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The study of the interaction model and the institutional arrangements within the industrial cluster and group business advantage to build

Peng-Jie Sun^{1,2}

¹HuaQiao University, Quanzhou 362021, (CHINA)

²Logistics School of Linyi University, Linyi 276005, (CHINA)

ABSTRACT

From the "advantage interactive" reward model, we found that the size of the cluster "cluster effect" determines the attractiveness of a cluster of companies outside the group size, but also affects the size of the cluster's growth rate and internal corporate competitiveness. The size of the "cluster effect" in turn depends on the internal network structure of the relationship between the cluster and the cluster hardware and software environment, thus optimizing the internal structure of the cluster hardware and software environment and the development of industrial clusters, to promote the rapid growth of industrial clusters, expanding clusters "aggregation effect" has a vital role.

KEYWORDS

Cluster edge; Industrial clusters within the enterprise; "Interactive advantage" reward model.



INTRODUCTION

Industrial clusters as a community organization in the middle market and the level of organizations, the impact of the business gathering all the advantages of the formation of competitive advantage and facilitate group formation and enhance the effectiveness of the advantages of size and aggregation, can be further improved, whether continuing in turn depends on the group of enterprises to build their own advantages behavior, so we need to build an interactive model of the advantages of industrial clusters and groups within the enterprise interactions, with the participation of the advantages to build a business model to explore the motivation and behavior of the proposed cluster of companies requirements, thus cluster competitiveness and foster the competitiveness of enterprises to provide ideas, provide reference and basis for the formulation of government policy^[1,2].

CLUSTERS SELECTED "ADVANTAGE INTERACTIVE" REWARD MODEL

Clusters through corporate behavior in order to build their own advantages and nurturing business advantage to build, is an important issue of this paper, for the design of the "superiority interactive" reward model of a cluster selected author^[3].

The basic assumption

To facilitate the modeling, combined with the characteristics of a cluster composed of private enterprises and, make the following assumptions:

Hypothesis 1: behavior management companies within the group have either positive or negative impact on the competitive advantage of the cluster, but also by business cluster or a positive or negative impact;

Hypothesis 2: business management within the group behavior, whether companies are conscious or unconscious, the goal is to enhance their competitive advantage, and enhance the overall interests with little regard for whether the favorable cluster;

Hypothesis 3: If corporate behavior within the group have a positive impact on cluster development, because of other enterprises favorable, it will get the support of other companies, which benefit from the cluster of increased otherwise contrary;

Hypothesis 4: Front companies have joined the cluster, its behavior is isolated, join the cluster is to gain more advantage of resources from the cluster, and he will be based from the benefit of the advantages of the cluster level to adjust the behavior of the current management, the to build a competitive advantage in the current period;

Hypothesis 5: Cluster the current level and the advantages arising effect level, depending on qualifications and on the group of companies of behavior, the higher the qualification, the more the norms of behavior and coordination, the higher the income level of the cluster, otherwise lower;

Hypothesis 6: competitiveness cluster and cluster edge enterprise level, the higher the cluster edge level, the competitiveness of enterprises, the stronger competitive advantage of enterprises cluster level constitute a part of;

Hypothesis 7: As companies continue to join and grow clusters to achieve growth, rent, labor costs rise, some companies within the group of "inert" and "vicious" and other competitive behavior will affect other businesses, which constitute negative effects of the cluster, or "crowding effect." Corporate "free rider" or "rest on its laurels" and "inert" behavior affects motivation and enhance the cluster advantage of other companies within the group; bad business, "make a vote," "vicious competition" and other behavior worsened cluster environment. The results of these factors will result in the loss of competitiveness of companies within the group, we are collectively referred to as "crowded loss."^[4]

Model construction

It is assumed that, in the cluster companies build their own advantages management behavior, regardless of whether it is conscious of the advantages of building a cluster would have a positive or negative impact, while also being counterproductive cluster effect. But companies unconscious behavior if a positive impact on the cluster and has been recognized by the cluster,^[5] the enterprise becomes unconscious behavior conscious behavior. We call this process, the case of enterprise clusters interact with the advantage of deducting constructed various cluster environment brought about "crowded loss" residual, seen as a cluster of corporate behavior recognition and reward of a given company's "Extra advantage ", using the formula is expressed as:

$$S_i^t(L_c) = E_i^t(L_c) - F_i^t(L_c) \tag{1}$$

$S_i^t(L_c)$ - t period represents an additional advantage for enterprises in the advantages of the level of cluster c i L_c in an interactive process within the acquired

$E_i^t(L_c)$ - i t period indicates the advantages of enterprise level within the cluster L_c c interaction in the cluster have a competitive advantage;

$F_i^t(L_c)$ -Said enterprise cluster c i t period due to the negative effects of which were in the "crowded loss";

L_c -A cluster of cluster edge level.

$S_i^t(L_c) \geq 0$, Shows positive surplus, has a net advantage that the behavior of enterprises to enhance their own advantage, and clusters have a positive influence, and definitely get clusters, companies are willing to continue to maintain or improve existing ways of operating, to expand $S_i^t(L_c)$;

$S_i^t(L_c) < 0$, Negative surplus, no net advantage, enterprises suffered losses in the interactive process, profit is negative, companies have chosen to improve their management methods, leaving a cluster or clusters are eliminated.

Formula (1)Shows that companies within the group acquired "extra edge" how much, and the level of the relevant cluster advantages. In addition, different periods and different levels of enterprises have the advantage of cluster facing the negative effects of high and low. Early on, the negative effects of low or even zero, but along with the growth of the cluster, its negative effects become more obvious, so enterprise "reward" the more the amount depends on the size of the enterprise and cluster edge level of contribution to the cluster level to get. Enterprises will be based on the "extra" edge lines and access ways to adjust its behavior and management whether to stay in the cluster. Enterprises acquired this "net advantage" as a cluster of benign behavior of the enterprise as a reward, so we called this model as "Interactive Advantage" reward models.

PRINCIPLE "ADVANTAGE INTERACTIVE" REWARD MODEL ANALYSIS

Advantage of the cluster from the management and further affect the behavior of companies within the group, which as a whole clusters and individual strengths as a business are interdependent, and only beneficial to the cluster and enterprise behavior in order to ensure the sustainability of both the business advantage but also to ensure the sustainable development of the cluster. But the interests of both the behavior of the different criteria, based on the overall cluster interests, and the corporate places individual interests^[6]. Thus, we need to explore : (1) why the enterprise cluster attractive; constraints (2) within the group of corporate behavior constraints.

Cluster attractive prerequisite

Assuming i $t-1$ period in its corporate management competitive advantage arising out of acts of $E_i^{t-1}(L_c)$, n centralized and mutual exchanges in the region, cooperation between the enterprises in this period constitute the cluster edge $E^{t-1}(L_c)$, Simple superposition of the advantages of the enterprises and the "cluster effect" factor arising due to the aggregation of product $A^{r_{t-1}}$, Namely:

$$E^{t-1}(L_c) = A^{r_{t-1}} \sum_{i=1}^n E_i^{t-1}(L_c) \quad (2)$$

Suppose i t period in which the enterprise management competitive advantage arising out of acts of $E_i^t(L_c)$

n corporate advantage during the periods of simple superposition of $\sum_{i=1}^n E_i^t(L_c)$ to $t-1$ $\sum_{i=1}^n E_i^{t-1}(L_c)$ m_t times, Where m_t is called their overall competitive advantage magnification, Namely:

$$\sum_{i=1}^n E_i^t(L_c) = m_t * \sum_{i=1}^n E_i^{t-1}(L_c) \quad (3)$$

In period t , n centralized and mutual exchanges in the region, cooperation between the enterprises in this period constitute the cluster edge $E^t(L_c)$, For the simple sum multiplied by each business advantage arising due to aggregation "cluster effect" factor A^{r_t} , Namely:

$$\begin{aligned} E^t(L_c) &= A^{r_t} * m_t * \sum_{i=1}^n E_i^{t-1}(L_c) \\ &= \frac{A^{r_t} * m_t}{A^{r_{t-1}}} * E^{t-1}(L_c) \end{aligned} \quad (4)$$

To make the cluster c can continue to provide more benefits to the population within the group companies, Cluster c t inevitable requirement period in which they have the advantage of not less than the population during the $t-1$ groups have the advantage, That cluster "growth factor" $d_{t-1,t} \geq 1$

$$d_{t-1,t} = \frac{A^{r_t} * m_t}{A^{r_{t-1}}} = A^{r_{t-1,t}} * m_t \geq 1 \quad (5)$$

$$\text{Among } r_{t-1,t} = r_t - r_{t-1} \quad (6)$$

Group within the constraints of corporate behavior

Contribution to growth from cluster edge enterprises, while the advantages of the use of existing resources to repay the enterprise. After analyzing the relationship between the cluster and the enterprise as a whole we need to further analyze the relationship between the cluster and group behavior between individual enterprises and their constraints and guide the way. Therefore, we further analyzed the formula (1) of the respective elements^[7,8].

$$E_i^t(L_c)$$

Based on the aforementioned assumptions, we know that the current business advantage level and the current cluster edge level related business advantage is part of the cluster advantages, while enterprises will be based on obtaining low yields from the Cluster advantage in adjusting the current build their own advantages behavior, and from obtain clusters corresponding benefits, to form their own competitive advantage, so:

$$E_i^t(L_c) = \omega_i^t * E^t(L_c) \tag{7}$$

ω_i^t is the partition coefficient is based on the current cluster edge cluster advantage of the contribution of business to the amount determined, $\sum_{i=1}^n \omega_i^t = 1$.

ω_i^t can be viewed on the corporate i build their own competitive advantages of an impact on the behavior of the advantages of cluster k_i^{t-1} ($k_i^{t-1} \geq 0$) multiplied by the coefficient of business advantage in the cluster and the cluster edge on the overall level of proportion, Multiplied by the current in the cluster represents companies get "extra" bargaining chips ρ_i^t ($\rho_i^t > 0$), Namely:

$$\omega_i^t = k_i^{t-1} * \frac{E_i^{t-1}(L_c)}{E^{t-1}(L_c)} * \rho_i^t \tag{8}$$

The formula (4), (8) into Equation (7), Finishing:

$$\begin{aligned} E_i^t(L_c) &= k_i^{t-1} * \rho_i^t * m_t * A^{r_{t-1,t}} * E_i^{t-1}(L_c) \\ &= k_i^{t-1} * \rho_i^t * d_{t-1,t} * E_i^{t-1}(L_c) \end{aligned} \tag{9}$$

Enterprise competitiveness in the t i is less than the competitiveness of the $t-1$ phase, The companies i are not added to the cluster or clusters are eliminated, So there are:

$$k_i^{t-1} * \rho_i^t * d_{t-1,t} \geq 1 \tag{10}$$

Relative to free enterprise, the advantages of group companies build behavior even in the contribution and the bargaining position of the cluster were acquired the same effect and free enterprise, Due to the growth factor clusters $d_{t-1,t} > 1$, Competitiveness is still higher than the group of foreign companies, so the same cluster of groups inside and outside the enterprise attractive;

$$F_i^t(L_c)$$

With the growth of enterprises and continue to join the cluster, within the group of companies to build their own advantages difficulty will increase, displays in:(1)The rate of increase in land prices p_i^t ($p_i^t > 0$), The higher the cluster level, Rising rates p_i^t the larger;(2)Growth rate of labor costs q_i^t ($q_i^t > 0$), The higher the cluster level, the higher the level of demand for business professionals, the greater the demand, the greater the difficulty of gaining access to qualified personnel, Thus the rate of increase of labor costs q_i^t the larger;(3)Negative impact on the rate of other corporate behavior s_i^t ($s_i^t > 0$), Cluster development, the faster, the higher the level, the cluster will be relatively more intense competition, rapid response capability for the corporate behavior of some companies within the group of bad behavior and the appearance of a close formation increased risk of negative impact on business caused by cluster more large, s_i^t the higher.

BASED POLICY RECOMMENDATIONS "ADVANTAGE INTERACTIVE" REWARD MODEL

Improve the internal structure of the cluster hardware and software environment, increase the "cluster effect" of the cluster;

Improve enterprise cluster market competition rules and institutions, providing a fair, equitable, transparent, competitive environment, and promote market-oriented process of enterprise clusters; Hard environment is to strengthen the construction of transportation, communications, energy, infrastructure, information exchange platform for enterprises to build, to build a suitable living environment per capita consumption environment, enterprise development and innovation to improve the external environment.

Build enterprise information exchange and collaboration platform to strengthen the competitiveness of its own corporate culture and improve their potential in the value chain system, improve the enterprise group bargaining chips ρ_i^t , provide an institutional guarantee for the enterprise to improve the contribution factor k_i^t ;

Increase the level of policy and support provided strength I_i^t , thereby reducing $(1 - I_i^t)$, different levels of compensation for loss of business due to the land, as well as a cluster of talent brought some negative effects, enhance the anti-risk capability.

CONCLUSION

Introduction of certain policies should be able to play a guiding enterprises to obtain the support and adopt policies which are conducive to the development of behavioral clusters that policy should have oriented the same time there should be a policy-level resistance, different levels of policy meet require different levels of enterprise development within the group, and policy support to the different levels achieved are different. This will not only take into account the needs of most enterprises in the cluster and cluster development, specification cluster survival, development and competitive environment, but also to guide and promote businesses within the group to enhance its competitiveness in the direction of cluster development needs and mobilize the enthusiasm of enterprises.

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