

# The Model of Ecological System of Real Estate Enterprises and the Research on Dynamic Strategic Cost

CHEN Zhijun<sup>[a],\*</sup>

<sup>[a]</sup>College of Economics and Management, Nanjing University of Science and Technology, Nanjing, China.  
Corresponding author.

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## Abstract

In the early stage of the development of the real estate business ecosystem, the majority of the enterprises in the system are niche enterprises. There is some symbiotic relationship, tend harm relations and symbiotic relationship among enterprises. In the gap of the real estate business ecosystem, it is necessary to study the relationship model of the niche real estate enterprises. Through the establishment of three models, the competition, concurrence and cooperation do to help the niche real estate enterprises in different stages outline the dynamic strategy. With this model, this paper makes an empirical study on the Y Company. The empirical results reflect the dynamic strategic cost situation of Real Estate Development Company, and it helps to put forward the strategy of dynamic cost strategy. The effect of this model is obvious, and its scientific and practical application has been verified.

**Key words:** Real estate enterprise; Ecosystem model; Strategic cost; Strategy

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## INTRODUCTION

Like most species in nature, most of the enterprises in the real estate business ecosystem are occupied by a

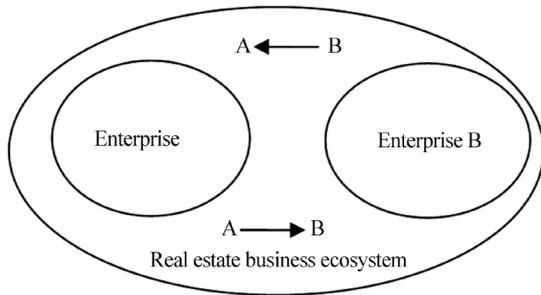
narrow space. They have a specialized function, and they distinguish themselves from other members of the system. In order to the entire business ecosystem functioning, they contribute their complementary resources (Cao & Huang, 2012). Therefore, in the real estate business ecosystem, a considerable part of the enterprise take the niche strategy, especially in the early stage of the development of the real estate business ecosystem, the majority of the enterprises in the system are niche enterprises. Some enterprises are symbiotic relationship, some are harm relations, and some are symbiotic relationship. We call such a system as a niche real estate business ecosystem, and these enterprises, as we called, are niche real estate enterprises. In the gap of the real estate business ecosystem, it is necessary to study the relationship model of the niche real estate enterprises. Constructing a relational model does help to scientifically put forward the feasible strategy of dynamic strategic cost of niche real estate enterprises.

## 1. MODEL CONSTRUCTION

In the niche real estate business ecosystem, the relationship between the niche real estate enterprises can be divided into three types: competition, concurrence and cooperation (Tian, Nie, Xia, & Li, 2006). In order to analyze the simple, this paper only model the interaction between two enterprises, and the specific model is constructed as follows:

### 1.1 Competition Model in Niche Real Estate Enterprise

Competition Model in niche real estate enterprise as shown Figure 1.



**Figure 1**  
**The Model of Niche Enterprises in the Real Estate Business Ecosystem**

Assumes that within the real estate industry ecosystem enterprise A and enterprise B are independent of each other, they have their own systems and independent enterprise environment. At this point, the growth of A and B output (output value) of the enterprise is in line with the law of the original model.  $x_1(t)$ ,  $x_2(t)$  represents separately the industries of enterprise A and B;  $r_1$ ,  $r_2$  illustrates their respective companies' fixed output rate;  $N_1$ ,  $N_2$  demonstrates each enterprise's maximum output. When the enterprise A and enterprise B in the same real estate business ecosystem coexist, there is a competitive relationship between A and B. They are bound to be affected by each other, but also affect each other's output (output value), the model can be expressed as:

$$\begin{cases} \frac{dx_1}{dt} = r_1 x_1 (1 - \frac{x_1}{N_1} - \delta_1 \frac{x_2}{N_2}) \\ \frac{dx_2}{dt} = r_2 x_2 (1 - \frac{x_2}{N_2} - \delta_2 \frac{x_1}{N_1}) \end{cases} \quad (1)$$

The factor  $(1 - \frac{x_1}{N_1})$  reflects that the enterprise A cause their own production of block due to the consumption of system resources; enterprise B, in the same business ecosystem, consumes system resources and thus has impact on enterprise A, which is illustrated as the factor  $-\delta_1 \frac{x_2}{N_2}$ ; The enterprise B (relative to  $N_2$ ) resource consumption, which aims to support enterprise A, is  $\delta_1$  times the consumption of enterprise A (relative to  $N_1$ ) resources. In the same way, the influence factors of enterprise B can be explained. Stable point of the model and the stability conditions are shown in Table 1 by solving:

**Table 1**  
**Stable Point and Stability Conditions of Niche Enterprise Competition Model**

Stable point	Stability condition
$(N_1, 0)$	$\delta_1 < 1, \delta_2 > 1$
$(0, N_2)$	$\delta_1 > 1, \delta_2 < 1$
$(\frac{N_1(1-\delta_1)}{1-\delta_1\delta_2}, \frac{N_2(1-\delta_2)}{1-\delta_1\delta_2})$	$\delta_1 < 1, \delta_2 < 1$
$(0, 0)$	Unstable

When  $\delta_1 < 1, \delta_2 > 1$ , it represents that in support of resource competition of enterprise A, Enterprise A in a strong and enterprise B disadvantaged. In the resource competition of enterprises B for supporting, the enterprise A is also stronger than enterprise B, which means that the enterprise A not only can maintain its own development, but also take the resources of enterprise B. This ultimately will lead to the collapse of the enterprise B, and the output of enterprise A (output value) will tend to achieve maximum output. That is,  $x_1(t)$ ,  $x_2(t)$  tend to be stable  $(N_1, 0)$ .

Conversely, when  $\delta_1 > 1, \delta_2 < 1$ , the enterprise A will close down, and the output of the enterprise B will tend to achieve maximum output.

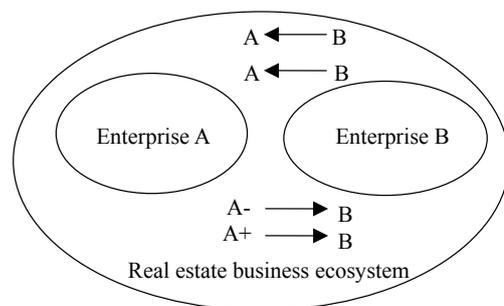
When  $\delta_1 < 1, \delta_2 > 1$ , it represents the competition for resources in the enterprise A, enterprise B is weaker; and in competition for resources in the enterprise B, enterprise A is weaker. Because of their own resources in a strong position in the competition, enterprise A and B will be able to achieve coexistence of stable equilibrium

state  $(\frac{N_1(1-\delta_1)}{1-\delta_1\delta_2}, \frac{N_2(1-\delta_2)}{1-\delta_1\delta_2})$ .

When  $\delta_1 > 1, \delta_2 > 1$ , the enterprise A and B cannot obtain the strong competition of their resources, it is impossible to appear stable solution.

**1.2 Concurrence Model in Niche Real Estate Development Enterprise**

The concurrence model in niche real estate development enterprise considers the competition and cooperation in the establishment of its model (Figure 2). When the two enterprises are in a competitive or cooperative state, there are positive and negative aspects to the enterprises, but there is not a single positive or negative. Because of the enterprise A and enterprise B in the business ecosystem, competition and cooperation are likely to promote or inhibit the development of enterprises.



**Figure 2**  
**The Concurrence Model of Niche Enterprises in the Real Estate Business Ecosystem**

In the model, using  $c_{ij}$ ,  $o_{ij}$  represents separately the correlation coefficient of J enterprise to I enterprise, in which  $-1 < c_{ij} < 1, -1 < o_{ij} < 1$ . The established model is as follows:

$$\begin{cases} \frac{dx_1}{dt} = r_1x_1(1 - \frac{x_1}{N_1} - c_{12}x_2 + o_{12}\frac{x_2}{N_2}) \\ \frac{dx_2}{dt} = r_2x_2(1 - \frac{x_2}{N_2} - c_{21}x_1 + o_{21}\frac{x_1}{N_1}) \end{cases} \quad (2)$$

By solving, the stability conditions of the model are obtained (As Table 2 show).

**Table 2**  
**Stable Point and Stability Conditions of Enterprise Competition and Cooperation Model**

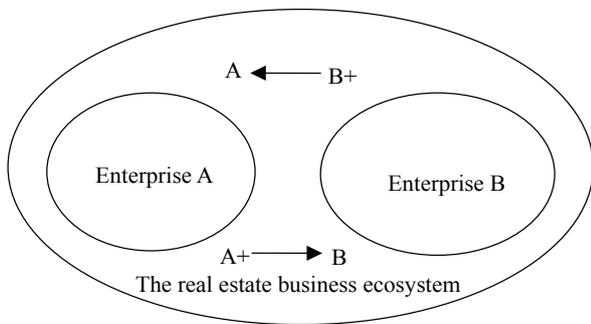
Stable point	Stability conditions
$(N_1, 0)$	$1 - c_{21}N_1 + c_{21} < 0$
$(0, N_2)$	$1 - c_{12}N_2 + c_{12} < 0$
$(\frac{N_1(N_2c_{12} - o_{12} - 1)}{(N_2c_{12} - o_{12})(N_1c_{21} - o_{21}) - 1}, \frac{N_2(N_1c_{21} - o_{21} - 1)}{(N_1c_{21} - o_{21})(N_2c_{12} - o_{12}) - 1})$	$1 - c_{21}N_1 + c_{21} > 0, 1 - c_{12}N_2 + c_{12} < 0$
$(0, 0)$	Unstable

$1 - c_{21}N_1 + c_{21} < 0$  or  $1 - c_{12}N_2 + c_{12} < 0$  expresses the degree of competition of the enterprise A and enterprise B. Beyond the capacity of cooperation between enterprises, which lead to a more enterprise inhibition, and gradually decline. An enterprise only exists in the final system, either one die, or is merged into an enterprise (Du & Bu, 2014).

$1 - c_{21}N_1 + c_{21} > 0$  and  $1 - c_{12}N_2 + c_{12} > 0$  expresses the cooperation between enterprises is very effective. Although the competition continues to exist, the two enterprises through the complementary advantages, to maintain continued balance, can be a long time common development

**1.3 Cooperation Model in Niche Real Estate Enterprise**

To suppose that, in the real estate business ecosystem, the power of niche enterprise A evenly match that of enterprise B, and they promote the output levels of each other.



**Figure 3**  
**Niche Enterprise Cooperation Model in the Real Estate**

Symbiotic model of enterprise A and B:

$$\begin{cases} \frac{dx_1}{dt} = r_1x_1(1 - \frac{x_1}{N_1} + \delta_1\frac{x_2}{N_2}) \\ \frac{dx_2}{dt} = r_2x_2(1 - \frac{x_2}{N_2} + \delta_2\frac{x_1}{N_1}) \end{cases} \quad (3)$$

The meanings of the symbol represent above.

**Table 3**  
**Stable Point and Stability Conditions in Niche Enterprise Cooperation Model**

Stable point	Stability conditions
$(N_1, 0)$	$\delta_1 < 1, \delta_2 > 1$
$(0, N_2)$	$\delta_1 > 1, \delta_2 < 1$
$(\frac{N_1(1 + \delta_1)}{1 - \delta_1\delta_2}, \frac{N_2(1 + \delta_2)}{1 - \delta_1\delta_2})$	$0 < \delta_1 < 1, 0 < \delta_2 < 1,$
$(0, 0)$	Unstable

When  $0 < \delta_1 < 1, 0 < \delta_2 < 1$ , the stable point is  $(\frac{N_1(1 + \delta_1)}{1 - \delta_1\delta_2}, \frac{N_2(1 + \delta_2)}{1 - \delta_1\delta_2})$ , which means there is a

symbiosis stabilization between enterprise A and B. Furthermore, enterprise A and B make relatively small contribution to each other--enterprise A and B contribute to the output of each other mainly through the system and the promotion brought about by the common market expansion, common modeling technology and management and sharing product and demand, which differ from other symbiotic models. When many such enterprises exist in the system, to achieve a symbiotic condition, it should satisfy  $0 < \delta_1 < 1, 0 < \delta_2 < 1$ , which means that the niche real estate development companies need a competitive relationship, and this fierce competition relationship will not be able to ensure the stability of the system, until it eventually appears in backbone enterprises (Xu & L, 2013).

**2. NICHE REAL ESTATE ENTERPEISE DYNAMIC COST MANAGEMENT STRATEGIC**

Like most species in nature, most of the enterprises in the real estate business ecosystem are occupied by a narrow space. They have a specialized function, and they distinguish themselves from other members of the system. In order to the entire business ecosystem functioning, they contribute their complementary resources. Therefore, in the real estate business ecosystem, the majority of the enterprise take the niche strategy. Niche enterprises are committed to developing their own expertise, and make a distinction between themselves and other members of the ecosystem. Through making use of the complementary resources supported by other niche businesses and backbone enterprises, the enterprises can put all the proceeds into professional and technical improvement.

If the business ecosystem has developed smoothly, the niche companies will form the subject of business ecosystem, and shoulder most of the value creation and innovation.

Specialization is a niche enterprise more realistic direction. And Enterprises focused on a segment or part of markets. They can be divided into residential and commercial, in the high-end and low-end, and so on. From the perspective of industrial chain, they can be divided into the design, construction, sales and property management.

Specialization requires a niche Enterprise advantage link and become the industry leader in the links, competitive advantages, access to space for survival and development, a place in China's real estate market.

Niche real estate development business needs according to their own strengths and weaknesses to determine if trans-regional development. Because first of all with the management of land use public transfer of bid, auction, high demands for funds. Secondly, due to the development of geography and culture, the impact of factors such as economic, planning, infrastructure, real estate product it is difficult to standardize. They don't like other industries to implement assembly line methods produce standardized products, and then selling through logistics distribution around the world. Development is not a simple copy of the successful products in different places, they need to be carried out according to the target market to improve and perfect. Finally, the cross-regional development needs a sufficient talent pool, but many small and medium enterprises in this respect are obviously inadequate. Thus first focuses on familiar regional market, as a regional market leader, accumulated sufficient resources to lay a solid foundation for trans-regional development. In more and more specification of the real estate market, with competition intensifies, breaking through the bottleneck and fast-growing is the dream of every niche business. Real estate niche in the ecosystem companies closely and complement, utilization of resources and information-sharing, enhanced while maintaining the advantages of individual organizations to adapt to the environment and the extent of available resources and system competitiveness.

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### 3. EMPIRICAL RESEARCH

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#### 3.1 Y Real Estate Co., Ltd. Profile

Y Real Estate Co., Ltd. is located in Yangzhou City, Jiangsu Province, Yangzhou City as an industrial city, after years of development, the industries in Yangzhou City has formed petrochemical industry, textiles and clothing, machinery and equipment, electrical appliances, automobiles, electronic information, biological medicine, cosmetic tourism sports goods, ships, agricultural and sideline products processing industry

and other characteristics of the ten special industries. These industries include the five pillar industries—petrochemicals, textiles and clothing, machinery and equipment, electrical appliances, automobile, and other high-tech industries including electronic information, biological medicine, as well as traditional industries, sports goods, shipbuilding and agricultural characteristics processing industry. In Yangzhou industrial economy, the top ten of the industries are: electrical machinery and equipment manufacturing, chemical raw materials and chemical products manufacturing, railways, shipping, aerospace and other transportation equipment manufacturing, automobile manufacturing, instrumentation manufacturing business, computer, communications and other electronic equipment manufacturing, special equipment manufacturing, general equipment manufacturing, textile and garment, apparel, fabricated metal products. Through the analysis of industrial cluster in Yangzhou City real estate: the level of development in Yangzhou real estate is far below the level of development of Nanjing; Yangzhou real estate cluster coefficient is much smaller than other pillar industries in the city, and has not yet formed an effective cluster effect (Chen, 2003); in Yangzhou City, backbone enterprises also did not appear in the full sense, nor the formation of dominate enterprises, thus the competition focused on the niche enterprises; therefore Y Real Estate Co., Ltd. dynamic Strategic cost strategy should select the slot type of real estate develop corporate strategy.

#### 3.2 Y Real Estate Development Enterprise Dynamic Strategic Cost Strategy

For many niche enterprises exist in the city, the main dynamic strategic cost strategies of Y Real Estate Co., Ltd. are:

First, the product strategy—Based on market segmentation and depth analysis and understanding of competitors in target market, avoid competition, position the product right, develop appropriate product portfolio, or take market outline; or concentrate superior resources and proactive to achieve strategic cost advantage in the target market, thus beat the competition and so on.

Second, the price strategy—in the fierce market competition environment, the real estate development companies often employ price competition means. The strength of the large real estate companies uses price competition to improve its market share, while the enterprises of relatively weak economic strength often follow the leading real estate companies to price in order to avoid internecine competition. Y Real Estate Development Co., Ltd. should seize the moment—the backbone enterprises have not formed in the market, to timely adjust pricing strategies, thus acquire strategic cost of high ground to gain a competitive initiative.

Third, the distribution strategy. Generally speaking, the distribution channels of Real estate product are two types:

companies selling directly and commissioned agents. The competitive situation of different enterprises should pay attention to select distribution channels according to their strength and resources occupancy. Such real estate companies are more inclined to choose the agency's distribution strategy to take advantage of real estate agents advantages in reputation, channels, marketing ability and experience, to compete other strong business.

Fourth, the promotion strategy. Real estate promotions, summed up: advertising, live demonstration model room, real estate opening ceremony, personal selling, chartering houses, public relations etc. Enterprises cannot be targeted and know themselves, unless they take the appropriate means of promotion after identifying the advantages, weaknesses and response pattern of competitors.

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## CONCLUSION

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In the real estate business ecosystem, the real estate development enterprises, as the core layer, in order to obtain a competitive advantage in the market, must interact with other companies and the living environment. These different interactions determine the interaction affecting the development enterprise dynamic strategic cost strategy in the real estate enterprise business ecosystem. Wherein the slit type of real estate development enterprises in the system, depending on the role, should take a different cost strategy (Li & Jie, 2012). Empirical evidence shows that

most of the current real estate development enterprises are slit type of real estate development companies, which in the real estate business ecosystem should achieve strategic cost advantage in the competition through product strategy, pricing strategy, distribution strategy, promotion strategy and other strategic cost strategy, thereby promoting enterprise evolution to the backbone.

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