

RUSSIAN ACADEMY OF SCIENCES
SIBERIAN BRANCH
INSTITUTE OF ECONOMICS AND INDUSTRIAL ENGINEERING
UNIVERSITY OF NATIONAL AND WORLD ECONOMY
TERNOPIL NATIONAL ECONOMIC UNIVERSITY
UNIVERSITY OF LODZ

**LOCAL PRODUCTION SYSTEMS
AND REGIONAL ECONOMIC
DEVELOPMENT**

Edited by
A.S. Novoselov, V.E. Seliverstov

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This collection of papers contains the results of research carried out by the participants of the “International Project FOLPSEC № 295050 within the 7th EU Framework Program FP7-PEOPLE-2011 IRSES” “Functioning of the Local Production Systems in the Conditions of Economic Crisis (Comparative Analysis and Benchmarking for the EU and Beyond)”.

The papers study the following problems: sustainable development of local production systems, business strategies of LPS, innovativeness of clusters, critical infrastructure protection, corporate social responsibility, environmental protection, local production system management, governance of local production systems in Bulgaria, Poland, Ukraine and Russia, policy guidelines with some measures of general application, aimed at problems observed in all LPS, and some specific measures differentiated according to a typology of local production systems.

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PREFACE

In recent years in the world research of regional development much attention is paid to the functioning of the local production systems (LPS). This became especially relevant in the context of the global economic crisis, when the survival of regions with different levels of development largely depends on the capabilities of their self-development and competitiveness, good governance and availability of a variety of public and private institutions.

This collection of papers contains the results of local production systems development research carried out by the participants of the International Project FOLPSEC № 295050 within the 7th EU Framework Program FP7-PEOPLE-2011 IRSES “Functioning of the Local Production Systems in the Conditions of Economic Crisis (Comparative Analysis and Benchmarking for the EU and Beyond)”.

The subject of research of the Project FOLPSEC is the local production systems (LPS) taking the considerable diversity of forms including regions of different types and rank, such as municipalities, industrial centers and nodes, territorial-industrial clusters, free economic zones, different territorial innovative combinations (technopolises and technology parks), regions of new economic development, etc.

In spite of this diversity of forms LPS have a number of essential characteristics in common, of which the main ones are the economic viability of the territory (especially the presence of economic potential necessary and sufficient for self-development), manageability (the presence of the subject for management of a given territory) and institutional factors (the presence of the institutional mechanisms underlying decision-making on the area and providing, in particular, the training of qualified personnel, conducting research and innovation, tax, financial, organizational and other support for development).

The purpose of the Project FOLPSEC is deepening theoretical research in the field of local production systems (LPS) and strengthening their practical application in the context of finding ways to overcome the global economic crisis.

To achieve this goal it is suggested to focus on the solving of the following main tasks:

- to carry out the exchange of knowledge in the field of approaches to the study of LPS and to make recommendations for the EU based on the use of positive practice in different countries in conditions of the economic crisis;
- to provide the exchange of the results of research of organizations-participants in the field of research of the functioning of the LPS for accelerating economic and social development and overcoming the relative regional disparities;
- to promote the use of the gained knowledge and good practices for scientific and educational purposes in all participating institutions;
- to lay the foundation for long-term cooperation between the EU and the third countries in the direction of strengthening the scientific partnership in the field of regional economic development.

The Institute of Economics and Industrial Engineering of the Siberian Branch of the Russian Academy of Sciences (IEIE SB RAS) is one of the research participants in the International Project 7th Framework Program of the EU FP7-PEOPLE-2011 IRSES “Functioning of the Local Production Systems in the Conditions of Economic Crisis (Comparative Analysis and Benchmarking for the EU and Beyond)” – FOLPSEC, No 295050. Duration of the project: 01.04.2012 – 30.03.2015. Project Coordinator in the IEIE SB RAS is Olga P. Burmatova.

Project participants are divided into two groups – the beneficiary countries (members of the European Union) and partner countries (non-EU). The first group consists of Bulgaria (University of National and World Economy, Sofia), Poland (Lodz University, Lodz) and Slovakia (Matej Bel University, Banska Bystrica). The second group includes Ukraine (Ternopil National Economic University, Ternopil) and Russia (Institute of Economics and Industrial Engineering SB RAS and Novosibirsk State University (NSU), Novosibirsk).

The present Collection of academic papers includes some intermediate results of research of the participating organizations on the Project FOLPSEC for 1.5 years (from April 2012 to September 2013). Better reflection of the outcomes of the work will be presented in two monographs, one of which is currently being prepared for publication at the University of National and World Economy (UNWE), Sofia (Bulgaria) in 2014.

**SUSTAINABLE DEVELOPMENT
OF LOCAL PRODUCTION SYSTEMS
IN TIMES OF FINANCIAL AND
ECONOMIC CRISIS¹**

*Stanka Tonkova²,
Mariana Kuzmanova³*

This research was supported by a Marie Curie International Research and Staff Exchange Scheme Fellowship within the 7th European Community Framework Programme. Executive summary: The work focuses on important issues related to measuring the results of the implementation of local production systems (LPS), as well as to stimulating their sustainable development during the current financial and economic crisis. It offers a widely applicable open system for metrification of LPS management based on quantifiable indicators and an innovative approach that enables synchronized management decisions over different periods of time.

INTRODUCTION

The European experience shows that one of the ways to increase the potential of the Bulgarian economy and to successfully respond to the international market competitive pressure, especially in times of financial and economic crisis, is the establishment and the maintaining of LPS development in regional systems, considered in the meaning embedded in the definition given by Local Production & Innovation Systems Research Network. According to that definition LPS are “territorial groupings of economic, political and social actors focusing their efforts on a specific group of interrelated activities. In Local production systems there are usually involved a wide range of interacting companies – manufacturers of consumer goods, suppliers, service companies, business consultants, marketers, consumers and others.”⁴

¹ Publication under project 295050 „Functioning of the Local Production Systems in the Conditions of Economic Crisis (Comparative Analysis and Benchmarking for the EU and Beyond)” (FOLPSEC), FP7.

² Prof. D.Sc.(Econ.), University of National and World Economy (UNWE), Sofia, Bulgaria.

³ Assoc. Prof. Dr., University of National and World Economy (UNWE), Sofia, Bulgaria.

⁴ Network’s Website <http://www.ie.ufjf.br/redesist/> (2009-05-05).

LPS are characterized by a diversity of forms of cooperation between the various stakeholders involved.

Unlike other cluster structures, LPS composition also includes various public and private institutions which provide: education and training (technical colleges, universities, etc.), research and innovation (research laboratories and centers) funding and support (banks and other financial institutions, politicians, local authorities' representatives, etc.). It can therefore be concluded that due to the interdependence and cooperation between the stakeholders in the local production systems, they offer the potential to increase the endogenous innovative capacity, as well as to accelerate local economy and local development competitiveness.

Conceptual differences¹ between the systems are due to variations in the level of development, the integration of the production system, the interaction between the stakeholders, the institutional provision, as well as to the innovative potential of the region.

The environment in which LPS operate is characterized by dynamism and complexity. Challenges in ensuring LPS long-term successful operation are extremely large. It is therefore necessary to apply a strategic approach to the regional development management, thus providing for both effective use of resources and competitiveness creation at advanced level. The strategic approach can be realized through the development and implementation of a flexible management concept.

The *aim* of the authors is to develop a balanced set of factors and indicators for LPS sustainable development management and its effectiveness measuring through an appropriate metrification. To achieve this *goal* the following research tasks are solved:

- Displaying the key issues in the field of strategic management and LPS competitive behavior with a view to make full use of their capabilities for local development acceleration and intensification of the sectors their formative subjects belong to.
- Developing a methodology for determining the results and effectiveness of LPS strategic development.
- Defining guidelines for practical use of the model for LPS sustainable development management in times of financial and economic crisis.

STRATEGIC MANAGEMENT AND COMPETITIVE BEHAVIOR OF LOCAL PRODUCTION SYSTEMS

Local economy functioning is closely linked to the national economy conditions. State economic interests as well as those of national and multinational companies are not always in tune with the needs and interests of local communities. Therefore, local development in the late twentieth century and the beginning of the new century relies on a new paradigm - the paradigm of the "*entrepreneurial approach*". That approach foresees that the municipalities, districts and regions act in compliance with the market-oriented approach, and gain competitive advantage by relying on their own resources (including human capital), thus ensuring the prosperity of the civil society. Essential characteristic of the local economic development *entrepreneurial approach* is the focus on *the endogenous development*. The latter supposes, among others, the establishment of viable institutions that contribute to the efficient use of multi-purpose local resources by introducing new economic activities.

¹ Lombardi, M., The evolution of local production systems: the emergence of the "invisible mind" and the evolutionary pressures towards more visible "minds". // *Research Policy* 32 (8): 1443–1462, 2003.

.....

In Bulgaria the spontaneous processes of endogenous development are still little known¹. The experience in the establishment and development of regional clusters in the Sevlievo municipality shows that these are based on the partnership between businesses and local authorities that leads to the achievement of several competitive advantages. Local authorities could not only speed up the process of regional clusters establishment by creating a favorable investment climate, but they could also participate directly in these clusters. All participants in the regional industrial clusters have complementary interests and are characterized with mutual interdependence. They also have harmonized business strategies, which balance their objectives and interests, while at the same time they share the same values and management practices. As a result of the endogenous and spatial-economic interaction the Sevlievo municipality has become an economic agglomeration on the type of a local production system. The relationship between the companies and between the business entities and the territory is the key to the companies' population.

The Sevlievo Municipality is a model of endogenous development in the country², accompanied by increased and efficient use of natural, economic and human potential combined with the provision of high level of services to the population and economic entities. All this leads to increased productivity and competitiveness of the regional economy.

The successful implementation of the entrepreneurial approach paradigm to local economic development is rooted in the philosophy of the strategic management. The strategic management of economic innovation and development allows a region, district or municipality to transform its economic structure by changing the local industrial mix (local branch structure), professions, goods and services, technologies used, which it relies on for generating incomes and welfare.

In order to intensify the development of regional systems in the context of the endogenous development in the country it is necessary to implement the National Spatial Development Concept (NSDC) combined with spatial integration of the regional and sectorial planning through regional coordination of sectorial policies, strategies, plans and programs. By implementing NSDC a territorial basis to promote polycentric development of the network of cities and improving the links between central and peripheral regions should be established.

In times of global financial and economic crisis to stimulate regional growth need not only depressed areas or unincorporated rural communities, but still prosperous regions. For their successful integration into the European structures, they should implement a new type of restructuring through LPS establishment and development as well as through cluster structures' development. LPS are of particular importance for the development of SMEs from cluster groupings, as they are built on their particular competitive advantages, thus giving them the possibility to survive under conditions of strong competition thanks to the access to information and specialized resources and the high degree of flexibility and innovativeness. LPS scope covers different companies; other similar or supporting organizations of the country as well as from other countries in

¹ The municipality of Sevlievo is developing two clusters. *The first one* is bringing together manufacturing companies producing sanitary fittings and sanitary ceramics. The central role in that cluster is performed by the united company Ideal Standard – Vidima AD, a leading manufacturer of sanitary fittings and sanitary ware and a leader in the areas of product distribution management in Eastern and Western Europe and commercial activities management of the multinational company Ideal Standard International in Eastern Europe. *The second cluster* operates in the area of electrical equipment, and cable and wire production. That cluster has two major companies: ABB Avangard (specialized in engineering and manufacturing of equipment for medium and high voltage products and service products), and EMKA AD (producing enamelled copper wires, round and rectangular copper and aluminum wires with paper, glass-fiber and foil-fiber insulation and more).

² Data provided by the municipality of Sevlievo state its population has 41500 inhabitants, of which 26800 live in the municipal center. In 2011 the industry occupied 76% of the total volume of the gross production in the municipality. There are 1200 firms, including 7 large companies employing over 250 people each. The unemployment rate is 6.1% while the average for the country is 9.97%. The industries defining the structure of the Local Production System – Sevlievo and certified to international standards are: production of sanitary fittings and sanitary ware, production of high-voltage devices, molds, and transition lines, wood processing, furniture, knitwear and textiles manufacturing.

Europe and outside Europe, whose importance and presence in the system are determined by the market forces¹.

It can therefore be concluded that local production system development depends on:

- The investment policy carried out at the national, regional and local levels, including also measures for successful development of "satellite" businesses.
- The investors' policy of commitment to local problems of education, infrastructure and others, including also the inclusion of investors' partners to the results of these investments.
- The developed and jointly implemented long-term strategy for the development of the local production system based on a diversified knowledge driven economy².
- The availability of an adequate regulatory framework governing the relations between the entities, including for the financial, administrative, political and market decentralization, as well as for the participation of the civil society in the decision-making process concerning local development, public-private partnerships, etc.³
- Local production systems' development largely depends on: the relation "social capital - institutional support"; interregional cooperation (for example partnership between neighboring municipalities to increase the attractiveness of the region as a whole and to develop strategies and plans for its future development); establishing partnerships with external "stakeholders", thus providing for: transfer of information on good practices, development of joint business initiatives and expansion of the target audience for the LPS production.

DETERMINING THE RESULTS AND EFFECTIVENESS OF LPS STRATEGIC DEVELOPMENT

Improving LPS performance as a whole, as well as within the individual organizations that form them, requires systematic measurement and assessment of both realized and potential outcomes of development, combined with effective management of their engines⁴. That need is particularly relevant in the context of the financial and economic crisis – when pressure from competitors is increasing and customer needs are quickly modified. Thus, early signals could be obtained. In this respect A. Neely notes that "... measures for development instead of measuring the activity, since the role of measurement is rather to support the development of the organization, than to assess the activity."⁵ Table 1 presents the results from the comparison matrix of the traditional and integrated systems of indicators for performance assessment.

¹ According to Porter, the more concentrated geographically is a national production, the greater is its competitiveness at the international market. P. Krugman shares the similar opinion on the importance of the economic geography of a country in terms of its growth and international competitiveness. Knowledge generated by the companies in the local production system together with the possibility for "collective learning" have been identified as key factors in promoting innovation and entrepreneurial dynamism in clusters.

² The Europe 2020 Strategy sets three interrelated priorities: Smart growth: an economy based on knowledge and innovation; Sustainable growth: an economy that expend resources more efficiently, being more "green" and more competitive; Inclusive growth: based on high level employment in the EU economy and contributing to social and territorial cohesion.

³ According to Porter M. the role of central governments and relevant local authorities is to facilitate and support competitive industrial clusters development, by providing businesses with an appropriate institutional environment for prosperity.

⁴ Kaplan R.S., Norton D.P. The Balanced Scorecard: translating strategy into action. Boston, Harvard Business School Press, 1996. – P. 31.

⁵ Neely A. Prospects for Business Development. Measuring the indicators of the state of your business. Sofia, Classics and Style Publishing House, 2001. – P. 17. (in Bulgarian)

The system of indicators for performance assessment of the organizations involved in the LPS and of the LPS as a whole, should meet the following basic requirements:

- *The focus requirement* (concentration on strategic success factors);
- *The multidimensionality requirement* (the system includes a variety of indicators: internal and external; qualitative and quantitative; financial and non-financial; with regard to finance, customers, suppliers, markets, labor resources, processes, quality, resource utilization, flexibility, innovations, time, etc.);¹
- *The integration requirement* (clarity about the cause and effect relationships in the formulation and implementation of the strategy).

Table 1

Particularities of the traditional and integrated performance assessment systems

Traditional systems of indicators	Integrated performance assessment systems
<p><i>Orientation:</i> towards valuable indicators (the past);</p> <p><i>Main goals:</i></p> <ul style="list-style-type: none"> – costs reduction; – assessment of the financial targets' achievement; – fragmented analyzes. <p><i>Nature:</i></p> <ul style="list-style-type: none"> – isolated assessment of costs, performance and quality; – insufficient analysis of deviations; – individual contribution is stimulated; – individual training; – underestimation of the intangible resources of the organization (knowledge, qualification, key competences etc.)²; – insufficient orientation towards the strategy. <p><i>Movement of the information:</i></p> <ul style="list-style-type: none"> – vertical structure of the records. <p><i>Flexibility:</i></p> <ul style="list-style-type: none"> – limited, summarizes significant volume of internal and external information. 	<p><i>Orientation:</i> towards the consumers (the future);</p> <p><i>Main goals:</i></p> <ul style="list-style-type: none"> – performance improvement; – assessment of the degree of strategy implementation; – integrated analyzes. <p><i>Nature:</i></p> <ul style="list-style-type: none"> – simultaneous and coherent assessment of costs, performance and quality; – direct reporting of deviations (unit, person); – team work and team contribution are stimulated; – training of the entire organization; – multi-dimensional analysis of all the resources of the organization; – focusing on the strategy. <p><i>Movement of the information:</i></p> <ul style="list-style-type: none"> – horizontal structure of the records <p><i>Flexibility:</i></p> <ul style="list-style-type: none"> – increasing, adaptability to the needs of the operational and strategic management.

The basis of the proposed by the authors of the present publication model for determining the results and effectiveness of LPS strategic development are: the adopted key ideas of the balanced scorecard for result assessment, the fuzzy sets and actions with them, the 11-point Likert Scale applicable to the fuzzy sets, and the experton-functions.

While evaluating both the performance of the organizations involved in the LPS and the LPS as a whole special attention should be devoted to the sustainable development issue in the context of the Concept of sustainable development of society. The notion of sustainability is considered "quality of endurance, perseverance (it is also called stability); it is manifested while changes (disturbances) in the equilibrium, constant (normal) state and function of the system are observed; as a result forces, restoring the original condition for system functioning are caused"³. The present paper shares the understanding that the sustainable development of the organizations involved in the LPS is the LPS harmonious development within the different perspectives of the Balanced Scorecard, aimed at ensuring long-term success for the local system as a whole.

¹ A possible list of indicators is proposed by the authors in the text below under point 2 "Determination of the results and effectiveness of LPS strategic development"

² Kaplan R.S., Norton D.P. Die strategiefokussierte Organisation. Führen mit Balanced Scorecard. Stuttgart, (P. Horvath et. al.), Schäffer Poeschel Verlag, 2001. – S. 59.

³ Stanulov N. Can you make decisions. The Magic of Choice. Sofia, 2002. – P. 37. (in Bulgarian)

Table 2

Elements of the model for cluster sustainable development management

- ◆ Use of the Balanced Scorecard for performance measurement as a model for LPS strategic development management.¹
- ◆ Introduction of new perspectives in the model according to the LPS specificity and the requirements of the groups of influence on it.
- ◆ Development of a system of indicators within the different perspectives thus ensuring LPS sustainable and balanced development.
- ◆ Performance management of LPS development and analysis of its capabilities for sustainable development in times of financial and economic crisis.

Table 2 classifies the elements of the model for LPS sustainable development management that are further specified in the text below.

For measuring the performance of the organizations involved in the LPS, and of the LPS as a whole, the use of the 11-point Likert Scale is particularly suitable, due to the following two reasons:

- *First*, this kind of scale offers maximum detailed estimates; the estimates obtained are more accurate and could be easily accepted and rationalized by the experts².
- *Second*, a methodological tool for mathematical processing of the parameters included in the model by using fuzzy estimates is developed (Table 3).

Table 3

Applicable Likert scale in fuzzy sets

Quantitative value	Linguistic value
1,0	very good
0,9	practically good
0,8	almost good
0,7	good enough
0,6	more good than bad
0,5	neither good nor bad
0,4	more bad than good
0,3	bad enough
0,2	almost bad
0,1	practically bad
0,0	very bad

The expert judgments set by the 11-point Likert Scale, are tabulated using the appropriate method and normalized, and the cumulative complementary experton-function is calculated. (Annex 1.)³ The cumulative complementary experton-function is monotonically increasing, its value at 0 is 1, and the entropy is obtained at the end of the evaluation process. For that reason, the final fuzzy estimate represents its *mathematical expectation*.⁴

¹ Norton D., Kaplan R. "Measures that drive performance", Harvard Business Review, January–February 1992.

² Dalkalatchev H. "Enterprise Sustainable Development, paper, VIth Scientific Conference with International Participation "Management and Sustainable Development", Yundola, March 2004.

³ Kaufmann A., Aluja J.G. *Técnicas especiales para la gestión de expertos*. Milladoiro, 1993.

⁴ Kaufmann A., Aluja J.G. *Técnicas especiales para la gestión de expertos*. Milladoiro, 1993. – P. 105–110.

The mathematical expectation (E) “characterizes the center of the distribution. It is the average value of the random value computed from all its possible values, weighted by their probabilities”¹.

The final fuzzy estimate (E) is defined as:

$$(E) = 1/10 (f(1) + f(0.9) + \dots + f(0.1)),$$

Where $f(1)$, $f(0.9)$, $f(0.1)$, $f(0)$ are the respective values of the cumulative complementary experton- function.²

Annex 2 presents the algorithm for calculating the complementary to the experton- function. From an economic perspective the complementary can be interpreted as the untapped potential of the respective LPS strategic success factor. Consequently, this option allows for deepening the analysis with respect of the effective and balanced LPS development within the different perspectives (activity key aspects).

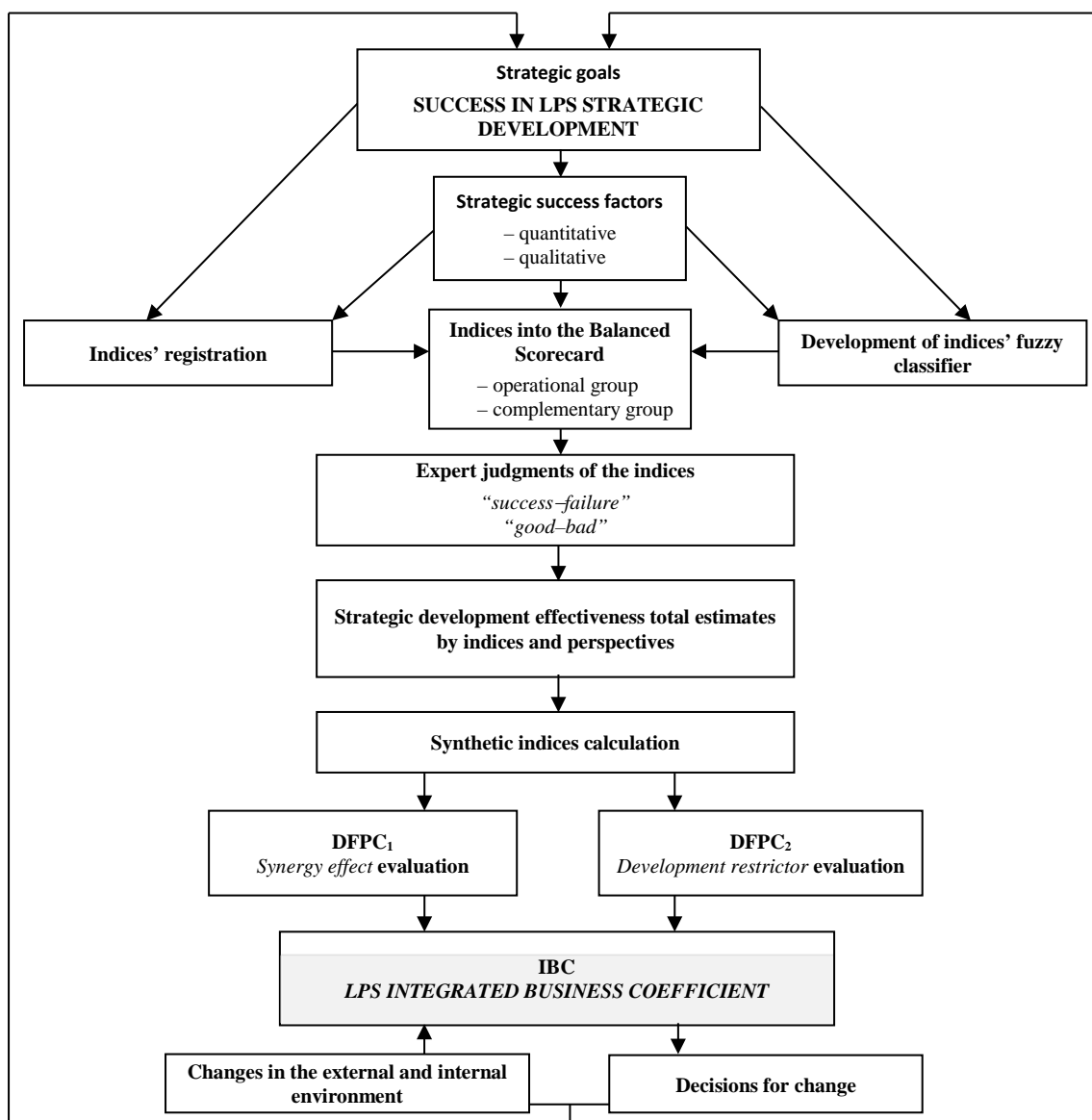


Fig. 2. A model for determining the results and effectiveness of LPS strategic development

¹ Gatev K., Spasov A., Radilov D. General Theory of Statistics and Economic Statistics. Sofia, Science and Arts Publishing House 1989. – P. 123. (in Bulgarian)

² Note: In calculating the final fuzzy estimate (E) the value of $f(0)$ is not taken into account.

Figure 2 presents the conceptual framework of the developed model, involving a system of indicators to measure the results and effectiveness of LPS strategic development. The developed and approved model is implemented based on the following consecutive stages:

STAGE 1. Starting point of the model are the formulated LPS strategic goals.

STAGE 2. The strategic success factors are defined. These are aimed at achieving the stated strategic objectives.

STAGE 3. The strategic success factors are specified into appropriate indicators, for which a fuzzy classifier is designed. It is linked to the results of the registration process of the respective indicators.

The selected indicators are bound in a system through the model of the Balanced Scorecard for performance assessment¹. The Balanced Scorecard is a modern tool for strategy operationalization into a limited number of key indicators for strategic control and management metrification. The name itself (score) emphasizes the importance of the ranking in order to ensure the balance between the key parameters of LPS functioning within the process of change management in it.

The main purpose of the Balanced Scorecard for LPS functioning performance assessment is to specify the strategies through the four perspectives defined. Moreover, Kaplan and Norton emphasize the lack of a reverse relation between the strategy and the operational activities of the organization, although the success of the strategy depends crucially on the process of its implementation.

In this context, *the main function* of the Balanced Scorecard is to guide the overall process of planning, regulation and control of the LPS strategic development as “traditional measurement systems are obsolete, they are encouraged to care only for the nearest perspective; they often lead to a limited optimization.”²

As to the Balanced Scorecard it is a suitable tool for both strategic and operational control.

Within the Balanced Scorecard for LPS performance assessment the following perspectives could be defined:

- The financial perspective (*indicators*: Gross value added dynamics; Profitability, Profitability of the investments, Growth in net sales, Working capital etc.);
- The customer perspective (*indicators*: Number of concluded contracts, Customer loyalty; Media publications, Joint initiatives with customers (exhibitions, conferences), Marketing activities to attract new customers, Marketing activities to keep the old customers, Dynamics of market shares, Number of new customers etc.);
- The processes perspective (*indicators*: Average execution time of a standard contract, Number of standard contracts, Quality of production, Level of technology compared to the most advanced solutions, Labor productivity, Average time for decision-making, Quality of products and services etc.);
- The human resources perspective (*indicators*: Number of internal seminars and programs for qualification up-grading, Education and training costs per associate, Number of innovative and innovation proposals, Staff satisfaction, Average wage growth, Average age of the employees, Share of the employees with higher education, Staff turnover etc.);

¹ For the first time that approach has been applied in an empirical study of 12 companies on ways to improve the traditional evaluation of the financial performance. The topic of the project is: “Performance measurement in businesses of the future”. In this regard, Kaplan and Norton developed a balanced system of financial and non-financial indicators by structuring the measures into four areas (**perspectives**).¹ Kaplan R.S., Norton D.P. The balanced scorecard – measures that drive performance. in: Harvard Business Review, January–February, 1992. – P. 71–79.

² Neely, A. Prospects for Business Development. Measuring the indicators of the shape of your business. Sofia, Classics and Style Publishing House”, 2001. – P. 46–47. (in Bulgarian)

- The potential perspective (*indicators*: Implementing joint initiatives for cluster development, New initiatives and projects, Impact of the crisis on cluster development, Degree of novelty of the techniques and technologies used, Investments in IT, Partners' number: high-tech and research organizations, Employment dynamics in the region, Number and size of organizations in the cluster, Changes in cluster structure, Partners' joint actions effects; Investments in the conquest of new markets, Innovation structure, Investments in human resources development etc.);
- The ecological perspective (*indicators*: Composition and characteristics of the production resources, Discharges of polluting substances from the activities implemented, Administrative activities related to environmental and technical control and trials, Cost-efficient use of natural resources (energy, soil, water), Costs for reducing the harmful effects of production processes on the environment, Costs for industrial waste water treatment, soil remediation, and waste recycling etc.).

To ensure greater model flexibility the parameters are classified into two groups: operational and complementary. Thus, the problem with the use of a uniform scale for measurement of the various quantitative and qualitative strategic success factors and indicators has been solved.

In this third stage registration of the indices in the Balanced Scorecard for performance assessment is carried out. These are linked to the respective strategic objectives and strategic success factors.¹

Furthermore, a fuzzy classifier is drawn up for each index from the main group within each perspective of the Balanced Scorecard for performance assessment by using the 11-point Likert Scale. (Annex 3 presents the fuzzy classifiers for two of the indices included in the developed model.)

The classifier allows for the development of a unified rating scale to all strategic success factors and indices from the operational and complementary groups. The indices are specified by experts very well aware of the cluster and the environment. To this end the mini Delphi method developed by Helmer and Dalkey was used. The purpose is to reach convergence in the judgments.² In this case it is important to guide the expert reasoning to a certain extent in order not to miss important indicators and to limit their number within reasonable limits. The model has been applied to six indices for each of the six perspectives of the balanced Scorecard for performance assessment.

The developed fuzzy classifier of indices creates great opportunities to deepen the study on the basis of the cascade principle by using fuzzy logic and the operations union (\vee) and intersection (\wedge).³ It is thus possible to obtain the total estimate for each perspective within the Balanced Scorecard for performance assessment.

STAGE 4. The next stage in the developed algorithm is to conduct inquiries with the expert group to assess the individual indices within the defined perspectives of the Balanced Scorecard for performance assessment. These are treated with procedures admissible for the triangular fuzzy numbers and the experton-functions.

STAGE 5. Defuzzification. Values obtained by indices and perspectives are total estimates of the strategic development effectiveness in the relevant section of the study.

STAGE 6. Determining the values of the total business-coefficients that characterize the strategic development of the given cluster in terms of strategic goals degree of achievement in times of financial and economic crisis. The developed model allows to

¹ In case planning decision development is needed.

² Dalkey N., Helmer O. An Experimental Application of the Delphi Method to the Use of Experts, in: Management Science, 9/1969.

³ Kaufmann A., Aluja J.G. Tecnicas de gestión de empresa. Previsiones, decisions y estrategias. Ediciones Pirámide, S. A. – Madrid, 1992. – P. 37–55.

study in dynamics LPS economic entities (businesses) functioning and to make comparisons by years with the other LPS economic entities.

On this basis two synthetic indices could be defined:

- $DFPC_1$ – measures the interaction between the perspectives included into the model and the associated synergy effect;
- $DFPC_2$ – characterizes the restrictor of LPS economic entities development.

In the economic interpretation of the index $DFPC_2$, while taking into account the rules for handling the experton-functions an analogy with the model of von Neumann could be made: “The Neumann growth rate is actually determined by the slowest-growing product in the system. As the processes are linked technologically, the slower growth, although of only one product, is slowing down the growth of some of the other products.”¹

The synthetic indices $DFPC_1$ and $DFPC_2$ vary on the interval [0; 1]. The 11-point Likert scale could also be applied to them. By using the indices $DFPC_1$ and $DFPC_2$ the integral business coefficient (IBC) could be defined by:

$$IBC = \sqrt{DFPC_1 \cdot DFPC_2} .$$

The derivative index is a reliable indicator for a complex evaluation of the strategic development effectiveness, due to:

First, the formulated integrated business coefficient and its composite quantities are in line with the economic rationale for the assessment of the socio-economic systems and their development. It is based on the ideas of the Balanced Scorecard for performance assessment.

Second, the mathematical operations that are applied are feasible in the fuzzy set theory and in particular – in the field of the triangular fuzzy numbers.

Third, the integral business coefficient varies on the interval [0; 1]. The 11-point Likert scale to assess the success, failure, respectively, is also applicable to it.

On one hand, the worst case scenario (i.e. 0) is a logical consequence of the zero value of one and/or the two constituting indices. Thus one could conclude that the extremely poor (unsatisfactory) shape of the business derives from the negative development of one or several perspectives, which in itself is inconsistent with the objective of the sustainable and balanced development of the cluster. On the other hand, the convergence of the integrated business coefficient to the value of 1 is the result of the values of its constituent variables close to 1. In other words, the perspectives included in the Balanced Scorecard for performance assessment are growing steadily and are the engine of the development of the economic entities included in the LPS.

The accuracy of the conclusions formulated that are the basis for decision-making and concrete actions depends on the quality of the system of indicators, as well as on the reliability of measures used. The development and implementation of the Balanced Scorecard for performance assessment of LPS businesses functioning is a precondition to overcome several weaknesses of the traditional methods for result evaluation, namely: unnecessary excess of operational and in particular of financial indices of the activity; disorder in the indices and their analysis as a result of the calculation of unnecessary indicators; presence of uncertainty about the content of some indicators; lack of integration between measures and strategy².

The main advantages of the proposed by the authors' model for determining the results and effectiveness of LPS strategic development could be summarized as follows:

- Use of an innovative approach – combining the concept of the Balanced Scorecard performance measurement to the theory of fuzzy sets and the experton-functions.

¹ Vesselinov V. Mathematical Economics. Sofia, Science and Arts Publishing House, 1982. – P. 79. (in Bulgarian)

² Neely A. Prospects for Business Development. Measuring the indicators of the state of your business. Sofia, Classics and Style Publishing House, 2001. – P. 67. (in Bulgarian)

- Wide application – at national, regional and local level; for business entities within the group of small, medium and large companies, in sectors and industries, ministries and agencies.
- Ability to develop management solutions for cluster strategic development of clusters within different time periods.
- The model is an open system – the indices used were selected according to the activity specificity; the relevance of the indices registered provides for the model flexibility.
- Adaptability – easy adjustment of the model parameters to changes in the external and internal environment.
- Compactness – the model uses aggregated information previously obtained from the user's databases. Therefore, the model could be integrated into the overall information system for management of the local system as well as of the economic entities functioning at its territory.
- Systematic and accessible presentation of inputs and outputs (tables and graphics).
- The model could be implemented by using Microsoft Excel for Windows, which makes it practical and convenient to use.

While implementing the created model one should also take into account some difficulties accompanying the establishment of well-functioning systems:¹

- On one side, the size, complexity and structure of the management system make the choice difficult and increase the time needed for decision making. On the other – there is a trend towards shortening the time available for response.
- It is not possible to predict all changes in the system and the environment. On the other hand the systems under investigation are characterized by their inertia. Thus, the entropy their existence is related to shouldn't be underestimated.
- Making effective management decisions requires overcoming a number of problems caused by the multiple relationships between system parts and its environment.

Based upon the characteristics of the socio-economic systems given above it is not an easy task to develop optimal management decisions in times of financial and economic crisis. The point here is to take decisions aimed at system entropy prudent management. In this regard, the volume and quality of the information for both the system itself and its environment has an important role to play.

CONCLUSIONS

Local production systems develop and operate successfully due to their specificity, which is manifested through the local labor market and local institutions, as well as through the small, medium and large enterprises and their distinctive competences. Ensuring LPS sustainable development of PPE plays an important role in accelerating the process of Bulgarian economy integration in the European structures and in the provision of regional sustainable development and growth. Achieving that ambitious goal requires the application of a modern LPS management metrification concept, which will have significant effects on the economic growth acceleration in regional and national context, i.e. more efficient use of multi-purpose local resources, improving LPS management by using the benchmarking as a prerequisite for the development of governmental packages of measures and initiatives to support and enhance the efficiency of local economic development and more.

¹ Stanulov N. Can you make decisions. The Magic of Choice. Sofia, Marin Drinov Academic Publishing House, 2002. – P. 45–46. (in Bulgarian)

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APPENDIX

Annex 1

Operations with the experton-function Expert judgments (example)

xpert	Interval	min	Max
E1	[0.5; 0.6]	0,5	0,6
E2	0,4	0,4	0,4
E3	[0.4; 0.5]	0,4	0,5
E4	0,5	0,5	0,5
E5	0,5	0,5	0,5
E6	[0.5; 0.6]	0,5	0,6
E7	0,5	0,5	0,5
E8	0,6	0,6	0,6
E9	0,5	0,5	0,5

Total interval expert judgments

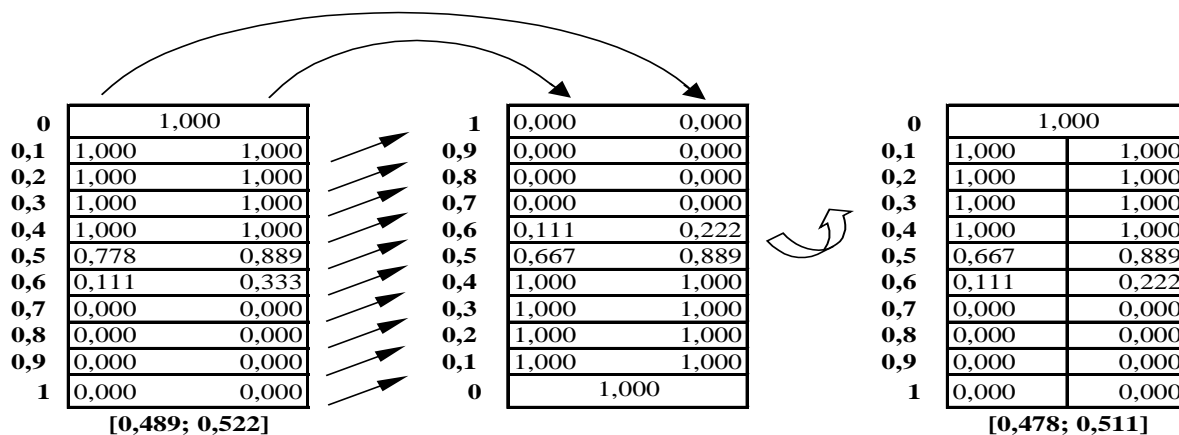
Interval	Description /linguistic judgment/	Experts								
		1	2	3	4	5	6	7	8	9
1	very good									
0,9	practically good									
0,8	almost good									
0,7	good enough									
0,6	more good than bad	1					1		1	
0,5	neither good nor bad	1		1	1	1	1	1		1
0,4	more bad than good		1	1						
0,3	bad enough									
0,2	almost bad									
0,1	practically bad									
0	very bad									

Defining the cumulative complementary experton-function

Number of expert judgments			Normalized judgments		Cumulative complementary experton-function	
Interval	min	max	min	max	min	max
1					0,000	0,000
0,9					0,000	0,000
0,8					0,000	0,000
0,7					0,000	0,000
0,6	1	3	0,111	0,333	0,111	0,333
0,5	6	5	0,667	0,556	0,778	0,889
0,4	2	1	0,222	0,111	1,000	1,000
0,3					1,000	1,000
0,2					1,000	1,000
0,1					1,000	1,000
0					1,000	1,000
Final fuzzy estimate					0,489	0,522
Defuzzification					0,506	

Annex 2

Algorithm for defining the complementary to the experton-function



Perspective: **2. CONSUMERS**
 Indicator: **2.1.01. – Dynamics of market shares**

Likert Scale meanings	Values
1 very good	Values \geq 4.0%
2 practically good	Values within the interval (3.6%, 4.0%)
3 almost good	Values within the interval (3.2%, 3.6%)
4 good enough	Values within the interval (2.8%, 3.2%)
5 more good than bad	Values within the interval (2.5%, 2.8%)
6 neither good nor bad	Values within the interval (2.2%, 2.5%)
7 more bad than good	Values within the interval (1.9%, 2.2%)
8 bad enough	Values within the interval (1.6%, 1.9%)
9 almost bad	Values within the interval (1.3%, 1.6%)
10 practically bad	Values within the interval (1.0%, 1.3%)
11 very bad	Values $<$ 1.0%

Perspective: **2. CONSUMERS**
 Indicator: **2.1.03. – Index of consumer affection**

Likert Scale meanings	Values
1 very good	Share of regular customers: \geq 80%; Average turnover per client: +4%; EBIT per client: +3%; Efficiency of the incentives for additional purchases: +5%. In this case the index (I) is equal to 1.00.
2 practically good	I = (0.95; 1.00)
3 almost good	I = (0.90; 0.95)
4 good enough	I = (0.85; 0.90)
5 more good than bad	I = (0.80; 0.85)
6 neither good nor bad	I = (0.75; 0.80)
7 more bad than good	I = (0.70; 0.75)
8 bad enough	I = (0.65; 0.70)
9 almost bad	I = (0.60; 0.65)
10 practically bad	I = (0.55; 0.60)
11 very bad	I = (0.50; 0.55)

A MARKETING APPROACH TO THE LOCAL PRODUCTION SYSTEMS MANAGEMENT

*Galina Mladenova*¹

This study aims to highlight and discuss some specific features of the marketing and functioning of the marketing mechanism in regional clusters as a form of local production system. The study of the peculiarities of marketing in regional clusters is a “cross” between the established marketing knowledge and the thorough understanding of the nature, characteristics of the organization and the functioning of regional clusters.

Cluster marketing can be seen as a social process, directed at satisfying customer needs, regional communities and cluster members, based on the cooperation of marketing resources and activities, which results in achieving market competitiveness and overall functional efficiency for the cluster and its individual members.

The author defines cluster marketing as a systematic process of purposefully combining separate marketing activities and resources within the cluster to achieve the organizational goals of each cluster member through more effective participation in the competitive marketing process and creation of competitive advantages, based on greater efficiency and innovation. As a management process cluster marketing is a complex interaction, involving various levels and degrees of commitment between organizations including:

- interaction in the development of a common marketing strategy of the cluster;
- interaction in the development of its own marketing strategy in the context of the cluster marketing strategy;
- cooperation in coordinating the marketing strategies of the members in the cluster.

This study contributes to the understanding of some important aspects of cluster marketing: its nature and characteristics; cluster marketing importance as a major function that ensure sustainable growth; basic principles of cluster marketing and its organizational structure and main functions.

INTRODUCTION

The need to implement a marketing approach to the management of local production systems is indisputable. In the modern environment of globalization, intense competition, rapid technological change and high saturation and fragmentation of markets, marketing is one of the major functions that ensure companies and their partnerships sustainable growth. For decades research and marketing theory as a whole have been developed with regard to the functioning of individual companies. No doubt this theory is useful, but today's reality requires special attention to be given to the changes that occur in marketing, shifting from the micro level (the level of the individual company, pursuing its own goals and strategies) to the level of meta-organizations – coordinated systems of organizations which have to comply with a new set of institutional factors and entities and more complex forms of organization and relationships.

Local production systems are an example of this different object of study. The study of the peculiarities of marketing in regional clusters, which represent one of the specific forms of organization of local production systems is a “cross” between the established marketing knowledge and the thorough understanding of the nature, characteristics of the organization and the functioning of regional clusters.

¹ PhD, Assoc. Prof., University of National and World Economy (UNWE), Sofia, Bulgaria.

This study aims to highlight and discuss some specific features of the marketing and functioning of the marketing mechanism in regional clusters as a form of local production system.

In studying the problem we should be guided by the belief that corporate marketing and cluster marketing should not be juxtaposed – there is interdependence between them. The well-managed marketing activities of individual companies and intercompany relations and interaction contribute to the exchange of information and experience, which has a positive effect on cluster marketing as a whole. On the other hand, by participating in the cluster, the companies themselves are able to improve their management and marketing and achieve greater competitiveness.

Although the term cluster is indiscriminately used for quite a wide range of business arrangements, in its broad sense it refers to a geographical concentration of certain economic activities (Carpinetti et al., 2008). Firstly A. Marshall (Principles of Economics) noted that the agglomeration of firms working in similar or related activities generates advantages such as a pool of suppliers of raw material, equipment and specialized services, a pool of specialized workers and the dissemination of new knowledge. (Schmitz, 1999).

Porter defined cluster as a “geographically proximate group of interconnected companies and associated institutions in a particular field, linked by communalities and complementarities” (Porter, 1998). He stands that cluster is „geographic concentration of interconnected companies, specialized suppliers, service providers, firms in related industries in particular field that compete but also cooperate” (Porter, 2000).

According to Van Dennerg (Van Dennerg, 2001) a cluster is a “local or regional dimension of networks”, in some other views it is a system of collaborating and interacting companies which jointly evolve over time.

Clusters are localized related organizations (Perry, 2007). A cluster of firms is likely to facilitate efficient and effective collaboration and the leveraging of different resources and competencies possessed by each firm (Lawson, 1999).

From the above definitions several characteristics emerge that are directly related to the development of the cluster marketing concept and its application in practice:

- *geographical context* – physical (geographical) proximity of the cluster participants. This proximity can vary: from a single city to a country or several neighboring countries. With the local production systems consideration is given to the location of the participants in a specific administrative unit of the country – city, municipality, district, planning region.
- *industry context* – a connection with the same sector, on the basis of which relationships are built and developed (horizontal and vertical) and the potential for collaboration.
- *co-competitive context* – implementation of conscious cooperation, in a competitive environment, among several or most of the cluster participants. “Cluster firms must cooperate while they compete.” (Mesquita, 2007). Especially useful for the economic health of the cluster is the competition between the organizations within it in the area of invention and innovation. Although cluster firms and organizations compete, especially those on the same level of the technological chain, there are undeniable benefits for which they should cooperate with each other.

Conscious cooperation in the implementation of joint activities is a major factor in explaining the benefits of clustering. Collective efficiency as a competitive advantage derived from the combination of the local “external economies” and cooperated joint activities (Schmitz and Nadvi, 1999). It may be the result of horizontal cooperation (between competing entities) or vertical cooperation (between manufacturers and suppliers, between manufacturers and distributors of products) either bilateral or multilateral.

Altenburg et al. (1999) highlight the following characteristic features of clusters, reflecting on the functioning of their marketing mechanism: relationships between companies forwards and backwards along the value chain; intense exchange of information; formation of diverse infrastructure that supports the activities of the cluster; formation of social and cultural identity, derived from common values.

The concept of clusters, defined by Porter, provoked an active scientific discussion that went beyond the traditional interpretation of agglomeration economies. The major difference between a cluster and industrial agglomerate is that agglomerates do not function as individuals themselves and they lack institutional networks and a high degree of inter-company interaction, going beyond contractual exchange relationships.

Therefore when considering the question of the characteristics of cluster marketing, we can rely on the following definition of a cluster: a group of companies, related to the same industry, which are located in a separate administrative unit of the country and share common features and complement each other (horizontal and/or vertical relationships).

NATURE AND CHARACTERISTICS OF CLUSTER MARKETING

The marketing cooperation in the cluster can be seen as a specific form of cooperation within the cluster, leading to higher economic performance for the individual participants and the group as a whole.

In economic publications one can meet definitions of “integrated marketing”, “conglomerate marketing” as a special case of integrated marketing (Guercini et al., 2012) but there are no attempts to formulate a definition of “cluster marketing”. To a considerable extent the existing “gaps” in the theory of regional clusters are generally the reason for the lack of clarity on the issue and for the omissions in the analysis of the marketing factors and the relevant marketing concepts. Brown (Brown, 2010) is quite right to note that “limited research exists to indicate the degree of impact the clustering has on marketing activities”.

Cluster marketing can be seen as a social process, directed at satisfying customer needs, needs of regional communities and cluster members, based on the cooperation of marketing resources and activities, which results in achieving market competitiveness and overall functional efficiency for the cluster and its individual members.

This is intercompany collaboration in which many companies with complementary knowledge, skills and/or position in the supply chain plan and implement strategies, aimed at achieving synergy in innovation, design, production, promotion and the distribution of products and services for their direct clients and the clients downstream the chain.

Cluster marketing makes it possible to achieve the seemingly paradoxical goals: the high production efficiency of a small firm (an individual member of the cluster) is combined with the possibility of strong market power of the large firm (the cluster as a separate system). According to the few researchers of cluster marketing it is more than collaboration and coordination of the activities, carried out by the independent companies in the supply chain and it focuses on: cooperation in the innovation process of creating and adapting high technologies; designing products that fully meet the changing wants of customers; carrying out of production, capable of “meeting” demand that exceeds the production capacity of the individual “player”. Therefore cluster marketing is aimed at building multi-firm relations with the market, which creates benefits both for individual companies and for the group as a whole. Through it a common line of action is set, based on the belief that participants have similar problems and as a result of this common line, they can either succeed together or fail together.

Management process cluster marketing is a complex interaction, involving various levels and degrees of commitment between cluster organizations (Figure 1.) including:

- interaction in the development of a common marketing strategy of the cluster
- interaction in the development of its own marketing strategy in the context of the cluster marketing strategy
- cooperation in coordinating the marketing strategies of the members in the cluster

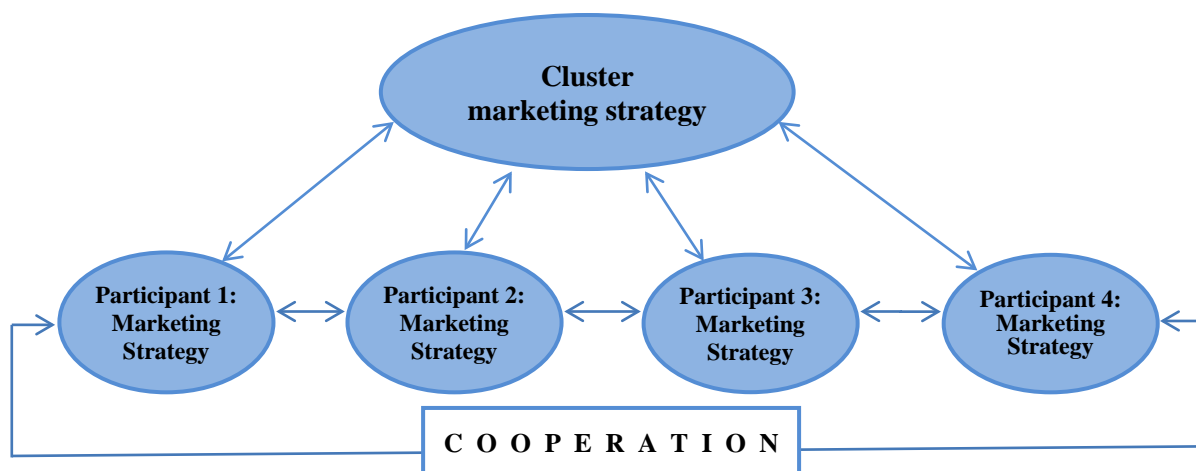


Fig. 1. Cluster marketing: management aspect

The marketing strategies cooperation can be implemented in some or all of the following areas (Guerchini et al., 2012):

First. Interfirm cooperation and coordination of functional strategies by the elements of the marketing mix – this refers to the interfirm coordination of communication processes, sales processes (branding, integration in terms of sales operations and channels), coordination of the decisions on product range, building a joint network of after-sales service, pricing agreements (in compliance with the legislative framework).

Second. Interfirm marketing cooperation, affecting other functional areas – this concerns the cooperation of marketing activities that have to do with various organizational aspects – cooperation in the training of sales personnel (marketing – human resources management); cooperation in developing new products (marketing – research and development), etc.

Third. Interfirm cooperation in marketing activities – this refers to the planning and implementation of specific marketing activities in which the independent organizations voluntarily join their efforts to implement project or series of projects (market research, penetration and development of a domestic or foreign market; supporting and joint use of customer relationship management systems; infrastructure projects, etc.).

Summing up what has been said above, we can define cluster marketing as the systematic process of purposefully combining separate marketing activities and resources within the cluster to achieve the organizational goals of each participant through more effective participation in the competitive marketing process and creation of competitive advantages, based on greater efficiency and innovation.

THE IMPORTANCE OF CLUSTER MARKETING

The marketing advantages for the cluster can be achieved through synergy in the area of marketing research, developing new markets, providing access to current and new markets, development of new products, development and co-use of marketing channels, etc. The most significant contribution of the marketing is that through it conditions are provided for creating higher added value, hence for enhancing the competitiveness of the cluster on a local, national and international scale.

In their study of the assessment of the performance and management of the collective efficiency of clusters Carpinetti et al. (Carpinetti et al., 2008) offer a system of metrics, adapting the concept of the balanced scorecard perspectives, developed by Kaplan and Norton (Kaplan and Norton, 1996). In the proposed system there are several areas of assessment of cluster performance:

- economic and social performance (measures of performance, related to the gross domestic product of the region, the workforce and any other result, creating benefits for the local economy);
- company performance (financial and non-financial measures of the growth and competitiveness of cluster firms);
- collective efficiency (measures, related to foreign economy and co-operation activities between participants);
- social capital (measures, related to cluster values and the degree of cooperation)

In their adapted methodology the authors propose a system of metrics to assess the performance of clusters (Table 1). We believe that marketing has an essential contribution to achieving the objectives in each of these perspectives.

Table 1

Metrics and the relevant objectives and perspectives for assessing the results of cluster functioning.

Perspective	Objective	Metrics
Company's performance	Market increase; Increase market value; Improve productivity; Reduce costs; Sales growth; Profit increase.	Average unit sale price; Productivity; Value added per employee; Sales volume; Profit.
Social/Economic results Environmental impact	Improve availability of specialized labor force; Improve employment opportunities; Increase collection of industrial residue.	Total number of trained people; Collection of industrial residue.
Collective efficiency	Reduce costs; Improve cooperation.	Total amount of collective acquisition of raw material.
Social capital	Increase number of participants.	Percentage of companies involved with cooperation.

We look on the marketing as a key factor for attaining the objectives in the first perspective. It directly correlates with the improved performance of the individual participants in the cluster by expanding the market demand and increasing the market shares in already penetrated markets, penetrating and developing new markets and as a result of this – the creation of

conditions for an overall increase in sales and profits. On the other hand, the narrow focusing and specialization of individual participants within the cluster allows them to achieve higher profit margin per unit and to benefit from the effect of experience, hence – to increase their profitability.

- Marketing is able to develop conditions for creating and increasing demand on local and foreign markets, including the capacity to generate more sales from existing customers (through the “cross-selling” strategies and the strategies of “increasing sales”) and to attract new clients/customers for company products.
- As a result of the combined strength, through cluster marketing is “enhanced” the competitive advantage of the relatively small players – members of the cluster, in serving existing and developing new markets. It allows for the survival of start-ups and small firms and for the long-term strengthening of their positions on the market. Marketing enables the small and medium-sized companies in the cluster to overcome resource, management and time limitations and to take advantage of the integrated strength of the cluster for penetration and development on the market. As a rule each individual participant has limited material, financial, human, information resources and the implementation of individual marketing activity is relatively inefficient. Along with this “collective” strength allows the “survival” mindset to be transformed into proactive strategic thinking and behavior, i.e. to improve company management.
- Marketing is an important factor for the development of the innovation process in clusters. On the basis of intercompany relationships and interrelations within the cluster, conditions are provided for easier transfer of innovations and a close relationship is built between basic and applied research. In other words, product and process innovations are more easily converted into new products and services, entering the market. Unlike neoclassical thinking, according to which technology is seen as an exogenous factor and the focus of individual entities is aimed at providing and allocating resources, in the cluster organization technological development becomes an endogenous factor (Markusen, 1996).
- Marketing provides individual players with up-to-date and comprehensive market information and marketing expertise, which is difficult (especially for the small participants in the cluster) in independent marketing activities.
- Cluster marketing enables the sharing of consultancy services in advertising, the organization of trade fairs and the presentation and distribution of products, industrial design, cluster branding.
- As a rule, clustering can be seen as a kind of barrier to the entry of new competitors and the intensification of industrial competition.

The marketing impact can be highlighted with respect to the second perspective – social and economic performance: the collectively built image and reputation has a positive impact not only on the market, partners and various social communities and institutions. Reputation is a factor that makes the cluster an attractive workplace for the skilled labor in the region and outside it, on the one hand, and is a factor limiting labor turnover, on the other.

- The development of internal marketing communications (within the companies in the cluster and between them) creates the necessary conditions for work, training and motivation of the workforce. Marketing enables the training of human resources and/or attracting them which provides a continuous exchange of ideas and best practices within the cluster.
- By building non-commercial interrelations among participants, marketing contributes to the provision and maintenance of social responsibility in the activities of the cluster and its individual participants to the local environment (social communities and the natural environment).

- Marketing contributes to the development of regional brands, which benefits both the organizations in the cluster and the regional economic communities and the economy of the region as a whole.

An important marketing contribution can be found with reference to *the third perspective*. Marketing enhances the processes of co-evolution in the cluster. Co-evolution as a concept of biology describes the reciprocal changes that occur in interacting and interdependent biological species with time. In an analogous way the changes in the cluster may be regarded as a mutual adaptation of the individual types of entities – participants in the cluster, in which the survival and development of each individual entity is dependent on the survival and development of the other entities, to which it is related. Therefore marketing creates an appropriate platform for business cooperation between the participants in the regional cluster.

- Marketing helps reduce operating costs. This effect is achieved as a result of several factors:
 - ✓ The development of internal marketing communications in the cluster strengthens the relationships between the participants and allows for better knowledge and understanding, for enhancing trust and cooperation, for an intense exchange of information and resources;
 - ✓ The carrying out of collective purchasing of raw materials, basic and auxiliary materials and business services increases the strength of the cluster participants in negotiations and leads to negotiating better prices for the supplied products and services, which has a favourable effect on the levels of expenditure and structure;
 - ✓ The reduction in transport, transaction costs and the costs, related to the coordination between cluster members, increases the overall efficiency of the chain;
 - ✓ The possibility of economies of scale as a result of increased sales volumes and supply volumes; using the same marketing (communication and distribution) channels;
 - ✓ Cluster participants are encouraged to specialize with reference to technologies, information and other resources, thus developing unique capacities and abilities, which increases profitability, etc.;
 - ✓ The development and use of joint databases, which enable easier communication with customers and a reduction in communication costs.

The high competitiveness and benefits of clustering for each participant are the strongest motivation to attract new cluster participants and expand its social capacity (*fourth perspective*). This type of cooperation requires not only a proactive attitude towards cooperation and commitment (Morgan and Hunt, 1994), but also the construction of social capital among the participants of a cooperative network (Gulati et al., 2000; Gulati, 2007).

On the basis of the arguments, produced above, we can conclude that the implementation of marketing in the cluster directly or indirectly affects all perspectives, in which the performance and efficiency of the cluster can be measured and assessed.

BASIC PRINCIPLES OF CLUSTER MARKETING

The operational mechanism of cluster marketing is subject to the rules for marketing operations, agreed on by cluster participants, the specific measures of distribution benefits, the incentives and constraints that have been planned and the methods for implementation of external control over marketing activities. The marketing mechanism is “set in motion” and leads to the attainment of the set objective, provided a specific range of principles is adhered to:

- The “*responsibilities-interest*” principle refers to the commitments, taken on by individual participants and the benefits they receive from joint marketing activities. It is impossible to discuss cluster marketing if this principle is ignored or not working. All participants in the cluster must show full commitment, investing the resources, necessary to achieve the collective goal while protecting the interest of each of them. The operation of this principle is most obviously manifested in the “collective mark” model but compliance with it is also mandatory in the other models of organization of cluster marketing.
- The principle of *regulation* – it refers to the need to create conditions for the functioning and operational regulation of cluster marketing, including the establishing of specific organizational culture of the cluster, management systems, internal rules of conduct, building new structures (Chamber of Commerce, professional associations etc.).
- The principle of *long-term agreements* affects relationships related to market exchange. The marketing cluster organization should not only ensure cooperation, but also guarantee an effective exchange process and relationships. We know that clusters are based on long-term relationships between the various entities within the framework of a contract that coordinates the interests of all stakeholders. The contract also provides a means for the fair setting aside of marketing resources which each participant should share with others. When using a collective mark, for instance, this principle is embodied in the registration of a collective mark, the negotiating of the right to sell products with this trade mark and the sharing of the relevant costs for its launching and consolidating its position in the market.

ORGANIZATIONAL STRUCTURE OF CLUSTER MARKETING

Three models of organization of cluster marketing can be distinguished (Tu, 2011):

- The “*collective mark*” model / *cluster brand model*. In this model the participants in the cluster register and jointly use a collective mark while sharing support costs.
- “*See the customer*” model. In this model, the increase in sales of the individual participant and the achievement of “cohesion” in the cluster are the result of strict compliance with the specific requirements of the customer and taking orders on a long-term contract. Thus is achieved strong interdependence between the individual participants, which provides a sound basis for sales and reduces uncertainty and risk on the one hand, but it may hinder initiative and search for new opportunities, on the other.
- “*Sharing marketing channel*” model/*channel network sharing* model – in this model a company in the cluster uses its marketing channels, but when spare capacity is available, the remaining cluster companies can also use those developed channels and services. Subsequently, the received benefits may be extended by mutual supply of current market information, joint identification of market opportunities and risks, creation and provision of higher added value.

As it became clear, cluster marketing is based on the cooperation of individual independent organizations – members of the cluster, in terms of market behaviour and the performance of the group as a whole. The insufficient development of the theory of cluster marketing is also reflected in the lack of serious studies of its organization. On the basis

of the existing views on the matter (Tu, 2011), we can distinguish several types of organizational structures of cluster marketing:

- Hierarchical structure (Figure 2):

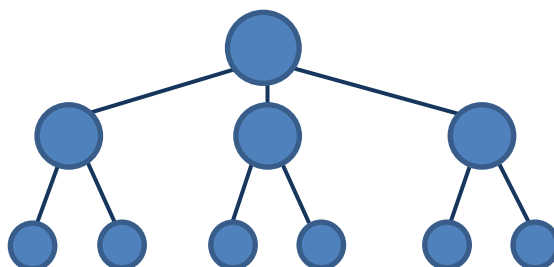


Fig. 2. Hierarchical structure of cluster marketing

The hierarchical organizational structure can be revealed in its two varieties:

- ✓ Cluster brand model. This model assumes that at the highest level should be differentiated joint activities, aimed at developing and consolidating a single cluster brand, at the average level – the activities related to the management of corporate brands and at the lowest level – product brands. It should be emphasized that there exists interrelation between the levels: the value of the cluster brand grows in the presence of strong corporate and product brands and vice versa – a strong cluster brand has a positive impact on corporate and product brands. A good example in this respect are tourism clusters – the recognition of a particular micro destination as a brand is a factor for increasing the brand value of the individual participants in the cluster and vice versa.
 - ✓ The leading organization model. In this model, the major marketing functions are “carried out” by a leading company in the cluster and its marketing networks. Usually the marketing department of the leading firm assumes responsibility for carrying out marketing research, participation in technological developments, planning and coordination of marketing activities, meeting the needs of the whole cluster. At the medium level focuses the responsibility for separate operational activities (logistics, packaging and other services). At the lowest level occur auxiliary activities.
- Star-shaped structure (Figure 3):

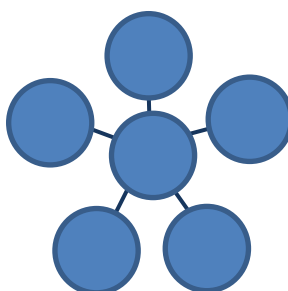


Fig. 3. Star-shaped structure of cluster marketing

This structure is characterized by the formation of a single centre, around which there are many entities (associations, technical institutes, educational institutions), specialized in the implementation of specific functions, including marketing ones. This type of organization is considered to be “looser” and it relies on the initiative and activity of the various production and technical associations in terms of the spread of ideas, technologies, the establishing of standards of behavior, etc.

- Linear-chain structure (Figure 4):

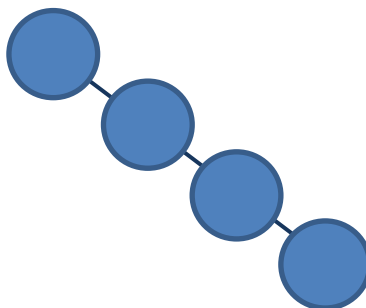


Fig. 4. Linear-chain structure of cluster marketing

In the linear-chain structure each link in the chain represents a definite marketing function of a virtual organization. Each virtual organization may incorporate in itself a number of units that perform one or more marketing functions. It is important to note that the separate virtual unit can exist only and solely in the presence of links with the other two units.

- Network (Figure 5):

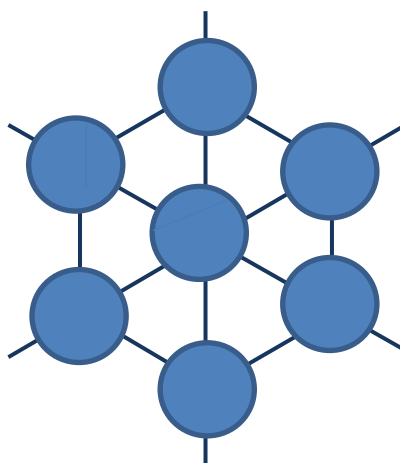


Fig. 5. Network structure of cluster marketing

In the network structure there is no distinct center. It has an open nature and involves a high degree of dynamism and flexibility.

Some authors (Carson et al., 2004) draw our attention to the fact that the functioning of the cluster marketing mechanism and the high marketing activity in the cluster is related to the existence of mature, stable social relationships between the participants. The close ties could be the result of prior social commitment of the entities, which creates trust, minimizes the unpredictability and risk in the behavior of partners, relatively reduces coordination costs and leads to a higher level of marketing cooperation. The stronger the social bonds between cluster members, the more likely it is to achieve high marketing performance. There is yet another opinion: good prior relationships which at first provide better adaptation to the market, may afterwards lead to inertia and overreliance on the network, as well as to neglecting external partners and weaker ties with them, which reduces opportunities and results. Along with the attention, paid to horizontal inter-company relationships, attention should also be given to vertical inter-company relationships, i.e., the relationships between cluster members and the other participants in the value chain. They are essential to marketing operation and performance, as the ability of the chain to generate and deliver the value, expected by end-users, depends on them.

CLUSTER MARKETING FUNCTIONS

Realizing the essence of marketing and the characteristics of clusters, we can define the basic functions that are subject to negotiation and agreement between cluster participants. These functions can vary, depending on the type of cluster and the stage in its development cycle (formation, maturity), on the specific features of the industry in which it operates, on the characteristics of the relevant markets, on the business environment of the region and the state, etc.

The level of marketing integration with respect to the functions, listed below, depends on other factors as well, among which: the degree of mutual trust between participants; the perceived reciprocity (“you–me, I–you”); the presence of business and marketing experience; the presence of experience in working in the local environment; the presence of experience in working in an international environment; business acumen; duration of the relationship; personal or emotional support; geographic proximity; the presence of joint databases for clients in order to improve communication with them, etc.

Practice has shown that the main marketing functions, that are carried out on the basis of cooperation in the cluster, are:

- Joint development of new products;
- Joint pricing strategies and planning;
- Joint development of distribution strategies and implementation of activities through distribution channels;
- Joint branding (co-branding);
- Joint promotional activities, including participation in advertising campaigns, brochures, catalogues, promotions, events, etc.;
- Joint marketing research;
- Joint participation in trade fairs, exhibitions, business conferences and other forms of presentation;
- Joint marketing delegations to explore market opportunities and conclude transactions;
- Joint programs for social responsibility;
- Joint missions on new markets and developing strategies for entering them;
- Joint sales on a local market and strategies for increasing market share;
- Joint sales on a foreign market;
- Creation and maintenance of joint marketing databases, enabling better targeting, communication and customer service;
- Joint training of marketing personnel and sales staff;
- Joint lobbying.

Cluster participants should aim at adequate allocation of their marketing resources, taking into account the overall marketing philosophy (strategy) of the cluster, on the one hand and, on the other, the task of strengthening the marketing mechanism of the whole cluster through cooperation, timely coordination of problem areas and guaranteed fulfillment of the agreements on sharing marketing functions.

CONCLUSIONS

In conclusion it should be pointed out again that the theory of cluster marketing is still insufficiently developed and does not correspond to the dynamic processes of creating new clusters and developing existing ones. It is generally believed that marketing contributes greatly to the effective functioning of clusters and to ensuring their competitiveness. However there still remain “blanks” and problem areas with reference to the sharing of resources in the implementation of marketing functions, the coordination of activities and the measuring of the results from them, the introduction of new marketing practices and incentives for marketing cooperation. These and many other issues need special further research and clarification.

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