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ДЕРЖАВНЕ УПРАВЛІННЯ
удосконалення та розвиток



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Yu. H. Koroliuk,

Doctor of Sciences in Public Administration, Docent, Professor the Department of Economic Cybernetics and International Economic Relations,

Chernivtsi Institute of Trade and Economics KNUTE, Chernivtsi

V. S. Tolub'iak,

Doctor of Sciences in Public Administration, Docent, Associate Professor at the Department of Management and Public Administration,

Ternopil National Economic University, Ternopil

IMPROVING THE EFFICIENCY OF STRATEGIC MANAGEMENT IN FRONTIER REGIONS

Ю. Г. Королюк,

д. н. держ. упр., доцент, професор кафедри економічної кібернетики та міжнародних економічних відносин

Чернівецького торговельно-економічного інституту КНТЕУ, м. Чернівці

В. С. Толуб'як,

д. н. держ. упр., доцент, доцент кафедри менеджменту та публічного управління

Тернопільського національного економічного університету, м. Тернопіль

ПІДВИЩЕННЯ ДІЄВОСТІ СТРАТЕГІЧНОГО УПРАВЛІННЯ ПРИКОРДОННИМИ ТЕРИТОРІЯМИ

The article reveals a new methodological approach to efficiency in regional administration by the means of region's social and economic system (SES) model putting into practice the working out of the program oriented documents.

The approach allows defining the possible ways of mutual profitable regional decisions from the point of view of frontier regions economic development and taking into consideration social interests according to Pareto optimality.

We have conducted the scientific survey together with the methods of scenario administration, that provide the transition from the reactive SES administration approach to the active (preventive) one aimed at prevention of crisis or irreversible processes. The mentioned above survey permits avoiding the problem of the standardized statistic indices system absence, as well as the absence of informational databases with foreign neighbouring regions and eluding the problem of such data comparisons accordingly.

В статті пропонується новий методичний підхід до забезпечення дієвості регіонального управління шляхом впровадження моделі соціально-економічної системи (СЕС) регіону в практику розробки програмно-цільових документів.

Підхід дає змогу визначити можливі варіанти взаємовигідних регіональних рішень з позицій розвитку економіки прикордонних регіонів і врахування соціальних інтересів згідно Паретто-оптимуму.

Здійснені наукові розвідки, у поєднанні із методами сценарного управління, забезпечують перехід від реактивного підходу в управлінні СЕС до активного (превентивного) управління на упередження виникнення кризових чи незворотних процесів. Зазначене дозволяє уникнути проблеми відсутності уніфікованої системи статистичних показників та інформаційних баз даних із закордонними регіонами сусідами, та відповідно уникнути проблеми порівняльності таких даних.

Key words: *social and economic system, frontier regions, neural network, strategic management.*

Ключові слова: *соціально-економічна система, прикордонні регіони, нейромережева модель, стратегічне управління.*

Stating the problem in its general aspect and its connection with the important scientific or practical tasks.

The problem of regional administration effectiveness increase is stated to be of prior importance in The State Strategy of Regional Development up to 2020 (approved by the decision of the Cabinet of Ministry of Ukraine from the 6th of August 2014 #385). Reaching the aim foresees the improvement of the strategy planning of regional development system on the state and regional levels, especially by the implementation of effective information support for defining problems of regional development, having the analysis and modeling the ways of solving the problems, as the basis for development and implementing reasonable administration decisions.

Other priority of the national regional development is the State Strategy that stipulates for territorial social-economic integration and spatial development, in particular by means of realization frontier territories development.

Mentioned above priorities and the crucial actuality of the public management mechanisms improvement on the middle level, have defined the main aspects of this investigation, and aimed at the ascertaining the tendencies and developing the methods of scenario administration effectiveness of the regions, bordering EU countries.

Undoubtedly the efficiency, quality and to some extent effectiveness problem of the regional management is cybernetic by its nature. It is known, that solving the cybernetic problems of any system administration has no other alternatives except clear and accurate measuring (assessment) of the subject influence extent on the state (parameters) of the object under management. Without such estimation we can speak neither about the improvement, nor about the administration fact itself. Native regional social and economic systems (SES) as the objects of the given investigation are not the exception.

On the same level we have methodological problem solving of the regional management efficiency, in particular, the adequate assessment methods results of managerial authorities influence on the region's development that are the complex tasks of the native and world Regional studies. Such difficulties are stipulated firstly by the absence of a unique activity results index in the state sector and secondly such activity is difficult to be measured or clear to be assessed. Another complicated aspect is that assessment of the activity should include direct and indirect indices related to a great number of economic, political, administrative, ethic, psychological and many other measurements.

The analysis of the latest works and publications in which we have started solving the given problem and to which the author refers, highlighting previously unsolved aspects of the general problem, to which the present paper is dedicated.

In the last few years in native and in foreign science as well there have appeared a lot of publications dedicated to some aspects of assessment, efficiency improving and effective functioning of the state and regional management system subjects. So, in the world practice there are well-known approaches to the effective public administration assessment, that are represented by a non-commercial project *GPP (government performance project)* in the USA, in the countries of Western and Central Europe by the quality assessment method *CAF (Common Assessment Framework)*, the usage of the international index *GRICS (Governance Research Indicator Country Snapshot)* etc.

Today we have famous investigations of the participants, in which there has been revealed the analysis of the criteria system problems, main tendencies and growth factors of the public administration effectiveness [1], the analysis of the public administration of the social and economic regional development [2] and many others (in particular, we should mention the periodical journal “Effectiveness of the state administration” of The Lviv Regional Institute of Public Administration National Academy of Public Administration, the Office of the President of Ukraine, thematic chapters with the same names in other professional journals of public administration) in which the main aspects of the analysis, effectiveness assessment, public and regional administration efficiency are highlighted.

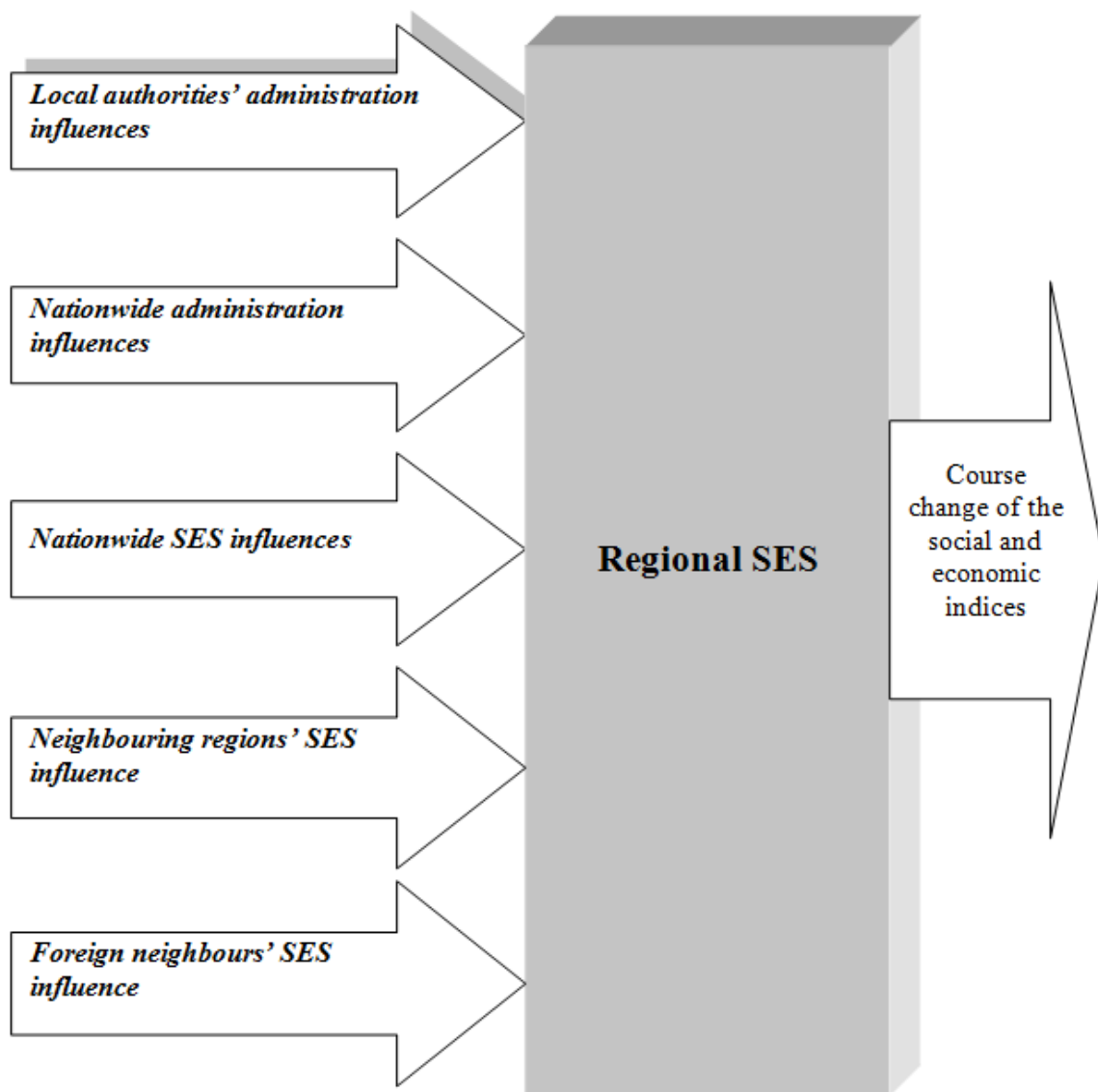
Stating the aims of the article (setting objectives).

The object of the article is the working out of a new methodical approach to providing the regional administration efficiency by means of SES region model put into practice of elaborating the program-oriented documents.

The body of the investigation with basic facts and complete argumentation of the scientific results.

In the course of investigation of the subject management influence effectiveness of the public administration system there is used a vast number of general scientific and methodical approaches and special methods: system and complex approaches, system analysis, cognitive modeling, structure and functional analysis, economic and mathematic modeling, statistic and graphic methods, expert assessment methods, etc. There appears the conclusion that main obstacles, when solving problems of the effective and successful regional administration, lie not in a methodical, but rather in a methodological plane. Native Regional studies demand objective and adequate assessment approach to the existing statistic database and then the ways of improving the efficiency of the regional authorities’ administrative influences.

The regional management efficiency assessment, accordingly to the system approach principles, is connected with an obvious fact that participation in social and economic development indices formation belongs not only to the local authorities but also to outer environment: nationwide social and economic system, neighbouring regions (neighbouring regions from other countries as well), worldwide macrosocial and macroeconomic tendencies, central authorities administration influences and many others (Pic. 1).



Pic. 1. Factors forming the regional SES indices

Though, contemporary local authorities effectiveness criteria assessment acquired by scientists and central authorities of the executive branch are still of discordant nature. In the system of the criteria put forward there does not exist the problem solving of the regional authorities contribution concretization into the region's development. Up to now there has not been elaborated the adjustment mechanism on absolutely different basic regional development conditions, objective economic potential of the region, multinational and corporative structures influence, global economy factors, common border with other countries etc.

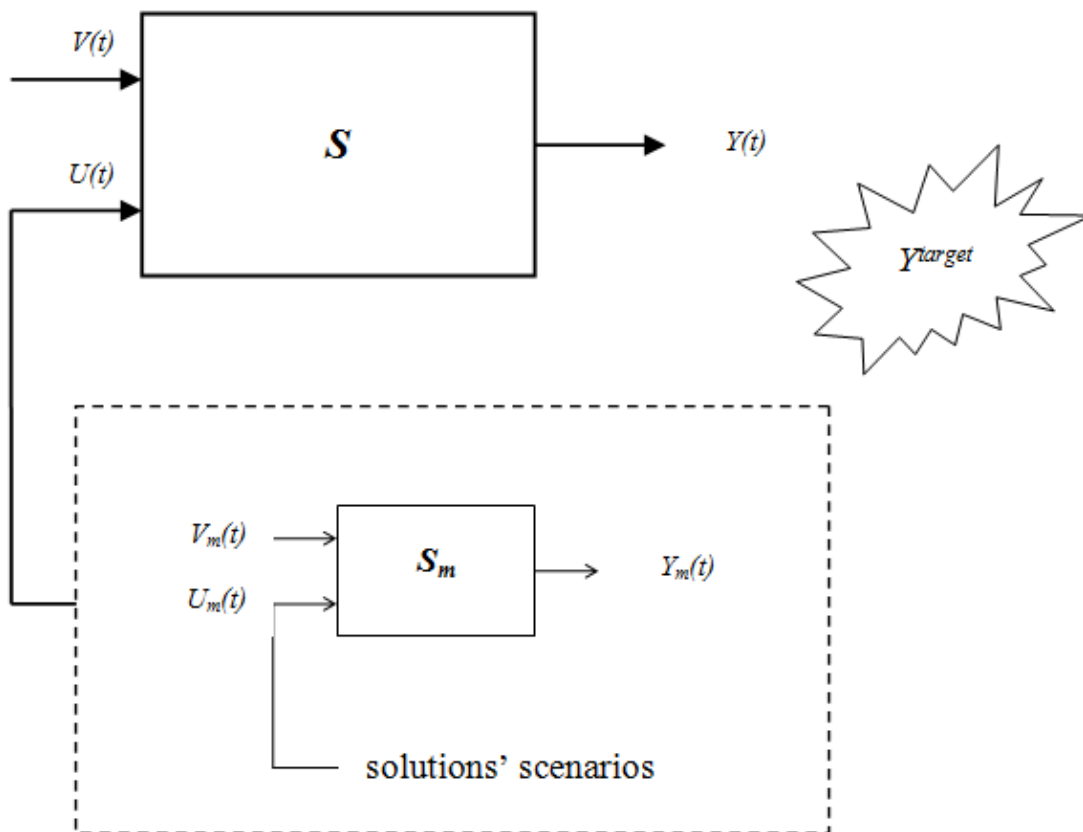
Regulatory and legal supply of the local authorities efficiency and assessment mechanisms that has become more actual in 2014-2016 [3] mainly regulates the analysis procedure (also using the methods of the statistic information processing, the methods of rating assessment formation of every region in Ukraine etc.) of the regional indices dynamics, that reveals the region's social and economic spheres condition. Basic methodological approach of such analysis is the use of taxonomy and normative methods. However such methods cannot concretize the contribution of the local authorities to any regional development index formation and consequently they make impossible the working out and efficiency assessment of the regional management efficiency improvement ways.

There also appears the question of the regulatory method total use in program adaptive regional development administration, when the main task of the local authorities is the efforts of the regional development course leveling to correspond the planned one. The problem becomes more profound in conditions of the globalization tendencies and the regional SES openness that leads to the total influence on their complex nonlinear conjuncture formation, mostly of the nationwide administration and outer economic factors.

So the most high-principled tendency in elaborating the adequate assessment method of the local authorities functioning is the immediate solving of the methodological problem of the whole existing administrative influences set applied decomposition that lead

to the administration object parameters changes – the regional SES.

For finding solutions to the given task, as to any administrative task, there should be building the adequate model of the regional SES taking into consideration all endo- and exogenous influence factors on its behavior. One of the most effective description examples of such process belongs to F.P. Tarasenko [4], according to whose works, some system S and its model S_m can be graphically represented in the form of a scheme, as in Pic. 2. Let's suppose that the system, as well as its model, is interpreted by "the black box" with the input $V(t)$ ($V_m(t)$) and output $Y(t)$ ($Y_m(t)$). Besides, to realize the administration principles in the system and in the model there are also the governing entrances $U(t)$ ($U_m(t)$). The target of the system is defined by reaching the output Y^{target} . Practically, the administration process, in this interpretation, comes to the choice of such governing input signal scenario that will lead to reaching the aim at the end.



Pic. 2. Management scheme using the system model (improved by the author from source [4])

Using the system model S_m (Pic.2.) allows the administrative subject to choose from the administrative scenario variants such ones that will lead to output model index close to Y^{target} . Having applied the chosen scenario in future, as system input S , the subject realizes the administration process without looking for acceptable variants in the system itself that simplifies greatly and quickens the search process of the effective administration ways.

Thereby the most practical way of improving the management process efficiency in frontier regions there remains the methodic elaboration and applied implementation of the model S_m . It is obvious that the administrative quality will be defined by the quality of the elaborated model. The last one, in its turn, depends on the object system cognition profundity (system) and the possibilities to transfer data and knowledge on the model. In the case of a frontier region, it is advised to put functional and statistic methods of formalization in the SES model basis. More detailed information about the formalization methods, available approaches and the technology of the model realization is revealed in the previous investigations [5].

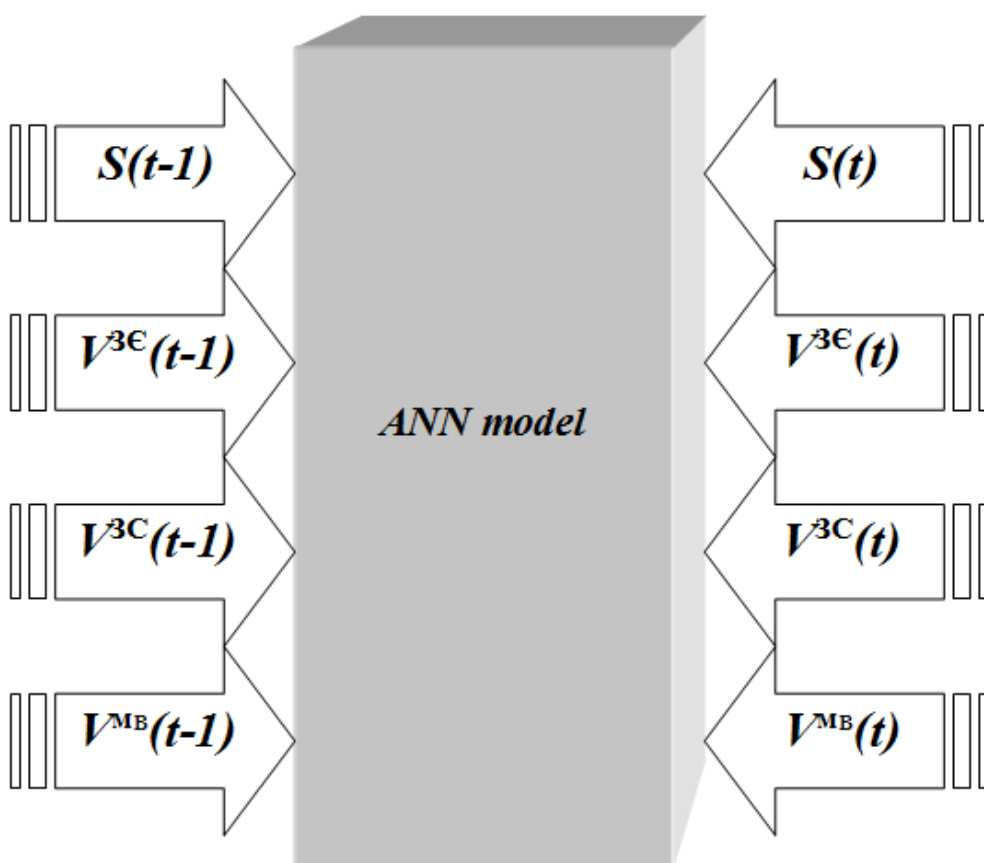
From the unity of the regional SES condition formation factors(S) (Pic. 1) we segregate three spheres of influence: influence of the local authorities (V^{MB}), national environment (V^{ZC}) and the influence of a European bordering country (countries) (V^{CU}).

We will define the condition of the regional management system by the completed set n of the social economic parameters S_i ($i = 1, \dots, n$) stipulated [6]. We will describe the influences of the national environment by the completed set m of social economic

parameters V_j^{ZC} ($j = 1, \dots, m$) stipulated as well [6]. The influence of a European bordering country (countries) is identified by the completed set k of the social economic parameters V_l^{CU} ($l = 1, \dots, k$), that describe the main peculiarities of its macroeconomic SES functioning.

The influences of the local authorities will be defined by the completed set h of the target social economic parameters V_y^{MB} ($y = 1, \dots, h$) stipulated by the regional position target papers.

Undoubtedly, by the number of parameters ($n+m+k+h$) the applied building of such model is possible only by using the technologies of the data mining (*Data Mining*). The last one presupposes the regulatory activity of the neural network learning procedure and its future application. In our case in the process of studying we advise to use the approach "succession". For this purpose, a person that takes the decisions (PMD) should make a retrospective (at least for 3..5 years) set of the mentioned above indices and export it into the mining programming network for the model learning (Pic.3.).

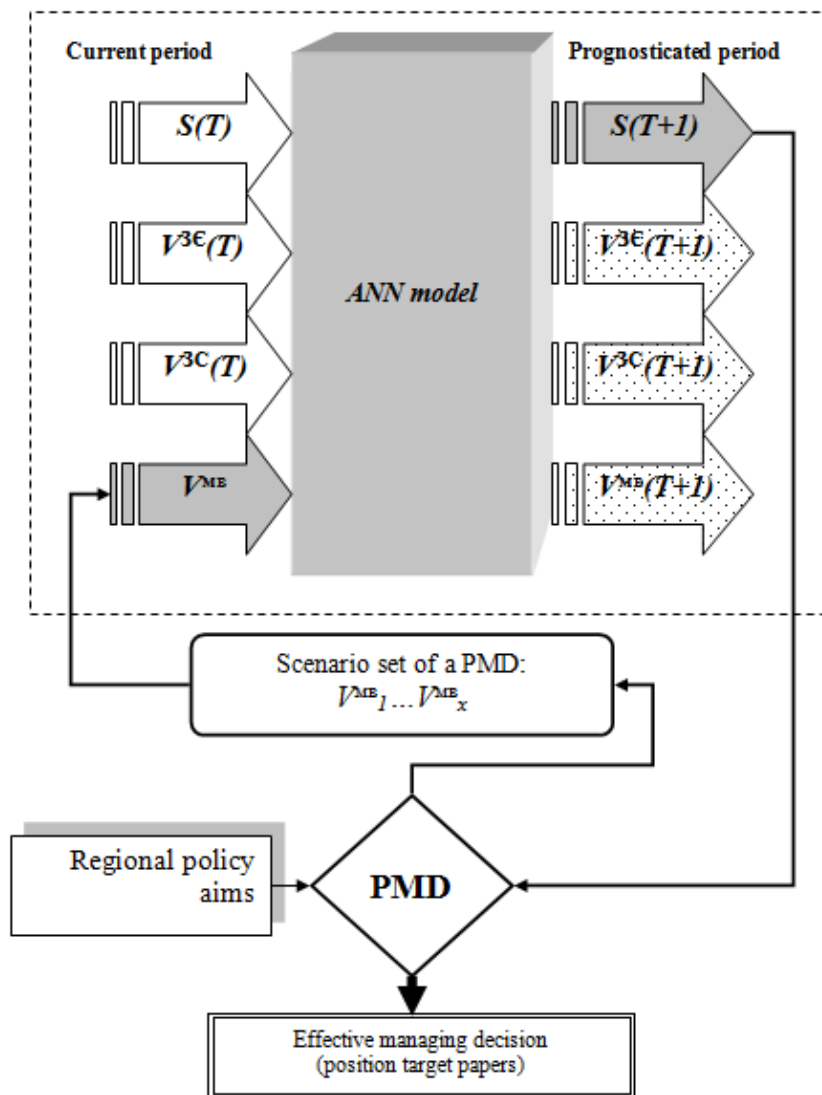


Pic. 3. Learning SES model

At the end of the learning process the model is ready for the applied use. In fact a PMD has at his/ her own disposal a model analogue of the regional SES (certainly in the concept of the black box systems of W. Ashby), in which there lays the information about the factors interplay: environment, region of a bordering country and the main fact, the retrospective factor of plan and programme resolutions of the local authorities.

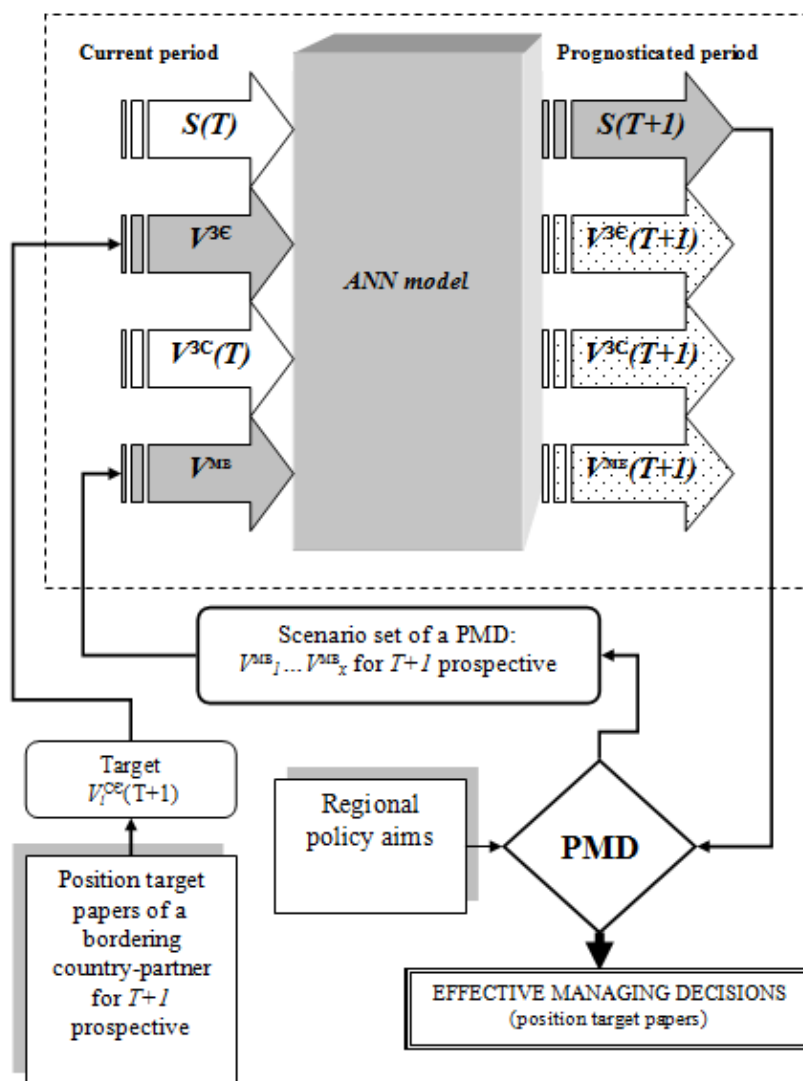
For the model application in the real time (T) a PMD forms a number of managing scenarios - $V^{MB}_I \dots V^{MB}_X$ and supplies the model on its input (Pic. 4.). It is clear that the most effective will be the concept from the set of the following scenarios: optimistic, pessimistic and real.

The received information at the model output $S(T+1)_I \dots S(T+1)_X$ is analyzed by a PMD for choosing the most optimal managing scenario in the time prospective $T+1$ (Pic. 4.), that will meet the clear aims of the regional policy. The information of other outputs is not analyzed.



Pic. 4. Applied usage of the SES model when designing regional development strategies (and other position target papers)

The universality of the model allows its usage in the case of the development strategies coordination of the region under administration and the region of a bordering country as well (Pic.5.). For this purpose, it's enough to put on the model's inputs V^{ZU} the target parameters $V_l^{CU}(T+1)$ got from the position target papers of a bordering partner for $T+1$ prospective.



Pic. 5. The applied use of the SES model when coordinating the region development strategies and the development strategies of a bordering country

Identically we may use the model when coordinating regional and national strategies of development etc.

The suggested concepts of SES modeling has undergone the adaptation and acknowledged their adequacy for solving numerous cases of regional managing tasks on the example of Chernivtsi region and other regions of Ukraine using as a programming environment data mining in the programme *Deductor Studio* and the public data of the State Statistic Service [5].

The research conclusions and prospective of its further investigation in this field

As follows, we have suggested a new approach to the methodic support of the regional management effectiveness by the implementation of a region SES model when elaborating position target papers.

The approach allows defining the possible variants of mutually beneficial regional decisions from the point of view of economy development of the regions situated near the border and taking into consideration social interests according to Pareto optimum. The prospective of the suggested method gives the opportunities, within the scenario approach, to pass from reactive approach in managing SES to active (preventive) management aimed at preconceptions of arising the crisis or irreversible processes. Moreover, this method allows avoiding the problems of the standardized system absence of statistic indices and informational database with the bordering countries' regions and avoids the problem of this data comparison.

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