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A Current Perspective of Knowledge Management in a Global Economy

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***Abstract*—Knowledge management is indispensible in today's highly globalized economy. Effective management of information and people is vital for companies to survive in this age of stiff competition, shrinking margins, and short product lifecycles. It is important for the knowledge management system to facilitate effective integration between information and personnel in order to foster creativity and innovation. In this work, we look at the various aspects of knowledge management and the challenges involved in effective implementation of an efficient knowledge management system that encourages cooperation and collaboration in a global organization.**

Keywords-knowledge management, acquisition, innovation, information, technology

I. INTRODUCTION

In today's highly competitive world where companies are striving hard to lower design-to-market times, and capture customer markets, it becomes imperative to be able to tap into the wealth of internal and external knowledge in order to spark innovative ideas for developing new products or services and improving existing ones. Knowledge management is the term given to the broad spectrum of systems and services that facilitate such acquisition and analysis of information. With computers and Internet becoming increasingly ubiquitous, information technology can be harnessed to develop such knowledge management systems. In this work, we look at the role of knowledge management in today's globalized economy. We will explore the different aspects of knowledge management as applicable in today's world and some of the challenges involved.

II. BASICS

Knowledge management (KM) has been put into practice in many industries ranging from automobiles [29], crop management [12], high-tech industries [15, 27], integrated circuit industry [9], manufacturing [1, 6, 9] and lately in virtual enterprises [8, 28]. It has multiple connotations based on the different schools of thought. It is often referred to as the management of information, people or both. Figure 1 [32] shows the processes involved in a knowledge management system.

From a systems perspective [24], knowledge management is believed to have four different levels viz. strategic, application, methods and technology. The strategic level focuses on the organizational level framework for managing information and people.

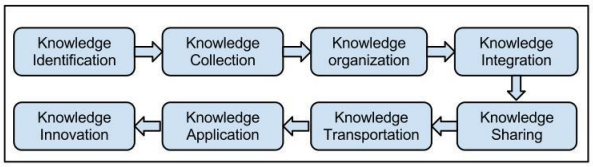

Figure 1. Knowledge Management Framework (Modified from [32])

The application level includes the decision support systems (DSS) and the methods level emphasizes on the implementation methodology. The technology level provides the necessary information technology platform and security support. Implied in this perspective is the fact that knowledge management aims [27] to

> "harvest the tacit knowledge residing in individuals and make it a firm asset, rather than to only leave it in the heads of the particular individuals"

This involves four major steps [16] viz. knowledge acquisition, knowledge accumulation and storage, knowledge exchange and knowledge application. This process is also known as the "spiral cycle of innovation" [22]. Central to this process is information technology and the people within the organization. Without adequate information technology infrastructure [10] and skilled workforce, a knowledge management system would cease to be effective.

III. CHALLENGES IN KM

A. *Strategies*

In order to effectively integrate knowledge management into the organization, a strategic perspective is essential. The knowledge management strategy [27] can be defined as

> "the reflection of a firm's competitive strategy to foster the firm's dynamic capability to create and transfer knowledge for the purpose of delivering superior value and meeting the evolving expectations of its clients"

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Studies [11, 27] have shown that an effective knowledge management strategy has a positive impact on the company's performance. Another aspect of knowledge management is looking externally at the organization's customers. Customer knowledge management [6, 25] seeks to understand the customers' needs and wants both in relation to the product or service and the knowledge about the product or service. This is especially true in today's age where the customer expects to be provided with sufficient knowledge about the products and services in order to make an informed decision. This knowledge from customers about their needs can be effectively employed for sustained innovation.

B. Distributed and Responsive Design

Having the best knowledge management system in itself is far from sufficient. It is imperative to have a system that is responsive [21] to changes in the knowledge available through the knowledge management system. This dynamic system behavior is integral to the success of the organization. This is achieved by ensuring that the knowledge collected is analyzed and utilized effectively to modify the system and to improve our understanding of the system.

Today, companies have operations in locations that are geographically distributed throughout the world based on availability of skilled labor and expertise. For example, a company might choose to engage in all its design activities in a country due to the presence of vibrant talent pool while choosing to manufacture the product in another due to the abundant availability of cheap skilled labor and selling it in yet another country where the customer base is situated. In order to keep all operations of the organization in synch and under control, it is imperative to have a distributed knowledge management [3, 18] system that allows each employee to access from and contribute to the common pool of knowledge irrespective of their geographic location.

C. Supply Chain

Supply chain management focuses on all the players involved in the value chain of getting the product to the customer. This begins with the raw materials followed by production and assembly leading to shipping and delivery. Lately, there is also a greater emphasis on recycling and reuse which adds more complexity to the supply chain since we know have to deal with both the outward and inward movement of products. Stiff competition and desire to maximize profits have driven companies offshore in search of cheaper suppliers. This compounds the difficulties involved in traditional supply chain management. Knowledge management is crucial for an efficient supply chain. Both knowledge management and supply chain management deal with the entire organization and have information at their core [13]. The aim of knowledge management in a supply chain [14] is to analyze data collected through Geographic Information Systems (GIS) and Radio Frequency Identification (RFID) devices to ascertain the best possible manner to route parts and products to maximize customer satisfaction through on-time deliveries.

D. Information Technology and Web 2.0

Information technology plays a vital role in knowledge management. Although information technology does not guarantee success of the knowledge management system, it has been shown [11] to be really useful if incorporated into to the organization-wide process of collecting, assimilating and disseminating data.

In today's Internet age, Web 2.0 tools [7] need to be developed for efficient knowledge management systems thus providing instant access through any device. Some of the key aspects of Web 2.0 architecture include user-focused design, universal access and open content. Using this architecture for knowledge management motivates [23] employees to create and consume knowledge with the aim of applying it to develop innovative products and improved processes. Implementation of this architecture while still in its nascent stages is catching on quite fast. A peer-to-peer architecture [26] may also be used to share information and foster collaboration and cooperation.

E. Performance Measurement

Organizations can have the best knowledge management system in place without much success if it does not meet the expectations. Hence, it is important to ascertain the effectiveness of the system through performance indices [20, 28]. These indices have to cover all aspects of a typical knowledge management system. Some of these indices may be quantitative in nature, which can easily be measured while some others might be qualitative in nature, which makes it harder to measure. These indices can be categorized into groups for better organization and analysis. One such classification [17] divides them into three major groups viz. environmental analysis, activity planning and decision-making. Another classification system [2] divides them into four groups viz. knowledge chain (the process of collecting, analyzing and sharing knowledge), external influences, software and hardware supports.

An alternative more comprehensive system, Knowledge Management Assessment Tool (KMAT) proposed by Arthur Anderson and the American Productivity and Quality Center [31] uses indices in major areas such as leadership, culture, and technology to evaluate the knowledge management system. A neural network approach [30] combines nine major indices to evaluate the knowledge management system.

F. Implementation Issues

Implementation of effective knowledge management systems [19] is a challenging task that requires careful attention to the organization's internal knowledge market, which involves "knowledge sellers" and "knowledge buyers". It has also been shown [4] that one of the more popular strategies is a top-down strategy where the impetus

for implementation comes from the top (read corporate headquarters) and the execution takes place at the bottom (read regional centers). It is also important to share knowledge across the various functional units in an organization through internal knowledge networks. A culture of cooperation and collaboration needs to be established within the organization where every employee is working towards the singular objective of maximizing profits through innovative products and improved processes. It is also imperative to ensure that knowledge management is not viewed as yet another "fashionable management tool" [19] through effective communication throughout the organization.

IV. CONCLUSIONS

The world we live in today is so interconnected that information holds the key to success. Globalized economy while providing access to cheap labor and new markets does engender stiff competition. This combined with the ever-shrinking product lifecycles and the volatility of customer demand makes for a really challenging scenario. Cooperation and collaboration between all players in the organization's value chain is essential today more than ever. Harnessing the knowledge available both internal and external is crucial to encourage creativity and innovation. In this work, we explored some of the challenges companies face as they embark upon implementing an effective knowledge management system. We looked at the impact a global supply chain has on the knowledge management system and also examined the role of information technology in ensuring the effectiveness of a company's knowledge management system.

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