

The Importance of Logistics in Creating Entrepreneurial Network Structures

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Building entrepreneurial companies is associated with taking actions to enable their general development, leading to application of innovative solutions, both in technology and management. Modern economy and pervasive crisis force entrepreneurs to search for alternative means for supporting the progress in order to be able to fight for customers against 'foreign countries of cheaper production' and, at the same time, to not being forced to use "drastic" methods of reducing production costs. This paper presents the already existing solutions that are not fully used in Polish reality, which are the network structures (clusters) that have beneficial economic impact and build integrated supply chains. The author is taking a theoretical attempt to connect concept of supply chains and clusters. Consolidation will relieve the individual companies and thereby will create opportunities to take new - common - actions, which together will create entrepreneurial network structure and bring individual benefits.

Keywords: network structure, supply chain, logistics centers, entrepreneurship.

1. INTRODUCTION

Specificity of actions implemented within clusters refers to a regional area of undertaken operations. The main driving force of regional development is activation of endogenous development potential of the regions which aims at stimulating sustainable growth of local development. Local development largely determines an approach to the economy in which the attitude and behavior of the community is affecting the economic situation of the region, which is why local development is now considered a core strategy or the first stage of regional development. Regional development is an important attribute of economic policy. Effective implementation of regional development policy is not possible without a strong local economy and decentralization of authorities.¹

Internal regional development depends largely on enterprises pursuing their activities in SME sector, among which creation of modern industrial

areas depends on the flexibility of small and medium-sized businesses, combined with other endogenous resources of the region. Small Polish enterprises until recently have operated in domestic, regional and local markets. However, globalization and decentralization has forced leading owners of these enterprises to make changes leading to their adaptation of production and financial issues as well as their management.² Particularly a group of SME sector companies and especially its economic situation allows local development supported by entrepreneurship in the form of network economy.³ It is the next step in taking actions that could ensure a stable existence in the domestic market, which is being confirmed by the increasing number of emerging cluster initiatives in Poland and abroad. This trend describes the loosening of ties between the organization and its development, and is a

¹ Niedziółka M., *Przedsiębiorczość gminy a rozwój regionalny*, [w:] Kuciński K., „Przedsiębiorczość a rozwój regionalny w Polsce”, Difin, Warszawa 2010, p. 30-31

² Pyplacz P., *Management of information resources in small enterprises*, [w:] Kościelniak H., „Determinants of entrepreneurship development”, WWZPCz, Częstochowa 2011, p. 28

³ Pakulska T., *Bezpośrednie inwestycje zagraniczne w rozwoju przedsiębiorczości w regionie*, [w:] Kuciński K. (red. nauk.), op.cit., p. 158

tendency observed over many decades in the world's economies. Inter-organizational network is an organization structure, which for organizational and legal terms take independent co-operation and may be related by capital.

This layout is in each case based on the synergistic potential of entities with at least the same plane of operation, as well as a wider collaboration than a single exchange could offer.⁴

The offer of network economy in the form of a cluster is an area for development of small and medium-sized enterprises, which can be identified with the simultaneous intensification of the local economy.⁵ Local development being the suitable framework for the establishment and development of clusters, as one of entrepreneurship method used precisely in this economic area, in the historical sense reaches more than thirty years back. This solution is used especially among enterprises that operate in one industry and are focused on single area. Foreign and domestic experience of entrepreneurs within the cluster shows that this solution works in practice.⁶

The literature shows many definitions of a cluster, both similar to one another and very different. Depending on business or geographical point of view, Adam Smith⁷, Alfred Marshall⁸ or Michael Eugene Porter can be considered the precursors of the concept. The first one believed that production specialization of a country provides its wealth and by increasing the production volume of the same types of goods inventiveness is being boosted. 'A cluster' based on the Marshall's⁹

Industrial District reasoning is associated with the concentration of interrelated enterprises of the same or related industries concentrated spatially. Preferred aspects of agglomeration are resulting from knowledge transfer in business environments, from specialized factors of production or services and the specialized work force. Porter regarded by most of economists as a specialist and creator of cluster definition, describes them as "*geographic concentrations of interconnected companies, specialized suppliers, service providers, enterprises operating in related sectors and associated institutions (universities, standards committees and industry associations) which in particular fields are competing, but also cooperating with each other*"¹⁰. In Poland clusters have been present on the market for many years. In the Polish legislation the concept of a cluster was contained in 2006 Regulation of the Minister of Economy on granting by the Polish Entrepreneurship Development Agency financial aid not related to operational programs, giving them the following definition "*the cluster is understood as spatial and sectorial concentration of entities acting for economic development or innovativeness and at least ten entrepreneurs, engaged in business activities in one or several neighboring regions, competing and cooperating within the same or related branches and related by extensive network of formal and informal nature, with at least half of the entities within the cluster being entrepreneurs*"¹¹.

The variety of cluster definition in practice comes down to building it in a way that the network of relations, in terms of internal regional cooperation, would be able to take common market activity in a competitive struggle at the national and global levels. In a well-functioning cluster a very important role is played by the flexibility of this organization, as well as the ability to build such stores chains that if supported by logistics companies they will be a source of savings for the

⁴ Krupski R. (red.), *Elastyczność organizacji*, Wyd. UE we Wrocławiu, Wrocław 2008, p. 194-201

⁵ Compare: Nowicka-Skowron M. (red.) *Zarządzanie sieciami współdziałania w procesie budowy innowacyjnej organizacji i regionu*. Wyd. WZPCzest., Częstochowa 2009

⁶ Markowski T., *Teoretyczne podstawy rozwoju lokalnego i regionalnego*, [w:] Strzelecki Z. (red. nauk.), „Gospodarka regionalna i lokalna”, PWN, Warszawa 2008, p. 19

⁷ Smith A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, Methuen & Co., Ltd., London 1776, wersjaelektroniczna: ebook - www.econlib.org/library/Smith

⁸ Marshall A., *Principles of Economics*, Macmillan and Co., Ltd., London 1890, wersjaelektroniczna: ebook - www.econlib.org/library/Marshall

⁹ See more: Wiśniewska-Sałek A., Nowakowska-Grunt J., *The Concept of Clusters in Agile Supply Chains*, [w:] Dragolea L., Grabara J. (ed.) "Tourism, Quality & Management - Challenges for Development and Sustainability", WWZPCzest., Częstochowa 2010

¹⁰ Porter M., *Porter o konkurencyjności*, PWE, Warszawa 2001, p. 245

¹¹ Rozporządzenie Ministra Gospodarki z dnia 2 grudnia 2006 r. w sprawie udzielania przez Polską Agencję Rozwoju Przedsiębiorczości pomocy finansowej niezwiązanej z programami operacyjnymi (Dz. U. Nr 226, poz. 1651 z dnia 11 grudnia 2006 r., § 13, punkt 2.) Regulation of the Minister of Economy of 2 December 2006 on the granting by the Polish Agency for Enterprise Development financial aid not related to operational programs (Journal of Laws No. 226, item. 1651 of 11 December 2006, § 13, section 2)

cluster. Contemporary economic changes make it necessary to adjust the entrepreneurs to stringent requirements that exist in the global competitive market. The result of such process is shortening of product life cycles and the need for flexibility to adapt the size of demand with ongoing efforts to reduce fixed costs. Helpful in this regard is use of advanced, internal logistics services carried out under the cluster network, resulting in creation of specific cluster structures such as logistics centers.¹² Cluster analysis shows that regardless of their volume or the industry in which they operate, there are several strategic steps in its supporting policy:

- examination of local economic system;
- overall identification of operating cluster initiatives;
- creation of leadership community in a cluster;
- adoption of development vision;
- development of strategic objectives;
- operationalizing strategy, the supplying indicators and variables into a form that is precisely expressed as the strategy;
- building specialized organizational structures initiating cluster development and improving its process.

Process formation of western network organizations clearly shows that the cluster does not arise accidentally, because there have to be premises or even rudiments of such structure. In turn, the degree of regional development, at which the undertakings in a form of a cluster happen, depends on its instruments of support in the region.¹³ Network organizations allow for the existence of small and medium sized enterprises on the market while exploiting their potential. Strengthening the potential from the local/regional government structure with widely understood measures of logistics causes an increase in the awareness and willingness of enterprises towards the idea of cluster formation and consequently to support regional development.

2. THE IDEA OF SIGNIFICANCE OF LOGISTICS ACTIVITIES TOWARDS INTEGRATED NETWORKS OF SUPPLY CHAIN

Being able to define a single concept of logistics in the current economic situation seems to be impossible because in most cases the practical logistics approach refers to responsibility for all stages of management. One can, however, make efforts to particularize the areas that logistics is based on. These are:¹⁴

- The area defined as the process of physical flow of goods / services;
- The area identified as the concept of integrated management system of flow of goods / services;
- Area treated as an interdisciplinary field of knowledge that addresses the regularity and phenomena during the movement of goods/services throughout the supply chain.

The above rank order is characterized by one common element that is a flow - in terms of physical and informational aspects. Yet the attempt to define the logistics will refer to all processes - not only taking place in the company but also between the cooperating parties in the supply chain. It is therefore justified, from the author's point of view, to refer individual components of "logistics" to specific actions bringing the expected results. Adopting a theme of network structures in logistics terms requires a focus on the supply chain as a binder connecting a network of links and an attempt to enable logistics centers coordinating warehouse and transport operations.¹⁵

According to Witkowski's definition, *'a supply chain is cooperating in various functional areas mining companies, manufacturers, retailers, service providers and their customers, between whom the streams of products, information, and financial resources are flowing'* and *'the idea of the modern supply chain management is the process of decision-making related to synchronizing physical, informational and financial flows of supply and demand flowing between its participants to achieve their*

¹² Seemore:Brzeziński S. (ed), „Global LogisticsChallenges”, Wyd.WZPCzest., Częstochowa 2006

¹³ Markowski T., *Teoretyczne podstawy rozwoju lokalnego i regionalnego*, [w:] Strzelecki Z. (red. nauk.), „Gospodarka regionalna i lokalna”, PWN, Warszawa 2008, p. 20-22

¹⁴ Szymonik A., *Logistyka i zarządzanie łańcuchem dostaw*, cz.1, Difin, Warszawa 2010, p.18

¹⁵ See more: Sałek R., *Efficiency of Internal Transportation Layouts in Logistics Processes* [w] Szołtysek J. (ed.), “Logistics and Supply Chain Management in Polish, Russian and Ukrainian Research”, Publish. Univ. Econ. in Katowice 2011, p.81-97

*competitive advantage and value creation for the benefit of all its cells, customers and other stakeholders.*¹⁶ The areas which has to be defined within actions taken in the supply chain¹⁷ concern inventory, building the network in terms of product/service and manufacturing, product design, optimization of physical flows, as well as validation of indicators and metrics that describe business parameters.¹⁸ It is also important to notice methods and tools used in the process of supply chain management, which significantly affect its continuity.

Building integrated supply chains should be focused on customer needs¹⁹ but more importantly on common pursuit of 'professional' purpose, which is possible to achieve by configuring the supply chain in terms of strategy. Strategies for operations and the supply chain business strategy enable referral on action in the field of operations and supply chains, also create possibility of delivering value to target customers and markets, as well as enable to develop key competences in the field of operations and supply chain.²⁰ Supply chain strategies are formed by factors which include: the characteristics of corporation structures and a leader in the supply chain, manufacturing conditions (product specificity) and market risks (products' nature) as well as the determinants of success and industry competition level.²¹ Configuration of a supply chain, which concerns not only the location of the infrastructure but also the organization of physical and non-physical flows comes down to the two categories of decision: structural and coordinating. The first refers to the territorial arrangement of components

¹⁶ Witkowski J., *Zarządzanie łańcuchem dostaw. Koncepcje, procedury, doświadczenia*, PWE, Warszawa 2012, p.19, 36

¹⁷ Compare: Nowakowska A., *Teoretyczne aspekty zarządzania łańcuchem dostaw*, [w] Wójcik-Mazur A. (red. nauk.) „Teoretyczne i praktyczne aspekty zarządzania przedsiębiorstwem”, Sekcja Wydaw. WZ PCzest., Częstochowa 2012, p.7-15

¹⁸ Szymonik A., *Logistyka i zarządzanie łańcuchem dostaw*, cz.2, Difin, Warszawa 2011, p.13

¹⁹ Grondys K., Kott I., *The Analysis of the Customer Service Level in Maintenance* [w] “5th International Doctoral Students Workshop on Logistics. Conference Proceedings”, Otto-von-Guericke University Magdeburg 2012, p. 65-68

²⁰ Bozarth C., Handfield R.B., *Wprowadzenie do zarządzania operacjami łańcuchem dostaw*, Helion, Gliwice 2007, p.54

²¹ Ciesielski M., Długosz J. (red.nauk.), *Strategie łańcuchów dostaw*, PWE, Warszawa 2010, p.42

of a supply chain together with the distribution, while the second concerns the determination of partnership relations between selected suppliers together with all the activities in the framework the cross-compliance (e.g., inventory, production policy, information sharing).²²

Supply chain development proposed by Ch. C. Poirier involves five steps which are relevant to their level of maturity by the following managing observations:²³

- I. internal functions and processes - the first level: integration of enterprise;
- II. organization - second level: corporate perfection;
- III. organization - third level: collaboration with partners;
- IV. closer to the environment: collaboration in a supply chain;
- V. business system: connecting with the network;

According to this classification, combination of integrated supply chains into the network structure constitutes the most mature chain. Thus, chains with a strong market position, which are supported by e.g. logistics centers can afford such cooperation²⁴. It is important to build an entrepreneurial supply chain based on strong partner relationships, that are the dominant feature of network structures.

3. METHODOLOGY FOR BUILDING ENTREPRENEURIAL NETWORK STRUCTURE

The contemporary economic centers of the world are based their development on innovations, recognizing it as a driving force of the world's entrepreneurship, for innovation in entrepreneurial activities needs space to transfer. Socio-economic development, which has been built on innovativeness, leads to the wealth of the country and the pace of its development and application site decides about its level.

²² Truong T.H., Azadivar F., *Simulation based optimization for supply chain configuration design* [w] “Proceedings of the 2—3 Winter Simulation Conference” — www.informs-cs.org/wsc03papers/158.pdf

²³ Poirier Ch. C., Quinn F. J., *How are we doing? A survey of supply chain progress*, Supply Chain Management Review, Vol. 8 No. 8, 2004, p. 24-31

²⁴ Seemore: Skowron-Grabowska B., *Centra logistyczne w łańcuchu dostaw*, PWE, Warszawa 2010

Entrepreneurial activities based on strategy of enterprises are building a strong regional economy, where clustering is one of several methods of supporting processes of economic development. Practical approach for creating an entrepreneurial network structure should proceed on the basis of flow diagram presented in Figure 1. In development of the individual stages, author gives you what should be characterized but research dimension of its description is depending on specifics of studied area.

- qualitative analysis through which knowledge about the preferences of the entities forming the cluster will be acquired (e.g. conducting questionnaire survey and / or direct interview in examined entities);
- competitive analysis to investigate further and closer environment of cluster (conducting statistical analysis of dynamics changes among number of surveyed companies over the years; along with a measure of strength of the linear relationship and quantitative

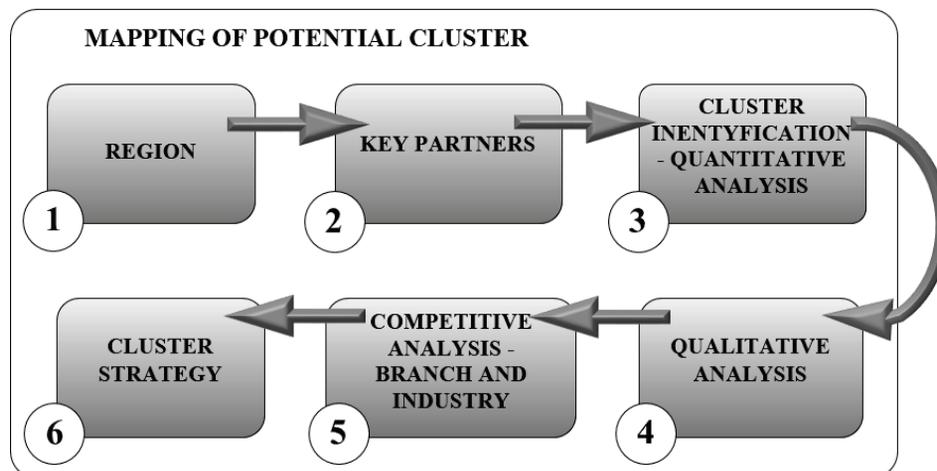


Fig. 1. Methodology for potential network structure mapping

Source: Own study based on Skawińska E., Zalewski R.I., *Klustry biznesowe w rozwoju konkurencyjności i innowacyjności regionów*. Świat-Europa-Polska, PWE, Warszawa 2009, p. 189

Mapping process involves characterization of the following areas:

- region where the cluster will conduct its activities (taking into account both administrative and regional aspects e.g. area, population, working population, unemployment rate, industrial production, capital expenditures, administrative division, entities in the CRO (pl. REGON) registry for examined branch and the characteristics of industries indirectly / directly dependent);
- key partners with whom entities, both, institutions and enterprises industry will cooperate (traders operating in examined section, the local government institutions, financial institutions, associations, economic and industrial chambers, innovation agencies, institutions supporting entrepreneurship and innovation);
- quantitative analysis that will indicate the region and the town of cluster leader (the use of mathematical calculations in determining e.g. location factors, agglomeration factor and cluster index);

relationships between the studied subjects and their manufacturing specificity; as well as characteristics of industry associated with changes of the structure of examined industry in the world);

- drawing up an initial cluster strategy (elaboration of cluster development policy through characterization of departments and support programs on the national and European level; in the provision of advisory and financial support; strategy development of examined region based on e.g. a SWOT / TOWS Analysis).

Successive stages of mapping help to identify the region where the selected branch has the potential to initiate action towards creation of a cluster, and then one should pay attention to institutions and companies within the cluster. Quantitative analysis should be performed at the stage before mapping to confirm its suitability. Qualitative analysis should involve the assessment of responses obtained in the process e.g. survey describing the attitude of entrepreneurs to take action and / or awareness of issues about network

structures. The cluster environment is reduced to characterization of a tested branch and general industry associated with it. The choice of strategy in a cluster could be initially based on a comparison of strategic analysis SWOT/TOWS of companies participating in one of the Polish clusters (preferably with the same or a related industry) with strategic analysis of companies operating in the region, where the potentially cluster can be formed; also with the development strategy of the region.

Performing of the mapping process takes place in an analytical way, allowing one to identify some branch clusters in a given area according to accepted standards. It also allows to characterize relations that occur between entities and to highlight strength of their influence. In the mapping process an important role is played by the procedure, because of the wide range of data explored and the ways and methods for their analysis.

The construction of entrepreneurial network system should be based on a clear and interdependent correlation in the activities which are undertaken to achieve a common goal. In order to gain an effective cooperation it is important to transfer the supply chain practices into management of logistics processes in network systems. This refers to a single process of storage and distribution, along with related information flow and technology, such as high rack storage warehouses, RFID and EDI. Such situation will allow to efficiently perform warehouse and transport logistics, that results in a more efficient management of the entire network system. For even more efficient functioning of e.g. a cluster, a logistics center should be added; this will provide the backbone of the activities carried out by the several/dozens of entities belonging to the cluster also with the support of other cooperating entities. It will also provide a central point of departure of the goods, which will support the whole process of delivering product to the customer (e.g. a foreign broker, wholesale, shopping centers or supermarkets).

The above assumptions of interconnecting supply chain practices with relation to the logistic centers are a strong aspect of building an entrepreneurial network systems. Their impact on its structure activities is necessary for the efficient functioning of a cluster, and at the same time, relieving the individual companies in the SME sector in terms of logistics, warehousing and distribution.

4. SUMMARY

Creating an entrepreneurial network structure should base its assumptions on network-integrated supply chains. This observation results from the key factor for constituting a cluster, which is the relationship between entities. The efficient functioning of the organization in terms of a cluster depends on conducted activities striving to achieve common and also individual goals. Clusters, according to the author, represent an optimal solution because they provide activities in the local area, include into its local government structure and concentrate on stimulating SMEs activities. The result of these activities is the internal development of the network's structure participants and the local economy obtained through expansionary activities. This underpins the need for entrepreneurial activities as a result of internationalization and innovativeness, where the choice of models and tools is conditioned by the type of industry and regional resources. The idea of supply chain forming involves cooperation between the subsequent links, which is convergent with the ideology of cluster-creating. This factor which constitutes a common denominator should integrate the chain into the structure, that is driving, both, regional development and activity of downstream companies involved in the process of creating of cumulative value.

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