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ENTERPRISE BUSINESS INTERACTIONS SYNERGETIC EFFECT ASSESSMENT

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Abstract.

The stability and effectiveness of relationships between business entities are priorities of all economic policies. As a result of theoretical and methodological analysis of the problems of formation and integrative interaction between enterprises, it was concluded about increase in the number of network inter-firm ties. Meanwhile, the economic phenomenon of industrial integration with due account for networking has not received yet a complete description in terms of substantiation of its economic impact. Therefore, the paper provides a systematic analysis of the methodological framework for assessment of the effectiveness of enterprise integration in the economic environment. On the basis of this analysis, we have concluded about feasibility to use a systematic approach for assessment of the effects of business interactions enterprises. This approach is based on the definition of a synergistic effect of a partnership. This paper proposes an original approach to its assessment related to revealing the difference between the current market share of a company and its share in the system of customer evaluations for products introduced to the market. Calculation according to the proposed method allows us to group competitors in the market by the level of effectiveness of their business interactions and use this information in the strategic planning of competitive behavior.

Keywords: Synergy, partnership, business interaction, economic effect of the partnership.

Introduction

The need of companies to integrate, to create strategic groups is caused by the desire to improve their sustainability and adaptability of business processes to external transformations. Regardless of the level at which the integration takes place, it is intended to strengthen cooperation and development of close and complex relationships between entities. This leads to difficulty in assessment of the effectiveness of such structures. In addition to the variety and complexity of the

system of relations between market actors, assessment of the effects is complicated by increasing in the speed of interactions. The factor of acceleration and growth of the business contacts rate opens up new opportunities to expand competitive advantages of organizations generating additional effects, including through virtual integration of enterprises in various industries.

It follows that if earlier the principles of interaction between the enterprises were built on competition laws (for example, it was more profitable for a company to have several competing suppliers), in today's economy, they are established in accordance with the cooperation ideology (better to have fewer suppliers, but to establish partnerships with them). In other words, the developing conditions for enterprise functioning change the traditional view of efficiency as the ability to give consistent results over a long period of time with performance of a variety of different tasks. [1] A number of efficiency factors increases that, of course, transforms its content.

In assessing the effects and effectiveness of the interaction and integration, various sources prioritize different aspects (relations between partners, rationality of coordination and sufficiency of control, optimality of network boundaries and so forth), which offers a challenge on understanding of a complex of methods and their classification.

Note that a variety of approaches to assessment of efficiency is objectively linked to the difference in the preconditions of integration of business structures with market participants.

The resource-based approach (e.g., by E. Penrose [2], G. Hamel and K. Prakhalad [3], and others) explains a corporation and a strategic group of companies as a concentration of resources and competencies that are the basis of competitive advantages development of which creates continuity of changes in the organization. According to this approach, a prerequisite for integration is the desire to combine and coordinate separate competences and resources. Consequently, the efficiency of the business interaction is determined by the availability of resources synergy, coordination degree of management within a business combination. The factor of integration efficiency becomes a degree of rationality and placement of limited resources which, ultimately, determines compliance with the price, quality and range of the supply to a structure of consumer demand.

The evolutionary approach (in particular, by R. Cyert [4]) is based on the fact that in the course of its development, a company uses the experience of other companies in the industry through continuous learning. The drive to efficiency is considered by some authors as contrary to the idea of an evolutionary approach. In a dynamic environment, continuous

learning process through network contracts is rather preferable than focusing on efficiency which is more acceptable in the conditions of stable markets. Despite this, in our opinion, efficiency in this case is assessed in terms of adaptability from the standpoint of compliance of a new evolutionary integration form to the market environment.

In accordance with the **transaction costs theory** (eg., by R. Coase [5]), a cost-effective integration is the task of minimizing costs. Upon that, enterprise boundaries should be assessed in terms of a set of hardly copied resources and property rights to them. In this context, not all authors agree with the opportunity to consider a firm as a system of contracts, as in this case its role as a carrier of competencies is eroded, which is contrary to the resource and evolutionary theory of a firm. [6]

An approach based on knowledge (for example, by E.N. Chizhova, et al. [7]) treats a company as a source of technological and organizational knowledge, and as a structure which is self-learning based on its own skills, experience, and knowledge. Recognizing an opportunity to save transaction costs in the short term, the apologists of this approach attribute a paramount importance to technological capabilities and implicit understanding of market trends, so an integration is seen as a form of realization of the learning and knowledge and skills transfer process within the system of partnerships. Therefore, effectiveness of business interactions can be measured in terms of productivity and costs on the knowledge transfer process.

The income approach involves finding two indicators: the value of future cash flow and discount rate. The complexity of assessment of integration efficiency in this case consists in accuracy of prediction of the future cash flows value, as well as in determining a period of time during which the effect of integration will be shown. It must be emphasized that the position of researchers who believe that any organizational and positional changes in the corporation should be assessed in terms of capital growth remains strong. At the same time, it is often noted that the majority of M&A transactions in practice do not lead to an increase in shareholder wealth, and in 50% of cases, income from equity of companies decreases. [8] However, conclusions about the effectiveness of mergers and acquisitions cannot be done without taking into account an avoided damage, as a decision on organizational changes is being made, as a rule, in a pre-crisis situation. In other words, in this case the understanding of the business interactions efficiency is expanded due to account of loss reduction indicators. Relationships developed in the course of carrying out any form of enterprise integration, may be regarded as an intangible asset and as resources because management of them implies the possibility

to gain profit. Consequently, the approaches that measure the value of business interactions as a factor of rise in effectiveness stay relevant. These include methods for estimating the level of trust, partner's commitment and loyalty, the degree of mutual satisfaction with the results of joint activities [9], the measurement of an absolute deviation of the benefits from interactions compared with the costs associated with their building and maintenance [10], return on investment in creation of a system of relations [11], assessment the marketing potential and market stability of the enterprises [12]. From here, it is possible to propose another approach to assess the effectiveness of integration which can be called **marketing.**

According to the **management approach,** the problems of research of inter-firm relationships effectiveness may not be solved without the analysis of approaches to the integration management assessment. A number of scholars emphasizes the role of management factors in achieving effective cooperation. The effectiveness of partnership of an enterprise consists in the effective coordination of the value creation processes (degree of control), accepting of partners' resources (speed of reaction to changes in market demand), social contacts of partner systems staff (constructive cooperation) [13]. According to George Lovenzoni and Charles Baden-Fuller [14], the integrated structures management effectiveness depends on an strategic center which role is played by a leading partnership company forming and developing it, and creating a core value, elaborating rules and strategies, dealing with strategic outsourcing and transformation of partner's competences for the growth of their efficiency. The strength of a network is determined by the weakest company being a member of the partnership, and the strategic center management effectiveness is determined by the ability to create and maintain up to date business vision received by the parties; to develop a system for integration and support of partners; to transform and control the positions of the network brand; to form an atmosphere of trust and mutual responsibility; to establish effective mechanisms for attracting and selecting participants**.** In our view, during business interactions between enterprises different types of efficiencies within a new organizational structure are combined, in connection with that there appears a systemic effect manifested in the increase of efficiency of activity. In other words, it is practical to speak of **a synergistic approach** according to which the purpose of creating a business relations system is the reproduction of the additional effect of the combination of resources, knowledge, skills. This approach, in our view, integrates all of the previous preconditions for integration of efforts with partners. Due to the fact that the desired benefits of all forms of integration arise from the synergy of interaction between participants of cooperation and

association, we believe that the approach based on calculation of the synergistic effect is most suitable for the problem on assessment of the effectiveness of business relations. This synergistic effect of interaction is meant by John. Dyer and H. Singh when speaking about a "relational" rent as a super profit from exchange relationships that the company may not receive acting in isolation from each other outside the partnership. [15] We also tend to the need also to take into account performance criteria embedded in the marketing approach, namely, consumer perception of commercial offering by an enterprise. On the one hand, marketing strategy focuses a business entity on the paramount consideration of requests of a consumer, so an opinion of the latter should serve as a criterion for assessment its performance. On the other hand, distribution of forces on the market which is expressed in a ratio of shares of firms represented thereon, shows the results of interactions made by companies. A corporation may manufacture products perceived by consumers as the best, without it will not necessarily occupy a leading position in the market.

Methods: The difference between the current market share of the company and its share in the system of consumer evaluations of products available on the market, should be attributed to the effectiveness of the system of interaction. Based on this reasoning, we propose the following steps in the methodology for assessment of the effects of business interactions:

1. Selection and justification of the product competitiveness parameters range: 1) describing the essential qualities of a product; 2) complementing the key qualities (packaging attractiveness, brand popularity, price, etc.).

2. Selection of basic samples of the products represented in one market. In industries with multiproduct manufacturing, sampling in the commodity market of interest is carried out in each product group by the criterion of the value of sales. The advantage of the technique is that it does not need to analyze all suppliers and commodity items available on the market.

3 Preparation of scorecards and parameter estimation. "Soft" parameters being dimensionless quantities, are estimated by the respondents with respect to a 10-point scale. The respondents are the final consumers of products. A way of organizing an information collection is using a focus group. Transfer of actual values ("critical" parameters of estimation) in the points is made by the aligned points method which presupposes the existence of a linear relationship between the natural and non-dimensional (point) values. The empirical formula of this dependence is an equation of a

straight line through the points which coordinates are the minimum and maximum values of the natural indicators of "critical" competitiveness parameters and dimensionless quantities located within a 10-point measurement scale:

$$y = \frac{9x-10n_1+n_2}{n_2-n_1} \text{ (for direct indicators) (1)}$$

$$y = \frac{-9x+10n_1-n_2}{n_1-n_2} \text{ (for inverse indicators), (2)}$$

Where y - actual value of a dimensionless (point) value of a "critical" parameter;

x - actual value of a natural indicator of a "critical" parameter;

n_1- worst value of a natural indicator;

n_2 - best value of a natural indicator.

Unlike conventional methods, in particular considered by A.A. Rudychev [16], in the proposed measurement scheme a product price refers to the "critical" parameters and is evaluated along with consumer properties, and is not opposed to them.

4. Calculation of the product competitiveness index:

$$\mathrm{IC_P} = \frac{\sum_{i=1}^{m} \mathrm{R_i}}{10 \cdot \mathrm{m}}, \quad (3)$$

Where $\mathrm{R_i}$- value of i-th competitiveness parameter, points;

m - number of competitiveness parameter.

5. Definition of the enterprise competitiveness index:

$$IC_C = \frac{\sum_{j=1}^{g} IC_{Pj}}{\mathrm{g}}, \quad (4)$$

Where g - number of product groups in the business of the enterprise under consideration, j = 1, ..., g.

6. Conversion of the competitiveness index (IC_{Cq}) obtained for q-th company into a transformed market share in terms of competitiveness:

$$D_{Cq}{}' = \frac{IC_{Cq} \cdot 100}{\sum_{q=1}^{z} IC_{Cq}}, \quad (5)$$

where z - number of companies involved in the assessment, q = 1, ..., z.

7. Evaluation of the enterprise market share by sales volume (D_{Rq}) in the traditional way by comparing the company's volume of sales to the market capacity.

8. The calculation of a transformed share of the market with regard to sales volume:

$$D_{Rq}{}' = \frac{D_{Rq}}{\sum_{q=1}^{z} D_{Rq}}. \quad (6)$$

9. Evaluation of the interaction efficiency index (I_E):

$$I_E = \frac{D_{Rq}{}'}{D_{Cq}}. \quad (7)$$

If I_E> 0, the system of interactions of the enterprise in the market is recognized effective, and if I_E<0, inefficient.

10. Definition of economic benefit of interaction for q-th company:

$$E_q = \left(D_{Rq}{}' - D_{Cq}{}'\right) \cdot \frac{V_q}{100}. \quad (8)$$

In the case of a positive effect (E_q> 1), the conclusion on feasibility of the interactions policy being conducted is made, in the case of a negative effect (E_q<1) it would be required to carry out additional studies to assess opportunities for growth of sales in this market.

Main part.

Testing of this method was conducted on an example of industrial enterprises presented in one of the regional Russian biscuits market. In order to determine the competitiveness of products we have highlighted the parameters characterizing the key qualities of the biscuits (defects rate, shape, surface, color, taste and smell, view in a fracture), and its additional properties (safety and convenience of the packaging, the attractiveness of the package, packaging convenience, brand recognition, price). Scoring of "soft" parameters for biscuits was carried out using a specially developed scale in which linguistic evaluations are based on the technical regulations applicable to flour confectionery products in the Russian market. To evaluate these parameters we have choose biscuit samples in the commodity groups "Sugar", "Butter biscuits without filling", "Filled butter biscuits", "Hard-dough biscuits", "Glazed biscuits", "Compound biscuits", "Oatmeal biscuits", "Cracker", "Unique positions" of confectionery corporations "Confectionary Belogorye" (1), JSC "Bryankonfi" (2), CJSC "Conti-Rus" (3), JSC "Akkond" (4), JSC "Pekar" (5), JSC "Slavyanka" (6), JSC "Bolshevik" (7), LLC "Konditerburg" (8), LLC "VKK Don" (9), JSC "United Bakers-Pskov" (10), LLC "KDV Yashkino" (11). The above numbers will be used in the following tables and figures. The evaluation was conducted on the basis of tasting within the focus group. Competitiveness indexes of industrial corporations represented on the regional biscuit market were obtained

on the basis of production assessment; the indexes are summarized in Table 1 and allow the market structure to present in terms of the competitiveness level (see Figure 1).

Table1: Evaluation of the effect of interactions.

Indicators	Ordinal number of the competitor in the regional market										
	1	2	3	4	5	6	7	8	9	10	1
The Index of Corporation Competitiveness	0.72	0.64	0.61	0.62	0.60	0.68	0.68	0.57	0.62	0.61	0.72
Transformed market share in terms of competitiveness($D_{Cq}^{'}$), %	10.16	9.00	8.62	8.71	8.50	9.57	9.56	8.14	8.77	8.69	10.16
The actual market share of corporation (D_{Rq}), %	25.68	11.09	2.66	4.51	5.08	15.08	2.52	4.27	6.35	3.03	25.68
Transformed market share in terms of sales volume ($D_{Rq}^{'}$), %	28.66	12.38	2.97	5.04	5.67	16.84	2.81	4.76	7.08	3.38	28.66
The index of the effectiveness of interactions(I_E)	2.82	1.38	0.34	0.58	0.67	1.76	0.29	0.58	0.81	0.39	2.82
Sales volume in the regional market, tons	2181	942	226	383	431	1281	214	362	539	257	2181
The volume of sales in the regional market, thous. rubles.	122520	52463	9140	25148	33065	65782	13361	18624	30968	16857	122520
The interaction effect(E_q), thous. rubles.	22669.5	1775.1	-516.9	-923.6	-936.0	4783.8	-901.8	-629.3	-522.5	-894.9	22669.5

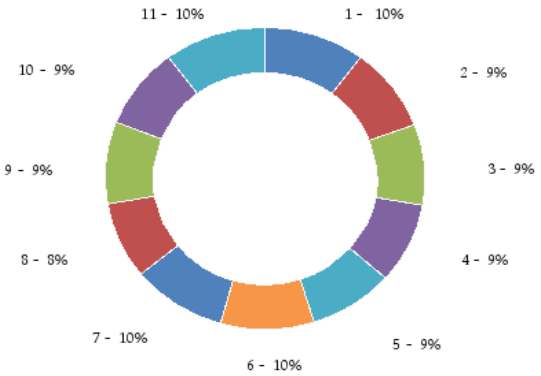

Figure 1. Transformed structure of regional biscuit market by the level of company competitiveness.

Market structure by suppliers' sales volume is shown in Figure 2.

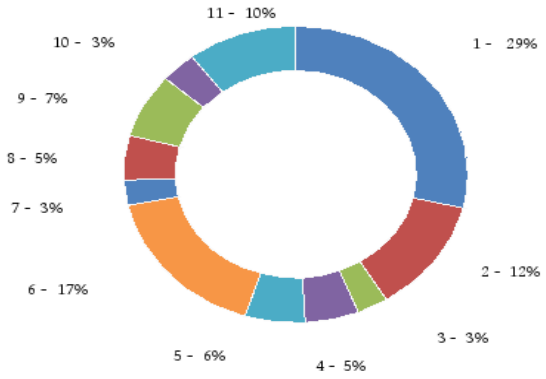

Figure 2. Transformed structure of regional biscuit market by the level of company turnover

Diagnostics of differences in market shares in terms of the level of competitiveness and sales volume determines availability of the business interactions effects that may be positive or negative (Figure 3, 4).

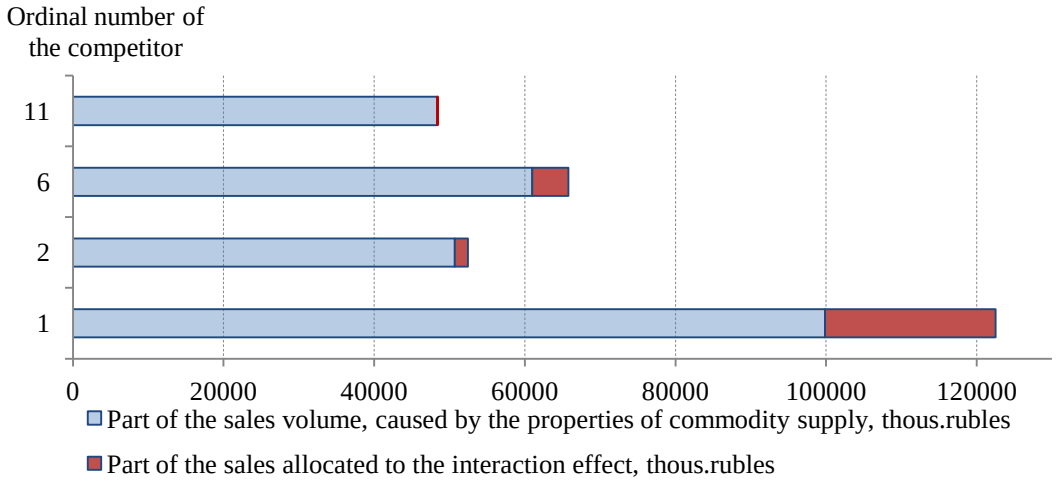

Figure 3. Visualization of the effects of business interactions produced by enterprises in the regional market of biscuits

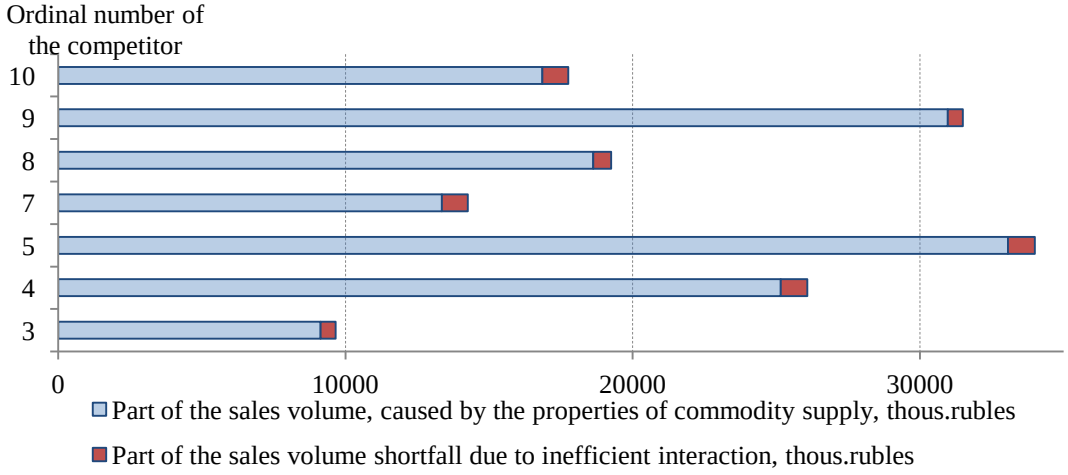

Figure 4. Visualization of foregone benefits of companies in the regional market of biscuits

Conclusion.

Using Sturgess formula [17] to determine the number of intervals we may separate the corporations presented in the market by their level of interactions effectiveness (Table 2):

$$h = \frac{x_{max} - x_{min}}{1 + 3.322 \lg n} = \frac{R}{m}, \qquad (9)$$

Where h - the interval step;

x_{max} – the maximum indicator value in the series;

x_{min} - the minimum indicator value in the series;

R - the indicator amplitude;

n - the number of terms in the series;

m - the recommended number of intervals.

Table 2: Grouping of corporations by level of their interaction effectiveness in the regional market.

Groups	I	II	III	IV	V
Interval for interaction efficiency index	(0.01; 0.58)	(0.58; 1.18)	(1.18;1.78)	(1.78; 2.38)	(2.38; 2.98)
Characteristics of groups	Inefficient system of interactions	The system with low efficiency of interactions	The system with an average efficiency of interactions	The system with high efficiency of interactions	The most effective system of interaction
Ordinal number of the competitor	3, 7, 10	4, 5, 8, 9, 11	2, 6	-	1

Conclusions.

Research and development of methodological approaches to the assessment of the effects of interaction between enterprises and market participants led to the following conclusions:

1. The following approaches to the assessment of the interaction effects have been identified: 1) resource approach (effectiveness of the interaction is determined by availability of a resources synergy, the degree of coordination of management by them within a business combination); 2) an approach based on knowledge (the effect is due to the

increment of the technological abilities, skills and understanding of the hidden market trends); 3) income approach (the effect is expressed by the future cash flow); 4) marketing approach (the effect is expressed by the increase of commitment, loyalty, the degree of mutual satisfaction of the partners); 5) management approach (effect is a change in a level of control of business processes); 6) systemic approach (the effect is estimated as cumulation of all the changes, including the negative by taking into account the results of synergy).

2. Due to the scope of the factors of interaction taken into account, we consider the systematic approach as the most representative, where a number of problems associated with the assessment of the synergistic effect of cooperation arises. The technique is proposed for the development of this approach; it allows more clearly to take into account the relational component of partnership synergy. In our opinion, the effect of interaction between enterprises and subjects of the external environment is expressed through the difference between the current market share of a company and its share in the system of customer assessments for the products available in the market.
3. The main steps of the proposed method are: 1) selection and justification of the nomenclature of the main and complementary parameters of product competitiveness; 2) selection of base samples represented in one market; 3) preparation of scorecards and evaluation parameters; 4) calculation of the product competitiveness index; 5) evaluation of the enterprise competitiveness index; 6) conversion of the competitiveness index obtained for the company in a transformed market share in terms of the level of competitiveness: 7) evaluation of market shares of companies by sales volume; 8) calculation of a transformed market share by sales volume; 9) evaluation of the interaction efficiency index; 10) determination of the economic synergy effect for the company.
4. Testing this method on the example of the eleven industrial corporations represented at the regional biscuit market allowed us to estimate the cumulative effect of their interaction with the different market actors in 23.9 million rubles in 2015. Also we have evaluated shortfall in income which took place in the activities of the seven corporations. On the basis of the Sturgess formula, the corporations presented at market were divided into five groups according to the level of efficiency of their business interactions system.

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