

THE KNOWLEDGE-BASED ECONOMIES IN THE EUROPEAN UNION: STRATEGIES AND NEW MODELS OF CLUSTERIZATION

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ABSTRACT

Possibilities for the development of new forms of economic, social and technological headway designed to create and further improve economies based on knowledge are analyzed here.

The main emphasis is put on national and regional economic specialization and creation of new networks of clusters in the situation of the development of the European Union. We have found that clusterization oriented towards the increase of efficiency of various national and regional economies is a critical precondition for successful creation of modern economy based on knowledge, both in the whole space of the European Union and particular countries.

Another idea - a concept of creation of regional and cross-regional clusters and their networks also known as „economic oases“ - is suggested here. It is explained in the paper that in the economies based on knowledge development of clusters and their networks will soon become one of the core forms of economic and technological advancement. Further on, the variety of clusters and their networks is defined, and the idea of clusterization generally oriented towards creation and promotion of high technologies is given. In addition, some typical factors of the economic and social development of the European Union are being described here, and it is subsequently proved that these factors reflect on the common context of creation of the knowledge based economies. Understanding of these factors allows us to consequently implement strategies of two types that could create the economies based on knowledge: first, these are the strategies oriented towards integration of the processes of economic and social development, along with the strategies oriented towards the synthesis of the results of the economic endeavours and technology advancement of different origins.

1. Introduction

The future of the European Union lies in the creation of the knowledge based society and knowledge based economy. This means that key issues that require *strategic decisions* are to be considered as issues of creation of the knowledge based society and knowledge based economy.

The essence of these issues could be revealed in the following: *what* should the knowledge based society and knowledge based economy be in the future in the European Union and *how* should the knowledge based society and economy be created in the European Union?

Striving to find answers to these questions determines the necessity of elaboration and implementation of appropriate *strategies for creation of knowledge based society and knowledge based economy*.

This publication analyzes a new approach towards the way how *long term strategies* designed to create knowledge based economy in the European Union should be prepared. This approach is a result of *scientific research* the object of which has been *creation of the knowledge based economy in the situation of the enlargement of the European Union*.

The objective of the completed research has been the proof of the fact that *key priorities for creation of the knowledge based economy is the urge of technological advancement and enhancement of compatibility and productivity* using such opportunities as *specialization of national and regional economies, creation of clusters and their networks*, as well as the *development of so called economic “oases” and hyper-clusters in the entire economic space of the European Union*.

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The main *result* of the completed research is the concept of *strategies oriented towards integration and synthesis*, the basis for which is the *universal principle of „creation of a new quality“*: we should utilize this principle in elaborating and implementing the strategies for creation of knowledge based economy in the European Union.

2. Creation of knowledge based economies in the European Union as a complex process of political, social, economic and technological transformation

The development of the European Union is a very complex process of both quantitative and qualitative transformations.

Main *problems* typical to the European Union as a system which require essential and radical decisions are the following:

1. Within the territory of the European Union there are *very limited sources of energy and raw-materials*. In the environment of the development of the economy needs for these resources have been steadily growing which means that the European Union becomes more and more dependent on the possibilities for the increase of these resources: we suggest that *prospects of economic development* of the European Union, along with *economic and energetic security* of the European Union has been influenced by various economic and political factors characterizing export of these resources to the European Union;
2. Within the countries of the European Union *very high standards of living are being implemented here* including the spheres of social security and social warranties, as well as environmental protection. As a consequence, all economic endeavors within the territory of the European Union require substantial expenditure which subsequently means that the *cost price* of the products manufactured in the European Union is *very high*. The increase of the cost price which is disproportionate to the quality of products determines the fact that products manufactured in the European Union become increasingly *incompatible*;
3. Key indicator for the well-being in the European Union is the ability to manufacture products to the increasing extent and more massively both in their local and global markets, and sell products of high quality and price. This means that in the European Union the need for more markets in order to sell their own products has increasingly growing (besides, it is of crucial importance that there is an adequately high purchase power). Inadequacy of such markets threatens the development of the economies of the European Union.

Necessity to respond to these problems determines main *challenges* to the European Union and its development:

1. *Quantitative increase of the European Union* is orientated to the following:
 - European Union could win possibly more markets to sell their production,
 - European Union could possibly gain better “direct” access to the countries in Eastern Europe, Central Asia and the Near and Central East where huge supply of energy and raw materials is accumulated and where great potential markets for the products manufactured in the European Union;
2. *Qualitative development of the European Union* is orientated to the goal to create *the knowledge based society and knowledge based economy* in the territory of the European Union: This could ensure the following:

- ability to create within the European Union the alternative energy sector and other sectors of economy, which could allow strongly decrease the dependence of the economies of the European Union on the import of traditional energy and raw materials,
- ability to create and widely distribute brand new products and technologies in the global which could allow the European Union to become a worldly leader in many spheres of economic and social life.

It is worth mentioning that over the last decade greater possibilities to ensure *quantitative increase* can be observed in the European Union, whereas in the sphere of *qualitative development* numerous difficulties and unpredicted obstacles can be seen. For this reason qualitative development of the European Union should receive priority consideration: we suggest that prospects of the European Union are basically influenced by creation of the *knowledge based society and knowledge based economy*.

3. Theoretical background for the knowledge based economies creation strategies : universal principle of “creation of the new quality“

The *concepts* of the knowledge-based society and knowledge-based economy can be defined in a number of ways. We suggest one of the most relevant versions.

The knowledge-based society is the society where social, economic and cultural progress is determined by the ability to create and efficiently apply new knowledge, and where creation of new knowledge and promotion of innovations become priority values. The knowledge-based economy is the economy where the development is determined by creation of new knowledge and new technologies, implementation of high technologies in all spheres, along with the priority orientation towards the use of products created by the means of high technologies.

Creation of the knowledge based economy as a key priority of the further enlargement of the European Union could be defined as especially complex process oriented towards formation of the brand new society and the qualitatively new life style. What is more, this process can be described as of “*double*” *complexity* as it reflects on orientations towards the *striving for the new quality in the following two aspects*: the knowledge based economy is being formed, which if compared to the “*traditional*” economy is by all means considered as *qualitatively new*; and forming of the knowledge based economy is completed in the situation of the *enlargement of the European Union*, which means that *qualitative changes* have been happening in the *entire space of the European Union*.

Examining possibilities and prospects for creation of knowledge based economy in the European Union it is recommended to apply the “*universal principle of the creation of new quality*”. This principle could be applied in various situations of life; it is suitable when examining both processes of the development of the knowledge based economics and common processes typical to the European Union, and its political, social and economic development and enlargement.

Universal principle of “creation of a new quality” could be defined as follows: *new quality always develops by the amalgamation when elements of different origin that never had belonged to the same system collide*. This principle expresses the idea of the developing and using the synergy effect, and demonstrates that *qualitative transformations* always require *actions and means* necessary to *join elements of different origin to the common system*.

Applying the *universal principle of the creation of new quality*“, it is important to consider the fact that as a subsequence of amalgamation there is always *new quality* created. At the

same time it is worthwhile mentioning that the *processes of amalgamation* can be very different and in the most common case can represent *two types*: processes of integration and processes of synthesis.

Processes of the *integration* usually prove that in the course of amalgamation elements that collide *never lose their major primordial features*: this means that the *result of the integration marking the new quality can be disintegrated according to previous features of the amalgamated elements*.

Processes of *synthesis* demonstrate that elements colliding in the course of amalgamation *miss their major primordial features*; this means that that the *result of the synthesis possessing new quality cannot be disintegrated according to the previous features of the collided elements*. We may state that *qualitative changes within the synthesis are never recurrent*, whereas *qualitative changes within the integration* in some cases *may recur*.

Understanding the meaning of the processes of integration and synthesis as processes of creation of a new quality allows broadly applying *the principle of creation of the universal "new quality"*, examining very complex manifestations of the enlargement of the European Union, including creation of knowledge base economy. When analyzing these manifestations, it is critical to assess *to what extent* the enlargement of the European Union is based on the processes of *integration* and to *what extent* the processes of *synthesis* determine the enlargement of the European Union ¹.

Elaborating and implementing the strategies of creation of the knowledge based economy it is necessary to logically forecast various vehicles designed for expansion and development of the *integral economic, social and culture space of the European Union*: among these vehicles there should inevitably be the vehicles oriented towards both processes of *integration* and *synthesis*.

4. Strategic alternatives: whether the European Union becomes a common space or an integrated system of various spaces?

Processes of the enlargement of the European Union arising currently are very intense.

These processes reflect on two-fold approach towards the European Union and its enlargement.

On one hand, the European Union could be perceived as a *multicultural, multi-economic and multi-social space*. We suggest that *the common cultural space* of the European Union is comprised by various ethnic, economic, social and cultural spaces represented by their *regional*, as well as *quantitative and qualitative* indicators. It is of crucial importance that the development of *common cultural space* in the European Union implies both processes of *integration and synthesis*: this means that *integral culture common to the entire society of the European Union* inevitably develops in the European Union;

On the other hand, European Union could be perceived as the *organization of the states belonging to Europe*. This means that it is possible assume that the European Union is generally *an organization of organizations* because *a modern state* broadly speaking can be defined as *a societal organization of the superior degree of the development*. The enlargement of the European Union as an organization of states is going in the way of integration of the new states into this organization, therefore, we suggest that the enlargement of the European Union are followed by the processes of *integration*. At the same time it is important to notice that the European Union as an organization has gradually started executing functions of the

¹ The principle of „creation of new quality“ could be defined as a universal methodological principle for all series of complex research and for all innovation oriented practical projects.

common state of the countries that belong to the European Union and this means that the European Union is gradually turning into the *super-state*. The development of the European Union as a new super-state simultaneously expresses processes of *synthesis* typical to the enlargement of the European Union as an organization.

We may *conclude* that both processes of *integration* and *synthesis* develop in the enlargement of the European Union as a *multicultural space and as organization of the states*. Therefore, the character and condition of the enlargement of the European Union in the future will be determined by what processes of the enlargement will *dominate, and whether processes of integration or processes of synthesis will dominate*.

Depending on the fact whether in the future the *processes of integration* or *processes of synthesis* dominate, it is possible to draft *two alternative visions* of the future of the European Union:

The first vision – *the processes of integration will dominate* in the enlargement of the European Union. In this case, *multicultural space of the European Union* will manifest as a *common space* comprised by *various national cultures* and where *various nations* live. In this case the European Union will continue functioning as the *organization of various national states*.

The second vision – *the processes of synthesis will dominate* in the enlargement of the European Union. In this case *a new type of common European nation* will *gradually* develop in the space of the European Union, whereas the European Union itself will transform into *the integral European super-state*. In this case modern national states will become *administrative and territorial sub-divisions possessing rather wide autonomy* in the future European Union as a super-state. Besides, we may assume that in the future members of the European Union will rather *identify themselves* with the *integral European nation*, rather than with *current nations of its own*.

It is natural that both of these alternative visions are *hypothetical*. This means that both of these visions as a *complex* can be considered as a *common hypothesis* dedicated to the future of the European Union. In this common hypothesis two stages could be emphasized: the first one (the stage of integration processes) and the second one (the stage of the synthesis process).

Creation of the knowledge based society and knowledge base economy in the European Union requires elaboration and implementation of appropriate *development strategies*. Understanding that processes of the enlargement of the European Union are *two-fold* (they are processes of integration and synthesis) it is possible to assume that in the situation of the enlargement of the European Union *strategies of two types* could be implemented:

*strategies oriented towards the processes of integration and strategies oriented towards the processes of synthesis*².

It is critical to note that strategies oriented towards integration and synthesis can be also designed for the entire European Union as a whole, and particular spheres of social and economic life in the European Union. One of these spheres is *development of national and regional economic systems and creation of cluster based economy of a new type*.

² The methodology of integration and synthesis oriented development strategies is a very effective basis for practical strategic decision making and for preparation and substantiation of long term development projects oriented towards the creation of modern knowledge based society : improvement of this methodology could be defined as an important priority in the area of the strategic decision making theory development and in the management modernization practice.

5. Priority strategies oriented towards integration and synthesis designed to create knowledge-based economies in the European Union

Creation of the knowledge-based economy is possible, provided all subjects of the economy are rationally specialized. Contemporary economic principles and practices confirm that in *efficiently operating economic systems their surplus value is created at greater extent*. This statement works in all cases where ways to increase efficiency and compatibility on the scale of both particular economic subjects and large national and regional economic systems. The main precondition to ensure high efficiency and compatibility of any economic system is to achieve that any economic system should be *properly specialised*.

Under the *proper specialisation* we understand the situation where the range of products produced within the *economic system* guarantees *magnification of the surplus value within this system*: the economic system should be exceptionally oriented towards the series of products, services and activities, whose structure allows achieving potentially greater surplus value or higher velocity of the increase of this value.

For the sake of the rationalisation of the national or regional economic system in the European Union various means may be implemented. These means should create a *solid complex*, and have to be *long-term* and *consecutive*. The idea of the means should ensure that the entire economic system of particular region or country is developed as a *large macro-cluster or hyper-cluster*. These large macro-or-hyper-clusters may be *multi-profiled* and oriented towards *creation* of different and diverse *final products*, and it is very important to create final products that are compatible in *global markets*.

It is obvious that large macro – or- hyper- clusters in particular countries or regions should meet the following requirements: large clusters of this kind function as *open systems*, maintaining both internal and external economic and technological relations in international and global markets; *inside* of the large clusters of this kind various specialised clusters can be created within incorporated diverse institutions of science, research and education, enterprises of production and services, business incubators, parks of science and technology, centers for innovation, and industrial, trade, transportation and communication companies.

Development of large economic systems in a way of *clusterisation* may be of great variety. A very prospective method to implement this way is creation of *regional (territorial) or sectorial "oases"*.

In general "oasis" can be explained as an *economic system, possessing extremely advantageous political, legal, economic and other conditions for activities and development*. These conditions are as a rule exclusive and in their presence the "oasis" as economic system receives various privileges or extremely beneficial environment is created for it. "Oases" can be established on behalf of political will of a *state* or even a *group of states*: by the way, the idea of regional "oases" is very viable in the improvement and implementation of regional policy of the European Union, with the intentions of creation of "oases" not only in particular countries, but also regions, comprised of regions of different countries.

Regional "oasis" is one where exceptionally advantageous conditions for economic development are created in a territorially outlined area (region). This area may coincide with systems of administrative territorial division of particular countries or may not. Sectorial "oasis" is one where exceptionally advantageous conditions are created for particular branch of economy, and particular segments of business or public sector.

Considering the fact that when creating the knowledge based economy the key priority should be put on *clusterization, networks of clusters, economic "oases" and rational specialization of regional economies* we suggest that: for the benefit of creation of knowledge based

economy in the European Union it is necessary to prepare and implement *a complex of strategies for clusterization and rational specialization of regional economies*³.

The *strategies for clusterization and rational specialization of regional economies* should include both *the strategies oriented towards integration* and *the strategies oriented towards synthesis*: the strategies oriented towards integration and the strategies oriented towards synthesis are characterized by *different purpose* and *different content*.

The idea of the strategies oriented towards integration is to ensure *high efficiency and compatibility of different regional economies and different sectors* of both in the integral economic space of the European Union and in global markets. These strategies should draw upon the following key decisions:

- each national or regional economic system should shape up one or more *priorities oriented towards creation of modern state-of-the-art technologies and products based on them*: based on such priorities one could define or develop *rational specialization of each national or regional economy*,
- each national or regional economic system according to the *regional priorities*, should form *regional economic "oases"* and clusters; whereas general "oases" and clusters can be transformed into *macro - or hyper - clusters* on the scale of large regions or the entire country (the clusters of this kind can be of a *broad scope, multi-scope* and *limited scope*, functioning as *specialized clusters* in particular sectors of economy),
- creation of "oases" and clusterization should ensure that *the major role* in the grow of economy is to be played by *intellectual resources and technological advancement*. The idea of the *strategies oriented towards synthesis* is to achieve that *major sectors of economy on the scale of the whole European Union* operate as *integral undivided systems*.

Each sector of this kind as a system should possess a *very high level of technological development* and should be a *leader* in the corresponding sphere of economy *on the worldly scale*. Orientation towards the challenges of this kind requires that within these strategies the following decisions are made:

- on the scale of the entire European Union *the networks of regional and sector clusters as well as "oases"* should be created and mutually developed: each element in the networks of this kind could become *rationally specialized* which would allow to make sure that *the network as a system is of a state-of-the-art level of productivity and technological advancement*,
- *the networks of regional and sectorial clusters as well as "oases"* should be *specialized*: subsequently, the networks of this kind on the scale of economic space of the European Union are *mutually complementing* and function based on partnership,
- *the networks of regional and sector clusters as well as "oases"* that are created in the European Union *can operate outside the European Union*: this will ensure the viability of economic structures of the European Union and their compatibility in the global markets,
- the networks of regional and sector clusters as well as "oases in the future should be an organizational basis for the *economies* of the *entire European Union*: the networks of

³ The series of complex research on economic specialization and clusterization in the Baltic countries are being made at Vilnius Gediminas technical university : those series of research are oriented towards the creation of the basic structures for knowledge economy development in the Lithuania and other countries in the context of enlargement of the European Union

this kind should be understood as the *key structural elements of the economy of the European Union*, as well as a *key organizational structure of the knowledge based economy* (it is obvious that in any of these networks high intellectual, information technical and other potential should be accumulated ensuring rapid and efficient headway of technologies and leadership in the global markets).

Implementation of the strategies explained above is a very important factor to achieve that creation of knowledge based economy and knowledge based society in the European Union become a reality.

Conclusions and recommendations

Creation of the knowledge based society and knowledge-based economy in the European Union is a very complex, long-term and ambiguous process.

Key challenges and priorities that require main attention when creating the knowledge based society and knowledge based economy are the following:

1. The basis for creation of the knowledge based economy in the European Union is the implementation of *the universal principle of “creation of a new quality”* designed to complete the following: development of the society and economy of a new type is going under concurrent *processes of integration and synthesis integral cultural space*; in the European Union should be created; *the strategies oriented towards integration and synthesis* should be created and implemented.
2. In the *strategies* designed to create the knowledge based economy in the European Union main emphasis should be put on the following *priorities*: *rational specialization* of national and regional economies, ensuring *high compatibility* both in the European Union and in global markets; transformation of national, regional and sectorial economies into the *macro –or hyper –clusters* and *systems of such clusters*; development of *clusters and networks of economic “oases”* in the entire space of the European Union; further development of *clusters and networks of economic “oases”* as *key organizational structures* characteristic to the economic system of the European Union.
3. In the situation of the further development of the European Union the following provisions should be implemented: issues of modernization and compatibility increase for the national, regional and sectorial systems should be tackled *in the strategies oriented towards integration*, issues related to creation of the *integral and undivided* knowledge based society and knowledge based economy should be tackled *in the strategies oriented towards synthesis in the entire space of the European Union*.
4. The clusters in various spheres of industries and services, as well as regional and sectorial “oases”, should be created in various countries and regions of the European Union. The creation of the clusters and “oases” of this kind should be based upon *strategies oriented towards integration*. The ultimate goal of these strategies should be *the creation and development of the knowledge based economies in various countries and regions in the European Union*. These strategies should be developed and implemented *in every country and sector of the economy of the European Union*, however, *coordination and partnership* should be ensured on the scale of the entire European Union.
5. The *organizational pattern* of the knowledge-based economy created in the European Union should be based on *networks* of clusters and “oases”. The creation of the networks of this kind should be based on *strategies oriented towards synthesis*. The

goal of these strategies should be *creation and development of the common and undivided knowledge-based economy in the entire space of the European Union*. The preparation and implementation of these strategies should be initiated by the European Union an *integral unit*.

Further scientific research and practice dedicated to creation of strategies for the knowledge based society and knowledge based economy in the European Union are greatly promising and important.

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