THE EXPEDIENCY OF VERTICAL INTEGRATION:
SYNERGY APPROACH ARGUMENTS

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Deciding on vertical integration is caused by the need to increase the company's competitiveness in the market. At the same time, under conditions of intense transformation processes in the market environment, the choice of organizational strategy is very complicated. This requires the development of recommendations on its feasibility taking into account the stage of market evolution. Accordingly, the aim of the work is the definition of expediency of vertical integration by use methodological instruments of synergetic approach. Results of the study were obtained using a methodology that includes theoretical synchronization of synergy tools and economic phenomena at the macro and micro level; simulative modeling stages of development of the market system which includes parameters of the value added, value of enterprises, number of enterprises; forming conclusions based on a comparison of probability estimates. As a result, it is determined that vertical integration is more doomed to success in conditions close to the stability of the market, rather than in terms of active transformations on it.

Key words: attractor, chaos, market system, synergy, vertical integration.

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1. Introduction

Qualitative results of transformations arising out the extension of the enterprise are directly related to the choice of one or more managerial decisions within a set of alternatives that occur after the evaluation of macro and micro economic circumstances. Managerial decision of vertical integration is an unshakable component of the continuum of administrative decisions which are taken by management or, less than that, is regarded as one of the alternatives for further business development. In case of impossibility to do any improvements in marketing and technology, vertical integration decision is very common for businesses seeking for new competitive advantages on the market. Accordingly, in the investigations, there has been increased interest in the appreciation of this decision, as a panacea for crisis and non-competitiveness of the company promoting improved financial results and its long-term development. As an argument the assumption of integrative synergy is given
But, any reasonable arguments and calculated proves of synergy approach to support these manifestations are not done. Methodologically important sense in the process of vertical integration is invested by some researchers. It is manifested that vertical integration is not so common for market organization (Williamson, 1991; Bijman, 2009; Bork, 1969; Peterson, 1997; Den Ouden, 1996). The arguments include different theoretical models based on asset specificity, transaction costs, property rights etc., but system synergy approach is not mentioned yet.

**The aim of the article** to substantiate the expediency of vertical integration using the methodological instruments of synergy approach.

**The objectives of investigation are** – to interpret the terms of the synergetic approach to the economic environment of the market; to analyze different situations that arise as a result of development of the market; to determine the most favorable periods for vertical integration

**Methods and methodology**

The methods continuum for current investigation includes 3 stages

1) To clear key synergy terms for economic investigation needs. It is used an abstract and logical method to distribute main macro and micro economic events between the stages of synergetic cycle.

2) Simulating models of a supply chain in macro and micro economic conditions of synergetic cycle stages. In accordance, the company in the value chain will be considered as element of the set \( X = \{x_1, \ldots, x_n\} \), and the market (M) as the set of elements pairs \( M = \{(x_i, x_j) : x_j \in X, x_i \in X, i \neq j\} \), the relationship arising between the elements represented as a set \( W, W \in \{x_i, x_j\} \). Accordingly, as a systemic phenomenon, the market will be the set both of elements (enterprises) \( X \) and many relationships \( W \) (transactions), assuring the value exchange and have the impact on the size of element.

3) The results estimation is to be made on the basis both of comparing the outcomes of simulating models and probability estimates of economic phenomena carried out in the general procedure

**2. Results**

It is often noted that the evolutionary paradigm of synergy is in the forefront of modern science. Under this paradigm, the development is understood as a sequence of long periods corresponding to the stable state of the system, which are interrupted by the short periods of chaotic behavior, and are followed next stable state. This moving are usually selected in the bifurcation point of chaotic fluctuations. According to V. Stepin (Stepin, 1999), “… self-developing systems characterized by a synergistic effect and the fundamental irreversibility of processes”. Using the assumptions of the synergetic approach, it is proposed to consider the market as a system of “meso” level which is an element of macro level (national economy) and includes micro level
systems (enterprises) within. Accordingly, the process of organizational changes of enterprises at a “meso” level (merger, acquisition, alliances) is a phenomenon of self-organization at the micro level.

To use the terminology of the synergetic approach to solving economic problems, let interpret key terms, and represent their meanings as an economic fact.

Table. Interpretation of the terms of the synergetic approach to the economic environment of the market

<table>
<thead>
<tr>
<th>The term of synergy approach</th>
<th>Describe of an economic phenomenon</th>
<th>The causes of emergence (influence of macro- and micro systems)</th>
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<tbody>
<tr>
<td>Chaos</td>
<td>Market condition in which there is a sufficiently large number of participants, which ensures the &quot;exhausting competition&quot;</td>
<td>• indirect effects of macroeconomic adjustments (lower taxes, currency exchange control, the issue of money, etc.), institutional reforms, liberalization of the policy of standardization and certification process; • high level of entrepreneurship aspiration.</td>
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<tr>
<td>Bifurcation</td>
<td>The state of enterprises in which it comes into management decision regarding changes to the existing development strategy</td>
<td>• arises as a consequence of &quot;exhausting competition&quot;, changes in the value of macroeconomic adjustments, tightening process of standardization and certification; • it is a result of inefficiency of interior economic and institutional mechanism, property rights conflicts;</td>
</tr>
<tr>
<td>Self-organization</td>
<td>The state of the market on which an “exhausting competition” leads to enterprise growth (decrease), bankruptcy. Stable relationships and markets are largely formed.</td>
<td>• &quot;fighting&quot; the effectiveness of economic and institutional arrangements of market participants, the sharing of property rights; • rational use of existing macroeconomic conditions and institutional regulation, standardization and certification policy;</td>
</tr>
<tr>
<td>Stability (attractor)</td>
<td>Market condition in which the number of enterprises is static, existing connections are stable and used by the parties for the internal development, development of markets for products. The level of competition is on minimum</td>
<td>• the static of macro and micro level systems, the absence of significant changes in the macroeconomic, institutional policies; • the absence of significant changes in market factors (capital, labor, technology).</td>
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Combining the concepts of chaos the state of the strong competitive market, and the processes of vertical integration as scene of self-organization, which for most researchers leads to a synergistic effect, indeed, we note the following.

At first, vertical integration is not some phenomenon of organization occurs spontaneously. In most cases it is an adjusted decision made by the management and is not free. Consequently, integrating vertically the enterprise forces the system changes to get a synergetic effect which is traditionally used to be a result of self-
organization. Therefore it affects the value of the synergetic effect – it can be both positive and negative. Second, the integrated elements spend some of its values (assets) on integration, which requires a certain accumulation of the assets. It goes to result the emergence of this phenomenon only at a certain point of business growth and is shown in some studies (Stuckey, 1993)

Respecting the holistic principles within the synergetic paradigm, that many modern scientific works interpreted as a famous Aristotle saying: "the whole greater than the sum of its parts", researchers have not sufficiently substantiated come to believe that the integration of businesses increases the effect (often profit) (Glinskaya, 2005; Vengeruk, 2002). Without questioning the vast majority of empirical studies manifesting the most positive impact both of vertical integration and any other forms of integration on economic activity, it should be assumed the following. However, as to a synergistic approach, the Aristotelian saying is not always justified.

For doing this, let us simulate a synergetic cycles of economic system (in this case the market), go along the stages of chaos with intensive bifurcations (situation 1), self-organization and state stability (i.e. attractor) (situation 2). Let the system consists of 2 levels (A and B) representing a part of a supply chain.

**Situation 1. Vertical integration takes place in a stage of chaos**

Throughout this series, we consider two elements, one of which sets the market tracking strategy ($A_1$), the other ($A_2$) – integrates vertically (with $B_1$) for the development of the market and stable supply of resources. Denote the values, which has mastered each of the $m$ elements on the level A $- V$, as well as $k$ elements on the level B.

Thus, the total value capacity of the system is $mV$. Let suppose, as a result of bifurcation it is appeared a free segment of a market at level A $- nV$ and $lV$ at level B.

There likely option that the excess cost that was released as a result of bifurcation processes concentrated in an element $A_1$ and make value $V_f = (1+n)V$. Opposites, element $A_2$ is formed through the merger (integration) and its potential to be $V_2 = (1+\alpha)V$ (where $\alpha$ - added value coefficient). Probability of such events will be, respectively: $P(A_1)_{chaos} = 1/(m_{chaos} - n_{chaos})$ and $P(A_2)_{chaos} = 1/(k_{chaos} - l_{chaos})$. When there is an additional expenditure of value to integration, its synergistic effect will tend to 0 or even have a negative meaning. Thus, the element $A_1$ has got the synergistic effect of market "destruction" significantly higher than the element $A_2$ of "creation" process, that is – integration.

Taking into consideration abovementioned, one can make the following conclusion. Vertical integration is an effective managerial decision for $A_2$ when $\alpha > n$. That is, the added value is formed by the object of integration should be higher than the value of temporarily vacant segments of the market for materials supplied, which is the result of ineffective business management or the inefficiency of market organization.

**Situation 2. Vertical integration takes place in a stable stage**

Implementation of this task in a self-organization and stability stage circumstances of the market shows quite different results from previous ones. Lack of sig-
significant destruction processes on this stage makes the probability of integration processes significantly higher than in the situation 1 because:

$$\frac{1}{m_{\text{chaos}} - n_{\text{chaos}}} < \frac{1}{m_{\text{attr}} - n_{\text{attr}}}, \text{ or } P(A_2)_{\text{chaos}} < P(A_2)_{\text{attr}} \quad (1)$$

This inequality is determined by the fact that the number of business units decreases until the stage of market stabilization (i.e. $m_{\text{chaos}} > m_{\text{attr}}$), as well as the possibility of a free segments appearance ($n_{\text{chaos}} > n_{\text{attr}}$).

Projecting this inequity into the "brain of decision making man" and minding rational behavior, most decisions about vertical integration should be taken in the state of the market is close to a stable stage.

Getting back to inequality again, it is necessary to indicate that in conditions of stability stage the parameter of empty market size will decrease (i.e. $n_{\text{chaos}} > n_{\text{attr}}$) while setting the value added will be relatively stable (i.e. $\alpha_{\text{chaos}} \approx \alpha_{\text{attr}}$).

Accordingly, a comparison of differences $A_1$ and $A_2$ values in chaos and attractor circumstances shows:

$$(V_2 - V_1)_{\text{chaos}} < (V_2 - V_1)_{\text{attr}} \quad (2)$$

In other words, the formation of vertical integration on the stage of market stability potentially more doomed to success than on the chaos stage. Empirical confirmation of such findings is made processes have vertical integration in the poultry sector in the U.S. for 1950 to 1992, when the stable economic growth and structural stability of the markets poultry products generated an increase of vertically integrated poultry companies in the United States (Martinez, 1997).

3. Conclusions

The expediency of vertical integration depends on the stage of synergy cycle and is caused by macro and micro economic factors that arise from "meso" level evolution. Using synergy approach for evaluating the processes of market organization it should be mentioned:

1. The nature of market functioning (in synergy sense) includes: chaos (market condition in which there is a sufficiently large number of participants, which ensures the "exhausting competition"), bifurcation (as a result of "exhausting competition" business comes into management decision regarding changes to the existing development strategy), attractor (market condition in which the number of enterprises is static, existing connections are stable and used for the internal development, development of markets for products).
2. The integration of businesses in the conditions of "exhausting competition" is extremely risky and can lead to loss competitiveness of enterprises are integrated. It can go out of a high level of entrepreneurship aspiration, low taxation, weak state control of product certification, uncertainty in a currency exchange rate.

3. The formation of vertical integration could be more successive in close to a stable stage conditions is characterized by strong technological and standardization control, stable macroeconomic factors, reduced possibility of new business appearance.

Utilizing the methodological approach, which includes parameters of enterprise value, value added, number of business units, will be useful for further investigation in a field of vertical integration expediency. Accordingly, that is an influence of a size of enterprise and technological improvements for integration. Moreover, it is common for firms doing business in a transitional economies (such as CIS countries) is characterized by controversial macro- and micro economic regulation in different branches.

References

Santrauka


Reikšminiai žodžiai: vertikali integracija, sinergija, rinkos sistema.
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