COMPETITIVENESS MANAGEMENT OF LEATHER COMPANIES: A CLUSTER APPROACH

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Manager's efforts aimed at developing efficient organizational forms of business, including clusters. Specified economic phenomenon can be identified as the structure of the vertically and horizontally linked by economic agents (companies, research and educational institutions, government agencies) in a particular industry and allied sectors. Their essential feature is the ability to complement and enhance the competitiveness of each other and the region as a whole. In this case principal in the identification of clusters is their ability to generate positive synergies from coordinated behavior and internal communications. Within the pale of the cluster mainly such forms of synergy find a manifestation, as synergies of scale, labor, sales, investment management, environment and operational synergies. Assessment of Ukraine leather companies regarding opportunities for cluster synergy cooperation was carried out by us in the following segments: manufacturing; logistics; sales; marketing; research and experimental development; exchange of information; communication with consumers. It is shown that the formation of cluster networks provides increasing competitiveness of companies by reducing logistics costs and marketing, accelerate innovation and by stimulating the exchange of knowledge and skills.

Keywords: competitiveness, cluster, positive synergies.

INTRODUCTION

Increased competition in the markets as a result of globalization of economic processes, accelerated upgrading of the technologies leads to the need to strengthen the competitiveness of leather companies. Areas in which these companies operate in many countries are experiencing stagnant production. However, the companies preserve the technological, human and scientific potential for successful development. Managerial efforts are aimed at developing efficient organizational forms of business, in particular, clusters. Specified economic phenomenon can be identified as the structure of the vertically and horizontally linked economic agents (companies, research and educational institutions, government agencies) in a particular industry and related sectors. Such companies must be located close to each other. Their essential feature is the ability to complement and enhance the competitiveness of each other and the regions as a whole.

Cluster study was initiated by Harvard Business School Professor Michael Porter (Porter, 1990). He found causes of competitiveness in individual sectors of the country on the basis of four indicators - "The diamond model". Before M. Porter, spatial agglomerations that are distinguished by increased competitiveness, were described by A. Marshall in his works (Marshal, 1961). Modern researchers identify spatial clustering as a kind of network form of organization (Enright, 2000; Sölvell *et al.*, 2003; Malmberg and Maskell, 2002; Powell and Brantley, 1992; Powell and Smith-Doerr, 1994; Perrow, 1993).

The main features of the cluster are preservation of competition between the companies; voluntary cooperation in certain areas in order to achieve common goals; geographical proximity of members; associations of companies that represent the main

production as well as related industries and servicing infrastructure. Fundamental in identifying clusters is their ability to generate positive synergies based on coordinated behaviour and internal links. The authors share the opinion that the cluster is just an association of companies that provides a positive synergistic effect reflected in the explicit and implicit financial effects. For the synergistic effect of cluster system to be maximal, it is necessary to optimally combine the elements that it includes. In addition, the volume of the synergistic effect will be significantly affected by the quality of the cluster system elements and the efficiency of their interaction. In each particular cluster, the occurrence of a synergistic effect depends on a combination of factors, among which the most significant are the number of members, number and qualifications of the staff involved, availability of resources, availability of areas of economic interest coincidence, quality of management, availability of the capital flows and information, government support (Eggertsson, 1990; Ansoff, 1999; Itami and Roehl, 1991).

Due to the aforesaid, **the aim of our study** is to develop the methods for evaluation of the relative synergistic effect and formation of scheme of optimal relationships between the cluster companies to ensure the maximum synergistic effect.

MATERIALS AND METHODS

As a result of study a scheme for optimal synergy cluster relationships for six companies of leather cluster in Kyiv was built. The methods by which the calculations were done is a sequence of the following steps: 1. identification of synergy factors that can be quantified; 2. calculation of matrix of synergy ratios between the two companies by certain factors; 3. calculation of generalized synergistic effect of cooperation between the companies by all synergy factors taking into account ratios of their significance; 4. establishment of ranks of various cooperation options; 5. construction of scheme for optimal synergy relationships between the companies in the cluster.

Most often, in practice, there are four types of synergism: synergism of sales, operational, investment and management synergism (Bushueva, 2002). Some researchers have also added to this list the synergy of innovation and "synergy of conglomerate" (Maljuk, 2009). It should be noted that in each particular cluster, depending on the stage of its development, degree of integration of the members, sources of the synergistic effect will vary. For the leather industry companies, the main sources of synergies in cluster structure can be such areas as manufacturing; logistics; sales; marketing; research, design and experimental development; exchange of information; communication with consumers. The occurrence of a synergistic effect due to the presence of common interests of companies in such areas, which are based on the use of the same or similar technologies, equipment, logistics channels, relations with the same suppliers and consumer segments, usage of the shared infrastructure, system of dealers, repair services, as well as the design and usage of scientific research results. Schematically, sources of synergy in the interaction of companies in the cluster are shown in Figure 1.

The diagram shows a few possible areas of coincidence of production and marketing interests of enterprises that can generate synergies. Much more of such synergy factors can be identified in practice. In addition, it should be noted that they are not static and may vary depending on the life cycle of companies and the cluster as a whole, as well as changes in market conditions. In the cluster structure, the companies' management faces

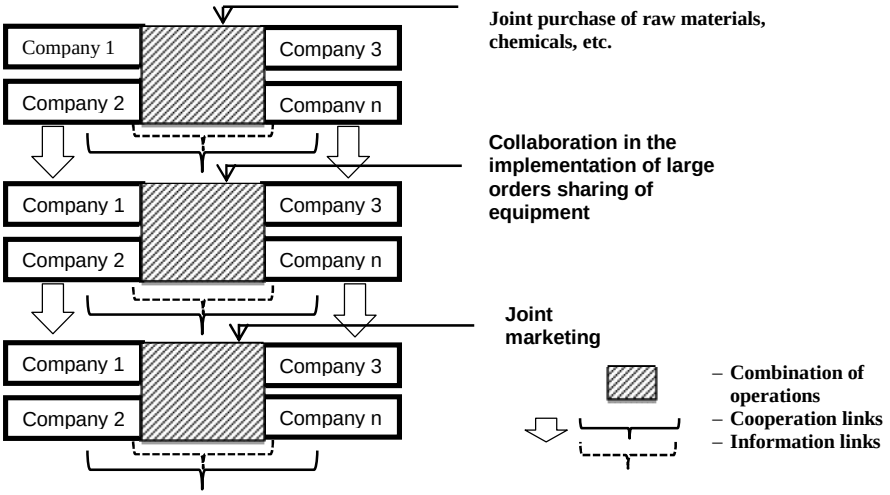


Figure 1. Sources of synergy in the interaction of the cluster companies

the task of researching and identifying the most complete list of sources of synergies generation. The more thoroughly they will be investigated; the better will be the evaluation of the total synergistic effect of the cluster. Based on our analysis of the possible sources of synergies generation in a cluster of leather industry companies in Kyiv, the following synergy factors have been distinguished: cooperation in repair servicing of the equipment (X_1); joint purchase of raw materials (X_2); joint promotional events, organization of exhibitions, etc. (X_3); cooperation in research and development (X_4); sharing of infrastructure facilities (X_5). All listed factors can be quantified and currently is the most significant for the companies' cooperation in the specified cluster. For their evaluation we proposed to use the following indicators:

1. Relative share of types of equipment that coincide in usage by the companies under study in the general list of equipment. The indicator is used to calculate the relative synergistic effect from the organization of joint repair service.

2. Relative proportion of raw materials that coincide in usage by the companies under study in their general list. The indicator is used to calculate the relative synergistic effect from the organization of joint purchase of raw materials, chemicals, etc.

3. Relative proportion of identical goods produced by the companies under study in their general list. The indicator is used to calculate the relative synergistic effect from the organization of joint promotions, joint participation in trade shows, collection and analysis of market information.

4. Relative proportion of products that coincide by production time and technology of the companies under study in their general list. The indicator is used to calculate the relative synergistic effect from the organization of joint research and development, project documentation, researches, etc.

5. The relative share of infrastructure facilities, which coincide in use by the companies in their general list. The indicator is used to calculate the relative synergistic effect from the organization of joint transport, storage etc. support.

RESULTS AND DISCUSSION

The proposed list of indicators can be changed and enhanced according to practical needs. After the synergy parameters for each of the above types of cooperation, the total synergistic effect between the companies under study in the cluster shall be determined. For each company its synergistic attractiveness is measured as the sum of two groups of effects: as a synergy generator for partner companies and as a synergy receiver from them (Ansoff, 1989). Determination of relative evaluation of synergistic effect generated in the cluster has been conducted for each of the five distinguished synergy factors (Table 1). For ease of handling, all calculated indicators were multiplied by 10. Five separate matrices by these factors were formed in total. This article gives only one matrix, but the final calculations are presented in Table 2. The corresponding lines of the Table 1 contain elements a_{ij}, which values are calculated by the above formulas of synergy ratios with pair interaction between i-th and j-th companies. Generalized evaluation of synergy generated by the pair interaction of the cluster enterprises is calculated as the sum of the synergistic effect ratios by of all synergy factors (Table 2).

Table 1. Formation of relative synergy evaluations by factor (X_1 - joint repair service of equipment)

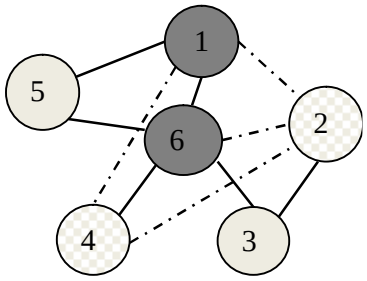
Synergy generator companies	Synergy receiver companies						Average value of generated synergistic effect
	C 1	C 2	C 3	C 4	C 5	C 6	
C 1	–	2.5	1.2	3.8	4.2	5	2.9
C 2	2.5	–	3	4.1	1.6	1.2	2.1
C 3	1.2	3	–	2.1	2.2	4.8	2.1
C 4	3.8	4.1	2.1	–	0.8	1.3	2.0
C 5	4.2	1.6	2.2	0.8	–	0.2	1.5
C 6	5	1.2	4.8	1.3	0.2	–	2.1

Columns 2, 4, 6, 8, 10 of Table 2 correspond to the synergy ratios by factors under study (X_1-X_5). Column 2 of Table 2 is filled with elements from the matrix Table 1 corresponding to the pairs of companies under study. Columns 4, 6, 8, 10 are filled in the same manner. To increase the accuracy of calculations, evaluation of total synergistic effect (C_Σ) of interaction between companies in the cluster was carried in view of the significance coefficients (kx) of the synergy factor under study (X_1-X_5). Columns 3, 5, 7, 9, 11 of Table 2 were calculated as the product of the synergistic effect ratio from possible cooperation and synergy factor significance coefficient: $C_\Sigma = \sum C_{i,j} * kx$. Synergy factor significance coefficient was determined on the basis of expert assessment. The six leading experts of leather companies under study in Kyiv have been selected as experts. It should be noted that the presented calculations are based on the analysis of cooperation between pairs of companies. However, this technique makes it possible similarly to algorithm presented above to evaluate the relative synergistic effect of the interaction of three or more members. Based on the calculation of the generalized synergistic effect, we have formed rating of various options for the companies' cooperation. Evaluation of priority was based on the following scale: if $C_\Sigma \geq 2$ – combination of companies is optimal; if $2 > C_\Sigma > 1{,}5$ – interaction option is quite

efficient; if $C_{\Sigma} \leq 1,5$ – combination of companies will have insignificant synergistic effect.

Table 2. Generalized evaluation of synergistic effect by synergy factors under study

Combinations of companies	Total value of synergistic effect by synergy factors										$C_{\Sigma}=\sum_{ij} * k_x$	Rank
	X_1 (k_{x1}=0,2)		X_2 (k_{x2}=0,23)		X_3 (k_{x3}=0,31)		X_4 (k_{x4}=0,15)		X_5 (k_{x5}=0,11)			
	C_{ij}	0.2 *C_{ij}	C_{ij}	0.23 *C_{ij}	C_{ij}	0.31 *C_{ij}	C_{ij}	0.15 *C_{ij}	C_{ij}	0.11 *C_{ij}		
1-2	2.5	0.5	1.3	0.3	1.8	0.56	1.7	0.26	1.1	0.12	1.7	8
1-3	1.2	0.24	0.9	0.21	0.8	0.25	1.1	0.17	3	0.33	1.2	13
1-4	3.8	0.76	0	0	0.9	0.28	1.3	0.2	5	0.55	1.8	7
1-5	4.2	0.84	1.4	0.32	1.2	0.37	0.3	0.05	4	0.44	2.0	6
1-6	5	1	2	0.46	0	0	1.4	0.21	8	0.88	2.6	3
2-3	3	0.6	1.3	0.3	4.6	1.43	1.2	0.18	3.1	0.34	2.8	2
2-4	4.1	0.82	1.5	0.35	0	0	2.4	0.36	1.6	0.18	1.7	9
2-5	1.6	0.32	0	0	1.9	0.59	0	0	0	0	0.9	15
2-6	1.2	0.24	0.2	0.05	2.8	0.87	2	0.3	1.9	0.21	1.7	10
3-4	2.1	0.42	0	0	1.2	0.37	2.2	0.33	0	0	1.1	14
3-5	2.2	0.44	1	0.23	1.8	0.56	1.7	0.26	0	0	1.5	11
3-6	4.8	0.96	5	1.15	0	0	0	0	2.3	0.25	2.4	5
4-5	0.8	0.16	4.2	0.97	0	0	0	0	2.9	0.32	1.5	12
4-6	1.3	0.26	3.8	0.87	3.1	0.97	3.1	0.47	4	0.44	3	1
5-6	0.2	0.04	3.7	0.85	2.4	0.74	3	0.45	3.9	0.43	2.5	4



Combination of the companies that is optimal according to the synergistic effect:
[4-6] – 3 (generalized synergistic effect)
[2-3] –2,8 (generalized synergistic effect)
[1-6] – 2,6 (generalized synergistic effect)
[5-6] – 2,5 (generalized synergistic effect)
[3-6] – 2,4 (generalized synergistic effect)
[1-5] – 2,0 (generalized synergistic effect)

Figure 2. Scheme of clustering interaction between the companies that is optimal according to the generalized synergistic effect

Based on the analysis of Table 2, the scheme of clustering interaction between the companies was built. It is optimal according to the generalized synergistic effect Fig. 2. Scheme of cooperative interaction between the companies under study in the leather cluster enables to conclude that cluster-forming in our case are the company's №.6 and №1. Company №2, №4 have more branched but less powerful in terms of synergy relationships as compared to companies №3, № 5. The scheme helps to identify and

direct management efforts to support those areas of cooperative interactions which may potentially generate the greatest total synergistic effect.

It should be noted that, in practice, the implementation of the identified potential synergies will depend on many factors. The most significant among them is the willingness of companies' management to organize co-operation with the partners. Moreover, the possibility of obtainment of a synergistic effect in the cluster will depend on the business environment, radius of trust between economic entities, features of companies that are defined by the asymmetry of their economic development, organizational culture, etc. Generation of synergistic effect in the cluster may also decrease because of the complexity of coordinating the activities of formally independent companies, and because of the lower stability of mutual relations in the cluster structure compared to hierarchical one.

CONCLUSIONS

The study conducted resulted in the development of a method for evaluation of synergy ratios between leather companies in the cluster of Kyiv City, which enabled to build the scheme of cluster interaction of the companies that is optimal in terms of synergistic effect. It was established which of the investigated companies are cluster-forming, priority of options for cooperation with the various partners was determined. Moreover, the most significant areas for coincidence of interests in the manufacturing, sales, marketing and innovation in terms of synergy were defined. The presented method can be used both in newly formed clusters and in the existing structures to evaluate and reformat partner relationships to maximize the synergistic effect.

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