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"Properly balancing a Hybrid: Integrating Human and Technical Components in the Design of *Just-In-Time Knowledge Management Systems*"

Abstract:

This paper explores the right balance of human and technical resources in the design of Just-in-Time knowledge delivery. It also examines and analyzes the case study: "Teltech: The business of Knowledge Management" by Davenport. It further attempts to depict the characteristics of the hybrid. The paper describes how the hybrid can be applied to Just-In-Time knowledge delivery. It also seeks to analyze and explore its interplay with knowledge splits with a view to designing Just-In-Time Knowledge Management. These include: "tacit versus explicit knowledge", "in-process" versus "after action" documentation, "process-centered versus product-centered approach", "knowledge versus information" and the "culture of sharing versus hoarding."

0.1. Keywords

Hybridization, JIT knowledge management, Knowledge analysts, hierarchical knowledge structure, thesaurus-based knowledge structure, knowledge engineers.

1. Introduction

The widespread use of the electronic media and the Internet has facilitated the exchange of information and in consequence brought about a tremendous increase in the volume of information. This has in turn, resulted in a situation otherwise known as the "information overload". Sorting through this vast pool of resources to extricate the right piece of information is not only tedious but intractable.

The idea behind "Just-in-Time knowledge delivery" is being able to furnish the right information in the right form, just when it is required. The implementation of this concept plays a vital role in minimizing the time spent in retrieving the needed piece of information or expertise.

This paper attempts to explore the design of "Just-In-Time knowledge Management". It will further explore the combined role of humans and technology in the Just-In-Time knowledge delivery systems. It will as a matter of core significance explain what a hybrid of these components should look like, its characteristics, and its right balance. Finally, the paper will explain the hybrid's implication to information systems.

In order to be able to address the design phase, it is necessary to first and foremost understand the problems that this situation poses. Thereafter, issues of design and implementation can adequately be addressed.

1.1. The Choice of Teltech as Test Bed

In order to better illustrate the problems to be addressed, the case study, "Teltech" was chosen as an example. Teltech is a company that specializes in knowledge management. It has been successful in utilizing the hybrid method

in Just-In-Time knowledge management (Davenport, 2002).

The choice of Teltech, as a basis, for the assessment of the right balance of knowledge delivery is based on the following: (1) Teltech is an information service providing company. (2) It utilizes the hybrid components of people and technology. (3) Teltech has a successful track record in rendering information services. Given the enumerated reasons, Teltech therefore serves as a logical and ideal ground for such discourse.

11. "Teltech: The Business of KM" Case Review:

Teltech provides technical expertise and information to companies that wish to better manage their knowledge and information assets. Teltech is a hybrid environment of people and technology-based services. It maps, structures and categorizes knowledge obtained from information sources and customer behavior. Teltech offers four basic services: (1) The Expert Network (2) Assisted Database Searches (3) Vendor Service and (4) Technical Alert service.

11.1. Why the choice of "hybrid search" method a preferred option at Teltech.

From experience at Teltech, it was found that most people choose the option of employing the services of knowledge analysts as guides in their search for knowledge and information rather than embarking upon the search themselves.

The clients' need for assistance from knowledge analyst during any given information search is demonstrated when clients call up. Often times, they don't know the search term and search criteria to use. In certain cases, they don't know the database in which to search from. The end users of the information services of Teltech not only require the guidance of the knowledge analysts, but also need the confidence of their expertise. That is, it makes the clients feel that the information they are getting from the knowledge analysts is the right one and, in essence, this has been proven true and valid over time with past cases.

Teltech pays very well and therefore through rigorous screening gets the best people for hiring. In addition, these recruits undergo a substantial amount of training. These aforementioned reasons account for why these knowledge analysts are considered by clients to be capable information providers. They therefore have won the trust of their clients.

A key method that Teltech uses to accomplish knowledge management is by storing the names and locations of experts in databases and then referring clients to them. The filtering enhances the search process and provides richer knowledge as this is more than a telephone book. The fact that people help in the search combines the use of both people and technology. One big advantage this has on the quality of service is that the waiting time for callers is drastically reduced. As a result, this minimizes the number of knowledge analysts needed to render services to clients. In the final analysis, this translates to reduced spending in training needs as well as in salaries.

11.2. Lessons Learnt From Teltech

From the Teltech case study, it is evident that humans and technology complement

each other. This conclusion was reached owing to the following reasons:

Teltech was formed with the express and sole purpose of providing access to a network of technical experts. From research conducted, however, it was discovered that customers were interested in gaining access to online databases. "Technical experts" in this case, refers to humans, while the "online databases" make a direct reference to technology. Teltech has created the right mix of humans and technology in meeting customer information needs. Teltech has further increased more services both human and technology-related.

Moreover, "knowledge analysts" being humans cannot store all the names and addresses of the experts and their areas of expertise in their heads. Experts vary from case to case and the knowledge Analysts invariably have to use the database to help them in their search. These databases also help them when referring their clients to experts.

This goes to signify how the hybrid use of humans and technology can prove to be very efficient in the provision of the client's information needs. The clients call the "knowledge Analysts" by phone to help them do an interactive search on the databases in the computers.

111. Dimensions of the Design Space

111.1. Process-centered Versus Product-centered Approach

The process-centered approach also known as knowledge flow focuses on knowledge management as a social communication process and it is enabled by groupware support; whereas the product-centered approach also known as knowledge stock focuses on knowledge assets, their creation, storage and reuse.

Information technology is the backbone that supports the exchange of this explicit knowledge. This is frequently based on document management systems. The archiving of lessons-learned, best-practice databases, distributed technologies, such as collaboration tools and groupware, innovative techniques for communication and cooperation like e-mail, real-time chats, videoconferencing, workflow tools, aid in the capture of expertise. This in turn helps in the solving of problems. These, are but a few instances of how and what tools are being developed and used for the purpose of knowledge exchange or knowledge sharing.

111.2. Tacit Versus Explicit Knowledge

Tacit knowledge is knowledge that is complex, developed and internalized by the knower over a long period of time. It is near impossibility to reproduce it in a document (Davenport & Prusak, 1998).

Explicit knowledge is that which one can express in a written or verbal form. The problem with tacit knowledge is that it is difficult to transmit or transfer. Explicit knowledge on the other hand, can be documented or easily passed on to others, either by verbal or written means.

We can know more than we can tell. That is to say, often times, we know the physiognomy of a physical entity say a face, and distinguish it from many others but lack the capacity to communicate its precise description to others. We can only do so if we are provided with a reasonable means of expressing ourselves. For example by

furnishing us with samples of features, for example, noses, mouths, we would be able to come close to what we would like to describe.

111.3. Culture of Sharing versus Culture of Hoarding

One of greatest challenges of Knowledge Management has always been the task of sharing knowledge. This stems from the polarity of the two types of knowledge: tacit and explicit knowledge. In the industry, for example, it has always been difficult to encourage stellar employees to share their hard earned knowledge with their less talented peers. The reasons for this tendency are the desire to enjoy monopoly of knowledge, especially in the cut throat competition of the present day job market. Moreover, time is very limited. The fear of the employer on the other is that of losing workers with tacit knowledge.

Furthermore, workers have little or no extra out of job time to document their knowledge. Due to the lack of documentation of knowledge, many organizations have to rely heavily on storing the knowledge in peoples' heads. This leads to chaos due to errors and as a result, inevitably leads to setbacks in the competitiveness of an organization. That is why documentation and knowledge sharing are major prerequisites to the implementation of JITKM.

Companies, business institutions and organizations lose a lot tacit assets on a daily basis due to the fact that experts or skilled employees who get fired, retire, leave for greener pastures elsewhere. They take with them, the tacit knowledge assets they acquired over the years. One of the biggest challenges of companies is to capture, document and most importantly share this tacit knowledge with new and less skilled workers. The difficulty here is the ability to transfer tacit knowledge. Another challenge is the creation of common searchable repositories organization-wide.

Sharing of tacit knowledge is best articulated by the phrase: "Knowing who knows

111.4. Traditional After-action reports Versus In-process Knowledge Management reports embedded in workflow systems.

The traditional After-Action explicit knowledge capture is a structured review process that allows training of employees or training on the job participants to find out for themselves what happened, why it happened, and how it can be done better with the aim of documenting them in repositories. This approach has it disadvantages. Firstly, it is not a good way of eliciting tacit knowledge. Tacit knowledge is mostly gained from experience and or doing. It resides in the heads of people. This knowledge is not easily transmitted through writing. In-process, on the hand is knowledge that is embedded in workflow. It is mostly captured during the workflow processes or gained through experience.

The concept of furnishing or making accessible the right information at any given point in time, when it is needed, and in the right amount and form is known as Just-In-Time Knowledge Management (JITKM). Just-In-Time knowledge delivery in principle is a marriage between Knowledge Management and Workflow Management and their joint implementation. Given the above definition, it is quite apparent therefore that the in-process is a better approach

for Just-in-time knowledge delivery. Besides the better capture of tacit knowledge, there is an excellent preservation of context, exposure of inefficiencies, richer "post mortem" details and above all a workflow with artifact characteristics of value, authority and believability.

The ideal method of knowledge delivery would therefore be a hybrid or a mix between the in-process and after-action approaches.

1V. Conclusion

From the foregoing, it is evident that knowledge management has come of age. This has been facilitated by the advancement in information technology, the widespread use of the Internet. Companies like Teltech have perfected the art and practice of leveraging the right knowledge in the needed form and amount and at the right time to the end users.

Teltech has most importantly utilized the hybrid method of blending knowledge analysts, experts, technology (knowledge repositories and interactive databases) not only to furnish individual users but a variety of industries with vital information in a timely manner to facilitate their work processes.

This paper represents an attempt at exploring the various options of knowledge delivery. It highlights the activities at Teltech as a case study with the aim of shedding light on their advantages, limitations and their implementation.

Looking at the concepts and knowledge splits analyzed in the preceding sections, it is quite apparent that a holistic hybrid approach that unifies the explored options of knowledge delivery is most appropriate for "Just-In-Time Knowledge Management".

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