

Research on Modular Business Processes

Weihui Dai¹, Weidong Zhao²

¹ School of Management, Fudan University, Shanghai 200433, China

² Software School, Fudan University, Shanghai 200433, China

¹whdai@vip.sina.com, ²wdzhao@fudan.edu.cn

ABSTRACT

Business processes of traditional functional organizations are hard to respond to the rapidly changing market in the information era, so modular organizations are given attentions. In this paper, business processes in modular organizations based on the commitments between competence modules are analyzed and process reengineering of the Haier Company is used to illustrate the characteristics of modular organization processes.

Keywords: modular organizations, process, competence, commitment

1. INTRODUCTION

It is hard to predict market needs in the era of electronic business. With unpredictable change, organizations are expected to focus on not only the efficiency of processes, but also the flexibility and adaptability. Traditional functional organizations with large-scale production organized under the predictable requirements are product-driven, and concentrate on the business efficiency. The coordination among departments is made by management. In doing so, business processes are fragmented and rigid, being clumsy in responding to the competitive market. How to meet customers' needs rapidly becomes the challenge the sense-and-respond Organizations face (Stephan, 1999). By sense-and-response Organizations we mean that are customer centered, and assembled by numerous competence modules. The coordination among the competence modules is customer-driven by sensing and responding market change in complicated environments. Relative customer relations are formed by particular commitments between competence modules, which are managed and tracked by the commitment management system in order to integrate the ability and responsibility of them.

In this paper, we discuss how to apply the commitments between competence modules to analyze processes in sense-and-respond organizations, and a case study is illustrated.

2. PROCESS AS A COMPETENCY

Integrating organization elements such as information, material and human resources, a business process can transform certain inputs into outputs, which actually reflect one kind of competence that the process itself is a competency carrier. A value chain involves a few processes in the organization operations in order to create value for customers needing the cooperation of different departments such as procurement, manufacturing, sales, customer service and human resources, which form the multi-dimension of the

competence and present the modularity of the process. On the other side, the hierarchy of the process makes the competence module hierarchical. Several low-level complementary competence modules perform high-level processes, so the hierarchy and complementarity of processes represent the structure of organizations. Different processes involve different competent modules; the way in which they combine is also different. The relations of the main body of the competence module - the team or individuals who play one role and whose cooperation determines the performance of processes to a great extent- reflect the organizational form. Process change management such as BPR emphasizes breaking the bounds between functional departments to reduce the loss brought by the cooperation and intercourse or to build up the competence of one single module making the work team or individual responsible for more steps of the whole process.

From the view of the source of organization competitive advantages, it's important for an organization to possess more advantageous and heterogeneous resources than other organizations, but it can't create true value if the resources aren't transformed into the products or service customers need by organization units that add values (Colli, 2001). In essence, the real source of organizational competitive advantages is to create value for customers through the inimitable coordination between organizational competence modules and the effective use of the resources. The transformation needs the cooperation of interrelated competences, which make up a process. The operation, in fact, creates value for customs through the activities and cooperation of organizational units from different hierarchies. The competence of the organizational units is the ability to create values for the organization with resources allotted. The competence is delaminated, from individuals, departments, to teams or virtual organizations across departments or even organizations. The low-level competence is the basis of the high-level one; meanwhile the high-level competence takes on the integration effect because of the cooperation of the

low-level competences. From the low-level to high-level, the scope of integrations and degree of added values increase fast, causing more difficulties in organizational coordination. Organizational unit competence depends on not only specific resources and expertise, but also the structure of the organization, the way of organization units cooperate with. However, it will bring the negative effect if the units don't work well together. From the discussion above, a process is a harmonious value-adding carrier because it assembles various units to build the core competence of an organization. Of course, the harmonious environment will not appear automatically, and good organization structure, surveillance and adjustment of organization performance are needed. Herein, resources are the basis of the competence; organization units are the main body of the competence

The competitive strategy theory suggests that the competence is the embodiment of a set of business processes, which are well comprehensible from the view of business strategy. If an organization want to gain competitive advantage, it's necessary to transform its core business processes into the inimitable strategy implementation and provide super-value for customers. The essence of the transformation is to assemble different competence units into an inseparable whole across functions and even organizational boundary driven by market opportunities, which need close connection among interrelated processes. To do so, the adjustment in the organizational structure, strategic investment in IT and control of top management are necessary to guarantee the success of the transformation. It seems that the transformation is to determine and integrate necessary business processes to respond to customers, but it is not easy to change processes into strategic competence. Among the key success factors, the inventory replenishment process of Wal-Mart, for example, makes it an excellent retailer, which connects its suppliers, distribution centers and numerous POS in superstores via satellite communication systems and Internet, so that each actor in the supply chain can acquire necessary information in time, thereby the sale process of suppliers, distribution process of distribution centers and the order process of the POS conjoin closely.

3. THE PROCESSES OF MODULAR ORGANIZATIONS

With increasingly intense competition, it's vital for organizations to sense and respond to ever-changing environments quickly. As for this, the research has been done on adaptive organizations. In this paper, we discuss modular organizations based on the adaptive organization. Modular organizations are different from traditional ones, centering on customers and consist of competence modules. More importantly, these competence modules can be combined dynamically to build up stronger competence modules. Each

competence module owns necessary qualification and resources to play a certain role. Modular organizations are, therefore, highly adaptive, which are characterized by reengineering, agility and flexibility. Organizations can deploy the competence modules and their relations to satisfy customers so that the structure of modular organizations adapt to rapid reengineering of organization processes.

Customers are the reason and goal for the existence of competence modules, and market changes attribute to the reengineering of the competence modules. In modular organizations, the relationship between competence modules is customer-performer, which can request or provide service. Here, customers are a relative concept, referring to either external consumers (receivers of organization output) or internal customers. The value of products or service provided can be evaluated by customers as the foundation of rewards. In process analyses, role-based cost management is taken to compare cost/return and discover the weak points in processes based on the value that each competence module creates for organizations. Besides, the contents and results of service are prescribed by commitments, which are one kind of formal or informal contract between competence modules. The commitments between the modules can be adjusted as a result of uncertainty of customers' expectations, which is achieved by continuous negotiations of the two. For instance, in the BPR of China Unicom Limited Heilongjiang Branch, operation units, as a customer of maintenance department, give the maintenance request and checkup standards. Then, the maintenance department will perform the maintenance and how well it work resorts to the operation units. In order to improve the efficiency of processes, commitments between competence modules can be managed by workflow management systems.

The adaptability of modular organizations depends largely on the smooth communication between competence modules, which needs an open atmosphere and active interactions, breaks the fencing of work dividing of functions and makes all parties participate in decision-making of organization planning.

Each module is authorized in modular organizations according to its capacity and responsibility. Decentralization and coordination are sometimes hard to compromise. How to coordinate competence modules to form an organic process system without strict command and control is a challenge to modular organizations. Generally speaking, common goals and effective coordination mechanisms between competence modules determine the way an organization runs as a whole. New competences will appear when the complementary modules are assembled organically, which avoids the isolation of traditional function departments and reduces the high cost of coordination. End consumers can't be satisfactory until commitments in every part of

processes are fulfilled. Therefore, commitment management is needed by all participants. On the other hand, how to capture external consumers to deploy competence modules and coordinate these modules is a problem.

From the view of point of commitments, roles of employees and work team etc. are identified and their contributions in the organization development are also easy to understand. Normative and authentic commitments simplify coordination management of modular organizations. In order to guarantee the cooperation among competence modules, commonly accepted protocols have to be designed. For instance, the commitment management of communication-based workflow models consists of four phases: definition, negotiation, execution and evaluation (Gregory, 2001). Commitments between competence modules are complex, speech and act theory, which is the basis of communication-based workflow models, are only simple abstraction of reality.

Modular organization processes are initiated from identifying customers' needs and then required competence modules and their commitments are designed. Herein competence modules are the combination of work teams of horizontal organizations. Actually, process management circulates the following four phrases: sensation, analysis, decision-making and execution. Change information in business environments is handled in the first two phases to provide the basis for subsequent reactions. To emphasize, competence modules can be taken by other organizations or even competitors (commitments between them may be more complicated). The commitment between competence modules is not to explain how results are accomplished, but to detail what the responsibilities are because the competence modules are automatic and, they can plan for their sub goals. The uncertainty of external customers may lead to the obscurity of the commitments, so the commitments between external customers and competence modules have to be adjusted repetitively. So do commitments between in-house modules of processes. Usually, commitments taken by a competence module are dual corresponding to its dual roles in a process: both a customer who requests service from the front role and a performer, who provides service for the next competence module in the process.

A process is, in essence, to transform external consumers' expectations into internal customers' requests, via the customer-performer chain of competence modules. When external consumers need new service, adjustments will be made along the chain. As a system, process modules must be well coordinated:

- Decompose process goals, and identify roles played and responsibilities taken on by competence modules. Every competence module should recognize that the

organization can satisfy external consumers and it can be rewarded only if it can satisfy its own "customer". Competence modules are designed to realize goals of organization processes, which is a top-to-bottom process of decomposing the goals

- Competence modules are customer-centered to establish the customer-performer chain through trust mechanism and commitment management. This actually introduces market mechanism to organization inside in order to improve the performance of competence modules, and to integrate external consumers with internal competence modules, even competitors into a whole for faster response.
- Competence modules can change commitments or reengineer. Changes from outside drive the commitments adjustment one-by-one along the customer-performer chain. On the other hand, information technology plays an important role in the establishment and maintenance of commitments among competence modules.

4. CASE STUDY: BPR OF HAIER GROUP

Linked by the market chain, the BPR of Haier encourages the initiative of employees and improvement of customer satisfaction. By the market chain we mean that market mechanism is introduced into organizations to prevent the coordination cost from exceeding the efficiency increase in labor division when organizations expand. That means that market is used as a coordination mechanism in Haier. The market chain turns internal relationships among processes, working procedures and employees into equal market relationships. Through the relationships, external market orders can be transformed into a series of internal "orders", forming a business process, which centers on orders with positions cooperating with each other and adjusting automatically. Customer-performer chains exist in organizational units. Whether commitments among units are fulfilled determine their revenues directly. The method above is essentially to build a benefit adjustment mechanism between internal organization units that reduces internal coordination costs. In doing so, the market chain transfers end consumers' requirements to every organizational unit, which facilitates information flow and feedbacks, making every organization unit aware of the competitive pressure and focusing on customers. In conclusion, the business processes of Haier are typical of a modular organization.

The market chain of Haier decomposes end consumers' needs into closely related customer-performer chains connected by commitments (market) as a whole. The market chain has overcome the embarrassment of isolated departments and no one being responsible for the whole process. Moreover, the market chain of Haier not only integrates internal organizational units through commitments, but also brings the suppliers and

customers together.

5.SYSTEM THINKING

From the discussion above, it's concluded that each competence module in modular organizations plays a definite role in a process, and they can make their own plan independently. The process model takes a look on a customer-performer chain whose snots are competence modules. Can the goal of the whole process be achieved if every role has "satisfied" its own customers? The question is noticeable. A good example is the beer game mentioned in Peter Senge's *The Fifth Discipline* (Peter, 1990). This story is about the "game" among retailers, wholesalers and manufacturers in a beer supply chain. The three roles all attempt to meet customers' needs to gain more profit, but they are constrained by the limited rationality and have not considered upstream suppliers and downstream wholesalers, who are lack of communication and information sharing. As a result, when demands fluctuate, orders will be magnified along with the supply chain. This is the so-called bullwhip effect. This illustrates the necessity to alter the mental models of competence modules and strengthen the

systems thinking.

ACKNOWLEDGEMENT

This paper is supported by the National Natural Science Foundation of China (No.70301004, No.70102004).

REFERENCES

- [1] Stephan, H Haeckel. *Adaptive Enterprise: Creating and Leading Sense-and-Respond Organizations*, New York: Harvard Business School Press, 1999
- [2] Colli, David J. *Company strategy*. Beijing China Renmin University Press, New York: Harvard Business School Press, 2001
- [3] egory Mentzas, Christos, Stylianos Kavadias. *Modeling business process with workflow systems: an evaluation of alternative approaches*. International Journal of Information Management, No. 21, pp123-135, 2001
- [4] Peter M. Senge. *The fifth discipline: the art and practice of the learning organization*, Shanghai: Shanghai San Lien Book Store, 1990