Analysis to the Sharing Obstacles and Effective Ways of the Implicit Knowledge Under the Network Environment

Take the Business Synergetic Platform of Science & Technology Information

Research of Shandong Province as an Example

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Abstract: Sharing the Implicit Knowledge is an important guarantee of improving the quality of knowledge service. This paper analyzes the sharing obstacles and effective ways of the Implicit Knowledge under the network environment, taking the Business Synergetic Platform of science & technology information research of Shandong province as an example.

Key words: Implicit Knowledge; Explicit Knowledge; Business Synergetic Platform

1. Introduction

Knowledge service is such a service, which is driven by user's goals, through sorting, matching and refining various explicit and implicit information resourses which can be utilized. It is based on the collection, organization, analysis, recombination of the information and the knowledge, and facing the contents and the solutions. Knowledge can be divided into the Implicit Knowledge and the Explicit Knowledge. Among them, the Explicit Knowledge is easy to be communicated, shared, imitated and copied, can be obtained by ordinary learning and accumulation, and be internalized to Implicit Knowledge by digestion and absorption. While the Implicit Knowledge is difficult to be obtained by the ordinary way and to be communicated, shared, imitated and copied, and it plays a vital role in realizing the individual value objectives and improving the organizational core competitiveness. Sharing the Implicit Knowledge can contribute to the generation of the new knowledge and the new viewpoint. It is the source of knowledge's innovation, having great significance for good operation of the projects and lifting the qulity of the knowledge service. But there are plenty of obstacles which block the road to sharing the Implicit Knowledge, especially in the network environment, where people's face-to-face communication opportunity decreases. Here, the authors take the Business Synergetic Platform of science & technology information research of Shandong province as an example, analyze the sharing obstacles and effective ways of the Implicit Knowledge under the network environment, in order to speed up the flowing of the knowledge and the information, accelerate the sharing and recreation of the knowledge, and improve the quality of the knowledge

service.

2. Overview of Explicit Knowledge and Implicit Knowledge

Knowledge is the real dominant resource and decisive factor of production at present, and it is the most important resource in modern enterprises and social economic development. It can be divided into Implicit Knowledge and Explicit Knowledge, which was put forward by Polanyi in 1958 in "personal Knowledge".

2.1. Definition and Features of Explicit Knowledge and Implicit Knowledge

Explicit Knowledge is such a knowledge, which can be expressed by formal and systematic language and can be shared in the shape of data, scientific formula, specification and operation. It can be coded, easily copied and quickly disseminated.

Implicit Knowledge is on the contrary,which is highly personalized, deeply rooted in the process, behavior, communication and interaction, practice, responsibility, vision and feeling. It is under the influence of the personal experience and knowledge, and it is difficult to be copied, imitated, formulated, clearly expressed and formed a unified format.

Table 1. the Different Features of Explicit Knowledge and Implicit Knowledge[1]

Explicit Knowledge	Implicit Knowledge
Easy to be coded and formated	Difficult to be coded and formated
Theoretical, may be not gained by practice	Practical and path-dependence
Expression in the form of character, language, chart and also	Expression in the form of inspiration, experience, knack and also
Non-monopolistic	Monopolistic
Easy to be communicated, shared and spread	Difficult to be communicated, shared and spread

2.2. Role of the Sharing of the Implicit Knowledge

Implicit Knowledge often has more creative value than Explicit Knowledge in the practical work, and it is the underlying intelligence cost and the key of the knowledge innovation. Sharing Implicit Knowledge can increase individual and institution's quantity of achievements' output, improve its quality, shorten its time and reduce its cost. Sharing the Implicit Knowledge of members in the organization is the magic weapon of enhancing the core competitive ability and making the organization impregnable. In the knowledge society, and it is also the important guarantee of stimulating the sustainable development of the organization.

3. Introduction of the Business Synergetic Platform of Science & Technology Information Research of Shandong Province

3.1. Background of the Business Synergetic Platform

The development history of the science & technology information research have been more than 50 years. During this period, the whole province's research institutes at various levels come out from scratch, and constantly improve the functions on the technology information's collection and sorting, storage and transmission, analysis and research and so on. The researchers' team is stronger and stronger, the means of information service have been varied, the above promote the development of the science & technology information research powerfully, and become the backbone in local department's work of science & technology management.

But at the same time, because of the restriction of region and industry etc, the fragmentation phenomenon of the information research is very serious, the "big information" situation hasn't formed between the science & technology information institutions, which restricts the further development of the information research. Today, the knowledge service is becoming highly valued. To

realize the fast knowledge innovation, the effective way is to organize the persons who may have different knowledge background and may come from different fields together to use interactive and cooperative innovation for common tasks[2]. To promote information research to deep development and to make information research keep up with the situation and reach a higher level so as to serve the society better, changing "fragmentation" phenomenon to "cooperation" phenomenon, realizing the collaborative research is carried on important agenda. The booming development of the network and the openness of the network environment provides the possibility and opportunities for breaking the"fragmentation" phenomenon and realizing the cooperation phenomenon. In this context, we prepare to estabish the Business Synergetic Platform of science & technology information research of Shandong province.

3.2. Logical Structure of the Business Synergetic Platform

The synergetic work function of the Business Synergetic Platform is realized mainly by four work module, they are "post management", "human resource management", "assessment statistics" and "project management". Figure 1 shows the mutual relationship.

3.3. Source of the Implicit Knowledge on the Business Synergetic Platform

The Implicit Knowledge on the Business Synergetic Platform mainly comes from the individuals in the "human resources management" module, which is composed by "internal employees", "external members" and "special experts". Among them, the "internal employees" unit is according to the specific requirements of the system construction and manage the persons who come from the interior of the information institute, participate this system and have the post qualifications. The "external members" unit is according to the specific requirements of the system construction and manage the persons who come from the exterior of the information
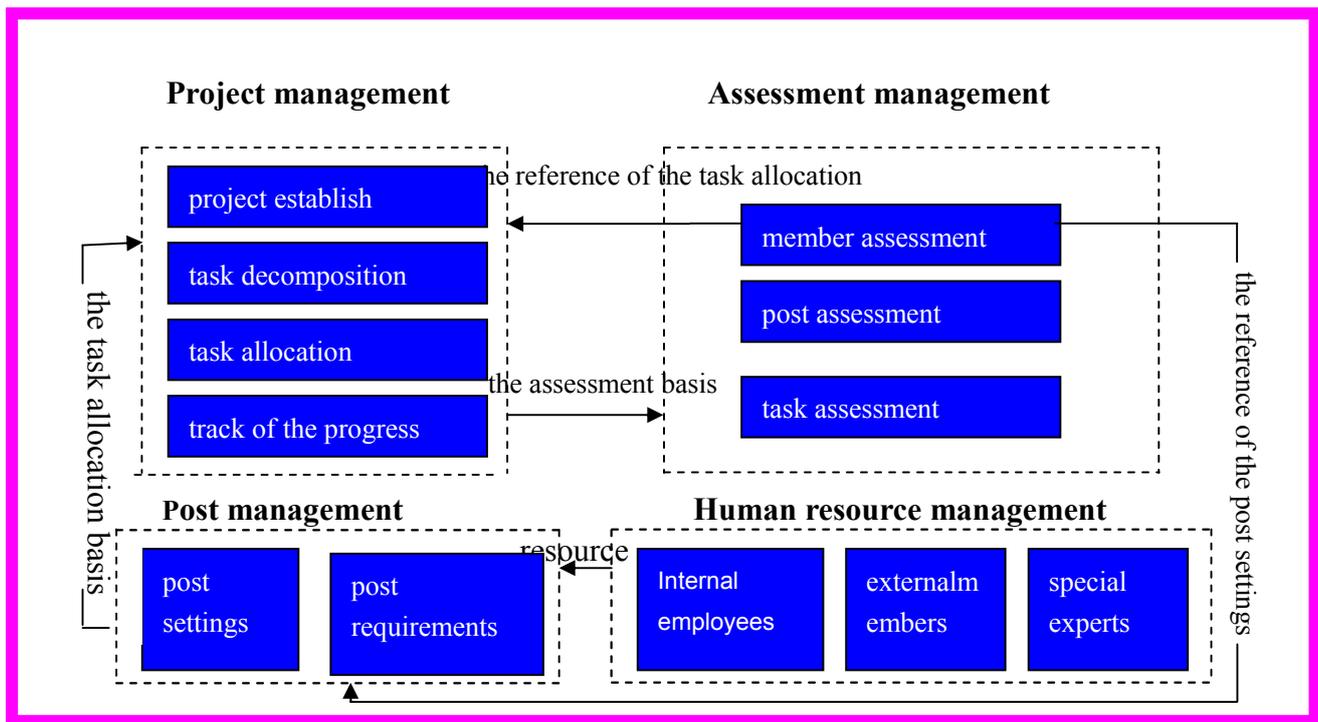

Figure 1. Logical Structure of the Business Synergetic Platform

institute, participate this system and have the post qualifications, such as the researchers from the other cities and the other institutes. The "special experts" unit is according to the specific requirements of the system construction and manage the experts and scholars who are academic leaders in some domestic fields or who are capable of managers of the research topics. The human resources in these three units divide and cooperate. They play individual research expertise and form the project team, providing service together for the science & technology decision of the Shandong province.

No matter who they are, internal employees or external members or special experts, they all accumulate plenty of the Explicit Knowledge and the Implicit Knowledge in the course of actual work and study. The Implicit Knowledge mainly includes belief, insight, inspiration, intuition, way of thinking and research feelings which can't be or still not be opened. The american scholar named Roy Lubit divided the Implicit Knowledge into four classes, they are the skills which are difficult to express, the mental model, the ways that handle the issues and the organizational routines[3]. The first three can be regarded as the Implicit Knowledge which are stored in the individual minds. According to this, we can divide the Implicit Knowledge of the human resources on the Business Synergetic Platform into three classes(see Figure 2).
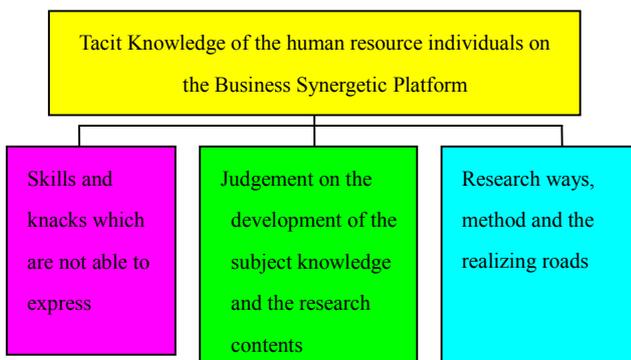

Figure 2   Implicit Knowledge of the human resource individuals on the Business Synergetic

4．Main Obstacles of the Sharing of the Implicit Knowledge on the Business Synergetic Platform

4.1. Objective Obstacles

4.1.1. Character of the Implicit Knowledge that can't be Expressed Exactly

One of the objective obstacles of the Implicit Knowledge expliciting is caused by the character of the Implicit Knowledge itself. It is not easy to be expressed exactly, and it is not standard, structured, systematic and coded, besides, it is difficult to flow. The researchers on the Business Synergetic Platform have plenty of the Implicit Knowledge, but they can't be expressed exactly, which hinder the sharing of the Implicit Knowledge between the researchers on the Business Synergetic Platform.

4.1.2. Sharing of the Implicit Knowledge Relies More on Face-to-face Contact

The sharing of the Implicit Knowledge relies mainly on the direct face-to-face contact between people, it is a connected transmission in the process of the life, work and study[4]. But the character of the network's virtualization makes the face-to-face interaction opportunity greatly reduced, which affects the sharing of the Implicit Knowledge. On the Business Synergetic Platform, the opportunity of the face-to-face contact is not very much, so the spread of the Implicit Knowledge encounters obstacles to some extent.

4.1.3. Different Members Have Different Professional Backgrounds

The Implicit Knowledge of the Individuals mainly includes technological elements, cognitive elements, experience elements, emotional elements and beliefs elements[5]. The researchers on th e Business Synergetic Platform may have different background knowledge and cultural literacy. For example, some researchers may possess the professional knowledge in economics, while some researchers may have chemical expertise, the different professional backgrounds will affect the depth

of the information acquisition. When the Implicit Knowledge spreads among the researchers, it may be more difficult to be understand because of the different majors.

4.2. the Subjective Obstacles

4.2.1. the Opportunity Cost Factor of the Sharing of the Implicit Knowledge

Opportunity cost means gain the greatest value by giving up something in order to get another thing. Any use of the scarce resources always forms the opportunity cost, no matter whether be paid during the process of the actual use. It's necessary for a person who want to get other's Implicit Knowledge to expend certain time even material and financial resources. As the provider of the Implicit Knowledge, its sharing also inevitable takes his time and energy. So the consideration based on the opportunity cost, will bring the obstacles of the sharing of the Implicit Knowledge.

4.2.2. Mutual Trust Degree of the Implicit Knowledge's Sharing Individuals

Trust is the foundation of the knowledge sharing. If the mutual trust degree of the Implicit Knowledge's sharing individuals is very below, it will inevitably affect the cooperation level, including affect the sharing behavior of the Implicit Knowledge. Only under the precondition of the mutual trust, can the Implicit Knowledge be well spread and shared. On the Business Synergetic Platform, the researchers may come from the same or different institutes. If some researchers come from the same institutes, they may feel familiar and the trust degree may be higher.To the contrary, if some researchers come from the different institutes, they may feel strange and can't trust each other very much. This kind of situation especially prone to appear during the startup period of the Business Synergetic Platform.

4.2.3. Incentive Mechanism of the Business Synergetic Platform

Based on the consider of the egocentric factor, the Implicit knowledge owners will have the tendency of protecting the Implicit Knowledge. Effective incentive mechanism can push researchers produce the inner motivation and improve their enthusiasm and initiative of sharing the Implicit Knowledge. If the incentive mechanism lacks, some of the owners of the Implicit Knowledge will not contribute their Implicit Knowledge voluntarily, thus the sharing of the Implicit Knowledge will be hindered.

5. Effective Ways to Share the Implicit Knowledge on the Business Synergetic Platform

5.1. Exploit the Researchers' Communication Channels

5.1.1. Use Brain Storm, and Excavate the Implicit Knowledge

The characteristic of the brain storm is that the participants can open their minds, and all kinds of minds arouse creative brain storm in mutual collisions. Every project team of the Business Synergetic Platform can make full use of the favorable opportunity such as the topic selecting meetings, project bidding meetings, project argument meetings, and the task evaluation and report conferences, ect, use brain storm to let researchers answer the questions and mutually edify, and reveal the Implicit Knowledge in the process of talk and discussion.

5.1.2. Use Network Technology and Construct the Sharing Atmosphere

Under the network environment, the Implicit Knowledge's face-to-face spreading chance is less and less. But it can be fulfilled by making full use of the network technology. On the Business Synergetic Platform, the internal employees, external members and special experts can release their Explicit Knowledge(such as researcher's research achivement) by establishing academic blog, besides, they can share their feeling and experience, thinking and judgement etc in the research processes.The frequent interaction can also

promote the mutual trust among the researchers, so that the sharing effect can be well raised. In addition, they can exchange and communicate their feeling and experience with others by establish BBS or install an instant messaging tools, and they can explicit the Implicit Knowledge by the visual tools such as VISIO,Project and Conceptual Map and so on. Besides, as the multimedia data such as video data lack rich semantic content annotations, we can use some knowledge management framework for conference video-recording retrieval that aims to bridge the gap between the Implicit Knowledge and the explicit Knowledge[6].

5.2. Establish Effective Long-term Incentive Mechanism

On the Business Synergetic Platform, one of the measures to encourage researchers share the Implicit Knowledge is to establish effective long-term incentive mechanism.Here are two main methods, one is assessment and rewards on the researchers for their behavior of sharing the Implicit Knowledge, arousing their sharing motive, mobilizing their sharing enthusiasm and initiative, so as to promote the communication and sharing of the Implicit Knowledge.The other is assessment on the whole job performance of the project team, which is linking up with the payment of every researcher, so as to link up every researcher's personal benefit with the whole benefit and promote the sharing of the Implicit Knowledge[7].

5.3. Construct the Congnitive Map and Establish the Database of the Implicit Knowledge

The congnitive map is a sharing tool of the Implicit Knowledge, which forms the sharing mental model through combining personal knowledge map, and thereby realize the sharing of the Implicit Knowledge[8]. The Business Synergetic Platform should construct every researcher's congnitive map at first, then combine all of theirs, and on this basis construct the whole congnitive map of the Business Synergetic Platform.

Establish the database of the Implicit Knowledge base is also an effective way to realize the sharing of the Implicit Knowledge on the Business Synergetic Platform. The relevant person can collect enough researchers' achievement reports and experience and so on, then summarize, generalize and establish the database of the Implicit Knowledge.The following is to manage the Implicit Knowledge and realize its search function, so as to better share the Implicit Knowledge.

6. Conclusion

The spread of Implicit Knowledge meets many blocks of objective and subjective factors. We must make the best use of the circumstance, make full use of the modern information technology, combine with the scientific and effective management measures, accelerate the sharing process of the Implicit Knowledge and ensure its sharing effect. Only in this way can we improve the core competitive ability of the organization and the level of information service. The preparation of the Business Synergetic Platform of science & technology information research of Shandong province provides a possibility of theory and practice to change the real situation of research activities' fragmentation which is caused by the restriction of industries and regions, and the research on the full sharing of the Implicit Knowledge of the researchers on the platform can really raise the level of project team's scientific research, therefore we can provide knowledge service of higher quality to government and society. In Web2.0 era, to meet the need of the society perfectly, the researchers on the platform must master and use new techniques expertly, manage personal Implicit Knowledge effectively, pay attention to the exchange and cooperation with others, enrich and perfect personal knowledge structure.

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