

The Super-cycle Mechanism and Model of Enterprise Expansion

MÉCANISME DE SUPER-CYCLE ET MODÈLE D'EXPANSION DE L'ENTREPRISE

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Abstract: In this paper, as the super-cycle theory of self-organization integrating methodology for enterprise expansion process, we study the super-cycle coupling mechanism of the enterprise and the environment, enterprises and enterprises, and among factors within the enterprises, then construct the super-cycle model of M & A expansion, virtual enterprise expansion and union expansion to effectively combine resources, and make synergies spiral under nonlinear.

Key words: super-cycle theory, Merger expansion, Virtual enterprise expansion, Union expansion

Résumé: Dans l'article présent, comme la théorie de super-cycle d'auto-organisation intégrant la méthodologie du processus de l'expansion de l'entreprise, on étudie le mécanisme de liaison de super-cycle entre l'entreprise et l'environnement, entre les entreprises et parmi les facteurs intérieurs de l'entreprise, et puis construit le modèle de super-cycle de l'expansion M&A, l'expansion virtuelle de l'entreprise et l'expansion d'union afin de combiner effectivement les ressources et faire synergie spirale non-linéaire.

Mots-Clés: théorie de super-cycle, expansion de fusion, expansion virtuelle de l'entreprise, expansion d'union

INTRODUCTION

Super-cycle theory was made in the 1971 by German biologist Manfred Eigen who studied various phenomenon of biological Circulation. The theory is a specific mechanism on the origins of life, including meticulous and more complete self-organization or general evolutionary mechanism. The theory said that during the process from the non-life to life, it inevitably existed a stage of self-organizing molecules between the chemical evolution and biological evolution, which implement Protein and Nucleic Acid mutual cooperation through complex compound in the form of super-cycle, thus completing a qualitative leap from non-life to life to prompt the origin and evolution of life. Super-cycle is a higher cycle, composed of the cycle, which implies the existence of non-linear effect, means owning self-reproduction and self-adaptive, self-evolutionary function.² Because accommodating the amount of information and gathering energy by super-cycle is much greater than other forms, thereby it makes the organization more closely with the reasonable, and the structure greater abundance and diversity. Super-cycle system forms self-organizing mechanisms through interaction among various

modules, allows the system to a higher orderly evolution state. This phenomenon exists not only in the biological area but in the socio-economic, management.^{3,4}

Enterprise system is a complex system, the enterprises expansion owns complex feature. Viewing from the complexity, enterprise expansion should be interpreted as: In the role of randomness, uncertainty complex factors between enterprise internal and external, through various expansion channels, the corporate bodies for their own survival, growth and evolution absorb external material, information and energy, to couple with internal factors, and after adaptation, replication and autocatalytic process of self-organization, etc., enterprises are from small to large, from disorder to order, from one to another in an order evolution. This shows that the expansion of enterprise systems exists the same cycle of self-organization. So in this paper, as the super-cycle theory of self-organization integrating methodology for enterprise expansion process, we study the super-cycle

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coupling mechanism of the enterprise and the environment, enterprises and enterprises, and among factors (material, information and energy) within the enterprises, then construct the super-cycle model of different expansion ways to effectively combine resources, and make synergies spiral under nonlinear.

If we think expansion enterprise as a mutant R_1 , then the core businesses is the most basic gene composing of life, wanting to cooperate enterprises will become another mutant R_2 during the evolutionary process. The analogy between enterprise expansion system and super-cycle system of biological evolution exists in a specific table 1.

1. THE ANALYSIS OF SUPER-CYCLE ENTERPRISE EXPANSION MECHANISM

Table 1 The analogy between enterprise expansion system and super-cycle system of biological evolution

No.	Biological Evolution	Enterprise System Expansion
1	mutant R_1, R_2, \dots	Wishing to undertake joint-ventures
2	replication enzyme E_1, E_2	Core competencies, behavioral concepts, trade preference
3	mutant copy	business development
4	replication enzyme is conducive to mutant reproduction itself	profit
5	replication enzyme is not conducive to mutant reproduction itself	not profit
6	replication enzyme is conducive to another mutant reproduction	capability and concepts of two enterprises are complement; business transactions tend are honest and trustworthy.
7	replication enzyme is not conducive to another mutant reproduction	capability and concepts of two enterprises are not complement; business transactions tend are fraud, selfishness, opportunism.
8	mutant germs (replication errors due to reproduce the individual R_1 competition R_1')	Another individual enterprise appears intending to the cooperation, which may compete with the original individual enterprise.
9	Mutation is non-meaningful. Variants E_1' of the enzyme R_1' than the reproduction E_1 is more conducive to reproduction R_1 , but no influence to R_1, R_1' will replace of R_1 , conversely out of this super-cycle.	When products, capabilities of the new cooperation enterprise R_1' are similar to R_1 , the result of competition between them is either R_1' replace R_1 or be expelled from this super-cycle.
10	mutation is meaningful or variants E_1' of the enzym R_1' than the reproduction E_1 is more conducive to reproduction R_1, R_1' will be joined this super-cycle replacing of R_1	products, capacity of a new enterprise R_1' of the cooperation are necessary to R_1 , and more conducive to cooperation with the R_1

As an enterprise, it will have some information (code), such as products, manufacturing capacity and the tendency of transactions (honesty, cooperation and mutual benefit, or fraud, selfish, etc.) which is like those mutant enzymes encoded copy E_1 and E_2 , the enterprise must continue to do their business so dynamic, accept their choice, then they will be possible to preserve the accumulated information and access to business development, which means constantly reproduce themselves. Because of the close relationship between these two businesses, their enzymes encoded can identify these two nuanced mutant, As only the different degree of intimacy between them, self-promotion benefits of its own is performed, or the

benefit of each other to promote mutual copy of the different methods. The interaction between this two mutant and copies enzyme produce at least two coupling results, as shown in Figure 1. One of the results is only to reserve a mutant unable to form super-cycle, which means that enterprises operating principles, product positioning, manufacturing capacity and core competencies, the cooperative, self-awareness and some transactions tendance including closed honesty or fraudulent in the enterprises operating to guide their own copy (the production and operation activities), also they affect other enterprises in their production and management.

If enterprise's product position is reasonable, its

innovation and ability are strong, it will benefit for the production and operation. This is like Figure 1 (a), the enzyme E_1 benefits enterprises (departments) R_1 , the enzyme E_2 benefits enterprises (departments) R_2 , R_1 and R_2 are strengthened by copy enzyme in the super-cycle, and the result of the intensified competition between R_1 and R_2 , even though R_1 , R_2 , E_1 , E_2 are in a state of equilibrium, the balance is fragile. If there is a small fluctuations (the minor changes in the environment) can disturb this balance. Through a self-amplified, one of two species is inevitably selected, and only one competitor to survive. Of course, this is a completely accidental process. Another result is that two mutants become stronger and form the over

dual-cycle organizations. Under these circumstances, enterprises pursuit a division of labor and cooperative competition in the business philosophy, and implement production management of Great Group implementation of the global manufacturing, integrity and mutual benefit management style, which is not only conducive to the development of their own enterprises, but also conducive to the production of other business enterprises, like Figure 1 (b). E_1 helps R_2 , E_2 helps R_1 , in the competition between R_1 and R_2 , no one can defeat anybody, no choice but to collaborate. The system interacted by mutant and enzyme eventually develops the mutual coupling way with self-promoting and enhancing, and establishes a dual-cycle, which promotes nonlinear enhance of expansion synergies.

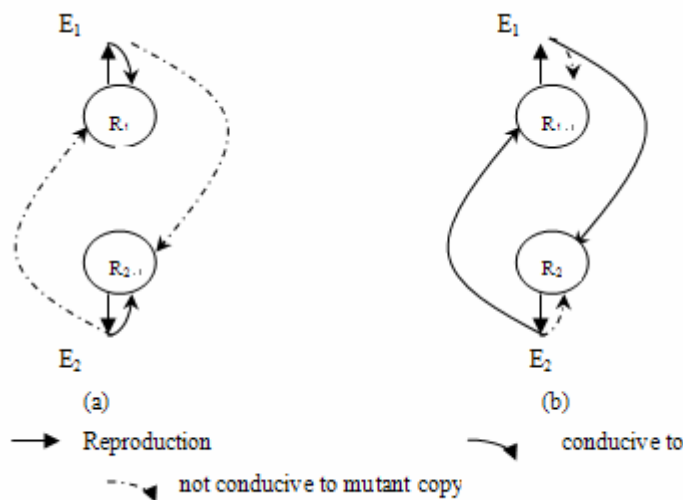


Figure 1 The interaction between mutant and enzyme in enterprise expansion system

2. THE SUPER-CYCLE MODEL OF DIFFERENT MODES OF EXPANSION

According to degree of the structure opening, the current enterprises apply more expansion modes divided into three types, namely the acquisition and expansion, Union expansion mode and virtual expansion mode. Three expansion types, because of different points of their expansionist motives, conditions, behavior characteristics and combine elements, show different self-organization characteristics, and their super-cycle models are different.

2.1 binary-cycle model M & A enterprise system

As one of the main methods in business expansion, M &

A is successful or not, which lies in coupling two enterprise connectivity (enterprise capacity, philosophy and the transaction Orientation) from super-cycle theory perspective, and cooperation of mutual benefit, emphasizing credit, otherwise the super-cycle can not be formed after merger, but only accelerating its extinction because of super-cycle. The mutant and copy enzyme in the M & A enterprise system may be formed super-cycle model shown in figure 2.

The coupling method of self and mutual-promotion between two enterprises and their transaction tendency will make two enterprises to become super-cycle organizations and the super-cycle enterprises perform advantages of cooperation, have a stronger vitality compared to individual enterprises. In cooperation, they gain mutual benefit and common development, to form a win-win situation even merged. The mutant gene of super-cycle enterprise members therefore are fixed, which means that collaborations between enterprises are consolidation and coevolution. Figure model follows:

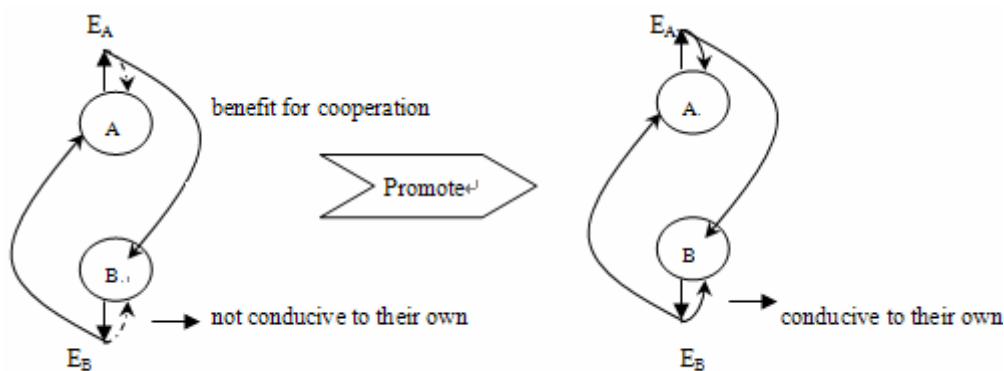


Figure 2 Super-cycle model of expansion merger system

Figure 2 indicates that because of their own internal and external changes in the environment, in the development process, the information coding produced by A (B) enterprise -- replication enzymes (products, manufacturing capacity, etc.) are gradually becoming disadvantage of self-replication mutants, thus curbing enterprises to a higher level of development. Therefore another consortium badly needed to happen. In this perspective, the consortium (variants) must have a common or complement connection with the core enterprise in several places. Only this it can fusion their products, and cultural better, have synergies evolutionary, spiral development momentum, and all of these mostly base on the more multiple points. Of course, the formation of mergers and acquisitions is more from the contrast of the strength and weakness, here is only a mechanism model of M & A.

Network-based virtual economic organizations in the way of cooperation agreements, outsourcing, strategic alliances, franchises or joint ventures set up, which takes projects, products or services as the center in commercial opportunities, and uses extensively information technology of the Internet as the core. Virtual expansion is manifested in many forms, such as virtual supply chain, outsourcing contracts, agile (flexible) manufacturing, virtual sales, virtual services and so on. The creation of a virtual super-cycle expansion model will be more considered from the connection point of organization functional. As the relationship between them is a monotonous linked, for instance, A enterprise wants to develop a product, which requires technical support, A becomes sponsors, B, C and so on become individual with the cooperation intent. Mutual benefits and common development will be achieved finally in the common research and development, innovation. In the virtual enterprise system, among the enterprises, there have no control or controlled, they combine totally for a common purpose. The limited cooperation makes a brief virtual enterprise system-cycle model is not very obvious. Model is shown in Figure 3.

2.2 multi-cycle system model of virtual expansion

Virtual expansion is that the expansion of enterprises and some other core businesses build a dynamic,

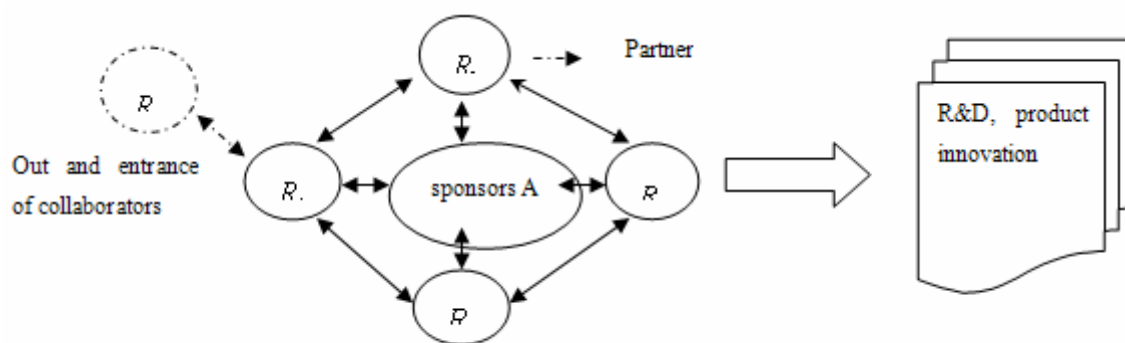


Figure 3 Multi-cycle system model of virtual expansion

A enterprise expansion and some other core businesses R_1 , R_2 , R_3 , R_4 , take projects, products or services as the center in commercial opportunities, and by using extensively information technology to build a dynamic, Network-based virtual economic organizations for the purpose of profit in the way of

cooperation agreements, outsourcing. In the organization through a wide opening, enterprises are out of failure, admit new members; multilateral cooperation, information sharing, they realize the super-circle, eventually complete research and development, product innovation.

2.3 multiple-cycle system model in Union expansion system

Strategic alliance concept is generally defined that two or more enterprises form a loose cooperative commonwealth which owns the complementary strengths, risk sharing, factors of production-level or two-way flow through corporate agreements or organization, to achieve strategic objectives of the common market, common use of resources. Strategic alliances can be seen as inter-organizational cooperation forms of rather adaptation in the ecological environment of commercial , which allows organizations more flexibility. Apart from the integrity, relevance, the purpose, and environmental adaptability features ,the strategic alliance system reflects structural complexity and associated acts complex, it's a dynamic, open system, with information feedback function. Therefore, the strategic alliance is a complex system. When the party cooperation R_2 meets with another firm R_1' , If R_1' enterprise's operational capacity (such as product or manufacturing capacity) is required for the side R_2 , and more conducive to side R_2 with the cooperation ,it

will be R_3 joined super-cycle, or excluded from the super-cycle or replace R_1 to form super-cycle organizations with R_2 . After continuous variation and selection, the union super-cycle expansion organizations can form multiple super-cycle. And mandated super-circle members along with the changes of product or task may change at any time. For example, out of the enterprise super-cycle organizations regarding product or task as core, several core enterprises owning some different products or tasks can form multiple super-cycle on the basis of diversified -cycle, it means dynamic strategic alliances.

In a strategic alliance system, the subsystems within all enterprises are a system .Resources, Information and energies are imported into enterprises, conversed, and then export products, technology. They interrelate and interact, each subsystem itself carries the copy of a message, it also provides for other subsystems catalytic support – items, experience, information, which form catalytic cycle. When forming a strategic alliance, resources owned by enterprise A provide catalytic support for other enterprise development; the same as enterprises B. Interaction between them creat multiple super-cycle, model shown in figure 4.

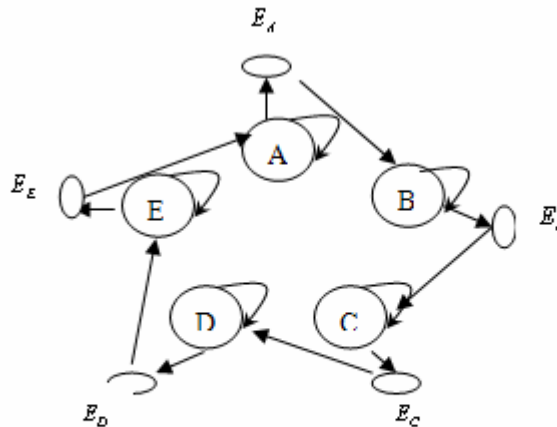


Figure 4 Multiple-cycle system model in Union expansion system

As super-cycle mechanism, it promotes competitive advantages to transfer among enterprises, thus demonstrates groups advantages. In cooperation, union parties gain mutually beneficial and common development, promote the strategic alliance system evolution to function better, more responsive to the external environment, in order to get a greater competitive advantage, forming win-win situation.

During the business expansion process, it is the key coupling the elements and resources. Enterprise system is a complex system, the enterprise expansion deed and its elements relations own complex nature from self-organizations. Through functional coupling, super-cycle makes all linked species coexistence, stable and under control, coherent grow .Coupling and synergic within the super-cycle enables it to develop and evolve towards optimized function. The competitive advantages of super-cycle are in groups' performance, the new species are difficult to replace the ultra-establish circulation, so it's a evolutionary manner. Building some super-cycle mechanism between the

3. CONCLUDING

internal elements of expansion enterprises and the point among material, information and energy, it will produce a new substance, such as the new system, new culture, new technology and new markets, and enable

enterprises to generate new nonlinear interaction, expansion synergies is spiral to promote the expansion systems across the instability into a new stable state.

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