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Some Necessaries of Knowledge Management in Project Based Firms

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Abstract: This study is seeking for a model for Knowledge Management in project based firms. These firms used to try for awarding project from clients and deliver it with especial duration and budget. According the type and specification of projects they will achieve and/or create some knowledge which is mostly tacit. Most of the time, according to their obligation for delivering project on time, this tacit knowledge do not transfer to explicit ones and many times because of most of their knowledge workers are project-loyal, these firms will lose their acquisitioned knowledge through ended project. This study according to the literature reveals that KM can act as powerful instrument for increasing project-based firms' performance and hence make more chance for them to award new projects. Of course this is a bilateral relationship; clients will have more trust to those firms who learn more from previous projects and firms will have more chance to award while they control all knowledge earned from previous projects.

Keywords: Knowledge Management, Project-Based Firms, Project-Oriented Firms

1. Introduction

Knowledge management is a set of methods and procedures which enable managers to manage the store of knowledge which is in the company or organization. Knowledge in the formalized (explicit) form – i.e. Information - can be in the form of bulletins, documents, statistics, etc. Knowledge management (KM) is a scientific discipline that stems from management theory and concentrates on the systematic creation, leverage, sharing and reuse of knowledge resources in a company [1]. Knowledge management approaches are generally divided into personalization approaches that focus on human resources and communication, and codification approaches that emphasize the collection and organization of knowledge [12].

Four major dimensions for the process of KM activities presented by Nonaka and Takeuchi (1995) and Davenport and Prusak (1998) are usually adopted for the general structure of KM models in enterprises. These four dimensions are knowledge creation, knowledge diffusion, knowledge transfer, and knowledge inventory. In this paper, we have especial look to knowledge creation which is happening in every project.

Knowledge creation is a continuous, self-transcending process through which one transcends the boundary of the old self into a new self by acquiring a new context, a new view of the world, and new knowledge. In short, it is a journey "from being, to becoming". One also transcends the boundary between self and other, as knowledge is created through interactions amongst individuals or between individuals and their environment. In knowledge creation, micro and macro interact with each other, and changes occur at both the micro and the macro level: an individual (micro) influences and is influenced by the environment (macro) with which they interact. To understand how organizations create knowledge dynamically, it can be

proposed a model of knowledge creation consisting of three elements: (i) The SECI Process; In Nonaka (2001), the process of knowledge creation through conversion between Tacit and Explicit Knowledge (ii) A shared context for knowledge creation; and (iii) Knowledge assets are the inputs, outputs, and moderators of the knowledge-creating process.

2. KM and Firms Performance:

A review of prior KM research uncovered key enablers for successful KM in organizations; these included human, technical, and organizational resources. The studies have shown how KM enablers affect organizational performance. For example, Sabherwal and Sabherwal (2005) examined the effects of contextual factors on CAR associated with IT-based KM announcements by adopting event study methodology. The results of their study highlighted the need for managers to consider the specific circumstances of their firms in deciding whether IT-based KM efforts would be appropriate. However, only a few researchers paid attention to understanding the relationship between KM strategies and organizational performance empirically, owing to the difficulty inherent to the assessment of KM strategies and their effects on organizational performance. Even KM can effect on market value of a firm [4].

Nowadays, environment is continuously changing fast and those firms will cope with situations which are Learning Organizations. The literature describes organizational learning at two levels: (1) Individual areas of competence (e.g., the five disciplines); and (2) a phenomenon of the organization as a whole, as in Senge's definition of learning as ''expanding the ability to produce the results we truly want in life'' [18]. It can be extended three critical steps in organizational learning as described by Nevis et al. (1995): knowledge acquisition, knowledge sharing, and knowledge utilization.

The use of knowledge as the basis for judging organizational learning is supported by Senge equating knowledge and learning. Nevis et al. (1995, p. 74) described knowledge acquisition as ''the development or creation of skills, insights, relationships''; knowledge sharing as ''the dissemination of what has been learned''; and knowledge utilization as ''the integration of learning so it is broadly available and can also be generalized to new situations.'' Ford et al (2000) worked on identifying the development of knowledge skills and implementation methods as important areas for future organizational learning research with focus on Project-Based firms.

3. KM strategies and industry types

To ensure an alignment with its business objectives and strategies, an organization should consider the type of work they carry out, their culture, dynamics and policies and practices, as well as the added value that is required from the KM initiative [2].

The effect of a firm's industry type has also been considered in KM strategy-related literature. Organizations should use KM strategies that fit their industry types. KM strategies of manufacturing companies are believed to have a higher corporate performance if they adopt a human-oriented strategy over the system-oriented strategy. Service firms may achieve higher performance by adopting a human-oriented strategy because they should provide knowledge-based services. Although a system-oriented strategy may improve its ability to service customers more rapidly and reduce service costs by reusing formalized prior knowledge, customer satisfaction and loyalty may suffer because this strategy may provide little discretion in fulfilling customer needs. A human-oriented strategy helps firms create new tacit knowledge that serves as a source of creativity, enabling firms to change innovatively, and provide customized services, which results in improved performance [16]. Table1 shows the Choi & Jong (2010) assessment of criteria for Km strategic classification.

4. Specialty for Project-Based Firms

In the past there has been no structured approach to learning from projects once they are completed. Top managers generally assume that professionals in enterprises already possess tacit knowledge and experience for specific types of projects. Such knowledge is extremely important to organizations because, once a project is completed, professionals tend to forget it and start something new.

Table1: Assessment of criteria for Km strategic classification

	System-oriented	Human-oriented	Dynamic
Goals	Increasing organizational efficiency by codifying and reusing knowledge	Acquiring and sharing tacit knowledge and interpersonal experience	Symbiosis between system- and human-oriented
Features	Emphasize codified knowledge Storing knowledge via IT Sharing knowledge formally	Emphasize dialogue via social networks and person-to-person contact Acquiring knowledge via experienced people Sharing knowledge informally	Integration of system- and human-oriented
Focus of announcement	Codification Best practices cases Books and manuals Codes Documentation Flow charts Internal publications Priori procedures Reports Dissemination using Content management system Intranets Portals Storage Database Electronic document management systems Electronic knowledge databases Electronic repositories Systemization through Data mining Expert systems Knowledge-based systems Knowledge map for knowledge asset	Communication Chatting Directory of experts Collaborative working Forum Telephone conference Voice mail Video conferencing Communities Communities of practice Expert community Strategic community Social networks Personal contact Brain storming Direct collaborative Face-to-face contact Face-to-face meetings Informal events Personal interaction Training Apprenticeship Hands-on experience Job rotation programs On the job training On-site education Mentoring	Integration of system- and human-oriented

Therefore, knowledge multi fold utilization is a key factor in productively executing a project [9]. The idea of knowledge as a competitive resource within project-oriented firms is a concept shared by numerous authors such as Nonaka and Takeuchi (1995), Egbu (2004), Egbu et al. (2001), and others. The difficulties associated with understanding and managing organizational knowledge has meant that organizations experience numerous problems in successfully implementing and sustaining their initiatives [6]. Egbu et al. (2001) state that, due to the project oriented nature of some organizations, cultural considerations are important for successful KM. They continue by stating that short-term, task- focused work can promote a culture which inhibits continuous learning.

To have deeply research regarding project-Based firms, it seems these theories can be used as framework: community of practice, social network analysis, intellectual capital, information theory, complexity science and constructivism [9].

Most of project-based firms are involving in design activities because they have to make something new for new projects. Knowledge about engineering design processes constitutes one of the most valuable assets of a modern enterprise. Normally, this knowledge is only known implicitly to the participating designers, relying heavily on the personal experience background of each designer. To fully exploit this intellectual capital, it must be made explicit and shared among designers and across the enterprise. Consistent and comprehensive knowledge management methods need to be applied to capture and integrate the individual knowledge items emerging in the course of an engineering design project [3].

Typically, a vast amount of design knowledge is manipulated by legacy tools and stored in highly heterogeneous sources, such as electronic documents and databases. Thus, a KM should (a) provide a comprehensive representation of the contents of these sources, thereby correlating the scattered knowledge items and providing a single point of access to design knowledge. As such a comprehensive representation cannot be complete (for reasons of scaling, maintainability, practicability, etc.), a KM should (b) employ

mechanisms to easily locate the original knowledge sources, where more detailed information can be retrieved. To this aim, (Meta) information about the sources (e.g., type, structure, version history, storage location) should be combined with information about their contents, and the KM should be integrated with existing tools and data stores to promote easy access to the original sources. In addition, the KM should (c) enable the capture and archival of work processes in order to provide information about the circumstances in which the individual knowledge items have been created. [3]

5. Role of IT

Obviously, IT is the impetus for the initial interest in KM. Furthermore, ITs enable firms to acquire or access explicit and simple knowledge from documented and computerized sources in a relatively efficient and timely manner. Thus, the effective development or adoption of IT is a key enabler for the implementation of successful KM strategies. Well-constructed IT, however, does not guarantee successful KM. An organization may have difficulties in establishing its knowledge creating environment due to the lack of an appropriate culture despite its well-constructed IT. In addition, initiating KM only through IT faces high risk of failure. In order to avoid the risk, companies should integrate system- and human oriented strategies by paying more attention to enhancing tacit knowledge by a variety of methods such as community of practices.

In particular, recording of the decision-making procedures allows recalling the design rationale applied at that time. This allows systematically retrieving experience knowledge that is suitable for a particular situation, and evaluating its applicability to the current working context. Moreover, best practices abstracted from the recorded work processes can be exploited for direct process support (i.e., the partially automated enactment of routine tasks in design tools). In this context, two different types of information resources need to be distinguished. On the one hand, the products created as part of the decision making processes (e.g., process flow diagrams, simulation models, design calculations, cost estimates, etc.) should be considered. These may be organized into documents, which act as logical units to enable work distribution or version control. On the other hand, there are the work processes or activities themselves, in which the products are created, used or manipulated. Any kind of integrated support needs to take both the product and the process aspect into account [3].

Especially for engineering firms, while the engineers can go on working with the tools they are accustomed to; additional support functionality is offered by the integrated environment. Kopena and Regli (2003) designed ontology for the representation of product knowledge. A Core Ontology defines the basic structure to describe products from a functional view. The model representation is based on a Description Logic (DL) system with low expressivity to achieve good computability and scalability. On the other hand, the full expressive power of ontology and description-logic (DL) based languages would offer capabilities not available in the Process Data Warehousing _PDW_ model of Brandt et al (2008). Another example model is Knowledge Decision Support System for Construction Project Management (KDSS-CPM). It is able to develop many alternative variants for project management and to select the most rational of them in an automated manner [9]. These systems can act as a powerful instrument for KM by managing documents, decision procedures, sketches, and etc. It seems using these applications will increase creativity for new projects because experts have all previous experiences explicitly in their hands and under control.

At all, while Information theory is based on the fact that we can represent our experience by the use of symbols like the alphabet, pictures, etc., it is concerned with the problem of how to measure changes in information or knowledge content, that is, how to compile or interpret a message [9].

6. Conclusion

KM is crucial for project-based firms because every project is unique and has especial lessons. Most of the time these lessons are learned as a tacit knowledge by individuals and firms must make them explicit for using in future projects. In this regard, firms must have especial IT instrument. The proper IT instrument must be distinguished according to firm's property (i.e. type of industry, organizational culture, firm's size,

and etc.). Without a good KM project-based firms cannot be Learning Organization and obviously they will lose.

7. References

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