

A Study of Strategic Change Based on Coevolution

Furuya Yoshiko¹

¹ Faculty of Administration, Chiba Keizai University, Inage-ku, Chiba, Japan

Correspondence: Furuya Yoshiko, Faculty of Administration, Chiba Keizai University, Inage-ku, Chiba, Japan.

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Abstract

This paper analyzed the process of strategic change from the direction of the coevolution trait and learning ability by adopting a model of roller. Strategy change theories are sorted into two schools, namely the exogene school and the endogeny school. We wish to mix these two schools together to make use of the coevolution theory. Base on that, a model of roller to explain the process of the coevolution of the strategic change is then developed. In our opinion, the successful strategic change comes from the resultant force within-firm and without-firm.

Keywords: strategy change, coevolution, self-organization

1. Introduction

The strategic change agent is the key factor that causes the enterprise strategic transformation. These factors play a decisive role in the successful strategic choice and implementation. In our opinion, most theories can be divided into two schools according to the dynamic mechanism concerned by traditional research on strategic change agents. One is the endogenous theory of strategic change agents emphasizing "Natural Growth"; The first is the exogenous theory that emphasizes the "Forced Growth" of the strategic change agent. The former holds that the internal factors of enterprises are the leading factors of strategic change, while the latter holds that the external environment oppression is the cause of strategic change. We believe that the internal and external factors of strategic change interact with each other. In chaos theory, the small fluctuations generated by this interaction may be amplified to form huge fluctuations. Like a Trigger, the driving system changes from the original state to a new state, thus producing qualitative changes. This is known as Peripheral decomposition. That is to say, because the interaction between things is related, unbalanced and asymmetric, a small fluctuation may cause huge changes, which is the so-called "butterfly effect". Therefore, the change of external factors is likely to affect the process of change within the organization. On the contrary, the process of organizational self-development is likely to produce a feedback to external factors, thus changing external factors. In our view, the motivation of strategic change is the result of complexity. That is, it is the result of the combination of automatic growth and passive growth.

On the basis of the above theory of internal and external biology, Rajagopalan and Kelly (1997) put forward three modes of strategic change. They classified dozens of documents on strategic change from 1980 to 1994 and divided them into three categories based on different definitions of strategic change: (1) if strategic change is defined as "change of purely strategic content", it is classified as change with rational perspective; (2) if the research topic is "the knowledge structure in the process of managers' cognition or strategic change", it is attributed to the cognitive view of change research; (3) if strategic change is defined as "the combination of strategic content and organizational environment change", it is classified as change studied from the perspective of learning. They believe that the motivation of strategic change is the result of the interaction of environment, organizational background, managers' cognition and organizational learning.

Domestic scholars have also studied the complexity of strategic change. Huang Xu et al. (2004) believe that there are many factors influencing enterprise development, including external environment and internal enterprise itself. The theory of "complexity science" and "complex management" tells us that the instability, imbalance and even conflict of the enterprise itself has become the condition of enterprise reform, and the enterprise system may appear in equilibrium, near equilibrium or far from stable equilibrium. Since the enterprise system has the self-organizing energy to jump to different system states, if the original dominant "core" of the system can eliminate this energy. That is, the system itself does not exist or loses the motivation to jump, and the system will remain the same; otherwise, the system will change. Pan Ancheng (2009) further discussed the coevolution mechanism of strategic

change agents. He believes that in order to generate "resonance effect" between organizational model and impulse strategy, exploring the realization mechanism of "strategic resonance" in the process of enterprise transformation will become an important direction of future research on strategic change agents.

In our view, in the period of strategic change, only by comprehensively grasping the key factors inside and outside the organization can the success rate of strategic change be improved and the satisfactory results can be obtained through the change. With the advent of the era of "super competition", strategic change has become the primary task for many enterprises to get out of difficulties and enhance competitiveness. But in fact, the case of strategic change failure is more and more. Therefore, we believe that it is necessary to further study the internal and external factors affecting strategic change, and try to explore a strategic change theory based on both internal and external modification from the perspective of co-evolution.

2. Coevolution Mechanism of Strategic Change and Drum Model

Coevolution was first proposed by Ehrlich and Raven (1964) in the study of the interevolutionary relationship between herbivorous insects and plants. As for the definition of coevolution, the academic community generally believes that Janzen's narrow interpretation of coevolution in 1980 is the most accurate. In his opinion, coevolution is a process in which the characteristics of one organism are influenced by the characteristics of another. And in turn, the latter is also influenced by the former, and the two organisms interact and evolve. Strict definitions require that coevolution occurs simultaneously and in cycles. That is, one side of evolution influences the other, which influences the other, and so on. Despite its origins in biology, the idea of coevolution has quickly spread to other areas of research, such as genetics, linguistics, and mathematical modeling. Coevolution theory also draws on knowledge from other theories, such as complex theory, computer organization theory and population ecology theory, thus forming a complex research method. In fact, the ideas and methods of coevolution are well suited for the study of organization theory (Porter, 2006), especially for the theory of organizational and technological change (Nelson and Winter, 2002). Baum and Sigh (1994) hold that, in essence, coevolution is a branch of the study on the relationship between organization and environment, which is a mutual feedback process of mutual causation and error expansion. That is to say, organizations and populations can not only respond to the environment, but also influence the environment (Aldrich, 1999). An organization is not only a reflection of its own heterogeneous personality, but also is limited by the external common environment (McKelvey, 1997). Thus, the error expansion of mutual feedback between the organization and the environment will produce the butterfly effect.

From the perspective of coevolution, the relationship between enterprise and environment in strategic change is a dynamic interaction, and enterprise is a component of environment. Enterprises evolve in the environment and interact with other elements in the environment. This interaction can have an impact on the environment and thus create external conditions favorable to the enterprise itself. The change of environment in turn affects the development of enterprises, the evolution of enterprises must follow the direction of environmental change. In other words, the enterprise and the environment are mutually influenced and interdependent, and the enterprise behavior is not only the product of the environment, but also the influencing factor of the environment. Therefore, we believe that the basic premise of the perspective of co-evolution is that the internal self-organization and external environmental factors of the firm are fundamentally interrelated, and the firm is rooted in its environment and coevolves with it. By studying the external and internal factors of enterprises, Lewin (1999) proposed an analytical framework for the co-evolution of enterprises, industries and environment. At the micro application level, Madhok and Liu (2006) combined co-evolution with the competitive advantage of multinational corporations and constructed a co-evolution model. On this basis, we proposed the drum model of strategic change co-evolution (FIG. 1). Through this model, we try to explain how the enterprise and its external environment co-evolve, so as to find out how the influencing factors of strategic change play a role in combination with internal and external factors. In the model, we divide the influencing factors of strategic change into external factors and internal factors. Among them, the external factors mainly come from the enterprise external environment oppression. The internal factors mainly affect the strategic change through the self-organization process.

As shown in Figure 1, the enterprise's ecosystem consists of two parts: the external environment and the internal environment. Since enterprises are in the era of "hyper-competition", various external environments are undergoing drastic changes. Therefore, if enterprises want to survive in this environment or maintain competitive advantages, they must make corresponding strategic adjustments according to the changes in the external environment. Therefore, we believe that the change of organizational external factors not only plays a role in promoting the evolution of external environment, but also can affect the internal self-organization process of enterprises. With the evolution of enterprise self-organization and the change of enterprise internal environment, the core competence and other factors

of enterprises are affected. In our opinion, the environment of an enterprise is a "Network Organization" structure, so the self-organization process of the enterprise will affect the Collaborative self-organization process of the Collaborative Network. Collaborative self-organization is a process in which organizations in an industrial cluster organize themselves around the industrial value chain and core capabilities. Therefore, through the process of cooperative self-organization and the interactive learning and interaction among enterprises in the industrial cluster, the industrial characteristics can be adjusted. The influence of industrial characteristics is not limited to the internal of an enterprise, but can be regarded as a general external environmental factor. As we can see, this model differs from previous studies in that it does not pit the natural selection level of external environmental change against the organizational adaptation level of internal trait change, but rather sees them as two related forces. The key to solving organizational problems is to combine the two extremes of exogenous theory and endogenous theory (Volberda & Lewin, 2003).

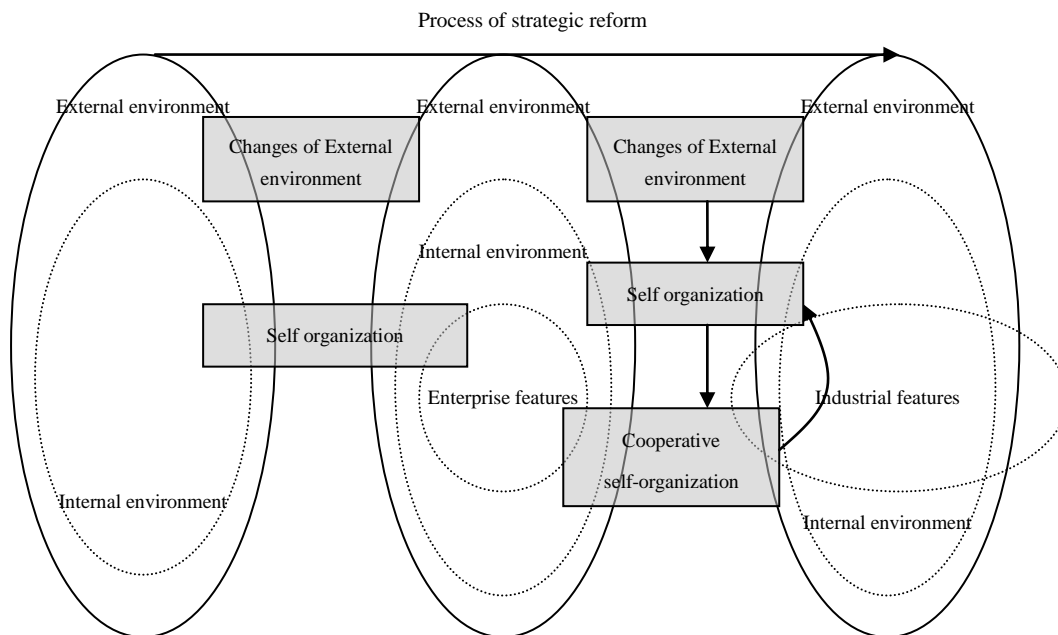


Figure 1. Coevolution drum model for strategic change

2.1 The External Environmental Factors of Strategic Change

Since the emergence of the theory of strategic change, the exogenous theory of strategic change has attributed the main influencing factors of strategic change to the change of the external environment of enterprises. Since the 1990s, scholars of organization theory have been more likely to regard an enterprise as a component of an ecosystem. A modern enterprise is likely to span several industries and find a place to survive in cooperation and competition with other members of the ecosystem. An organizational ecosystem is a system in which an organization interacts with its external environment. Based on this idea, the exogenous theory explores the causes of strategic change from the aspects of market structure and competitive relations.

In the early industrial age, scholars mainly focused on the impact of market supply and demand on strategic change because the external environment changed less dramatically than today. Based on Compustat database, Schendel and Patten (1975) focused on the relationship between the factors leading to change and the choice of change strategy, and subjectively classified the improved behaviors into strategic and operational ones. Hambrick and Schechter (1983) further added more change variables to their research, and studied mature institutions with poor performance, and proposed that the market position of an enterprise would affect the choice of enterprise change strategy.

Since the 1980s, as more and more enterprises entered the market, the competition has become more and more fierce. Therefore, the competitive relationship between enterprises has gradually become the main external influencing factor of strategic change. Foreign scholars have also done a lot of research on the competitive factors. According to some economists (Bain,1959;According to Mason, 1957), in those industries with average strength and high

concentration, competition will intensify, thus increasing the probability of strategic change (Porter, 1980). Later, Hannan and Freeman (1989) also discussed the relationship between organizational population competition from the perspective of population ecology, and proposed a series of mechanisms of organizational change.

We believe that the external environment of today's enterprises is an organizational ecosystem of Coopetition. Moreover, as the boundaries of the organization are gradually blurred by the ecosystem, it becomes more and more difficult to distinguish the external environment from the internal environment of the enterprise. In order to survive and gain competitive advantage in the ecosystem, modern enterprises need to coevolve with the entire ecosystem. Organizations and external environments develop together through Shared Vision, Strategic Alliances and other interactions. In our opinion, the direction of corporate strategic change should coincide with the direction of the common development of organizational ecological environment.

2.2 Internal Environmental Factors of Strategic Change

The strategic change of an enterprise is bound to affect the evolution process of the organization, and the endogenous theory holds that the evolution of the organization will in turn promote the occurrence of strategic change. In the late 1990s, with the promotion of complexity theory, scholars began to regard strategic change as a complex organizational behavior (Kauffman, 1995). According to complexity theory, organizational System is a Swarm System. The so-called colony system is a living, thinking, organic system. It believes that the system itself has the characteristics of self-organization (Bonabeau and Meyer, 2001). Macintosh and Maclean (1999) used complexity theory to re-explain the motivation mechanism of strategic change. They put forward the syllogism of strategic change: the self-organizing process of reconstructing organizational rules, breaking organizational equilibrium and positive and negative feedback. On this basis, Robertson (2004) proposes that the self-organization of enterprises can make organizational change more effective. Therefore, the evolution of organizations and their strategic behaviors is not only influenced by the external environment, nor is it merely an evolutionary process of survival of the fittest, but also related to the internal components (components) of the organizational system and the interrelationship of elements. In our opinion, the strategic change of an enterprise is a complex organizational behavior, which is produced by the combination of external and internal driving factors. McKelvey (1999) used computational experiments based on agent model to explain the motivation of strategic change, and used NK Brown's fitness landscape model to analyze the problem of sustainable growth of enterprises in a specific period of time, and then proved that strategic change is the product of Multi-coevolution of a complex system.

It should be emphasized that the enterprise itself will constantly interact with the external environment in the process of self-organization, which is actually a constantly evolving Community of Knowledge. The self-organization process of an enterprise needs to continuously absorb and feedback knowledge from its external ecological environment. When the organization interacts with the external knowledge community, the organization will be constantly generated and evolved. Therefore, the change of the enterprise's internal environment changes the characteristics of the enterprise, and further influences the characteristics of the entire industrial cluster through interaction, thus promoting the collaborative self-organization process of the entire organizational ecological environment. With the evolution of collaborative self-organization, the industrial value chain, industrial characteristics and even industrial system of industrial clusters will be affected. As Lewin et al. (1999) put forward, industrial system and industrial characteristics are important variables for the adjustment between enterprises and industries, as well as for the interaction and evolution between enterprises, between enterprises and industries, and between enterprises and the environment.

We believe that although both the traditional exogenous theory and endogenous theory of strategic change have made a very profound explanation of the motivation and process of the change from a single perspective, there are still contradictions on many issues. The drum model tries to explain the strategic change by connecting the two theories from an integrated perspective. According to Chaos Theory, we know that the outside and the inside of things are not either-or concepts, they are always complex and intertwined. From this perspective, it is not as important to focus on how business and organizational ecosystems are driven and dependent on each other as it is to set exogenous versus endogenous. Many social scientists have found that the history of social development is full of examples of coevolution. Unilateral consideration of exogenous or endogenous factors of change cannot effectively guide strategic change. In our view, when faced with the influence of external environment, whether an enterprise can choose the right direction of change and make the self-organization process and the characteristics of its industry promote each other becomes the key to the success or failure of its strategic change. Unilateral consideration of exogenous or endogenous factors of change cannot effectively guide strategic change. In our view, when faced with the influence of external environment, whether an enterprise can choose the right direction of change and make the

self-organization process and the characteristics of its industry promote each other becomes the key to the success or failure of its strategic change.

3. Conclusions and Future Research Directions

This paper mainly discusses how to combine the exogenous and endogenous theories of strategic change from the perspective of co-evolution. This paper first demonstrates the rationality of using the theory of co-evolution to study strategic change, and then puts forward the drum model of co-evolution of strategic change. The main conclusions of this paper are as follows: (1) Exogenous and endogenous theories of strategic change can be integrated through coevolution. (2) Both external and internal factors can influence strategic change. (3) The change of external factors and the self-organization process of enterprises affect each other. (4) In order to achieve good results of strategic reform, we must consider the effects of external and internal factors.

The conclusions of this paper have the following implications: (1) The industrial characteristics directly affect the industrial system, and the industrial system directly affects the external environment, and the external environment plays a decisive role in the success or failure of strategy. Therefore, the strategic change or strategy formulation of an enterprise needs to follow the industrial characteristics of the industry. (2) In the process of strategic change, enterprises should make the self-organization direction and external driving factors fit together and promote each other to achieve synergistic development. (3) The trigger of strategic change is likely to be external or internal unilateral reasons. However, no matter the external or internal factors cause the strategic change, the enterprise also needs to combine the other factors to plan the strategy, so as to improve the success rate of strategic change.

In our view, the research on strategic change agents from the perspective of coevolution is still in the exploratory stage. Future research should focus on the following aspects: (1) As Kallis(2007) said, "The purpose of organizational coevolution research is not to define what is coevolution, but to use the framework of coevolution to better understand complex socio-economic phenomena." We believe that future research should be able to use the view of co-evolution to explain the process of strategic change in a more profound way. (2) The value of coevolution lies in the analysis and interpretation of strategic change by linking factors at different levels. If future research can be combined with time-based competition theory and dynamic capability theory, it can better explain the dynamic nature and fundamental motivation of enterprise strategic change. (3) Lewi and Koza (2001) believe that, due to objective reasons such as data collection, empirical research on coevolution theory develops much more slowly than the concept. Therefore, the empirical method of coevolution is also an important direction for future research.

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