



CODEN [USA]: IAJPBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

<http://doi.org/10.5281/zenodo.2648227>

Available online at: <http://www.iajps.com>

Research Article

SYNERGETIC CONCEPT OF FORMATION AND DEVELOPMENT REGIONAL MARKET OF TRANSPORT SERVICES

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Article Received: February 2019

Accepted: March 2019

Published: April 2019

Abstract:

The formation of a civilized market for transport services is becoming one of the most important areas of regional economic development in modern conditions of development of federalization and strengthening the economic independence of the regions. The transport services market is one of the most extensive and significant regional markets. Therefore, the concepts of formation and development of the transport services market are of particular importance.

The research presents a synergistic concept of the formation and development of the transport services market, based on the principles of directed self-organization of nonlinear dynamic systems.

The main conclusions from the synergetic concept of the formation and development of the regional transport services market are as follows:

- 1. In the market of transport services as an open non-linear system, the processes of self-organization lead to the creation of more complex organizations and structures by integrating various structures that are developing at different rates in evolutionary integrity.*
- 2. There is a limited set of ways for the regional transport services market to move to a new, higher level of hierarchical organization, ways of building a complex evolutionary whole.*
- 3. The management of the regional market of transport services should be organized so that in its state space the attracting limit sets are formed - attractors that meet the main goals of the functioning (existence) of the regional market of transport services and, therefore, provide the desired state (behavior).*

Keywords: *Transport Services Market, Regional Market, Synergetics, Self-Organization, Logistics, Market Management.*

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Please cite this article in press Vladimir Berezchnoy et al., Synergetic Concept Of Formation And Development Regional Market Of Transport Services., Indo Am. J. P. Sci, 2019; 06(04).

INTRODUCTION:

The formation of a civilized market for transport services is becoming one of the most important areas of regional economic development in modern conditions of development of federalization and strengthening the economic independence of the regions. The transport services market is one of the most extensive and significant regional markets. Therefore, the concepts of formation and development of the transport services market are of particular importance.

A modern, efficiently operating transport services market is the main mechanism of commodity circulation, which is a system of coordinated actions of market participants, ensuring the movement of goods from producer to consumer in the right time with minimal losses of quantitative and qualitative characteristics of the goods.

The market is a basic phenomenon, since it is here that its subjects interact with each other, market equilibrium is reached, and prerequisites for its violation appear. The market as a phenomenon and economic category has been the object of close attention of researchers for more than 200 years. During this time, several concepts have emerged for interpreting the nature of the market for goods and services [6, 7, 9]. The study of the problem under consideration on the basis of the analysis of existing scientific works allowed identifying several different concepts of the functioning of the commodity market: classical, marketing, institutional, and evolutionary.

However, in recent years, the functioning of the regional transport services market has faced many problems that cannot be solved by the usual methods, based on traditional disciplinary approaches. The functioning of the modern market is so difficult, and the external conditions change so rapidly that the old management methods do not give satisfactory results. There is a need to form a new approach to managing the operation of the transport services market, using the results of the theory of self-organizing systems and systems analysis.

In contrast to the approaches common in theory and practice, a synergistic concept of market formation and development is proposed, which is based on the principles of directed self-organization of complex nonlinear dynamic systems. In this concept, the development of the market is viewed as an evolutionary transition from one unstable state to another with the possible occurrence of dynamic chaos, and market structures arise as a result of self-organization from chaotic nonequilibrium states.

MATERIALS AND METHODS:

The development of a market system is a process of natural change, transition from one state to another, more "perfect", from simple to complex, "from lower to higher". The ability for spontaneous generation of structures and their rapid self-reproduction is the result of the struggle and cooperation of two opposing principles: the mechanism of structure formation, cooperation, integration (process localization factor) and spontaneous decay, competition, diffusion, dispersion (erosion factor).

Synergetics is a modern theory of self-organization of complex structures in market economies, the main feature of which is non-linearity and openness. Synergetic considers the mechanisms of free cooperation of interaction of elements of open systems with nonlinear feedback in unstable states. The main idea of synergetics is the idea of the fundamental possibility of the spontaneous emergence of order and organization from disorder and chaos as a result of the process of self-organization [4]. Self-organization includes not only the mechanisms of free cooperation, but also other mechanisms that "push" the system to self-organization.

An example of self-organization can serve various options for the free market of transport services with a balance of supply and demand, pricing system and other market processes.

RESULTS AND DISCUSSION:

The analysis performed allows us to give a brief description of synergy as a new scientific concept of the formation and development of a regional transport services market, which is based on three key ideas:

- 1) the market as an open system;
- 2) non-linearity of the market system;
- 3) self-organization of the economic system of the market.

The process of market functioning as a system, its movement from chaos to order, the process of self-organization, the emergence of new market structures from the position of synergetics can be explained as follows.

1. Most market systems are open - they exchange energy, matter, information with the environment. Such systems are characterized by the possibility of transition to a state of dynamic chaos. The change in the system is manifested in the change of its states due to external influences and the internal properties of the system itself. The main role in this is played not by order, stability and equilibrium, but by instability and

non-equilibrium, that is, they continuously fluctuate.

2. A fundamental condition for the self-organization of market structures is the emergence and strengthening of order through fluctuations. As long as the market system can dampen these fluctuations, it will be in a state of dynamic equilibrium. However, under certain conditions, fluctuations (internal or external) can lead the system to qualitative changes, the formation of new relatively stable structures.
3. This occurs at a particular bifurcation point, the branch point of market development options, where fluctuations reach such strength that the market system loses its stability and changes its state. After passing this point, the market system begins to develop in a new direction, its evolution ceases to be unambiguous, it will occur along one of the alternative paths, with randomness playing a fundamental role, secondary factors and it is impossible in principle to unambiguously determine its future behavior.
4. New market structures resulting from the interaction effect of the elements of the system are called dissipative, because maintaining them requires more energy than maintaining simpler ones, which they replace. Those trajectories or directions in which the development of a market system after the bifurcation point is possible and which differs from others in relative stability, in other words, is more real, is called an attractor. The attractor in synergetics is interpreted as a relatively stable state of the market system, attracting to itself the set of trajectories of its development, possible after passing the bifurcation point. Attractors show where evolutionary processes in an open nonlinear system go when it loses stability, i.e., describes those real structures to which the market system aspires as a result of its evolution.
5. Dissipative structures are the result of the macroscopic manifestation of chaotic processes occurring at the micro level and leading to the market system dissipating (dispersing) energy, matter, information. On the one hand, this is a factor of "natural selection", destroying everything that does not correspond to the internal trends in the development of the market structure. On the other hand, there is a coherence factor linking market structures within a complex formation, establishing in them the overall pace of development. In fact, this is analogous to the diffusion of the most diverse kinds, including the transfer of economic knowledge, scientific and technical information, etc.

Synergetics proves that for complex socio-economic systems there are several alternative ways of development and reveals the mechanism for choosing these alternatives [4]. Consider the synergistic concept of the regional transport services market as a complex, open, non-linear system freely exchanging energy, material flows and information with the external environment and other systems, able to resist entropic tendencies and adapt to changing conditions, transforming its structure if necessary.

In our opinion, the functioning of the transport services market as a complex open nonlinear system has the following features and properties:

- disequilibrium,
- the presence of feedback,
- the presence of transient phenomena,
- the presence of dissipative processes,
- evolution.

When studying the behavior of the transport market, it should be borne in mind that the market system under consideration is just an element of some other, also non-linear, dynamic system (regional economy). And these systems, developing according to their own laws, determine many properties and circumstances of the development of their subsystems. The existence of complex market systems is possible thanks to the hierarchical organization of system levels of complexity. In the transport services market, we distinguish the system hierarchy vertically, forming the micro level (local market), meso level (regional market), macro level (country market) and mega level (world market) and horizontally forming the spatial structure of the market.

The presence of the vertical (transition of the barrier in jumps) and the horizontal (change of position in space) constitutes the essence of the hierarchical stratification of the market system. The obvious connection between the structural (phase) transitions in the state of the regional transport services market system and the abrupt changes in the order parameters is traced.

An open market system is not isolated from the environment, but interacts with it. The openness of the regional market of transport services as a system means the presence of sources and sinks in it, the exchange of resources, energy, information with the environment. Exchange processes occur not only across the boundaries of the regional transport services market, but also through internal points and areas of the market.

Nonlinearity is a fundamental concept of a synergistic concept. Under the non-linearity of the regional market of transport services is understood the possibility of ultrafast development of market processes at certain stages of its evolution. With a smooth change in the parameters of a non-linear market system, under certain conditions, microfluctuations are enhanced, and its state and properties can change drastically, as a rule, stochastically and irregularly.

Nonlinearity in the transport services market is manifested in the emergence and disintegration of enterprises, the emergence of new technologies and inventions, fluctuations in market cycles and scientific and technological progress, downturns and upturns in the market, the formation of transnational corporations and small venture capital enterprises. It contributes to the growth of competition and evolution. It should be noted that only strong non-linearity allows market systems to cover a wide range of significant environmental impacts in the process of adaptation and competition. This determines the sensitivity of the non-linear market environment to small fluctuations amplified by a non-linear positive feedback mechanism. Such sensitivity of non-equilibrium states, caused not only by internal activity, but also through external influences, determines the continuous functioning of the market system - its stability and mobility, that is, the degree of its controllability and ability to develop.

The study showed that the region's transport services market is an open system that exchanges material, information, labor, and financial flows with the environment. The regional market for transport services is also a non-linear system that can be in a state of mobile (unstable) equilibrium or in a state of disequilibrium.

According to the conceptual provisions of synergetics, in the aggregate, the properties of nonlinearity and openness of the transport services market support heterogeneity in the market environment and are necessary conditions for the emergence of processes of self-organization of new structures [1].

The study of synergistic models for the formation of market systems showed that the development of the transport services market is a qualitative change in its structure and functioning due to the cooperative interaction of its components. As a complex open system, the transport services market goes through an alternation of stages of order and chaos. The transport

services market and its components in an unstable state undergo various changes - fluctuations that the market system can neutralize to a certain limit, which is facilitated by the stability of its structure during the evolutionary period. When the fluctuating parameters exceed the critical values, there comes a moment when the market system enters the bifurcation zone, where a change in the parameters leads to an abrupt transition of the market to a qualitatively different state, to a new development trajectory.

Thus, under changing external conditions, the evolution of the transport services market is a sequence of different attractors, the transition between which occurs through unstable states and bifurcations.

Developing the position of the transport services market as a dynamic system, i.e., a system that changes over time, we note such an important feature of its evolution as unevenness, instability, lack of monotony. The main factors of unsustainable functioning of the transport services market are:

- scientific and technical factors (the emergence of new technologies, the spread of innovations), which lead to technical re-equipment, reducing the boundaries of old industries, the emergence of new ones;
- market factors are associated with increased competition as a result of the development of transport, informatics and communications, increased uncertainty of the external environment and increased market fragmentation due to the differentiation of consumer demand.

Like any other complex open system, the regional market of transport services in its development passes through the alternation of stages of order and chaos. The transition of the regional transport services market to a higher level of development is associated with an elongated sequence of destructions (crises) necessary to achieve a more advanced level of organization. Thus, the market disequilibrium can be considered as a decisive form factor. By changing the parameters of the market system, namely the intensity of growth in the number of market subjects and the intensity of their functioning (business activity), one can initiate the process of continuous formation of market structures, slow down or speed it up. At the same time, it is possible to transfer the market system to a new, more perfect level of development. However, and this is obvious, complexly organized market economic systems cannot be imposed on their development paths - it is necessary to identify opportunities to contribute to their own development trends, to find ways for their further evolution.

In our opinion, within the framework of synergetic ideas, the development of a regional market for transport services is a qualitative change in its structure and functioning due to the cooperative interaction of its constituent components. The transport services market is a kind of integrity in which, as in the evolution of any nonlinear dynamic system, periods of quiet development, when there is a gradual accumulation of minor changes, are interrupted by sharp qualitative leaps, bifurcation periods that significantly change both the properties and the structure of the market system, and it moves from one development trajectory to another.

Possible development trajectories, those real structures in space and time, to which the processes of self-organization in open nonlinear systems go, are attractors [5, 8]. At the transport services market, various organizational and legal forms of transport enterprises, types of transport systems, technology of transport processes, etc. can be attractors. and determine the development of unified transport and terminal systems, containerization and packetization, the formation of integrated logistic structures. In logistic structures, an organizational, technological, economic and informational unity of streaming processes arises, which creates prerequisites for the integration of producers and entities that ensure the process of product promotion and the formation of a new, relatively stable structure. The motivation for creating integrated logistics structures is the awareness of market subjects of interdependence and the desire to obtain from the joint activities such competitive advantages as improving business efficiency, accelerating response to consumer demands, minimizing commercial risks.

The consequence of the attraction mechanism is the following: after passing through the bifurcation zone, the crisis gaps in the evolutionary process, the market system is in the vicinity of one of the attractors, the number of factors determining its future behavior becomes minimal. As a result of this effect, the management of the transition process of a market system to one or another stable attractor is possible by using a small number of variables or adjustment parameters that determine its asymptotic behavior. By exerting certain effects on the market system in a state of instability, at the point of bifurcation, it is possible to increase the probability of its release to the desired stable state, to the target attractor, bypassing the "trial and error" phase. Thus, the modification of market structures at the present stage of economic development, along with the spontaneous principle, contains elements of conscious self-regulation and regulation.

There are two approaches to the management of open non-linear systems, which include the regional market for transport services:

1) environmental change and 2) impact change.

Changes in the environment: by changing the characteristics of the environment itself, as a result, the regimes become unstable and bifurcations occur.

Impact change: changing the topology of the impact on the same environment, receiving various unstable modes and causing bifurcations.

In the first case, bifurcations are obtained by changing the market environment itself (for example, market attractiveness), in the second case, as a result of the internal, immanent development of processes in a given environment (for example, the level of competition). In synergetics, "control parameters" do not directly control the behavior of the system, they "trigger" its internal self-organization mechanism [2, 3].

Effective management of the development of the transport services market is possible in the form of non-linear management, focusing on our own trends in the evolution of the regional market, the range of attractor structures available to it. Purposeful, controlled excitation of certain structures from the spectrum available to the market system allows reducing the time of "natural selection" of alternative trajectories of its development. This is achieved by a resonant impact on the market environment with the help of a small, but topologically correct (i.e., an appropriate spatio-temporal organization) changes in the adjustment parameters. Weak, but corresponding to the internal tendencies of the controlled system, resonant influences and influences are extremely effective. However, they must comply with the internal trends of the market system. If management actions are not coordinated with the internal development trends of the transport services market, then they will not lead to success and are doomed to failure. Management will also be ineffective if attempts are made to build structures that are inadequate to internal trends in market evolution.

CONCLUSIONS:

The main conclusions from the synergistic concept of the formation and development of the regional transport services market are as follows:

1. In the transport services market as an open non-linear system, the processes of self-organization lead to the creation of more complex organizations and structures by integrating various structures that are developing at different rates in evolutionary integrity.
2. There is a limited set of ways for the regional

transport services market to move to a new, higher level of hierarchical organization, ways of building a complex evolutionary whole.

3. The management of the regional market of transport services should be organized so that in its state space the attracting limit sets are formed - attractors that meet the main goals of the functioning (existence) of the regional market of transport services and, therefore, provide the desired state (behavior).

REFERENCES:

1. Gorbachev VV. Synergistic introduction of social-economic processes Ethics and science of future. M. Delfis, 2003.
2. Zang VB. Synergistic economy. Time and variables in nonlinear economic theory. M. Mir, 1999.
3. Kanke VA. Philosophy of economic science: textbook. M. INFRA-M, 2007.
4. Knyazeva EN., Kurdyumov SP. Basis of synergetics. Synergistic outlook. M. KomKniga, 2005.
5. Milovanov VP. Synergetics and self-organization: economics and biophysics. M. KomKniga, 2005.
6. Kovalenko E. et. al. Regional economics and management. SPb. Piter, 2008.
7. Roy LV, Tretiak VP. Analysis of branch markets :course book. M. INFRA-M, 2008.
8. Sadchenko KV. Laws of economic evolution. M. Delo i service, 2007.
9. Sherer F, Ross D. Structure of branch markets. INFRA-M, 1997.