the culture and values, organizational structures and reward systems |

| | | | |
|---|---|---|---|
| 9 | Ismail and Yang (2007) | Proposed a KM framework for higher education comprising of three main sections – knowledge acquiring process, knowledge distribution and segregation process and strategic planning process using the knowledge. | The paper helped us to understand the need for knowledge acquisition, knowledge segregation and knowledge dissemination in a KM system. |
| 10 | Butler and Murphy (2007) | Discussed the critical success factors for KM implementation in organizaions. | The study of the paper helped the authors to take into consideration the factors that influence the KM implementation in developing their framework. |
| 11 | Petrides (2004) | Discussed the benefits that knowledge management practices can provide to organizations. | The paper guided the authors on the need for implementing knowledge management in higher educational institutions. |

This paper is motivated by the above related researches to explore perceptions of stakeholders for IT based KM intervention in higher educational institutions. Based on the outputs, the authors have developed a KM framework that facilitates the institutions to capture structure and disseminate the institutional knowledge so that it is readily available to everyone – anytime, anywhere.

### *Knowledge Management*

Knowledge management is the discipline of enabling individuals, teams and entire organizations to collectively and systematically create, share and apply knowledge to better achieve their objectives. KM delivers outstanding collaboration to maximize the value of organizational information and knowledge assets leading to improved effectiveness and greater innovation.

Wiig (1996) defines knowledge as "the insights, understandings and the practical know-how that we all possess". Nonaka (1998), Tiwana (2000) and Zack (1999 identified two types of knowledge – tacit and explicit. Tacit knowledge is the form of knowledge that is subconsciously understood and applied. Tacit knowledge is highly personalized, gained through experience and influenced by beliefs,

perspectives and values of the individuals. It is difficult to codify and resides in the minds of the people possessing it. It is usually shared through highly interactive conversation and shared experiences. Explicit knowledge, on the other hand, is easy to articulate, capture and distribute in different formats. It is formal and systematic (Nakkiran, Sewry, 2002, pp.235-245). Explicit knowledge can be documented and easily communicated. This knowledge is easier to share and use across the organization.

Knowledge management systems are employed by organizations to meet the organizational objectives of improved performance, competitive advantage, experience transfer and the development of collaborative practices. Duffy(1999) defines knowledge management as the "identification, growth and effective application of an organization's critical knowledge" defines Knowledge management is "the systematic, holistic approach to the sustainable improvement of the handling of knowledge on all levels of an organization" (Eppler,2002). According to Nakkiran and Sewry (2002, pp. 235-245), knowledge management is the process of identifying, growing and effectively applying an organization's existing knowledge in order to achieve the organization's goals, while creating an organizational culture that permits further knowledge creation. From these and other views about knowledge management, it is inferred that a good knowledge management system should be integrated into the daily routines of the people enabling a continuous knowledge flow in the organization.

A knowledge management system is based on capturing, storing, transforming and sharing the organizational knowledge. Information technology (IT) is a key enabler for KM systems and facilitates the capture, storage, transformation and dissemination of knowledge.

### *Role of KM in Higher Education in India*

Higher education institutes create knowledge during their academic and administrative processes. Knowledge is created as explicit knowledge in the form of documents, procedures, results as well as tacit knowledge in the form of experiences, judgments, views and perceptions that resides with individuals. The challenge is how to make available to the institution this explicit and tacit knowledge as an integrated central resource. Capturing and making the institutional

knowledge available will ensure continuity and will accelerate institutional learning (Petrides, 2004). On the contrary, most HEIs face the difficult task of integrating their institutional knowledge for improved knowledge sharing and effective decision making.

Knowledge is created at various levels in different forms and is required at each level in a different form. Academic and administrative processes of teaching, examination, evaluation, admissions, counseling, training and placement and research and consultancy result in many useful experiences and studies which may be defined as knowledge in the context of higher educational institutes (Ranjan, Khalil). KM in higher educational institutions aims at integrating the knowledge produced at all levels and using it towards the institute's goals and targets. This will have the implications of improving the operational quality, capacity development and effectiveness of the organization leading to enhanced productivity and performance.

An academic institution is made up of a number of components or levels consisting of faculty, students, administration, academics, research and training and placement. Each of these levels creates knowledge as well as consumes knowledge, though the nature of knowledge varies at each level. It is important to identify the knowledge that each level contributes to the system and the knowledge that each level requires to perform its functions, and find ways to apply this knowledge effectively at the points of use. A robust KM system must adhere to the information needs of all the levels.

## MATERIALS AND METHODS

### *Identification of the Domains and Determinants*

The authors identified the functional domains in the HEIs and the determinants that support the effectiveness of KM in these domains via an interview and group discussion based study as well as professional experience in educational institutions. Inputs were also gathered from work already accomplished in the field of KM in higher education (Ashishta and Arun, 2006, Ranjan and Khalil, 2007).

Data on the functional domains in HEIs and the indicators that determine the domains was collected on the basis of information collected during group and individual interviews with the faculty, heads of departments, deans and staff and observations of the procedures

and processes. The data collected was analyzed using the content analysis technique. Content analysis consists of analyzing the contents of documentary materials(books, magazines, newspapers) and verbal materials (interviews, group discussions) for the identification of certain characteristics that can be measured or counted (Kothari, 2010).

The content analysis resulted in the identification of the activity domains in higher educational institutions and the determinants for KM intervention in these domains. The major domains were identified as institutional planning and development, research and consultancy, administrative services, purchase and procurement, finance and accounts, teaching and learning process, examination process, admission process, placements and faculty recruitment, faculty performance evaluation, student affairs and others. The authors restricted their study to only some specific domains.

### *Qualitative Research and Pilot Study*

A study was conducted by the authors in the form of a survey from faculties and staff of reputed engineering colleges and business schools. The objective of the study was to study the perceived importance attributed by stakeholders to IT based KM intervention in HEIs in order to establish a support for structured knowledge management. Based on the activity domains in HEIs and the determinants perceived to impact KM intervention in these domains, a questionnaire was framed. It consisted of a brief introduction on the purpose of the research specifying the authors' interest in the participants' perception of the impact on KM intervention in the functional domains of HEIs. The questionnaire was designed to be simple, easy to fill, less time consuming and focused. It consisted of three sections – the first on the demographic data like age, gender, educational qualifications, professional experience and other work responsibilities of the faculty. The second section consisted of the list of determinants in various domains to be evaluated by the faculty for KM intervention. The third section focused on collecting the views of the respondents on the perceived benefits that IT based KM intervention can have in the various functional domains.

To conduct the survey, the questionnaire was distributed to the respondents partly by mail and partly in person. The candidates for the survey consisted of senior faculty members, Deans, Heads of

Departments, training and placement officer, administrative staff and section in charges. The selection of the respondents was done very carefully keeping in mind the nature of the institutions, academic qualifications, designations and professional experience. They consisted of participants with varied educational and cultural backgrounds, professional experience and exposure to varied learning experiences. The respondents were chosen from universities, engineering colleges and business schools in the NCR of Delhi. The names of the HEIs and the respondents have not been disclosed. Research ethics was observed in the research process.

Follow up telephone calls and e-mails were made to remind the respondents that the survey should be completed in order to maximize the response rates. It took about one month to complete the survey wherein 167 responses were received out of a total of 550 forms distributed. The response rate of the survey was 30.36%.

In answering the section 2 of the questionnaire, the respondents marked a determinant "YES" in support of KM intervention, else it was marked "NO". The responses were encoded, entered into the computer and results computed in the form of percentage response (YES / NO) for each determinant. These results are illustrated in appendix 1.

The subjective section 3 facilitated to collect the views of the respondents on the impact that KM intervention can have in the various domains. The conclusions are illustrated in table 1.

***Observations and Inference***

It was found that the importance given to the determinants for KM intervention differed from institution to institution depending upon the organizational structure, goals and targets, organizational responsibilities, stakeholders and the decision making authority. The results of the study assert the opinion that KM initiatives can play an important role in enhancing the performance and effectiveness of HEIs in their major work domains.

Table 1 summarizes the impact that KM intervention can have in the various domains. This is based on the views expressed by the respondents in response to section 3 of the questionnaire.

Table 1 : Impact of KM intervention on functional domains

| Domain | Impact of KM Intervention |
|---|---|
| Institutional Planning and Development | o Establishment and measurement of goals, objectives and targets<br>o Development of more relevant and focused policies<br>o Increased consistency in decision making<br>o Focus of strategic planning efforts towards institutional goals and objectives<br>o Improved procedures and processes<br>o Standardization and effort towards total quality management(TQM) |
| Institutional Research | o Enhanced research<br>o Motivation for research<br>o Facilitation for inter disciplinary research<br>o Utilization of institutional resources and facilities<br>o Reduced time for research<br>o Reduced costs<br>o Easy access to research grants and facilities |
| Industrial Projects and Consultancy | o Reduced industry-academia barrier<br>o Improved services to industry<br>o Enhanced industrial exposure for faculty and students<br>o Increased revenue generation<br>o Enhanced understanding of relevance of curriculum in industry practices<br>o Production of industry ready professionals |
| Placement Services | o Better placements and higher average salaries<br>o Enhanced planning for placements<br>o Better long term association with corporates and companies<br>o Improved guidance for placements |
| Teaching and Learning Process | o Effective teaching and learning process<br>o Better and modern teaching methodologies<br>o Improved student projects<br>o Improved relevance of courses for industry practices<br>o Motivation towards research in selected areas<br>o Improved results |
| Recruitment Process | o Compliance to required cadre ratio<br>o Recruitment of competent faculty<br>o Reduced faculty turnover |

Continuation of Table 1

| | |
|---|---|
| Performance Evaluation of Faculty | ○ Enhanced support to retention and promotion<br>○ Better succession planning implementation<br>○ Enhanced plans for faculty development, traing programs and QIPs<br>○ Self Improvement and career development plans<br>○ Motivation towards superior performance<br>○ Assignment of the right people to the right jobs<br>○ Clear understanding of responsibilities and expectations<br>○ Fair grant of recognition, awards and compensation |
| Institutional Administrative Services | ○ Improved effectiveness and efficiency of the administrative services<br>○ Improved compliance with policies, goals and objectives<br>○ Enhanced responsiveness and accountability<br>○ Reduced process cycle times<br>○ Efficient decision making |
| Student Affairs | ○ Improved availability and accessibility of institutional resources to students<br>○ Enhanced services offered to students<br>○ Improved service capability of concerned staff and faculty |

Based on the results of the survey, the authors emphasize the pressing need for KM intervention in HEIs. To facilitate this, the authors have proposed a conceptual framework for implementing knowledge management in higher educational institutions.

## FRAMEWORK

The framework comprises of determining the existing gap in the knowledge needs of the organization and proposes an iterative process for closing the gap. A knowledge chain as shown in fig. 1 focuses on the identification of the strategic needs of the higher educational institutes based on the organizational goals and objectives, organizational hierarchical structure, stakeholders and the processes. Once this has been achieved it is important to determine the degree of the existing KM in the organization- what and how much useful knowledge is efficiently captured and reused in the forms required. The next step is to determine the knowledge gap and the factors that create this gap. The need is to close the gap for the efficient use of organizational knowledge towards goals and objectives.

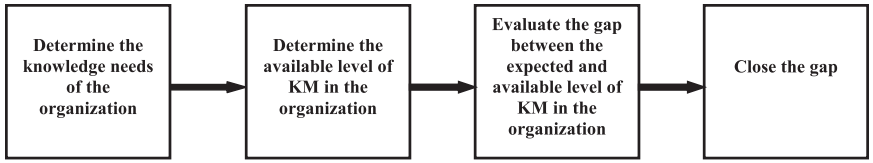


Fig. 1 : Knowledge chain

The principal knowledge sources in higher educational institutes are the faculty, students, section heads, staff, administration, registrar and the training and placement services. They create tacit and explicit knowledge in the areas of academics, development and planning as a result of the activities performed. The organizational knowledge is captured and encapsulated to be stored as a central institutional resource for use by all stakeholders. The storage of knowledge is facilitated by a central knowledge base called the knowledge repository. A knowledge repository is a structured collection of the knowledge generated in an organization. This includes the documents generated and the tacit knowledge available with the stakeholders, explicitly codified. The knowledge repository ensures the availability of related knowledge quickly and efficiently at the same place. The knowledge in the knowledge repository is mapped to different processes and disseminated to the users or stakeholders.

Kevin and Evaristo (2004, pp. 87-91) have discussed that storing knowledge in a central repository ensures the following:

a) Maintenance of shared context, thus improving the means of exploration of knowledge.
b) Ease of access as the knowledge is well structured and available at a central place
c) Ease of transfer to and fro from the stakeholders and processes.
d) Enhanced validity of knowledge as only validated knowledge makes its way to the central storage.
e) Easy identification of the source of knowledge.

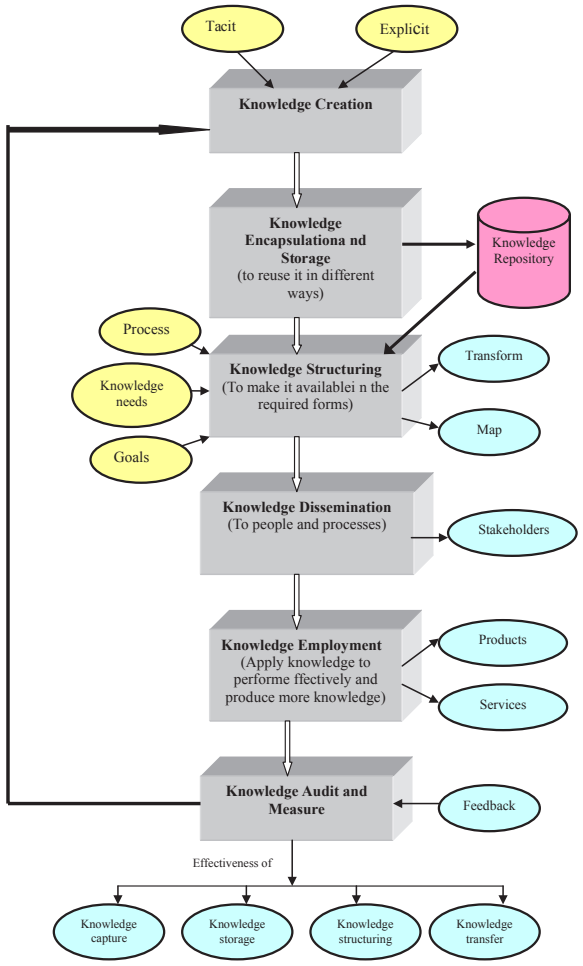


Fig. 2 : Conceptual Framework for Knowledge Management

The stored knowledge is structured into appropriate forms based on the organizational goals, the knowledge needs of the stakeholders and the processes in the organization. This consists of transformation of knowledge and its mapping to the processes where it is applied. The next phase is of the dissemination of the knowledge to the points of use. The knowledge is applied to the production of products and services

in the organization. An important phase in the framework is the audit and measure of the effectiveness of the phases of the framework. This can be achieved through efficient feedback mechanisms. The application and use of knowledge produces more knowledge that needs to be captured. This is an iterative process.

### *Implications*

The implications of implementing the proposed framework and the opportunities it offers to higher educational institutes, discussed throughout the paper, are summarized in this section. Today the challenge faced by most KM systems is the lack of ability to integrate the capture and transfer of actionable, articulated and explicit knowledge (Delen, Al-Hawamdeh, 2009). The framework focuses on the integrated collection of knowledge from all levels in the institution and its dissemination for application at the points of use. Retirements, resignations and restructuring of activities leads to the phenomenon of "knowledge drain", particularly the tacit knowledge that resides in the minds of the people. This results in loss of useful knowledge from the organization. The challenge in minimizing knowledge loss is the ability to identify the knowledge sources and the necessary measures to ensure knowledge retention and utilization (Delen, Al-Hawamdeh, 2009). The framework offers opportunities to institutes to grow from a individual level to a cross functional and cross organizational knowledge sharing culture. Storage of the organizational knowledge in the knowledge repository as a central resource results in the availability of knowledge anywhere, anytime. Past experiences and data on failures and mistakes, if captured and stored, help to apply corrective and preventive measures to the newer domains. A centralized approach towards storage of organizational knowledge provides opportunity for collaborative work environment leading to better products and services.

### *Challenges Faced*

The implementation of the framework in higher educational institutions will face challenges and threats on account of human nature, existing organizational hierarchy and infrastructural constraints. Resistance to change, lack of proactive commitment, silos

mentality and lack of co-operation among professionals are traits of human nature that will pose a challenge to the implementation of the framework into services. According to Nakkiran (2001), the employees and more importantly top management are not very committed to KM initiatives. Most people believe that knowledge is power and the fear of losing tacit knowledge is an important reason for the lack of knowledge sharing culture in organizations. The implementation of the framework into services consists of integrating the processes pertaining to different functions. This is a challenging job as it involves many people and processes, both internal and external to the organization. The conversion of the framework to an automated system for access to knowledge anywhere, anytime requires robust authentication techniques to avoid misuse of any information. Lack of IT awareness at some levels in the organization is a constraint on the IT based implementation of the framework. The pressures of productivity and deadlines result into limited attention span and hence low commitment to knowledge management systems. Lack of incentives to participate/collaborate for knowledge sharing is another factor that discourages people from putting in the right effort towards knowledge sharing.

The successful implementation of a knowledge management system demands urgency in overcoming the barriers. It is required to conduct a culture audit to analyze the reasons for unwillingness of the people to share knowledge proactively. The mindset of the people from "my knowledge" should definitely change to "our knowledge" (Ranjan, 2008). Motivating users of a KM system to contribute their knowledge to the system is critical for the success of the overall KM initiative (Frappaolo, 2006; Mutter et al., 2005). Implementation of IT training programs, KM deployment sessions and recognition for KM practices will contribute towards the success of knowledge management initiatives in higher educational institutes.

### *Future Work*

The authors intend to apply the proposed framework for developing a comprehensive IT based KM system to implement knowledge management in higher educational institutes in India. The framework can be implemented on the organizational intranets. In the next phase, the system can be integrated with knowledge bases of

the companies, affiliating bodies, other colleges, suppliers and service providers resulting in an integrated KM system for the benefit of all the stakeholders – internal and external to the organization.

## CONCLUSION

Today, higher educational institutions need to be efficient to tackle problems from cross functional, cross organizational, ethical and cultural perspectives and equipped with tools to achieve excellence. For that they need to develop a thriving knowledge sharing culture and look beyond the technology to achieve their goals and objectives.

From the results of the survey as discussed in the paper, the authors conclude that IT based KM intervention in HEIs can prove to be a promising techno management tool to enhance performance in the vital areas of teaching and learning, research and administrative services. Based on the results, the authors have presented a conceptual framework for the development and refinement of knowledge management systems in higher educational institutions. The authors feel that if implemented, the framework will yield more benefits to improve the quality of knowledge sharing and use. The approach will enable higher educational institutes to proactively respond to the needs of the stakeholders and acquire enhanced capability to plan and develop.

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