Synergizing Knowledge Management Concepts

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Abstract

In the business world change has become the norm. The steady predictable growth till last century has given a way to global market competition, radical technical innovation and major shift in approach towards business. These changes have no historical precedent. Business activities have become more complex due to frequent changes. Due to these changes the type and quantum of information required by business enterprises is also increasing. Hence it has become important that one should use one's wisdom to convert information into knowledge in the present scenario of business world. Now proven ways of applying knowledge in business is known as "Knowledge Management".

Keywords: Intellectual Capital, Knowledge Harvesting, Data Warehouse, Data Mining, Text Mining.

Introduction

The overall challenge that many enterprises face today is in identifying where knowledge resides and how to leverage it for their business purpose. Efforts to create a knowledge based system in enterprises have been growing largely out of gaining competitive advantage in the market. Knowledge management under management discipline talks about the concepts related to various types of knowledge. Similarly information technology has concepts related to knowledge management. A business model for knowledge Repository system can be developed by applying these concepts.

Historical Back Ground of Knowledge Management

The concept of Knowledge management is not new. The focus and approach has been changing over a period of time. One may observe from the literature on the history of information and knowledge that the basic pattern of behavior remained consistent over a period of centuries concerning the role of information and knowledge. History provides many examples. Emperors in china in the olden days always surrounded themselves with advisors who were scholars first, politicians second. Roman emperors like the ancient Greeks consulted educated priests to gain an insight into the possible future. Indian kings seemed to be concerned with creation of knowledge among people by allocating places for schools and libraries. In the present era the advancement of Information and communication technologies are facilitating business enterprises for making use of the concepts of knowledge management more effectively.

Evolution of Knowledge Management

In the pre industrial era agriculture was the basis of nation's economy, then the concentration was to learn more about farming. In the post industrial era manufacturing became the basis of nation's economy, then the concentration was more about learning manufacturing techniques. Nick Bontis rightly observes that the first evidence of codification of knowledge may have its roots in scientific management. Fredric Taylor attempted to formalize workers' experience and tacit skills into objective rules and formulas.

Organizational Knowledge Base

Knowledge representation in documents, manuals, e-mails and databases can be considered as ' Explicit Knowledge '. Knowledge found in business processes, products and services can be termed as ' Embedded Knowledge '. Undocumented knowledge that is captured during discussions, meetings and interaction with persons inside and outside one's own organisation can be termed as "Tacit Knowledge ".

Intellectual Capital or Assets

Intellectual Capital or Intellectual assets are two words mentioned frequently in the present knowledge economy. The word ' capital ' or 'Asset ' as suffix to 'Intellectual' is not used in strict accounting terminology. It is only a term referred for "Intangible Assets ". It may be noted that the meaning of both the terms is the same. The components of Intangible Assets are generally classified under four heads. 1-Market Assets represent business enterprises' brand image, distribution network and collaboration. 2 - Intellectual property Assets are patents, copyrights, Design rights, Trade marks and Trade secrets. 3-Human centered Assets indicate knowledge and entrepreneurial ability of employees in a business enterprise. 4-Infrastructure Assets consist of business processes, methods and information

systems. These will enable business enterprises to conduct their business smoothly.

Knowledge Groups in Business enterprises

Generally one may find four types of knowledge groups in business enterprises. 1. Knowledge Explorers - They maintain a good balance between internal and external learning. 2. Knowledge Exploiters - Their priority is clearly on external learning more then internal learning. Their focus is mostly over improvements on competitors ideas and less on the development of radically new products. 3. Knowledge Learners - They are slow in applying new knowledge. Their knowledge dispersion level is very low indicating they may be focused in certain areas and not able to integrate different streams of knowledge. 4-Knowledge Innovators - They are aggressive learners, they most effectively combine internal and external learning. Their focus is on both radical and incremental learning. 5- Knowledge Workers add value through their ideas, analysis, judgment, syntheses and designs.

Knowledge Harvesting

The word “Harvesting" generally applies to agriculture and refers to the practice of increasing the yield of cultivable land. In the same way organizational databases can be considered as equivalent to cultivable land, where the employee’s wisdom is the 'manure' with the help of which data is converted into useful information. 'Knowledge Harvesting' is an integration set of processes that capture the often hidden insight of human expertise in business.

Business Intelligence

The word 'Intelligence' in 'Business Intelligence' means the application of information, skills, experiences and reasoning to solve business problems. It is apt to recall Efrain Turban, Jay E.Aronson and Ting-Pang Liang’s observations on business intelligence. They say it involves acquiring data and information from a wide variety of sources and utilizing them in decision making. Further they indicate the business analysts add an additional dimension to business intelligence: Models and solution methods.

Data warehouse

Data warehouse is a concept in information technology. It may be noted that a data warehouse is central store of data that is extracted from operational data. The information in data warehouse is subject oriented, non volatile and of a historic nature. Data warehouse tends to contain extremely large data sets. There are different definitions of data warehouse. The essence of these definitions is extraction of the data from the legacy systems in enterprises integrating with data from the various sources for analyzing purposes. It can be said that the purpose of data warehousing is to 1.to slice and dice through data 2.to operate analytical process and 3.to support the decision process.

Data Mining

Knowledge in ' Knowledge Discovery in Data warehouse ' means relationships and patterns between data and elements. The term 'Data Mining' is used exclusively for identifying knowledge in Data warehouse. Pieter Adrains and Dolf Zanting have classified four types of knowledge in data mining. They are 1. Shallow knowledge- information can be easily retrieved from databases using a query tool such as structured query language (SQL) 2. Multi Dimensional Knowledge - Information can be analyzed by using online analytical processing tools (OLAP) 3. Hidden Knowledge - data can be found relatively easily by using pattern recognition or machine learning 4.Deep Knowledge - information that is stored in the data warehouse can only be located if one has a clue that indicates where to look.

Text Mining

The analysis in respect of textual data stored in text database is carried out through text mining. Like data mining it identifies relationships in the vast amount of text data.

Intelligent Systems

There are certain concepts in information technology which can be made use of for developing a knowledge management system. They are 1. Case Based Systems- This contains cases that maintain unique expert experiences. 2. Artificial Neural Networks - this uses artificial neurons executable on systems to imitate the human brain. 3. Gentic Algorithms- This helps to find useful knowledge by modifying the natural selection process. 4. Fuzzy Logic- This helps to improve decision process by making use of symbolic reasoning and mathematical calculations.

Web Based Intelligent Systems

Wide usage of internet services has led to web based intelligent systems being developed. Semantic web is an emerging concept in web services. This concept talks about the representation of data on World Wide Web. Resource Description Frame work (RDF) is used to integrate a variety of application using XML. Ontology is used as a tool for the collection of RDF statements and making logical inferences among them.

Core Competence

Business enterprises need to evaluate the core competence in relation to their products and services. The elements in external competency are Patents, Brands, Monopoly and Trade secrets. The element in internal competency consists of Process technology, distribution channels, advantages in costing and size of plants. Assessment of these core competencies will help them to know their competitive advantage in the market. The value of core competence can be enhanced by integrating, building and reconfiguring the internal and external competencies. While talking of core competence of the corporation, Prahalad C.K and Gray Hamel observe that core competencies are the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies.

Relating Knowledge Concepts

It is generally perceived by many business enterprises that the concepts related to knowledge management are not applicable to their organizations. They seem to think it is a technology for preserving and enhancing the knowledge base of some sophisticated technology driven business enterprise. But after a close look at their own organization, they may find that many elements related to knowledge management discussed in this paper are already available in their organization itself. In reality they are required to make use of the elements of knowledge source in their organization. Table 1 and Table 2 are examples for relating the concepts in knowledge management.

Table 1 – Relationship between two disciplines in Knowledge Management

Concepts in IT Discipline (Data Mining)	**Concepts in Management Discipline**
Shallow Knowledge	Knowledge Learners
Multi Dimensional Knowledge	Knowledge Exploiters
Hidden Knowledge	Knowledge Explorers
Deep Knowledge	Knowledge Innovators

Table 2 – Concepts in the Management Discipline

Core Competence	**Intellectual Assets**
Elements in External Competence	Market Assets Intellectual Property
Elements in Internal Competence	Human Centered Assets Infra Structure Assets

Experience has shown that human centered resources are the most valuable asset for any organization. Some studies have indicated that only a small portion of Corporate Knowledge is in shareable form. The majority is in employee's brains and it is not in shareable form. Business enterprises should provide opportunities to their human centered assets for applying the concepts such as Knowledge Harvesting and Business intelligence in their work. Figure 1 – Corporate Memory gives an overview of the percentage of shareable knowledge in business enterprises.

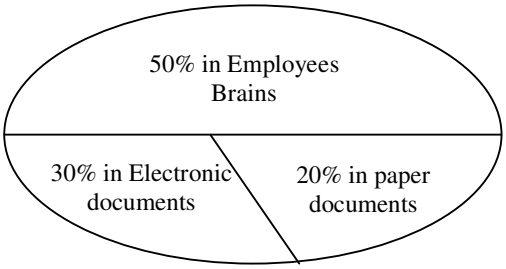

Figure 1 – Corporate Memory

Steps for creation of Knowledge Repository System

It is required to form a core team to develop a model for knowledge repository system by a business enterprise .The core team should consist of domain and functional experts, human expertise specialists and software professionals. Domain experts possess in depth knowledge related to technical and production process of a particular industry. Functional experts would provide the procedures, standards, norms and documentation of a particular industry. Human expertise specialists will explore and codify the knowledge of their employees related to their area of business. Further they will identify their employees for classification under knowledge group. Software professionals will design the knowledge repository system on the basis of the inputs provided by the other members of the core team. The Core team could also classify the various components of Intellectual Capital of their organization.

The type of data required for assessing core competence is organizational data and industry data at a country level. The following Figure 2- Frame work for knowledge repository system gives an overview of the steps involved for the creation of the above system.

Categorizing and increasing the information within the repository system is very important. This system represents a valuable means to manage the explicit,

sharing, combination of application and renewal of organizational knowledge. The above knowledge repository system helps knowledge innovators and knowledge workers to create intelligent systems for their analysis and business strategy. Further they can apply the emerging concept such as semantic web for enhancing the knowledge repository system. The mechanism of creation of intelligent systems depends on the capabilities of the end users. Michael H.Zack rightly observes that Information technology makes sense in cases of uncertainty and complexity, but much less so far dealing with ambiguity.

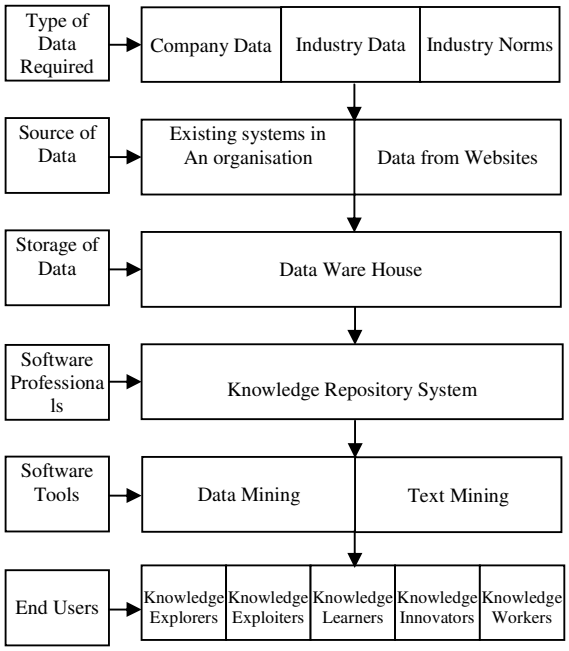

Figure 2 -Frame Work of Knowledge Repository System

Conclusion

Knowledge base in a business enterprise is an extension of knowledge sharing systems. In spite of heavy investment on information systems many business enterprises seem to feel they are not making any remarkable success in their business. Business success lies in converting the information into knowledge. In today's business scenario the use of sophisticated knowledge base depends on the skill with which executives in business enterprises arrive at their findings from their analysis for framing strategy for their organization. The key link between knowledge and information is probably best expressed in commonly accepted idea i.e. "Knowledge in the business context is nothing but actionable information".

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