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# A GENERAL FRAMEWORK FOR KNOWLEDGE MANAGEMENT IN AN EDUCATIONAL INSTITUTION

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## Abstract

*Knowledge Management (KM) has been a buzzword in the business circles and the amount of literature available on this subject, highlights its emergence as a new paradigm in the business world. This new era of the "knowledge based economy", one which values the enhancement of work efforts through the use of knowledge and increased productivity and innovation, has the power to completely transform not only the foundations of business, but also, according to Peter Drucker, to profoundly change the very fabric of society [1]. This statement emphasizes the importance of knowledge and how it is going to affect every facet of life. Education being the core activity, upon which the social well being of a nation depends, is a knowledge intensive activity. The use of KM as a means for effectively managing education in an educational Institution is the theme of this paper. Efforts are on around the world to use KM for effectively managing the education delivery process. This paper tries to present a broad and general overview of KM and how it can be applied to education. A general framework for KM in an educational institution is presented, which can help an institution in its efforts and really yield the benefits.*

## 1. INTRODUCTION

Knowledge Management (KM) has been the subject of much discussion over the past decade. There is a need for organizations to harness and manage their intellectual capital and make it as a competitive advantage. KM has been applied to a very broad spectrum of activities designed to manage, exchange and create or enhance intellectual assets within an organization [2]. The advent of liberalization and globalization in the 1990s has changed the nature of competition rapidly because of increased global connectivity, distributed expertise and shorter product development cycles. The world is migrating towards a knowledge-based economy. KM is a new strategic initiative that is changing the paradigm

of information systems from one of processing data to one of harvesting and capitalizing on the knowledge of an entire organization, ranging from expertise in individual's heads to documented material [3]. KM is increasingly being applied to educational Institutions as sharing knowledge is their *raison d'être*. There are lots of opportunities for applying KM in educational institutions as knowledge is generated, stored and shared or disseminated and imparting knowledge through the education delivery process is the core activity. The intellectual capital of an educational institution is always higher when compared to the financial capital and this intellectual capital has to be nurtured and utilized to effectively manage knowledge. This paper tries to broadly provide

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an overview about knowledge, knowledge management and need for KM. A general framework for KM is presented at the end of the paper, which can act as a guide for adopting KM by an educational institution.

## 2. KNOWLEDGE AND KNOWLEDGE MANAGEMENT

'Knowledge' is defined as what we know: knowledge involves the mental processes of comprehension, understanding and learning that go in the mind and only in the mind, however much they involve interaction with the world outside the mind and interaction with others [4]. Before discussing KM, there is a need to understand the distinction between data, information and knowledge. Data are collection of facts, measurements and statistics whereas information is defined as organized or processed data that are timely and accurate. Knowledge is information that is contextual, relevant and actionable [3]. Different researchers have classified knowledge into different types based on their applications [5]. Knowledge includes a level of understanding that a human attributes to information. Davenport and Prusak (1998) define Knowledge as "a fluid mix of framed experience, values, contextual information and expert insight that provide a framework for evaluation and incorporating new experiences and information". Knowledge can be either tacit or explicit (Polyani 1967). Tacit knowledge refers to the knowledge that has personal quality that makes it hard to articulate or communicate. Tacit knowledge is usually in the domain of subjective, cognitive and experiential learning, whereas explicit knowledge deals more with objective, rational and technical knowledge. Explicit knowledge is the policies, procedural guides, white papers, reports, designs, products, strategies, goals, mission and core competencies of the enterprise. Tacit knowledge is the cumulative store of the experiences, mental maps, insights, acumen, expertise, know-how, trade secrets, skills set, understanding and learning that an organization has, as well as the organizational culture that

has embedded in it, the past and present experiences of its people, processes and values [5,6].

This classification is more widely used, when compared to other classifications [5] and helps in better management of knowledge in an organization. This classification in fact is the basic step before going in for KM.

### 2.1 Definitions of KM

There are many definitions of knowledge management of which three given below are able to provide a clear overview of what KM is all about and what it can do to an organization and how KM helps an organization.

- Knowledge management is the systematic, explicit and deliberate building, renewal and application of knowledge to maximize an enterprise's knowledge related effectiveness and returns from its knowledge assets (Wiig, 1997).
- Knowledge management is the process of capturing a company's collective expertise wherever it resides – in databases, on paper, or in people's heads – and distributing it to whatever it can help produce the biggest payoff (Hibbard, 1997).
- KM is getting right knowledge to the right people at the right time so they can make the best decision (Pettrash, 1996) [7].

KM has been an enabler to achieve business objectives. KM helps to effectively harness knowledge, which is one of the most critical assets in today's world. Lot of case studies is available in the literature to highlight the effectiveness of KM as a strategy for gaining and then sustaining competitive advantage. IDC's KM survey done in 2002 shows that KM is being applied to a wide spectrum of areas like business and legal services, software, discrete manufacturing, government, financial services,

process manufacturing, education, wholesale / retail, telecommunications, health care services, utilities and others. The survey also found that KM is highly concentrated in business and legal service industries.

Similarly according to a survey conducted by Knowledge Management magazine and International Data Corporation (IDC) about the state of KM (2001) [8], the primary business uses or domains of KM are to:

- Capture and share best practices (77.7 %)
- Provide training, corporate learning (62.4 %)
- Manage customer relationships (58 %)
- Deliver competitive intelligence (55.7 %)
- Provide project workspace (31.4 %)
- Manage legal, intellectual property (31.4 %)
- Enhance web publishing (29.9 %)
- Enhance supply chain management (20.1 %)
- Others (5.5 %)

The increasing importance of knowledge and its applications and their importance to an organization are clear from the survey. The knowledge inherent in an organization helps to provide value added products or deliver value added services to its customers. Education is one sector which has immense opportunities for applying KM, particularly higher education. This paper tries to present how KM can be applied in an educational Institution, by developing a general framework.

### 3. KM IN EDUCATION

Education is the process of delivery of knowledge to the students and teaching-learning process is the main activity in this process of

education. Research is another associated activity concerned with education. These core activities of education are supported by other activities like administration, finance, management, library, student services, planning etc., which can be called as non-academic activities. KM is not a new paradigm for educational institutions because they have a significant level of knowledge management activities and hence it is important to recognize them and use them as foundations for further development [9]. Educational Institutions create intellectual capital of the country. They produce intellectuals who utilize the knowledge that they have learnt or gained for producing more knowledge, goods, products, services etc. The role of teachers as creators of knowledge has been redefined in this new era of knowledge economy. Hence the application of KM in an educational Institution assumes greater significance. Education sustains the economy of a country and thereby its society. The people associated with education have to redefine their roles and play a very aggressive role in not only creating knowledge assets, but also in its effective management.

Educational Institutions and Universities are in the knowledge business and increasingly they are exposed to market place pressures like other businesses. Teachers have a changing role in a knowledge based society [9].

#### 3.1 Some Issues regarding KM in education

Davenport et.al (1998) gave some kind of a comprehensive definition for KM – KM is concerned with the exploitation and development of the knowledge assets of an organization with a view to furthering the organisation's objectives. The knowledge to be managed includes both explicit, documented knowledge and tacit, subjective knowledge. Management entails all of those processes associated with the identification, sharing and creation of knowledge. This requires systems for the creation and maintenance of knowledge repositories and to

cultivate and facilitate the sharing of knowledge and organizational learning. Organisations that succeed in knowledge management are likely to view knowledge as an asset and to develop organizational norms and values which support the creation and sharing of knowledge [9].

This definition almost encompasses the various important issues associated with KM and is very apt for an educational Institution. From this definition Davenport identifies four types of KM objectives, which is important in education namely the creation and maintenance of knowledge repositories, improving knowledge access, enhancing knowledge environment and valuing knowledge [9].

The 2001 survey by knowledge management and IDC [8] found that of those companies that adopt KM, the top reasons are to:

- Retain expertise of personnel (51.9 %)
- Increase customer satisfaction (43.1 %)
- Improve profits; grow revenues (37.5 %)
- Support e-business initiatives (24.7 %)
- Shorten product development cycles (23 %)
- Provide project workspace (11.7 %)

On similar lines KM could be advantageous to educational Institutions for various reasons like

- Increase student retention and graduation rates,
- Retain a technology workforce in the face of severe employee shortages,
- Provide online courses, cyber colleges and virtual universities,
- Retain the knowledge of experienced faculty,
- Increase student satisfaction,

- Better student enrolment,
- Increased resource mobilization,
- Shorten curriculum development time,
- Better management of the total education delivery process.

### **3.2 Knowledge Management Framework for an Educational Institution**

Before developing a framework and to implement a KM program successfully, there are some aspects which have to be clearly understood namely:

1. Knowledge must be available – Knowledge must be available whenever it is required. There must be a mechanism to capture and save the knowledge in a database, so that it is easily retrieved and searched as required.
2. Knowledge must be accurate – It is critical to ensure that the retrieval of knowledge from the knowledge database is accurate. The knowledge required for any purpose in an organization for anybody should be accurate and must be readily available, so that lot of time is not wasted in searching it. Otherwise the very purpose of having a KM system in place will be lost.
3. Knowledge must be effective – Knowledge in the database must be effective and of value or the employee will cease to use the database as a source of information.
4. Knowledge must be accessible – The knowledge in the KM architecture must be accessible, when required, in order to make the database effective and efficient.
5. Knowledge must be protected – Knowledge in the database must be secure and it must be protected from unauthorized users.

6. Knowledge usage analysis and tracking tools – There is a need to have a reporting system to track on what information is most relevant or irrelevant, to ensure that the database complies with Retention and Disposition policies and is kept free of information that is no value to the organization [10].

With these aspects in mind a general framework for KM implementation that can be used for any kind of organization with different phases is given below.

**Phase 1:** Infrastructural Evaluation – This phase has two sub steps

**Step 1:** Analysis of Existing Infrastructure – In this step, an understanding of various components that constitute the KM strategy and technology framework is obtained. By analyzing, what is available, the critical gaps in the existing infrastructure can be identified and the organization can build upon it.

**Step 2:** Aligning KM and Business Strategy – In this step, an understanding is obtained between the connection between KM and the business strategy of the organization.

**Phase 2:** KM System Analysis, Design and Development – There are five steps in this phase and are:

**Step 3:** KM architecture design and component selection – In this step, there is a need to select the infrastructural components that constitute the KM system architecture. There is a need to identify the components of this KM architecture and integrate them to create the KM system model. There are certain decisions to be taken like the selection of a collaborative platform – Web or a proprietary platform. The components of this platform have to be identified: Artificial Intelligence, Data warehouses, Genetic Algorithms, Neural networks, Expert systems, Rule bases and Case based reasoning.

**Step 4:** Knowledge Audit and Analysis – There is a need to audit and analyse the knowledge available.

**Step 5:** Designing the KM team – In this step the KM team that will design, build, implement and deploy the KM system have to be formed. To design an effective KM team, there is a need to identify key stakeholders both within and outside the organization, identify sources of expertise that are needed to design, build and deploy the system successfully while balancing the technical and managerial requirements.

**Step 6:** Creating the KM system Blueprint – The KM team identified in the previous step builds on a KM blueprint that provides a plan for building and incrementally improving a KM system. The KM architecture developed must be optimized for performance and scalability, as well as high levels of interoperability. The system must be future proofed so that it is possible to integrate any new changes in technology very easily into the system.

**Step 7:** Developing the KM system – Once the blueprint for the KM system is in place, the next step is to actually develop the system.

**Phase 3:** Deployment - The third phase is to deploy the KM system that has been built in the previous stages. This phase involves two steps:

**Step 8:** Pilot Testing and Deployment using RDI Methodology – A large scale project such as a typical KM system must take into account the actual needs of its users. Although a cross-functional KM team can help uncover many of these needs, a pilot deployment is the ultimate reality check. RDI Methodology is results-driven incremental technique, which will help in the selection of the right, nontrivial and representative pilot project.

**Step 9:** Leadership and Reward Structures – To implement new systems like KM and its enthusiastic adoption and use, requires new reward structures that motivate employees to use the system and contribute to its use. There is also need for an enthusiastic leadership.

**Phase 4:** Metrics for Evaluation – The last phase measuring business value of KM. There is a need for devising a set of company-specific

metrics for KM.

**Step 10:** Real-options Analysis for KM – In this step, there is a need to measure ROI-accounting for both financial and competitive impacts of KM on the business. By this step, it will be possible to understand the financial implications and use the metrics to prove the impact of effective KM and also lets to refine KM design through subsequent iterations.

### **3.3 A Specific framework for KM implementation in an Educational Institution**

With an understanding of the phases required to implement KM in an organization in general, it can be used to develop a specific framework for KM implementation in an Educational Institution.

Educational Institutions have significant opportunities to apply KM practices to support every part of their activities. An Institution wide approach to KM can lead to exponential improvements in sharing knowledge. Some key points necessary to ponder upon before starting the implementation are -

- Every initiative like this requires the support and commitment of top management, which has to commit not only financial but also other resources including human resources. The importance and significance of KM initiatives must be clearly understood by the top management and the role it is going to play in the future.
- The employees working in the Institution both teaching and supporting should be convinced about the benefits of KM and how it can impact their working in the Institution.
- It should be clear as to what KM is going to accomplish for the Institution.
- The necessary resources required to support KM must be made available.

- A time frame for its implementation and the possible outcomes after its implementation must be clearly visualized. What are the benefits that KM is going to provide for effective management of the teaching-learning process and all other processes supporting it must be analyzed.

After having a clear picture about all these points, the implementation of KM can be started. The phases are as follows –

**Phase 1:** Educational Institutions have an existing infrastructure, in terms of buildings, laboratories, library etc. Information Technology (IT) infrastructure, which is very crucial for KM implementation has to be evaluated for its adequacy and if not necessary improvements are necessary. It may include hardware, software, networks, Internet etc. There is a need to clearly link the KM implementation effort with the business strategy, which in case of an educational Institution is imparting quality education.

**Phase 2:** A framework for KM implementation is necessary, which includes KM architecture design and component selection. This phase may have to be different from that in case of an industry, as educational Institutions cannot have a professionally designed architecture and the necessary technology. Cost factor could be a major limitation. Hence a system designed inhouse could be built and used. In this phase, the next step would be to do a knowledge audit, to understand and assess the knowledge assets within the organization. A KM team can be formed, which can include all the key stakeholders both within and outside the organization. This team will help in the design, development and deployment of the KM system.

**Phase 3:** This phase involves deploying the KM system developed in the previous phase. This may involve some kind of a pilot testing in any department, to understand the working of the system, to perform some kind of a reality check. It will also highlight the pitfalls and the necessary corrections to be made. The results of the pilot

implementation will provide some kind of an impetus for full fledged implementation.

For effective implementation of KM, there is a need for an environment of trust, which has to be created by the management through their leadership. Knowledge sharing cannot be mandated. *The process of knowledge sharing has to be voluntary and willing. For which the employees have to be motivated and this requires rewards and other means by which employees can be made to participate in this process.*

**Phase 4:** Finally there is a need to evaluate the efforts of KM implementation, for which metrics can be developed and tested, which could be in terms of monetary or non monetary.

Educational Institutions have ample opportunities for KM implementation. It need not be the use of a professional system in place. An inhouse, well tested and modeled system of KM implementation could be used, which serves the purpose. Educational Institutions have significant opportunities to support every part of their mission – from education to public service to research. KM is not new to educational Institutions, as they are involved on a continual basis in the process of knowledge creation, sharing and dissemination and storage. There is only a need for a formal system to be in place to perform it in a much better way, just like having ISO 9000 Quality Management Systems or Total Quality Management in place. The efforts of a formal KM system in better management of knowledge are proven from lot of examples available in the literature.

#### 4. CONCLUSION

Knowledge Management (KM) can mean different things to an organization depending upon the initiative. KM, is not a technology or a set of methodologies...it's truly a practice or discipline that involves people, processes and technology. And if implemented correctly can improve the productivity and efficiency of an entire organization [11]. This paper tries to present an overview about KM and how it can

be implemented in an educational Institution. A general and a specific framework for KM implementation are discussed, which can go a long way in guiding an Institution in its endeavor for KM implementation.

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