Prospects & Challenges of Implementing Knowledge Management System in IT Industry

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Abstract- **Recent past has seen an epidemic growth in the adoption of strategic information systems. In order to be successful, enterprises are putting in huge investments into implementation of information technology (IT) and knowledge management systems (KMS). KMS implementation in an IT industry has been discussed in this paper. Several challenges including multiple information sources, access control, and employee's mistrust among others are being identified along with their possible solutions. Later foreseen benefits of KMS implementation including quicker problem identification, faster response time, and cost saving among others are being highlighted. The paper concludes with revealing future research possibilities.**

Keywords: Knowledge management, service industry, information technology implementation.

I. INTRODUCTION

Good governance and efficiency are the two major drivers for organization's progress. Academicians, scholars and practitioners; all of them have highlighted the significance of knowledge [1-3]. Organizations have been using the shoulders of knowledge and technology not only to survive, but to gain strategic competitive advantage [4]. This has resulted in extensive KMS implementation in various industries worldwide.

Enterprises in order to ensure well-organized flow of knowledge from both inside as well as outside the organization are employing KMS. This not only helps organizations in achieving their goals, but also facilitates in having better organizational output. According to [5]; a revamp in strategy, business processes, configuration and technologies is required to make the best out of KMS. Even the organizations that are unaware of KMS, also requires the supervision of knowledge systematically. This creates a challenge when a particular knowledge is required such as: (1) from where to look for the knowledge, (2) from whom to get it and (3) how to finally have it.

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In order to tackle the above challenges, KMS is the way to go. KMS streamlines the end-to-end flow of information within an organization [6] [7]. The systematic storage of information in a KMS makes desired information retrieval a facile task.

The next section will briefly discuss KM. After this, company background has been discussed where the KMS is being implemented. Section 4 will highlight few of the challenges being faced by the company during and after the KMS implementation. Section 5 will discuss about the perceived benefits that are expected after successful KMS implementation. In the end, paper is concluded along with identifying future research direction.

II. KNOWLEDGE MANAGEMENT

In order to understand what KM is, we need to understand the definition of knowledge. Although knowledge is considered as an important strategic asset of any modern-era organization, its definition is still being defined [8]. Numerous definitions of knowledge have been devised by a number of researchers. According to [9]; knowledge is the observation, skills and know-how of an individual that comes with experience. Nonaka et al. [10] defines knowledge as the actuality of skillful action and the potentiality of defining a situation to take desired decision.

Now we have understood what knowledge is, we can better understand what KM is. The process to generate, expand, deliver, and exploitation of the use of knowledge is referred to as KM [11]. KM is being utilized to enhance organizational productivity along with gaining strategic competitive advantage [12] [13].

Very often, an individual's knowledge or perception can have complete disparity to the knowledge structure of the organization. Therefore, it is imperative to perform business process re-engineering in a way that aligns individual's knowledge to the organization's knowledge. In order to achieve this, KMS is being implemented. This includes generation, accumulation, retrieval and transfer of knowledge [14] [15].

III. COMPANY BACKGROUND

XYZ Company is the trendsetter in the fields of time management, authentication & authorization, access control and security management solutions. The company focuses on delivering superior technology for workforce management with the help of its world-class top technology vendors. Technology solutions provider sells business problems solutions instead of selling technology itself. Having presence at multiple locations within Pakistan, XYZ Company has a clientele of more than

10,000. In order to give improved customer service, the company decided to implement KMS. Due to privacy issues, the name of the company has been kept anonymous.

IV. CHALLENGES AND ISSUES

The data was gathering from two engineers working for the case company. Many brain-storming sessions were being conducted during the planning and designing phase of KMS. All the stakeholders were involved included but not limited to board of directors, managers and senior managers, engineers and staff from various departments such as maintenance, system support, supply chain and others. After several meetings, the company identified following challenges and issues:

A. Diverse Information Sources

When a client faces an issue in the solution being implemented by the XYZ Company, any available support engineer is assigned by the company to resolve the issue of client. As it is almost next to impossible for the company to always assign the same engineer to a particular client to resolve its issue, knowledge is being generated by multiple support engineers over the course of service level agreement (SLA) with the client. It is imperative that KMS gets updated with the knowledge from only the authorized support engineers in a systematic in order to avoid unnecessary information stored in KMS.

B. Information Inaccuracy

Sometimes, during a remote support given to the client, the client's description of a particular issue is ambiguous or inaccurate. For example, if a client reports an issue that one employee is not being authenticated using the face-detection system being implemented is because system is malfunctioning. However, in actual the problem was not exactly the malfunctioning of the system, instead the employee when got registered had a beard and later he got his beard cleaned which caused the system to not recognize the employee. There is a possibility that this problem gets stored in KMS detailing malfunction as the core reason, which will be incorrect information. Therefore, there needs to be some mechanism in KMS or some standardized procedure, which avoids recording of avoidable and inaccurate information to be entered into KMS.

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C. *Unstructured Information*

Since, KMS gets information from multiple clients and from multiple support engineers. The information needs to be recorded into KMS accumulate as a huge pile of data. This multiple source of information if entered into the system without proper classification and tags leads to inefficient knowledge retrieval later on. In order to address this issue, the company believed that may employ some classification or statistical techniques along with developing Meta data which may helps in overcoming this challenge.

D. *Employees' Mistrust*

It is an organizational culture that a technical person sometimes hinders in sharing his knowledge about a particular problem that only he knows how to resolve. The reason is to have some employees / engineers fears that if their knowledge is being transferred to other engineers, they are vulnerable to being fired from the company or in other words become dispensable. This was ranked as the major issue by the company's top management. In order to rectify this issue, top management suggested that the most useful employee who provides with the most legitimate input of information into KMS will be provided maximum annual appraisal.

E. *Data Redundancy*

The duplication of data is referred to as data redundancy [16]. There is a very high possibility of storage of multiple instances of the same information in KMS. This will result in data redundancy which may make system slow with the passage of time and also the information search could become tedious too. This issue can be resolved by stream lining the process of data entry into KMS by allowing less manual input and more pre-defined input using dropdown menus and combo boxes. This will eventually help KMS in identify and avoid data repetition data duplication.

F. *Access Control*

Open access to the KMS will be a threat to the information being shared. If all engineers and support staff will have access to update or modify information in KMS, there is a high chance of data inconsistency and / or data loss. In order to take care of this issue, the KMS should be having a provision to give appropriate and different access level to each user who can access or alter the information within KMS.

G. Stamp Marking / Approval of Imperative Knowledge

At the time of writing this paper, the KMS was still in the initial phase of its implementation. Initially each and every issue and its solution including unnecessary information were used to be recorded in the KMS. Therefore, this was a need to ensure only the appropriate and necessary information being stored in KMS. But the question was; who will be responsible to approve the source information as "the knowledge". This issue can be addressed by having some provision in the software to register some administrators or special users, which acts as a data or information verifier instead of a data source.

V. BENEFITS OF KMS

According to [17]; product and service efficiency and productivity can only be achieved by having proper knowledge management. It is believed that the implementation of KMS will result in increased customer satisfaction and company's revenue. A number of benefits were being identified by the company as a result of KMS implementation which are discussed below:

A. Problem Identification

One of the main reasons of implementing KMS is to identify client's problems and issues as early as possible so as to provide better and improved customer service. Having combined and centralized solutions to all the problems in the KMS will enable the company in better and quicker problem recognition and identification that may be faced by its clients in the future.

B. Data Mining and Knowledge Engineering

The science and theory to reveal hidden patterns and trends in a large and complex collection of data is referred to as data mining [18]. KMS having a lot of centralized data and information will enable the company to perform data analytics and make use of knowledge engineering principles. This will enable the company in improving their decision-making capabilities. The company may also be able to forecast problems that may arise with a particular product or particular client.

C. Quicker Troubleshooting

As discussed earlier, the use of KMS enables rapid identification of problems. As each problem along with its appropriate solutions are being saved in KMS, this will enable the company is faster troubleshooting and problem rectification.

D. Reduced Response Time

As discussed in previous paragraphs, quick problem identification and faster troubleshooting results in reduced response time. Rather than investigating every problem and its solution from scratch, the KMS will enable the company to just search the particular problem from within the system along with the tried and tested solution thus resulting in reduced response time to the customer issues.

E. Remote Support and Cost Saving

KMS will change the way how support is being provide to the customers. The requirement to visit the client/customer premise in person will be reduced because of KMS especially for software related issues. As all the solutions to the problems would be single click away, company can easily provide remote support to its client over telephone or by remotely logging in to the client's system. This will ultimately result in saving time by reducing the frequency of visiting in person to the clients' premise and also the various costs of factors such as transportation, user engagement etc associated with it.

F. Customer Satisfaction

The perceived performance of a product or service with respect to the customer's own expectations is referred to as customer satisfaction [19]. Company's ultimate goal was to have satisfied customers. They will be able to achieve this goal by KMS implementation. Quicker problem identification, faster troubleshooting and quick problem resolution will ultimately result in satisfied and happy customers, which will further result in company's growth.

VI. CONCLUSION AND FUTURE RESEARCH DIRECTION

Every technological implementation comes at a cost of some challenges and issues [20]. These issues need to be addressed and rectified efficiently in order to have that implementation a success [21]. This paper identified and discussed several challenges and issues. Some of these can be generalized. But majority of them are specific to service industry especially IT service industry as discussed. Similarly, some the benefits discussed are the ones, which were expected or experienced by XYZ Company and may not be applicable to other organizations belonging to different industry. Further research can be done by comparing various KMS implementations case studies belonging to other industries in order to verify and or generalize the results of this research study. Furthermore, future research may also reveal some additional challenges or benefits of KMS.

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