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ON THE PERSPECTIVES OF «UNION OF ECONOMICS WITH BRAIN SCIENCE»

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Abstract. The modern economy is characterized by a high level of uncertainty. Under these conditions, the use of complex mathematical algorithms for enterprise management is problematic. Therefore, it is proposed to use control algorithms that are based on the simulation of the logic of the human brain. This idea was prompted by the Nobel laureate R. Schiller. On the other hand, this is even more necessary because of the current state of economic science, which mainly represents the mainstream trends. This conclusion is confirmed by the themes of the works that were awarded with the Nobel prize in Economics for the last 50 years. The part of conceptual component of these works was significantly reduced in recent years. For comparison, K. Marx's teaching, set out in his work «Capital», was chosen as an example of a conceptual approach. In order to correct this asymmetry, it is necessary to direct the vector of economic science in the direction of conceptual research. This difficult task requires more active use of computer algorithms and programs. As a result, there is a need to develop algorithms for the brain functioning model in terms of generating new knowledge and management decisions under conditions of strong uncertainty, i.e. cognitive methods and technologies of a new type.

Keywords: cognitive technology, thinking, truth, knowledge, information, brain.

The modern economy is on the way of intensive innovative development and this cannot but affect the need to develop new methods of management. This need is determined by the high systemic complexity of the economy due to the impact on the economic system of various kinds of uncertainty factors.

These factors have a very diverse nature: global economic crises, political decisions, legislative acts of the government, incompetence of managers, the level of competition, uneven development by region, industry, high rate of renewal and expansion of the range and volume of production, natural disasters, etc.

To date, a very significant Arsenal of mathematical methods and models for solving control problems under uncertainty has accumulated.

These tasks can be divided into two large groups.

In the first group, the problem of reducing uncertainty is posed and solved directly through the identification of uncertainty parameters. And then the problem of minimizing the risks in the presence of these parameters is solved.

The second group is related to the development of management methods applicable to any significant and unpredictable uncertainties. These methods should be equally successful in dealing with any uncertainties. They can be realized only on the basis of imitation of thought processes and those laws and principles which exist in a human brain. The brain is not only a flexible management tool, but it is also the only generator of new knowledge (NZ).

In the context of modern scientific and technological progress, the role of NP increases as the main factor in the development and modernization of the economy. Knowledge is considered as a resource for solving and maintaining management tasks. In this regard, modern concepts of economic management are purposefully focused on the use of algorithms for generating NC in a new quality – in algorithms for the formation of management decisions. They should manage the development, absorption, creation, use and diffusion of innovation.

It follows that the process of generating management decisions is inseparable from the processes of human thinking that generate, form and use this knowledge. Here exactly belongs the main logical link of the proposed new approach to the management of economic, on the basis of which the application of cognitive methods and technologies (CMT) is justified.

A key feature of such CMTs is that they use not so much the knowledge itself as such a property of knowledge as truth. Thus it turns out that the truth governs the economy.

However, the importance of cognitive technologies is not limited to this aspect. The proposed approach to the creation of CMT on this basis also has such a unique ability to harmonize the fractal principle of financial and economic indicators of managed economic objects. And this property is generally beyond consideration in the existing concepts of management systems of innovative development. When using CMT based on the logic of human thinking, it «chooses» a special mode, characterized by the presence in the control decisions of - as it turned out - fractal structure.

This CMT algorithm provides two essential properties:

1) in accordance with the fractal structure, financial and economic indicators of the managed innovation economic system (prices, asset structure, borrowed funds, wages, revenue, etc.) are formed.);

2) fractal structure tends to spread to managed economic systems of any level, regardless of industry and scale of activity (enterprise, industry, state, transnational Corporation, stock and financial markets, etc.).

The need for this type of CMT is long overdue. As the Nobel laureate Professor R. Schiller rightly noted [1], «... Another equally important thing is the urgent need to combine the economy with the brain science. People are now studying how the structure of the brain and mechanisms of its activity affect economic activity. In the future, their discoveries should be applied in the sphere of economic policy».

Therefore, the search for traces and consequences of the processes of direct «unification of the economy with the science of the brain» should be recognized as an extremely promising direction.

In principle, this production is not new. This kind of research has been conducted for a long time and its results are published periodically. But true to form. in all known works, which examine the impact of mental abilities of the brain on the economy, the brain is considered as a super-powerful multifunctional computer, which is configured to receive huge flows of information from the outside and effective and universal processing [2]. And it is in this that the limitations of most of the works are manifested.

Brain activity is not limited to the perception of knowledge and information from the outside, their processing and generation of new knowledge and information. It is the brain in an effort to maximize the truth of knowledge about the studied objects that has the above unique additional ability to structure new knowledge on the basis of such a worldview essence as truth. This property is little studied by modern science and therefore it is even more beyond consideration in the existing concepts of innovation management.

The economic system in this case is presented in the form of some structure evolving in the conditions of market competition. Here, many, including the most important and significant processes are determined directly by the peculiarities of the logic of the brain functioning. It is no exaggeration to say that the patterns of behavior that are present in economic processes – is an integral result of both the action of economic laws and the parameters of thinking of the totality of all people involved in these processes.

There is another circumstance that requires the study of CMT.

Abstract review of publications in the field of economic achievements of recent years showed that economic science is gradually losing its generalizing essence and is becoming more like a set of techniques. And it is correct, but partially. Due to this transformation, the detailed studies, their depth and diversification are acquired. The growth of depth and detail in economic research is accompanied by the loss of

qualitative universal generalization and integration of all aspects of economic processes into a single coherent theory.

At the same time, economic theories of such an integrating generalizing approach exist, and K. Marx's teaching set out in his main work – Capital, can serve as an outstanding example here. Let us consider in more detail the difference between «Capital» and modern trends and concepts.

Marxism, as a doctrine, has the famous «three sources and three components»: English political economy, French philosophy and German dialectics. This creates a serious methodological and philosophical Foundation for the whole theory of Marxism. The modern mainstream does not have such a Foundation. This gave Marxism the highest level of credibility that modern economic concepts lack,

Let us consider from this perspective the works, which authors were awarded with the Nobel prize in Economics. The list of those is available on the Internet [3].

It is known that the Nobel prize in Economics, since 1969 to the present time, were awarded to 78 laureates. These examples are quite representative in order to identify the familiar trend in the dynamics of the winners ' topics. This trend is the transition from major theoretical problems of a global nature to more private works, but nevertheless less significant theoretically. This does not detract from their correctness, relevance and necessity, but their generalizing level is much lower.

This trend was noted by the Nobel prize winner in 1973 V. Leontiev: «... the continuation of the activities of the Nobel Committee is problematic. I think that even now his attention is gradually shifting from theoretical economists to institutional economists. And now there is a problem, because in concrete economic researches it is possible, at least, to speak about some hierarchy, and also large steps forward, breakthroughs whereas in institutional school I really do not see any large breakthroughs» [4].

We see that in these works, in particular, system-wide principles and approaches have been removed or replaced. In this regard, it would be methodically correct to return these principles to the practice of research.

Thus, there is a need for the «scientific economic pendulum» to swing in the other direction, i.e. to direct all the power of CMT towards the development of the «lagging» theoretical generalizing component. In other words, use CMT to generate new theoretical knowledge.

And there is confidence that in this direction we should look for a way to «combine the economy with the brain science».

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