

# Research on Real-Time Synergy Innovation of Enterprise Based on Flexibility Theory\*

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**Abstract** The paper brings forward the concept of the real-time synergy innovation based on the enterprise flexibility. Firstly, the article combines to the meanings and the key-dimensions of the enterprise flexibility; then, study the framework and basic characters of the real-time synergy innovation based on the enterprise flexibility. Finally, the article brings forward how to construct and implement of real-time synergy innovation in detail and how to integrate exterior integration process and interior integration process into a anformity system.

**Key words** Enterprise flexibility; Real-time synergy innovation system; Key-dimensions; Platform

## 1 Introduction

With the progressing of information economy, knowledge economy and globalization economy, some environmental factors which were easily mastered by enterprises are disintegrating, the basic characters of enterprises' competition are changing, and a new hyper competition time is coming. The enterprises are paying more attention to how to adapt to the dynamic environment and gain the competitive advantages. In this article, we study on the real-time synergy innovation based on the enterprise flexibility. At present the definition of flexibility which is be used commonly was been put forward by Mandelbaum in 1978. The flexibility is a kind of competence that can respond to the changing of environment efficiently. A lot of scholars have studied on flexibility from different points of view. Initially, the research was focused on manufacturing flexibility. Someone pointed that a enterprise could increase its flexibility competence by improving equipment flexibility and worker flexibility in production process. Also someone put forward that platform was a new approach to improve flexibility. A platform is a design, technology, or set of subsystems and interfaces shared by one or more product families.

The full speed development of information technology makes great efforts to promote the development of the modern manage concept. The idea of collaborative has become more and more important under the tendency of globalization economy. Thus real-time synergy innovation emerged as the times require. The concept of real-time synergy innovation was first put forward in 1999. In their opinion, the real-time synergy innovation is a type of software and service which can make the users work in cooperation between the product lifecycle and manage products by Internet technology; the authorized real-time synergy innovation users can use a standard browser to look over the information in the broad sense enterprise information system's view, no matter what kinds of computer they use and no matter where they locate. Recently, the study of real-time synergy innovation concept emphasize particularly on the two sides of management function and technology structure. With the point of management, the researchers think that real-time synergy innovation is the floorboard of a group of economic entities (manufacturer, supplier, copartner, customer), which form the dynamic alliance to exploit market opportunities and create value. With the point of technology, the researchers think that real-time synergy innovation is actually a solvability scheme based on Web. It links the manufacturer, supplier, co-partner, and costumer with all correlative activities in the product life-cycle by applying Internet technique. There are some other scholars think that real-time synergy innovation provides effective information platform for enterprises inside integration and outside expand.

## 2 Key Dimensions of Enterprise Flexibility

Enterprise flexibility is the effective reaction ability to the conditions change. We can research enterprise flexibility from three key dimensions: time, range and effect.

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The time reflects enterprise system's reaction speed to the conditions change. It is the embodiment of enterprise system's speed. An enterprise with high flexibility can react quickly to conditions change; the other way round, enterprise can't adapt reply step in time to change. The range is an aggregate of the advisable policy strategies and steps in order to adapt and control the conditions change; it is the embodiment of enterprise reaction's span to the conditions change. It means that the enterprise has stronger flexibility competence if it has a great amount of advisable policy strategies and steps. The effect is the enterprise reaction's benefit and quality, is the final embodiment of enterprise reaction's veracity and validity.

Considering the close relationship between the supplier and the partner, the partner must do some changes when the core enterprise adjusts its strategy to adapt to the change of the outside environment. Firstly, the core enterprise must choose the partners with a strong flexibility and they must match with the flexibility of the core enterprise, thus they can make an effective synergy. Secondly, if the real-time synergy innovation system wants to get the most optimal effect, it should ask all the participant form a dynamical, stable and effective system. In the middle of the core enterprise, the real-time synergy innovation considers the design, stock, selling, manufacture and service as the main chain, there into the design of product is most important. These nodes form a piece of net structure. Firstly, constructing of the inside of the real-time synergy innovation should take the enhancing the flexibility of every node as premise. Then build an effective collaboration system. In a word, let the every part of chain operate harmonically.

### 3 Basic Character of the Real-time Synergy Innovation Based on the Enterprise Flexibility

The real-time synergy innovation reaches the goal of increasing the enterprise flexibility through the intimate collaboration among the outer enterprises, integrating and optimizing all the processes of the enterprises and the information system, it can respond to the changes of the outer environment most efficiently in lest time, with the lowest cost and achieve the highest benefit. Basic characters of the real-time synergy innovation based on the enterprise flexibility as shown in Figure 1:

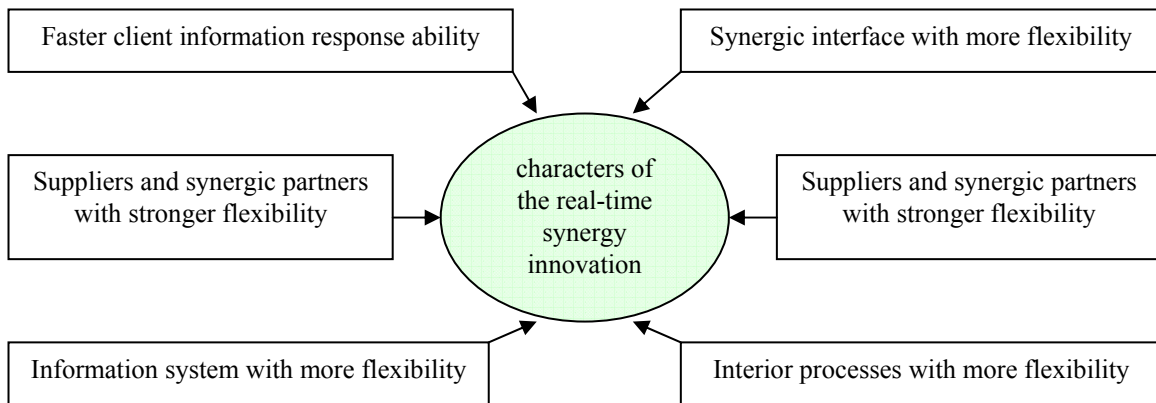


Figure 1 Basic Characters of the Real-time Synergy innovation

Faster client information response ability. Real-time synergy innovation based on the enterprise flexibility regards users as the most important component and establishes a friendly communication interface between the Core Enterprise and users. The core enterprise can gain the information users needed immediately, besides it can respond the information users need through the feedback system based on the requirement of flexible users to some other function modules of the real-time synergy innovation, such as the product designing module, manufacture module, material marketing module and so on. In this way it can satisfy the specific individual demands. At the same time by the way of adding the user information analysis module to the information system of core enterprises and the user interfaces, it can guarantee the collecting, delivering and using of the information more efficiently. Meanwhile it also can enhance the enterprise's ability of response to the outer market.

Suppliers and synergic partners with stronger flexibility. Objectively real-time synergy innovation based on the enterprise flexibility asks the suppliers and synergic partners to have stronger ability of flexibility. In this way the core enterprises can respond to the demand of the collaboration in collecting

and producing much faster and more efficiently, thereby it can guarantee the flexibility of the whole real-time synergy innovation system. The supplier with more powerful flexibility can supply materials with different sorts, quantities and specifications. So providing material for the core enterprises to produce varied sorts and specifications can be assured. At the same time the producing partners with stronger flexibility can also coordinate with the producing plan of the core enterprises, adjust producing batch and technology routes trimly and guarantee the flexibility in all the producing processes of core enterprises.

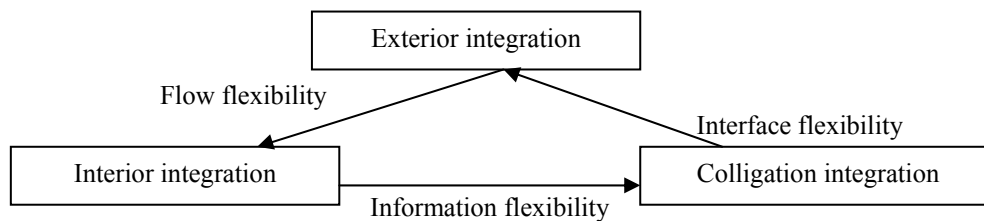
**Synergic interface with more flexibility.** Real-time synergy innovation based on the enterprise flexibility not only asks the synergic enterprises to have more flexibility, but also emphasizes the flexibility of the whole system much more. The achievement of the flexibility mainly originates from a well flexible synergic interface. Because the interface is the connection of different parts, so if the real-time synergy innovation based on the enterprise flexibility wants to gain the flexibility of the whole system, it must be supported by the flexible synergic inter-faces. This flexibility of synergic inter-faces gives expression to standardization, timely and efficiency of the communication of the information between different parts and the same goal of collaboration among different parts, which can stimulate mutual.

**Interior processes with more flexibility.** The main content of real-time synergy innovation based on the enterprise flexibility analyzing and optimizing the business processes. The objective of it is designing the business processes as whole with more flexibility, guaranteeing the business processes in the enterprises run smoothly and efficiently and adjusting to the changing actual need of outer environment quickly. Therefore the business processes with more flexibility is the inner foundation of real-time synergy innovation based on the enterprise flexibility.

**Information system with more flexibility.** Real-time synergy innovation based on the enterprise flexibility will be brought out through the information system. In the course of establishing the real-time synergy innovation based on the pliant of enterprise, the information systems become more flexible now the information system can be established by a flexible designing method, which asks designers to consider the flexibility of the information system in the course of information system integrating or in the beginning of establishing and set according to the probable new demand in the early days of the information systems designing. The systems adopt module components designing method, which is beneficial for modifying and expanding. Meanwhile we add the toots to adjust processes and modules that can assure the flexibility and efficiently of the information system.

#### 4 Construct Real-time Synergy Innovation System Based on the Enterprise Flexibility

The key idea of constructing real-time synergy innovation based on the enterprise flexibility is to attain the whole optimization of cooperating system inside and outside, including three main processes: exterior integration and interface flexibility, interior integration and flow flexibility, colligation integration and information systems flexibility, as shown in figure 2. Only when at the three aspects was optimized integration the whole enterprise flexibility can be fully embodied.



**Figure 2 The Construction of the System of Real-time Synergy Innovation Based on the Flexibility**

**Exterior integration process.** Exterior integration is a process that a core enterprise, together with its suppliers, cooperators and customs, forms a kind of steady dynamic alliance relation. In the process the core enterprise needs to appraise relative indexes of suppliers and cooperators, to choose the most adaptive ones with whom to built steady dynamic alliance relation. During the process of building up alliance relationship, suppliers, cooperators, clients and Core Enterprise are independent individuals with difference properties and characters, so validity of integration interface must be considered careful if these comparatively independent individuals waited to be integrated effectively. Integration interface among enterprise are those interfaces that enterprises join with each other. If the integration interfaces

are wanted come into being among enterprises, it must have some flexibility. Meanwhile, the exterior integration may be processed under a thought of a kind of platform. The methods, technologies and rules that integration involved should be looked as public service to direct the whole exterior integration process.

Interior integration. It does mean that interlink ages and cooperation of every correlative function nodes in the middle of enterprise. These function nodes mainly include product design, stock, produce, selling and severest. These main operations of correlative node form enterprise interior main operation process. As a result, interior integration of real-time synergy innovation based on the enterprise flexibility is mainly the integration of enterprise operation process. In the operation of traditional enterprise, sometimes enterprise's function department separates the enterprise operation process into disruptive node. What the employee concerned is individual task and work. But in the mode of real-time synergy innovation based on the enterprise flexibility, what the people advocated is the idea of cooperating work; what the enterprise considered is to realize the most added value in every flow node, and to reduce those activities that is invalid or can't increase the value in value chain, thus enterprise can realize the whole process optimization. At the same time, process integration demands some of flexible characters. That is to say the process after be optimized not only can improve enterprise operation efficiency, but also can make appropriate adjustment according to enterprise need, thus the whole enterprise flexibility can be increased.

Colligation integration process. Colligation integration is an integration process that integrates exterior integration process and interior integration process into a conformity system, thus the optimization of whole integration process can be attained. The integration of interior and exterior can be realized by flexibility information system integration. Information system integration can connect dispersive executive activity of enterprise alliance together smoothly; share information and other resource; reinforce the cooperation among enterprises; meanwhile it can provide a plenty of particular and unfeigned information and complex analyses method, thus some anti-structuring processing can be become general processing, as a result information system integration can realize the whole cooperating product's flexible operation. But presently, in some enterprise, the applying of information still has some problems, such as different enterprise have individual information system, and these information systems often found on different platforms, adopt different data forms, so information system integration must eliminate information alone inland. Second, the problem that some enterprises with low information level join in the whole colligation integration information system by taking what kind of form is also need to research. But with the increasing development of new technology, these problems will be resolved gradually.

## 5 Conclusion

In the process of modern production, the increasing degree of industrial linkage, technology enhanced interdependence, individual technology breakthroughs is no longer alone; they demand supporting technology must be through the integration, and to establish the appropriate management model forming a productivity and competitiveness. In this context, integrated innovation has more sustainable advantage. We considered that integrated innovation should co-ordination arrangements, introduction decentralizing, focus keystone. We should well used integration of upstream and downstream industry chain, the individual technical systems integration, advanced technology and internal systems integration, systems integration and other related disciplines integration to enhance independent innovation capacity.

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