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CREATION OF INNOVATION CLUSTERS AS A LINE OF ENTERPRISE COMPETITIVENESS IMPROVEMENT IN THE FIELD OF FOREIGN ECONOMIC ACTIVITY

The article shows the possibility of using a cluster approach to development of enterprise foreign economic activity and improvement of its competitiveness. Specific features and conditions for creation of innovation clusters for external economic activity are determined. An approach to the analysis of cluster opportunities in foreign economic sector is proposed. Expediency of creating an innovation cluster in the form of a "knowledge network" is grounded.

Keywords: innovation cluster; competitiveness; foreign economic activity.

Олена А. Сущенко, Ірина М. Труніна СТВОРЕННЯ ІННОВАЦІЙНИХ КЛАСТЕРІВ ЯК НАПРЯМ ПІДВИЩЕННЯ КОНКУРЕНТОСПРОМОЖНОСТІ ПІДПРИЄМСТВ У СФЕРІ ЗОВНІШНЬОЕКОНОМІЧНОЇ ДІЯЛЬНОСТІ

У статті показано можливість застосування кластерного підходу до розвитку зовнішньоекономічної діяльності підприємств та підвищення їх конкурентоспроможності. Визначено специфіку та умови створення інноваційних кластерів у зовнішньоекономічній сфері. Запропоновано підхід до аналізу кластерних можливостей зовнішньоекономічного сектору. Обґрунтовано доцільність створення інноваційного кластера у вигляді «мережі знань».

Ключові слова: інноваційний кластер; конкурентоспроможність; зовнішньоекономічна діяльність.

Рис. 1. Табл. 2. Літ. 26.

Елена А. Сущенко, Ирина М. Трунина СОЗДАНИЕ ИННОВАЦИОННЫХ КЛАСТЕРОВ КАК НАПРАВЛЕНИЕ ПОВЫШЕНИЯ КОНКУРЕНТОСПОСОБНОСТИ ПРЕДПРИЯТИЙ В СФЕРЕ ВНЕШНЕЭКОНОМИЧЕСКОЙ ДЕЯТЕЛЬНОСТИ

В статье показана возможность использования кластерного подхода в развитии внешнеэкономической деятельности предприятия и повышения их конкурентоспособности. Определена специфика и условия создания инновационных кластеров во внешнеэкономической сфере. Предложен подход к анализу кластерных возможностей внешнеэкономического сектора. Обоснована целесообразность создания инновационного кластера в виде «сети знаний».

Ключевые слова: инновационный кластер; конкурентоспособность; внешнеэкономическая деятельность.

Problem statement. Engagement of Ukraine and its economic entities into globalization processes has revealed certain contradictions from the point of view of the following national economic interests. Including the country into the global competitive space has a significant impact on the development of Ukrainian industries and non-manufacturing business too. However, at the same time, its weak aspects, poor

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preparedness to conditions and requirements of free competition at world markets are revealed, resulting in production recession. Nevertheless, development of foreign economic activity (FEA) and foreign economic relations can promote further development of national economy, modernization of its industry and improvement of the overall competitiveness of economic entities. Solution of the stated problems requires application of a systemic strategic approach and innovative instruments.

Recent research and publications analysis. The problems of enterprise competitiveness, in particular, in the field of foreign economic activity are the research object for many prominent foreign and Ukrainian scientists. The papers of the following researchers should be marked out: I. Ansoff (1989), I. Faminskii (2009), R. Fathutdinov (2009), Ya. Kornai (1990), F. Kotler (1991), A. Kredisov (2004), O. Kyrychenko (2002), M. Porter (2005) etc. Scientific study of the cluster paradigm was performed by such researchers as M. Porter (2005), M. Voinarenko (2000) etc. However, possibilities for the cluster approach use for improvement of enterprise compatibility in foreign economic activity especially when taking into account the innovation component, require additional understanding and research. That is why the **purpose of this paper** consists in theoretical substantiation of innovation clusters creation as an approach to improvement of enterprise competitiveness in foreign economic activities.

Key research findings. Clusters' emergence and popularity are directly related to development of competitive advantages of economic entities. Besides, economics globalization promotes the establishment of fundamentally new economic relations characterized by new forms of interaction between the government, private sector and various other institutions. Clusters that play an important role in generation and efficient development of this interaction.

Taking into account a foreign economic factor, clusters are to be defined as the groups of interrelated enterprises concentrated by their territorial features, providing foreign economic activity, infrastructure and non-commercial sector development related to their functioning so that they simultaneously compete and supplement each other.

In accordance with the tasks of improving enterprise competitiveness in the field of foreign relations it is necessary first to determine specific features and conditions for innovation clusters creation. Innovation clusters of this kind are based on "knowledge networks" representing local (territorial) areas of innovative development and working out export-oriented innovation products and advanced technologies.

Functioning of "knowledge networks" implies specific types of activity connected with knowledge and defined as in (Sushchenko, 2013; Tuzovskiy, 2005):

- creation of new knowledge;
- preservation of knowledge by means of creating knowledge bases, databases, intellectual capital of enterprises in a cluster;
- knowledge distribution and use within the cluster.

Activity of such clusters implies the development, support and activation of innovative functioning of export-oriented enterprises, consolidation and sharing of their innovative resources, knowledge and competences, technologies transfer, creation of innovation business- and knowledge-incubators. By their essence and functional orientation "knowledge networks" are the core of a cluster.

Generation of innovation clusters as a "knowledge network" requires a preliminary analysis of cluster possibilities concerning foreign economic activity. It implies the determination of potential for clustering and its innovation potential. Performance of such analysis is based upon methodical approaches stated in (Kredisov, 2004; Sushchenko, 2013; Trunina, 2013).

Its results make it possible to determine a number of cluster types and the level of their strategic usefulness (Sushchenko, 2013) for foreign economic activity.

In our opinion, innovation cluster is always strategically useful. In a long-term period it provides steady successful functioning of enterprises engaged in foreign economic relations, an appropriate level of their economic security, it is able to stimulate their innovative activity, develop their intellectual potential, get stable competitive advantages at foreign markets.

Analysis of cluster opportunities was performed on the data of enterprises of the Lugansk region. Key industries in which enterprises are engaged in foreign economic relation were singled out and the results on their potential for clustering were obtained. It should be mentioned that, of course, the presented analysis shows the results of functioning and enterprises development before the armed conflict in the region.

Lugansk region is a region with considerable industrial, agroindustrial, scientific and technical and transboundary potential, which allows enterprises in the region develop geoeconomic directions for the development of their foreign economic activity. The regional industrial potential is concentrated in the fuel-energy complex. The main share belongs to the extractive industry; its enterprises make one sixth (15%) of the total production volume in the region. Industry is also represented by mechanical engineering enterprises, chemical, petrochemical, food, woodworking, textile and building materials industries. Enterprises of Lugansk region had foreign economic connections with economic entities from 109 countries when it comes to exports, and with 61 countries in terms of imports, with 80 countries as to exports of services and with 49 countries as to services import. 405 enterprises of the region exported goods, 498 enterprise imported them (Sushchenko, 2013).

The results of the performed analysis demonstrate high potential of cluster generation among the enterprises of metallurgy and mechanical engineering sectors. Simultaneous presence of horizontal and vertical relations between these enterprises makes possible sharing specialized resources, production and information technologies.

Metallurgical and machinery enterprises form the industrial core of the region. There are enterprises with complete cycles of metal production, which deliver products to 45 countries (Asian, EU and CIS countries). The cluster includes one of the biggest vehicle-building enterprises in Ukraine, with its powerful science-technical and production capabilities. The cluster also includes not only manufacturing enterprises, but also those which work in repairing and maintenance of production facilities of the cluster.

However, despite significant potential and manufacturing capabilities, there are enterprises in the cluster whose economic status during the recent years was characterized as cubersome. This is explained both by the latest world economic crisis and also by the structural crisis in this sector, which resulted in the loss of some tradition-

Table 1. The Lugansk region cluster capability in terms of external economic activity, authors'

Sector with high level of cluster creation potential	Sector with medium level of cluster creation potential		Sector with low level of cluster formation potential	
	Food manufacturing industry	Light industry	Coal industry	Health resort and recreational
Metallurgy and machine building industry				
"Alchevsk Iron & Steel Works", "Metals & Polymers", "Steel shot works", "Alchevskkoks", "Ukrenergochermet No. 1", "Dombasdomnaremont", "Interprom", "Alkar", "Flagman", "Briankivsk drill equipment works", "Mine machinery", "Prommash", "Stakhanov Ferroalloy Works", "Stahanov Experimental Mechanical Works", "Intermet", "Stakhanov car building works", "Pervomaysk electromechanical works, "Luganskteplovoz", "KKZ " Centrokuz", "Scientific and Production centre "Transmash", "Lutugino Research & Production Roll Company"	"Luganskmlyn", "Corporation Luganskmyasoprom", "Stakhanov municipal dairy factory", "Ukragrotrade", "Lugansksholod", "Confectionery factory AVK", "Luga-Nova", "Shid-Agro"	"Gloria Jeans", "Lutri", "Sverdlovsk Garment Factory", "Salama", "Rovenki Shoe Factory", "Luganskleginvest"	"Luganskvuhillya", "Rovenkiantracit", "Sverdlovvantracit", "Krasnodonvuhillya", "Stakhanovvuhillya", "Lysichanskvuhillya", "Pervomayskvuhillya"	"Lugansk-Kurort"
0.82	0.61	0.45	0.38	0.25
Internal motivation of cluster participants (max = 1)				
Competitiveness of cluster participants				
Competitive capacity of central participants significantly exceeds competitive capacity of others	Approximately equal competitive capacity of all participants	Approximately equal competitive capacity of all participants	Approximately equal competitive capacity of all participants	Cluster consists of competitively weak participants
Evaluation of cluster potential and competitiveness				
3.4%	4.5%	5.5%	7.5%	6.5%
Production growth rate in relation to economic growth rate in general				
32.0%	7.2%	6.5%	11.4%	1.5%
Cluster production growth rate compared to sector growth rate in general				
73.8%	13%	10%	11.6%	1.6%
Ratio of cluster production in regional production				

al product markets, problems with raw materials suppliers, raw materials price rise. The conducted research allows us recreate current the situation according to the main indicators of cluster enterprises activity (Figure 1).

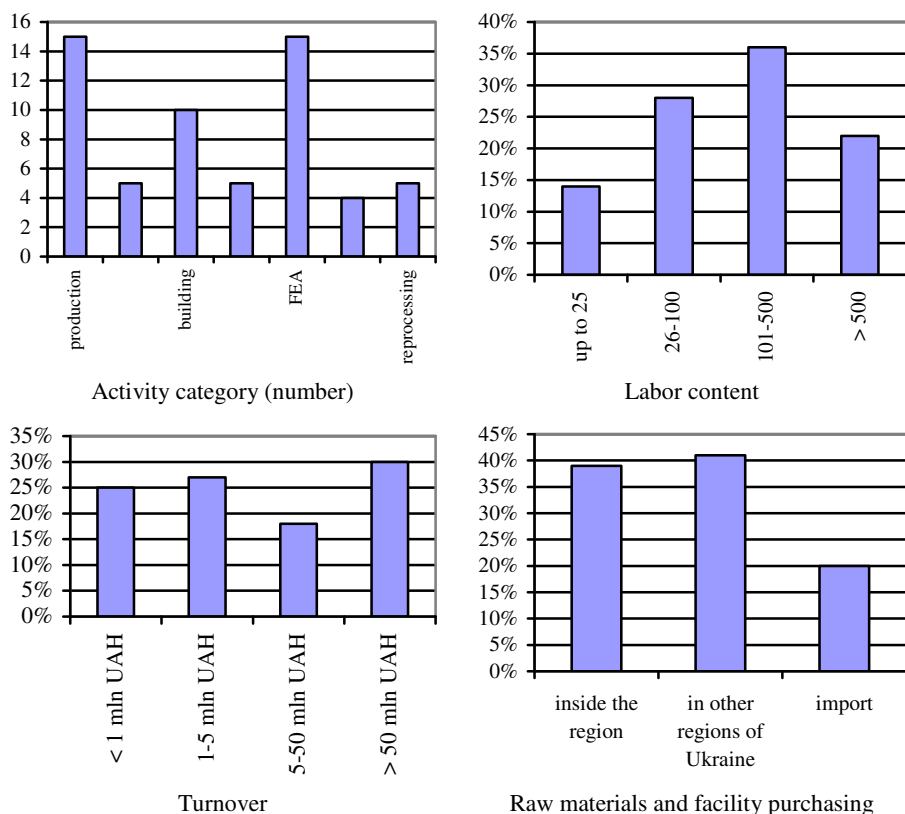


Figure 1. Analysis of the situation at enterprises of the cluster in 2013, authors'

Cluster enterprises realize their products (work and services) both in Ukraine and for export. Export operations are one of key types of foreign economic activity was carried out by the majority of the cluster enterprises. It should be stressed that during the recent period the export volumes of the products of metallurgy and mechanical engineering have considerably reduced, this had been caused by crisis phenomena in economics and war operations in the East of the country. However, apart from this, insufficiently efficient management of FEA, untimely transformation of its methods and technologies according to changes in the global environment also take place. That is why expert polling of the supervisory personnel of the cluster enterprises was performed to reveal such problems, the results are presented in Table 2.

Expert polling was carried out in two stages in January 2014. At the first stage the preliminary survey was performed, aimed to determine the current state of FEA of the cluster enterprises and defining the range of problem issues for assessment during further polling. A questionnaire was created on the basis of the discussion. At the second stage an expert polling was carried out using the expert polling methods as proposed

by S.D. Beshelev and F.D. Gurvich (1980) and G.M. Dobrov (1974). During the research we used a special questionnaire to poll 30 experts among the management of the cluster enterprises specialized in the sphere of FEA and innovations introduction, and also experts of Lugansk Chamber of Commerce who deal with the problems of FEA development. To determine the most significant problems in FEA development the enterprise experts were offered a number of problematic questions to be assessed in by the degree of their importance on the scale from 1 to 10 (1 – minimum, 10 – maximum significance). The rating of problem importance was performed according to the results of the poll and each problem was assigned a corresponding rank. The degree of agreement between experts' opinions was determined taking into account the concordance coefficient.

Table 2. Expert polling on the efficiency of external economic activity of cluster enterprises, authors'

Possible ways for FEA enhancement at enterprises	Rank
Tax preferences	1
Access to new markets	2
Modernization and re-equipment	3
Extension of the loyal consumers list	4
Introduction of management innovations	5
Introduction innovative waste-processing technologies	6
Enhancing the quality of export production	7
Activation of innovative activity	8
Access to information about the situation at external markets and needs of potential consumers	9
Change of economic situation in the country	10

The polling results demonstrate that only a small number of respondents chose efficiency improvement ways concerning managerial aspects among all options. Moreover, none of them found it necessary to work out a strategy for enterprise FEA development and application of FEA strategic management methods, with corresponding managerial response to cyclic fluctuations in the economics in the industry and global processes. This leads to the conclusion about the absence of strategic vision on FEA development at enterprises of the cluster under study.

Also, it is revealed that the basic problems of cluster enterprises interrelation include low level of their cooperation, absence of joint strategic projects on foreign economic activity development, absence of single information database as to foreign product markets, enterprises, suppliers and potential consumers. Important faults also include the absence of a united innovation center that could have focused efforts, resources and potential possibilities of the cluster enterprises for the development of innovations and their introduction into real practice of production as and management.

Overcoming the determined "weak" points is possible on the basis of creating a united platform that will be the basis for solving problems in cluster functioning, providing coherence of its members interests and the synergy effect from their interaction. This platform is presented by an innovation cluster in the form of a "knowledge network", oriented on innovative development of enterprises' foreign economic activity, preservation and growth of their scientific, technical and intellectual potential.

Enhancement of innovative knowledge-intensive components of the above-considered cluster is a specially topical task nowadays. It has already been mentioned that the analysis of cluster possibilities was presented on the basis of Lugansk region before the warfare started. The current situation in this region is characterized as critical, a considerable part of industrial potential and production capacities is destroyed or is controlled by terrorist formations. Warfare influenced directly or indirectly the activity of almost all big metallurgical or mechanical engineering enterprises in Ukraine. Some of them were pillaged and taken out of the territory of Ukraine by Russian invaders.

According to A. Lysenko, a representative of the National Security Council, equipment of the Holding Company "Topaz", that specialized in manufacturing of military complexes of radio-technical reconnaissance "Kolchuga", was taken out to Russian Federation by the trucks of the so-called "humanitarian convoy". The shops of this plant were used as casernes by the militants. Unique equipment for growth of artificial monocrystals of sapphire, silicon, spinel, garnet, niobates of lithium and other hard and superhard monocrystals was removed from "Mashzavod – 100" in the same way (Informator.lg.ua, 9.12.2014).

Those enterprises that preserved their production potential left their industrial capacities on the occupied territory. In particular, these are "Stakhanov Railway Carriage Building Plant", "Stakhanov Ferroalloy Plant", "Stakhanov Technical Carbon Plant", "Pervomaisk K. Marx Electrical Mechanical Plant". These enterprises activities have been terminated though they preserved their capacities and are able to manufacture and sale products. Ukraine, Western Europe, India and the USA were their traditional markets. However, there is a legal barrier due to impossibility of drawing out cargo customs declarations and certificates of origin of the product. It is also impossible to supply raw materials to (or through) the territory uncontrollable for Ukraine.

Along with it, most powerful enterprises that are parts of big holdings move their orders to other enterprises situated outside the territory of the Antiterrorist Operation. In particular, these are "Alchevsk Metallurgical Industrial Complex", "Luganskteplovoz" that renewed registration on the territory fully controlled by Ukraine. New registration allows these enterprises remain in Ukrainian legal field and get back to normal functioning in the future.

At present "Alchevsk Metallurgical Industrial Complex" does not work at all; the enterprise underwent hot preservation and runs at idle as its production technology does not allow stopping the plant. Besides, it is impossible for the enterprise to obtain raw materials and take out finished products. Now administration of the "Industrial Union of Donbas" which includes "Alchevsk Metallurgical Industrial Complex" made a decision to transfer orders from this enterprise to the capacities outside the territory of the Antiterrorist Operation. An analogous industrial complex built in Poland is a reserve enterprise for this (Informator.lg.ua, 9.12.2014).

Conclusions. The key advantage of an innovation cluster in the form of "knowledge network" consists in prioritizing its scientific-research and knowledge-capacious components. It is for this reason that partial (and hopefully, temporary) loss of industrial potential and production capacities of the regional cluster is not disastrous for its functioning. Cluster enterprises own a powerful scientific-technical and research basis enabling them actively introduce innovations into their activity, developing their intellectual capital. Close relations with research institutes, universities,

design bureaus and other institutions of the region, almost all of which were evacuated to the territory controlled by Ukraine, makes it possible to preserve the innovation potential of the cluster. Transference of activities will help keep scientific personnel, enhance the innovative potential of the cluster participants. It is to result in the creation of new knowledge, and its further use within the framework of the innovation cluster which would allow the enterprises acquire globally competitive advantages in their foreign economic activities once they get back to full functioning.

References:

- Ансофф И.* Стратегическое управление. — М.: Экономика, 1989. — 519 с.
- Бешелев С.Д., Гурвич Ф.Д.* Математико-статистические методы экспертных оценок. — М.: Статистика, 1980. — 263 с.
- Боевики вывозят с территории Луганской области уникальный завод, 9.12.2014 // informer.lg.ua.
- Бусленко Н.П.* Моделирование сложных систем: Монография. — М.: Наука, 1998. — 400 с.
- Виссема Х.* Стратегический менеджмент и предпринимательство: возможности для будущего процветания / Пер. с англ. — М.: Финпресс, 2000. — 272 с.
- Войнаренко М.П.* Концепція кластерів — шлях до відродження виробництва на регіональному рівні // *Економіст*.— 2000.— №1. — С. 29–33.
- Дидрих В.Е.* Моделирование информационных систем организационного управления. — М.: ИПРЖР, 2002. — 178 с.
- Добров Г.М.* Экспертные оценки в научно-техническом прогнозировании. — К.: Наукова думка, 1974. — 120 с.
- Ермишина А.В.* Конкурентоспособность региона // www.citystrategy.leontief.ru.
- Информационные технологии: Учеб. пособие / Ю.Ю. Громов, В.Е. Дидрих, И.В. Дидрих и др. — Тамбов: Нобелистика, 2010. — 130 с.
- Квакернаак Х., Сиван Р.* Линейные оптимальные системы управления. — М.: Мир, 1977. — 656 с.
- Кириченко О.А.* Менеджмент зовнішньоекономічної діяльності: Навч. посібник. — К.: Знання-Прес, 2002. — 384 с.
- Клиланд Д.* Системный анализ и целевое управление / Пер. с англ.; Под ред. И.М. Верещагина. — М.: Сов. радио, 1974. — 280 с.
- Корнаи Я.* Путь к свободной экономике: страстное слово в защиту экономических преобразований / Пер. с англ. — М.: Экономика, 1990. — 149 с.
- Котлер Ф.* Основы маркетинга. — М.: Прогресс, 1991. — 667 с.
- Кредисов А.И.* Управление внешнеэкономической деятельностью. — К., 2004. — 326 с.
- Куниц Г.* Управление: системный и ситуационный анализ управленческих функций / Пер. с англ. под общ. ред. Д.М. Гвишиани. — М.: Прогресс, 1981. — 491 с.
- Мишин С.П.* Оптимальные иерархии управления в социально-экономических системах. — М.: ПМСОФТ, 2004. — 190 с.
- Портер М.* Конкуренция / Пер. с англ. — М.: Вильямс, 2005. — 608 с.
- Сущенко О.А.* Зовнішньоекономічна діяльність підприємств регіону в умовах глобалізації: управління та розвиток: Монографія. — Луганськ: Ноулідж, 2013. — 316 с.
- Теория активных систем и совершенствование хозяйственного механизма / В.Н. Бурков, В.В. Кондратьев, В.В. Цыганов, А.М. Черкашин. — М.: Наука, 1984. — 272 с.
- Труніна І.М.* Забезпечення конкурентоспроможності суб'єктів підприємницької діяльності: Монографія. — Харків: Точка, 2013. — 436 с.
- Тузовский А.Ф., Чириков С.В., Ямпольский В.З.* Системы управления знаниями (методы и технологии) / Под общ. ред. В.З. Ямпольского. — Томск: НТЛ, 2005. — 260 с.
- Фаминский И.П.* Глобализация — новое качество мировой экономики. — М.: Магистр, 2009. — 398 с.
- Фатхутдинов Р.А.* Глобальная конкурентоспособность: инструменты системного развития: Монография. — М.: Стандарты и качество, 2009. — 464 с.
- Шукишунов В.Е., Варюха А.М.* Ассоциация научных технопарков, инкубаторов бизнеса и инновационных центров // *Инновации*.— 2008.— №3. — С. 24–38.

Стаття надійшла до редакції 21.09.2015.