Framework for a Knowledge Management Platform in Higher Education Institutions

Parul Sinha, Monika Arora, N. M. Mishra

Abstract*— Effective implementation of Knowledge Management is considered as an increasingly important tool facilitating organisations to gain a competitive advantage. Educational Institutes are not far behind, they have also realised that Knowledge is now a driving force for organisational change and innovation, which are a survival tool in today's dynamic environment. As a result, Educational Institutions are exercising radical changes and are at varying stages of planning and implementing knowledge-based strategies in effort to improve their competitiveness, productivity, organisational effectiveness and better service to the nation by producing skilled leaders for tomorrow. However, KM initiatives are both expensive and risky propositions. Financial resources put a constraint on what can be expended on knowledge activities. This necessitates a re-look at knowledge management initiatives in Educational Institutions, which can be considered to be knowledge intensive organisation. This paper presents a framework which can be adopted for building a Knowledge Management platform in Higher Education Institutions. It lists the steps to implement a KM solution/portal and discusses the sub parts of the portal, which can cater to the needs of the stakeholders of an Academic Institution. It also discusses the factors influencing the success of knowledge management initiatives in a Higher Education Institution, which help them to distinguish themselves in the academic market place.

Keywords: ***Higher Education Institutions (HEI), Knowledge Management (KM), Portal.***

I. INTRODUCTION

The Information age has transformed the way in which the organizations operate and the return on investment (ROI) is determined. To survive, compete and excel in a truly competitive and fast-paced scenario it is critical to look back and bank upon the tangible and non tangible assets of the organization. The value that "knowledge" can add to an organisation is recognised and every effort for an improved ROI and better management of the organisations' knowledge assets is being made.

Recent advances in information processing technology, coupled with accessible high-speed networks, are facilitating organizations with ample opportunities to formalize the collection, protection and use of knowledge. To accomplish this, new software systems and processes have been developed to integrate with existing information systems and spread throughout the enterprise. These new approaches are collectively referred to as "Knowledge Management". Knowledge is a fluid mix of framed experience, values, contextual information, expert insight and grounded intuition that provides an environment and framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers.In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms [5].

The use of Information Technology techniques in education is transforming the basic Teaching-Learning process along with Institutional building techniques in significant ways. The convergence of computers and communication along with advances in Data storage and retrieval has led to the emergence of a whole new kind of educational experience, opportunities offered by Information Technology are motivating the academic community to consider and relook at the prevailing educational practices. IT enabled processes have transformed the roles of teachers from being providers and deliverers to moderators and facilitators of learning. The teaching-learning have become student-centered. There is a huge upsurge in the methods of computer supported collaborative learning, problem based learning and problem based learning. These upcoming methods of learning-teaching are closely associated with a growing confidence and dependability among academic community in the capabilities of Information Technology for leveraging the learning-teaching process. Educators are enthusiastic and appreciate the way they use Information Technology to improve their teaching activities, which include the engagement of students with subject matter content, active learning, assessment of learning outcomes, feedback provision to their students and focused mentoring [10].

Academic researchers are still inquisitive to explore about the future influences of Information Technology and its upcoming fields on the achievement of content-specific study, learning outcomes and the processes of teaching-learning, including students' approaches to study, their motivation for learning and engagement with the subject matter content.

Information Technology facilitates organisations to benefit from knowledge management solutions by providing the appropriate tools that execute these processes. The need of IT based KM initiatives makes a strong case for further exploration with a view to look upon them as potent enablers for restructuring the existing Higher Education System, which may also cast a serious impact on the overall economics of running and maintaining the higher education system [8]. But it has been realised that information technology does not in itself create knowledge or guarantee knowledge creation. Organisations have found that leveraging knowledge is extremely difficult and it is primarily dependent on building a knowledge sharing culture based on effective communicating teams, and mutual trust, and secondarily on information technology tools and techniques.

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The relationship between social interaction within an organization and knowledge management system success is high. There are two aspects of social interaction: interdepartmental connectedness, and interdepartmental conflict and there is a significant relationship between both factors and knowledge management system success (Anthony J. Delmonte, Kennedy Space Center, Jay E. Aronson, 2004).

II. KNOWLEDGE MANAGEMENT AND HIGHER EDUCATION

The idea of knowledge management has been well recognized in the business world but the literature regarding information management to support education learning is scarce. The literature review highlights several important points which strongly support the adoption of KM techniques in Higher Education.

It is time for educational administrators to look for information system to assist in creating effective learning environment, which in turn supports teaching and learning [11]. The current complex knowledge society requires the institutes to be constantly evolving, innovating, investigating, analysing, predicting and responding to opportunities and threats.

All Organisations store, access, and deliver knowledge in a unique manner; the differing factor is the way that value is added to the products and services they deliver by the effective use of the knowledge capital. From Literature review we find that Higher Education institutions have significant avenues where they can practice knowledge management techniques to support their mission and accomplish their vision. The benefits of the use of KM method in higher education can classified into five main categories, such as the benefits on the research processes, the curriculum development processes, student and alumni services, administrative services, and strategic planning [7]. KM practices can also benefit Management Education Institutions in other ways such as Faculty Development, Research process, Curriculum development , Student teaching and learning process , overall control of the institutional processes like library, computer lab, recruitment, etc ,Strategic planning like Institute marketing, Placements/Corporate Interface etc. To meet the growing requirement of curriculum design and curriculum delivery, to meet the twin objective of relevance and quality of human resource development, and to ensure that teaching learning processes create an environment conducive for creativity and innovations, it becomes necessary to adopt KM techniques in curriculum development [1].

The identified interventions in selected areas are if taken up by appropriate agencies viz. Governmental (for policy making) and institutional (for implementation), are bound to rationalize the investment in higher education system as well as lead to more responsive Higher Education System with optimized resources utilization. These modern interventions of IT based KM could also lower the overall investment in the existing higher education system by carefully identifying the key areas where these interventions could be applied [9]. Research, which is one of the primary assignments of an Institution, is the media for knowledge creation and knowledge dissemination. The Higher Education Institutions provide knowledge to the students, manage and archive the existing knowledge for future reference.

Motivating and encouraging the academic community including faculty, staff, students, parents etc to share and contribute in the Higher Learning Institution are the key enablers for a successful KM implementation. The Outlook, Enthusiasm, and Actions are the facilitators for effective application of Knowledge Management strategy, along with Organisational strategy. Technology also plays an important role in knowledge transfer, it facilitates effective distribution of the tacit and explicit knowledge.

Explicit knowledge is a knowledge category that is in the form of documents, reports, design, blueprints, models, patterns, new rules, mathematics equations, etc. This knowledge can be package, codified and transferred easily. Besides, it can be also be communicated, shared and expressed easily with formal language. It can be easily captures with efficient Information Technology techniques. Whereas Academia's experience, skills, "know-how", beliefs, values, perceptions and judgment or opinion are categorized as tacit knowledge. This knowledge is considered personal to each particular individual. Therefore, it is more difficult to transfer or share, express and communicate to the other parties involved. As a result, the Academic community may face difficulties in formalizing this type of knowledge into formal documents. Their ideas and experiences may be captured in audio and graphic format for later used. The Human Resource practices aligned with Knowledge Management practices play a major role in capturing Tacit knowledge.

The acquired knowledge is compiled and used in decision making and problem solving. Subsequently, the various knowledge processes, knowledge objects and knowledge systems that are generated are used as input for the proposed framework of a KM system known as "Knowledge Portal for Higher Education Institutions". The knowledge that is stored in this Knowledge Portal is distributed and shared globally within the Academic community and students of Higher Education Institutions.

III. STEPS TO IMPLEMENT KM IN AN ORGANISATION

The Implementation of KM in an organisation is done with several objectives such as building on existing resources and systems, providing an immediate ROI (Return on Investment) on knowledge resources, and ensuring that each step is a building block that provides a foundation for future enhancements.

The Knowledge Management system is engineered by adopting a sequence of steps such as:

Purpose- Identify the Business Problem to be solved and plan an alignment of the knowledge management strategy with overall business objectives. The KM strategy should overlap with the Organisational strategy.

Adapt- Knowledge Management is more than just an application of technology. It involves cultural changes in the way employees perceive the knowledge they develop. A successful implementation of knowledge management also requires endorsement from all levels of the management hierarchy. In a nutshell it imitates Change Management.

Plan- Formation of a well staffed team with a strong team leader and cross functional expertise is essential for successful implementation of knowledge management. This is followed by a short-listing the type of information which is useful for our business and the sources of knowledge. It involves organizing knowledge by classifying it so that it reflects how our organization operates.

Expectation- Identify the key Features of the Solution which ensure that knowledge management technology acquired will help solve our business problems while enhancing our overall IT infrastructure.

Implement - Execute knowledge management systems using a phased approach. Each phase of the implementation addresses a specific module of the knowledge management solution, builds the foundation for the next phase, and provides immediate benefits and a quantifiable ROI.

Implementation incorporates its own set of challenges such as team up existing Knowledge Silos , Categorize to deal with new knowledge, Build a Knowledge Warehouse to make knowledge widely available, Enable end-user contribution to allow increased knowledge flow, Expand the use of metadata for effective categorization of knowledge and create a knowledge directory.

Associate- Knowledge to People

The link between knowledge and people distinguishes knowledge management systems from applications that manage just the explicit knowledge. The most efficient user-friendly tools are failures and perform below expectation in managing information if they are not strongly associated to people and aligned with company's processes.

These steps of Effective Knowledge Management system development can be executed in a cyclic fashion with iterations for improvements and enhancements.

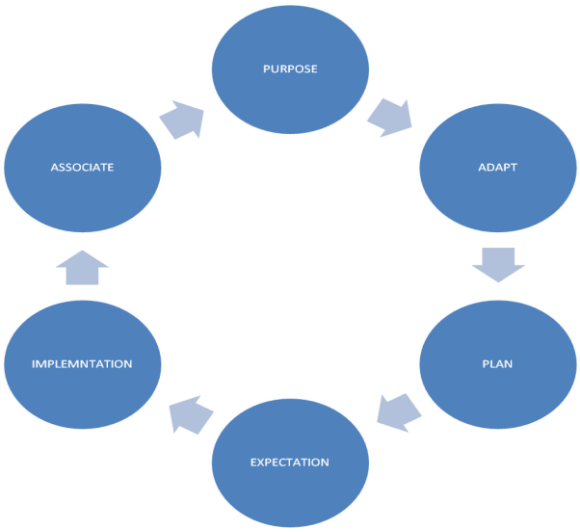

Figure 1: Implementation steps for KM system

IV. PROPOSED FRAMEWORK FOR A KNOWLEDGE MANAGEMENT SYSTEM (PORTAL) IN A HIGHER EDUCATION INSTITUTION

The basis of developing a portal involve deciding primarily what to capture. This would include stakeholder, project and process knowledge across the organisation. It should also house experience gained from previous projects and facilitate the future projects on that basis. This aspect is covered in the third step (i.e. Plan) of the previous model. The expectation from the KM solution involves decreasing time to market a new project, lesser cycle time and enhancing collaboration.

Study of KM deployed in a famous IT company in India gave various insights. Primarily KM started in the organisation in silos. Slowly managers realised that it was necessary for an organisation's growth and continued success. Over a period of time it was accepted that KM would enable seamless exchange of knowledge across its stakeholders fostering innovation and efficiency. Developing the KM framework involved integrating the Business Processes, Infrastructure, and People in sync with the Knowledge oriented mission and vision of the company.

After studying the KM implementation approaches in various organisations, it was found that results have been very positive in organizations that have started to implement Knowledge Management using a building-block approach. Research information and best practices are shared, experts are identified and cost savings are realized as employees spend less time locating or reinventing knowledge and more time being productive. Overall, these organizations are more competitive and more effective as they integrate Knowledge Management practices into the structure of their organization - they realize higher value from the assets and capital they have used to obtain knowledge.

Like many other processes, there is no "one way" to implement Knowledge Management --especially since KM is a combination of technology, culture and practices. Although some real life examples provide an overview of some effective, proven ways to plan, implement and evaluate the results of Knowledge Management to help an organization be more effective and successful.

These experiences could be successfully adapted in an Educational Institution as proposed below. A portal for Knowledge Management could be build the broad layout plan of which could have 8 to 9 modules or sub portals:

1. **K2Doc**-this would be a document warehouse. It would contain various sections related to general and technical information accessible to employees (faculty/staff) comprising of Accreditation Standards, Proposed courses in pipe line, Fee Structure, Expenditure, Budget Plan etc and its access is restricted.
2. **K2Learn**-this would contain a database of documents for both faculty and students. It could include separate sections for presentation, notes, old question papers, online quiz, discussion forums , research papers , etc. Contributions to both K2Doc and K2Learn would come from External and Internal sources including regulatory bodies, students, staff, libraries etc. Stakeholders would be encouraged to share and collaborate on these platforms. Due recognition would be given to those who contribute.
3. **K2Research** – this would be the repository of the in-house developed expertise like developed case studies , ongoing research, working papers, ongoing student projects, tools and methodologies, ready to use templates like resume format, important questions for viva, simulations, recorded videos of student viva, placement information etc.
4. **K2DataBank**- it would contain archived student projects. It would basically be useful for students to make them learn from experiences of their seniors. The best practices, techniques adopted and

success mantras would be handy in these.

5. **K2Expert**-It would be a directory of people who are experts in their respective domain. It would hold links to connect to academic experts, career counselors, consultants from various Industries etc. It would help mainly students to draw a roadmap for their career path by learning from individual experiences and counseling.
   The students and parents would have an option to post a query to the respective individual and the replies are captured in a database
6. **K2Explore** for future reference.
   The queries for which answers are posted are closed and archived in K2Explore whereas those which remain unanswered are posted as a message to the entire fraternity.
7. **K2Konnect**-are online discussion forums designed to enable student/staff/management to discuss and exchange information on a particular topic of interest to them.
8. **K2TestTime**- is a virtual exam centre where student can appear for both objective and subjective mock tests/exams. It will score the results and keep a track record of an individual's performance with comparative result with those that have appeared in the past or the expert score.
   The employees of the organisations where the KM system was implemented had expressed about the acceptability of the system by sharing that the system was a hands-on efficient tool, it helped in finding relevant information or at least find a starting point. The tool had its initial teething problems like poor acceptability and apprehensions but slowly picked up and became richer and robust. It is now acting as a Strategic tool for the organisation.

V. PROPOSED MODEL

Based upon the proposed framework, a model can be build for the KM system as given below:

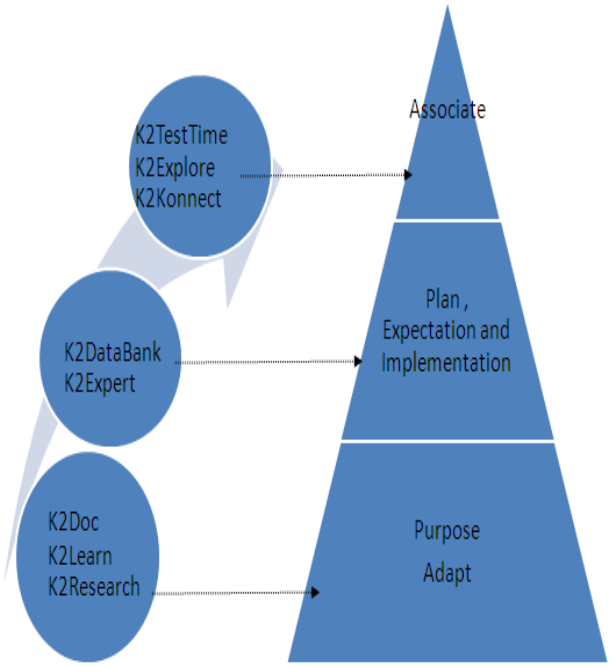

Figure: 2: Proposed Framework for a KM portal in a HEI

This model converge the implementation steps and the sub portals of the KM portal. It depicts that the various steps to implement a KM solution is similar to the functional hierarchy of an Organisation. The identification of need (Purpose) and the adaption to the new system(Adapt) should initiate at the Operational level .The planning of resources, sources of Information required (Plan), Expectations from the system(Expectation) and the Implementation benefits and approach(Implementation) lie at the Tactical level. The last but not the least, the permeation of the system in the organisational plans and procedures (Associate) should be enforced at the Strategic level.

Also the Portal models like K2Doc, K2Learn and K2Research would be used more for the daily routine purpose hence lie at the lowest i.e. Operational level. The modules K2DataBank and K2Expert are more of Research and long term approach like, so lie at the middle i.e. Tactical level. The modules that help to explore for opportunities, to evaluate self and to develop communities like K2Explore, K2TestTime and K2Konnect lie at the topmost i.e. strategic level.

VI. CONCLUSION

It found that the relevant factors that bring success to an educational organisation by adopting KM practice are an a appropriate mix of 1) Integrated technical infrastructure (including networks, databases, repositories, computers and software), 2) An organisational culture that supports learning, sharing and use of knowledge, 3) Motivation and commitment of users including incentives and training and 4) Senior management support related to resource allocation, leadership and providing training[3]. Further their findings the authors detail that knowledge initiatives using Integrated technical infrastructure have become more individualistic and personal goal oriented, instead of organisational. Thus this remains a major challenge to be overcome. There are several events which are organised in Higher Education Institution that facilitate the attempts of social interactions for fostering knowledge sharing. The working knowledge needs to be captured and distributed through well-designed work processes and thus defined methodologies need to be adopted to capture and use knowledge automatically through the work processes.

Knowledge Management System is now accepted by most of the organisations as a key for better decision-making.and gaining competitive advantages. The Academic community has considerable opportunities to apply Knowledge Management practices as discussed in the applications catered to in the portal. Applying Knowledge Management concepts has led Higher Education Institutions to explore how Knowledge Management might be applied in a Higher Education Institutions setting. Knowledge Management System in Higher Education Institution could boost the efficiency, effectiveness, and quality of graduates who can satisfy the employers' need in the entry level of employability in their future [6].Each HEI is unique in its scope, size, and priorities, and is a complex institution that balances both providing superior education and research opportunities, while simultaneously operating as an efficient and effective business in a competitive market [4].

The proposed framework of a KM system and supporting technology will blend the organization' s goals, social processes, organization behavior, and organization strategy with the Knowledge management strategy .There will be a unison in the processes of knowledge creation, sharing, or application. It will foster the growth of an organisation, Higher Education Institution in this case, and promote the primary activities of teaching, learning and academic administration. In a nutshell if the KM portal is properly and implemented as discussed above, it would improve the Institution performance and productivity.

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