

A study of knowledge management models in the project-oriented service company

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Abstract— In the fully customized service mode and highly customized service mode, the process of services is a project from the essence. Project-Oriented Company is a new organizational structure adapts to the development requirements of service. This paper analyzes the features of project-oriented service company and points out the key factor to establish a project-oriented service company is knowledge management. In order to have a better knowledge management, the paper makes a cause analysis of the knowledge loss in project-oriented service company, and based on this explores two knowledge management models.

Keywords- *Project-oriented Company; service; knowledge management models*

I. INTRODUCTION

Tether (2001) divided the services into four categories according to the degree of standardized variation, that is: complete standardization, high degree of standardization, highly customized services and fully customized service. In the fully customized service mode and highly customized service mode, the service development involves a large number of specialized innovations, service providers and customers need to maintain close interaction, and their process of services is a project from the essence.

The typical traditional organizational structure in services involves function-type organizational structure, project-type organizational structure and matrix-type organizational. No matter what the organizational structure is used, there is a bottleneck in organizational structure: the structure conflicts between the project team and functional team. Then Project-Oriented Company appeared.

Project-Oriented Company is a new organizational structure, which completes company's activities in project model or project privileged way. Project-Oriented Company is a more flattened, flexible organizational structure which is with a high efficiency of resource allocation and strong business management capabilities, with the encouragement culture of innovation and teamwork.

There are two fundamental changes in project-oriented organizational structure: Firstly, Project-Oriented Company is changing the allocation mode of resources. In the fully or

highly customized service mode, the service offerings can not be stored. The services need to forecast demand precisely and configure the appropriate service capabilities, so dispatching service resources reasonably becomes particularly important. In Project-Oriented Company, the traditional functional departments turn concerning about the departmental goals to focusing the project objectives and the traditional functional departments turn into resource guarantee department to supply and maintain a variety of professional resources, so it is to become a resources provider. Secondly, Project-Oriented Company is to establish departments for standardization and componentization. The heterogeneity of the service products requires the enterprises must establish departments for standardization and componentization, for facilitating and reusing the accumulation of knowledge.

The key factor to ensure the quality of service products and long-term development of the enterprise is how to find common ground of the different projects, how to deal with the experiences and methods of refining, solidification for enterprise knowledge and how to establish an appropriate mechanisms to improve the reuse rate of knowledge.

II. THE KNOWLEDGE LOSS ANALYSIS IN PROJECT-ORIENTED SERVICE COMPANY

Knowledge is rich in content and broad in extension. This paper is concerned with the organizational knowledge which closely links to the survival and development of enterprise. On the one hand, organizational knowledge is used in coordination, management and distribution of various categories of resources, to encourage enterprises to the normal operation of various functions; on the other hand, organizational knowledge put the enterprise's information resources, data resources and situational factors together to ensure that experts, individuals and the resources required in different fields work in concordance.

A. *The Knowledge Loss Analysis Based on the Characteristics of Project-Based Organization*

The traditional project-based organization has a very serious loss of knowledge, which is closely related to the characteristics of the system.

First, the ultimate goal of project is to meet or exceed customer expectations, and its core is to deliver the desired products or services to customers in a certain amount of time, cost and quality. This project-goal-oriented is easy to lead project members to ignore enterprise's strategic goals, and also lost momentum to accumulate the knowledge.

Second, the project performance evaluation is based on achieving the established project objective with the limited resources, which is lack of assessment of the effectiveness of knowledge accumulation.

Third, the channel of knowledge accumulation is narrow. The project managers and professionals obtain the appropriate knowledge through the actual operation of the project. Because of lacking of the guidance of their predecessors and the accumulation previous projects, project knowledge is accumulated through the practice of the past. And it is very difficult and time-consuming for a manager or professional staff to format a better knowledge system.

Fourth, the project organization is a temporary organization, which provides necessary conditions for the proliferation of knowledge. But on the other hand, it also limits the effective integration of knowledge, because the project documents not given due attention and further development.

B. The Knowledge Loss Analysis Based on the Process of Knowledge Management

1) Knowledge Identification

Knowledge identification is the process of knowledge creation and knowledge acquisition, such as knowledge discovery, knowledge integration.

Knowledge acquisition has two main sources: internal and external. In the enterprise, the knowledge acquisition is a series of searching and accessing process aimed at the existing knowledge. The external knowledge can be obtained from a variety of channels, such as customers, cooperative enterprises, competitors, universities, partners, national laboratories, consultants, and so on. The main obstacle in knowledge identification is the perception of knowledge.

First, because of the limited rationality of human behavior, people will often choose program closest to their own experiences. This will lead them more prone to ignore the existing body of knowledge that has nothing to do with their own knowledge, or difficult to be self-digested and absorbed, which will result in limitations in acquiring organization knowledge.

Second, differences in the evaluation of knowledge will lead difficult in the excavation process. The potential value of knowledge is difficult to determine. If the enterprise seems can not benefit or even unable to judge the potentially valuable knowledge of the future, knowledge-sharing will have a certain difficult.

2) Knowledge Sharing

Knowledge sharing is a process of knowledge transfer, flow and spread between different subjects. No matter knowledge is derived from internal or external of enterprise, we can abstract the subject of knowledge sharing into knowledge providers and

knowledge receptor. The object of knowledge sharing is knowledge. The ways of knowledge sharing is various which is according to the content of knowledge. Subject, object and shared ways are likely to impede knowledge sharing.

First, Knowledge provider may have protection awareness. The stronger the protection awareness is, the greater the barriers to knowledge sharing. Within an enterprise, protection awareness often comes from competition. Furthermore, if the profession or knowledge structure of knowledge receptor is quite different from knowledge provider, knowledge provider need to spend a lot of time, energy to transfer knowledge, knowledge provider will not be happy to continue the transfer of knowledge. The level of protection from external knowledge sources depends on level of trust, which is if transfer knowledge to the knowledge receptor and the receptor use this knowledge to create value, the knowledge provider whether can benefit from it in accordance with the appointment.

Second, the absorption awareness, that is, whether there is a clear intention and initiative of knowledge receptor may affect the effectiveness of knowledge transfer. In general, the weaker absorption awareness of receptors is, the more difficult to transfer knowledge.

Third, the object of knowledge sharing, that is knowledge, will also affect the efficiency of knowledge sharing. In general, explicit knowledge is easy to document and can transfer the document to achieve knowledge transfer; tacit knowledge is difficulties to express, and therefore is difficult to transfer.

The specialty of knowledge will also affect knowledge sharing. The higher the specialty, the worse the degree of knowledge-sharing is.

The amount of knowledge will also affect knowledge sharing. The greater the number is, the more difficult transfer is.

Fourth, the shared ways of knowledge is very important to knowledge sharing. Tacit knowledge and explicit knowledge interact and convert between each other in the course of business activity; the process of transformation is actually a knowledge-sharing process. In the processes, it needs to establish knowledge management system based on modern information technology, and an open knowledge exchange platform for sharing and interaction of knowledge.

3) Knowledge Storage and Creation

Bnoora&Revnag(1991) divided knowledge storage into mechanical storage and organic storage. Mechanical storage refers to store objective knowledge, such as documentation, statistical data, survey reports, etc.; Organic storage refers to store personal, subjective knowledge, such as tacit knowledge, skills, knowledge workers will be theory into practical application of the capability.

In this process, there are mainly the following questions:

First, knowledge stock can not save. If new knowledge in a short time can not be absorbed and used by enterprise, the enterprise must maintain the knowledge as knowledge stock. In this process, due to the impact of the current state of knowledge and intellectual cognitive constraints, enterprise is

unable to distinguish whether the new knowledge is important to the development of enterprise, and that leading to some of the most innovative new knowledge are ignored by enterprise.

Second, old knowledge is difficult to eliminate. In order to completely change the knowledge state of enterprises, it will inevitably involve the elimination of old knowledge. There are a large part of the old knowledge is tacit knowledge, with the nature of silent, complexity, integrity, specialty. Such knowledge is difficult to clarify in the short term, which will not only hinder the successful completion of the updated enterprise knowledge, but also may become much greater obstacles to the acquisition and absorption of new knowledge.

Third, knowledge needs to absorb and create. Any organization should not only be highly efficient handling of information, but also need to constantly create new knowledge. So the nature of knowledge creation is the conversions of knowledge. Therefore, how to change explicit knowledge into tacit knowledge is the most difficult question of knowledge management in the project-oriented service company.

III. THE KNOWLEDGE MANAGEMENT MODELS IN THE PROJECT-ORIENTED SERVICES COMPANY

A. *An Knowledge Management Model Based on the Organizational Structure of Company*

Based on the project-oriented company's characteristics, as shown in the figure 1, its knowledge management must address three questions:

First is to build trust mechanism and motivate mechanism. Trust mechanism plays an important role in knowledge sharing, especially to tacit knowledge sharing. Knowledge provider may worry about losing ownership, sense of superiority or right. The competition between unit and team also led to lacking of motivation to share knowledge with others. Because knowledge is dependent on the situation, the subject of knowledge transfer may become uncooperative for the cultural, environmental, situational factors. Therefore, the trust mechanism is very important as a means and the premise to knowledge management.

Trust mechanism and incentive mechanism have a close contact. Mutual trust needs mutual benefit. On the one hand, enterprises need to establish a mutual trust and benefit culture basis by collaboration between project organizations and the regular exchange between project members, on the other hand project stakeholders must make reasonable contractual arrangements for the benefits and responsibilities.

Secondly is to change the original function departments into resource supply sectors, as well as put forward knowledgeable demands to project members.

In the project-oriented company, project members come from different professional and technical sectors, the difference from original project organization is turn traditional functional departments to a resource pool. The resource pool can prevent resources being solidified in the project thereby reducing the use efficiency, but also can solve the conflicts between the functional departments and project teams. The basic duties of

resource department include: first, to provide resources in time, quantity and quality norms; Secondly, to classify and grade employees. Classification is defined their role by the professional skills, and grading is to determine the functions of the basic level based on his capacity and experience. This will determine the basic salary of employees; also provide space for future career development. Third is to extract and integrate the project knowledge. Split the project into components (including the processes, activities, roles, tools, documents, models, etc.) and standardized packaging and re-used to improve the degree of standardization of services.

Third is to establish a specialized knowledge coordination department to complete the knowledge management work.

Knowledge coordination departments need to establish knowledge management objectives, define the basic framework and processes for enterprise knowledge management. Knowledge coordination departments need to establish relationships between organizational objectives and specific knowledge, and have a strategic thinking of acquisition, sharing, integration and creation of knowledge. Knowledge coordination departments need to determine the knowledge transfer processes according to actual situation of enterprise, define how to precede the knowledge transfer activities in the sector, the project team or any other branch level.

Knowledge coordination departments need to determine the standard of knowledge for knowledge assessment. Through the establishment of standards of knowledge, the existing knowledge in company can be systematized. Knowledge standards put forward a clear requirement of the organization, as well as from where to get. At the same time, knowledge sharing needs to compare the benefits and investment to determine the reasonably level of detail.

Knowledge coordination departments also need select the appropriate transfer process according to the type of knowledge. Usually need to consider the similarity of tasks and background, the specific circumstances of the receptor and other factors.

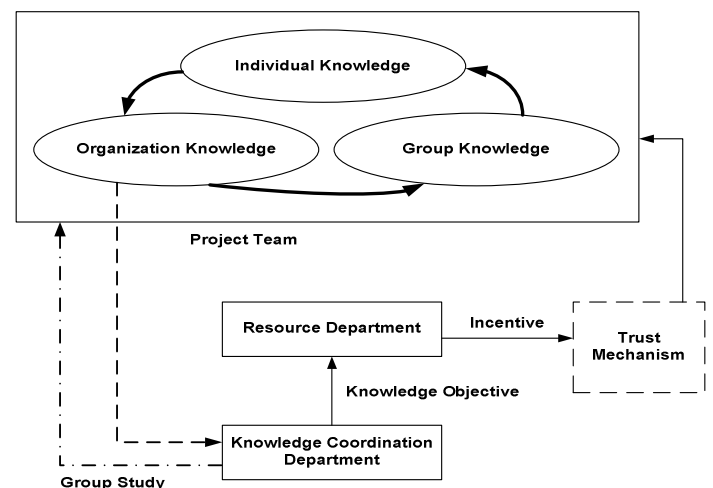


Figure 1. An Knowledge Management Model Based on the Organizational Structure of Company

B. An Knowledge Management Model Based on the Process of Knowledge Management

By analyzing the knowledge management process and the reasons leading to the loss of knowledge in the project-oriented services company, it is obvious that accurately identifies and control of knowledge identification, sharing, storage and the creative process help to solve these problems.

First is to select the appropriate knowledge-sharing tools according to the different types of knowledge.

The identification of knowledge comes mainly from two aspects: internal and external of company. If the knowledge is divided into implicit and explicit, then, whether from internal or external, the identification and sharing of knowledge include the following levels, as shown in the figure2:

① From individual tacit knowledge to individual tacit knowledge. Individual knowledge transfer is the ultimate foundation for a company to form organization knowledge, usually based on tacit knowledge as a starting point. Employees mainly through observation, experience, imitation and put into practice to achieve knowledge transfer and sharing.

② From individual tacit knowledge to explicit knowledge. Namely, the tacit knowledge can be externalized by such means as excavation, record, collate and summarize, and can be exchanged and transformed between individuals.

③ From individual tacit knowledge to group knowledge. Through social means of communication (such as technology, management and other experts demonstrate in public, guide group work, etc.) can dominant of individual tacit knowledge into group tacit knowledge.

④ From individual explicit knowledge to group knowledge. Some individuals explicit knowledge may be dominated and encoded, and turn to the group explicit knowledge by the external-oriented model of efficient communication and transformation.

⑤ From group tacit knowledge to individual knowledge. The groups tacit knowledge which is difficult to be explicated such as the hidden skills, group members understanding, collaboration capabilities, can be turned into individual tacit knowledge through the impact of individual groups and individual own sensibility, etc. And the groups tacit knowledge which is easy to be explicated can be summed up and coding as far as possible, becomes the code of practice , regulatory compliance and so on, and be turned into explicit knowledge for the individual.

⑥ The transfer of tacit knowledge between groups. In the project-based organization, most of the work is a collective, cooperative activity, so most of the deposited knowledge is shared by the working group. Tacit knowledge transfer between groups in the general influence each other through cooperation or collaboration. In the process of cooperation, one group's experience, know-how, tacit knowledge can be learned by another group; and the group's mental models, value systems, organizational culture also can affect another group.

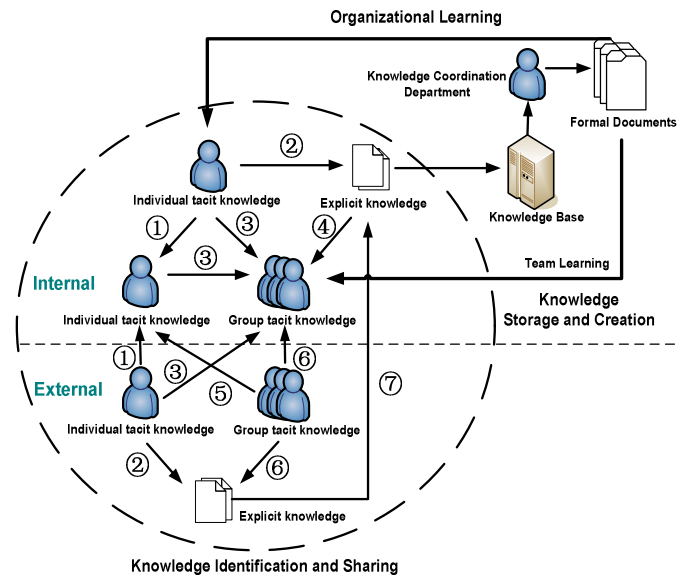


Figure 2. An Knowledge Management Model Based on the Process of Knowledge Management

⑦ From the tacit knowledge to explicit knowledge between groups. One group may explicit part of tacit knowledge, arrange and sum up into the operating specifications, management systems and operational guidance and other documents, exchange and share between groups, and then turn the tacit knowledge into another group explicit knowledge.

Second is to build a knowledge base for the organic storage. Knowledge can be stored mainly in knowledge base. On one hand, knowledge base compile explicit knowledge to a document, for example, reports, manuals, procedures, documents, records, etc. Knowledge base systematizes through categorization and sorting. On the other hand, knowledge base recorded conscious knowledge sharing activities, which will provide the form of guarantees for the sharing and preservation of tacit knowledge.

Third is to promote knowledge creation through knowledge coordination departments. The key point of knowledge creation is to make it into the planned behavior, which is solved mainly through the establishment of Knowledge coordination departments. Knowledge coordination departments will organize the team level and organizational level of collective learning based on documented knowledge, so as to realize upgrade the team knowledge and organizational knowledge.

IV. CONCLUSION

First, in the fully customized service mode and highly customized service mode, their process of services is a project from the essence. Project-Oriented Company is a new organizational structure adapts to the development requirements of service. The key factor to establish a project-oriented service company is knowledge management.

Second, the knowledge management in project-oriented service company is affected by many factors. From the organizational structure point of view, the main factors including the project objectives, project performance evaluation and the one-time feature of project; from the knowledge management process point of view, the main factors including the barriers of identify knowledge, knowledge provider, knowledge receptors, and the characteristics of the knowledge and the methods of knowledge sharing.

Third, the knowledge management models in project-oriented service company emphasize the following key points: from the organizational structure point of view, it needs to establish confidence mechanism and incentive mechanism, to turn the original function departments into resource supplier, as well as put forward knowledge requirements and to establish special knowledge coordination departments to complete the knowledge management work. From the knowledge management process point of view, it should select the appropriate knowledge-sharing tools based on different types of knowledge, build a knowledge base of knowledge for

organic storage, and promote knowledge creation through Knowledge coordination departments.

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