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РОЗВИТОК ПРИНЦИПУ БІНАРНИХ ВІДНОСИН В ТЕОРІЇ УПРАВЛІННЯ ЕКОНОМІЧНИМИ ПРОЦЕСАМИ

У статті виконаний аналіз змісту бінарних відносин у формі причинно-наслідкових відносин. Показано, що дана форма відносин є основною для моделювання та пізнання закономірностей відносин між елементами систем різної природи. У той же час показана можливість використання відносин у формі діалектичної єдності протилежностей категорій «одиничне — загальне» для розкриття нових закономірностей для систем у формі організованих цілих.

Ключові слова: *система, ціле, діяльність, цілісність, категорія, поняття, механізм, рух, управління, відповідність.*

1. Introduction

Categorical apparatus of the modern management theory of economic processes, as basic categories include the categories «system», «control» and «relation».

Currently, there is no unambiguous definition of the category of the «system».

The most common is the definition of a system through the category of «whole», eg, in the form of a «coherent set of objects (elements) interconnected by mutual relations» [1].

L. von Bertallanfi proposed to refer some systems, formed by a person to the organized wholes [2].

Thus, between the objects (elements) of the system there are installed twin (binary) ratios [1]. In the control theory, it is generally considered binary relations, which are divided into the following types [1]:

— Equivalence, tolerance, strict order, quasi, lax procedure.

Thus, each type of relationship can be endowed at least with one of the following properties [1]:

— Reflexivity, antireflectivity, symmetry, asymmetry, antisymmetry, transitivity.

If is also generally accepted the view of the system as an object that has the input, output, and it is characterized by the category of «state» [1]. It is assumed [1]:

«From the perspective of the whole system its input can be interpreted as a cause, and its output as a result. ... For organizational and human-machine systems there are the most important concepts of goals and objectives. The relationship between these concepts is the following: the results of solving problems and achieving goals are evaluated in terms of output or state. And how to change the status and outputs can only be at the expense of inputs, there is a problem of formation of such inputs at which the outputs determine solution to the problem».

Thus, for organizational system there is introduced the principle of cause and effect relationships between the parameters characterizing the state of the input and the parameters characterizing the state of the output.

Thus, under the behavior of the system they understand «changing of its state (and hence output), the outcome of which is a certain result. The behavior of the system in a way is related to the achievement of a goal or to solution to a problem. Whatever the aims and objectives we will be to talk about the processes of change in the state $x(t)$ and processes at the input $u(t)$ and output $y(t)$ of the system» [1].

From this position, it follows that the behavior of the system is considered in the form of the process or their combination, i. e. the principle of process approach toss presenting its behavior.

Important for control systems is the category of «management». Its content may be defined as following:

«We define governance as previously such use of cause and effect relationships, in which the behavior occurs, leading to the desired result (the system reaches the goal or solves the problem)» [1].

For the system causal relationships are formed, usually in the form of functional relations. The argument in this case is a function of time [1]. Therefore presented in such a way the systems relate to the system time.

Thus, in the theory of economic management (organizational systems) there is a fundamental principle of cause and effect. This principle is implemented in the theory of sets, which is the basis for the formation of mathematical models of economic processes and their management systems.

At the same time there is well-known principle of dialectical relationship concepts studied by Hegel in the theory of knowledge in the form of «general — special — concrete» [3]. Marx in Capital in the study of economic processes (category «labor»), this ratio is considered in the form of a binary relationship categories «abstract concrete — general», emphasizing the character of the «duality» of the concepts used in the study of the essence of the phenomenon.

Hegel forms triple attitude, Marx goes to a binary relation. This problem is known as the philosophy of the «mystery» of the middle member of this ratio.

In this study, a «single» will be in Nima concept characterizing the reflection of a particular object or phenomenon of the material world in the consciousness under the «general» we mean the concept is the product of intellectual activity. An example of these categories Hegel quotes to the Science of Logic, «cherry» and «fruit» [3].

Under «special» we understand the mechanism of realization of the dialectical relationship. The situation is similar in the set theory, which marks relations reveal the mechanism (process) of the implementation of these relations.

In this regard, the problem of determining whether the use of the dialectical relationship as a new binary relation to the establishment of relations between objects (elements) of organized wholes arises. The solution to this problem will apply the method of dialectical relationship to mathematical modeling, analysis and synthesis of economic processes and systems to manage these processes.

To do this, you must consider the applicability of mathematics in the form of a binary relation of dialectical relationship «general — individual».

2. Analysis of literature and formulation of the problem

The principle of cause and effect relationship is recognized in the scientific methodology. This is evidenced by the results of its application in the study of natural and social sciences.

In the work [4] the principle of cause and effect relation has been used to build the business model of resource-managing.

In the work [5] the principle of cause and effect, relations was used for the establishment of regularities laws between the practice of human resource management and organizational responsibilities on the one hand and organizational responsibilities and knowledge of the process on the other hand.

The work [6] is devoted to the development of a model of knowledge transfer in the provision of primary health care. Set indeterminacy casual of the cense and effect relationships, by the organization of communication between a doctor and a patient.

In the work [7] the principle of cause and effect relationships is applied to analyze the effectiveness of the implementation of quality management systems and the establishment of relations among the organizations of the third social sector.

The analysis of these given sources has shown that the principle of establishing of cause and effect relationships is decisive in carrying out scientific investigations in different branches of knowledge.

To find a possible application of the principle of dialectical relationships in mathematics, and therefore in the scientific disciplines based mathematics there is an analysis of content standards ISO 80000-2: 2009 [8] done.

In mathematics and the theory of sets there is not a binary relation to sets and/or their components in the form of a dialectical relationship «general — single» and a sign designating it. Therefore, in the mathematical set theory models an of organized whole the given form of relationship (unity of opposites) is not applicable.

3. The object, purpose and objectives of the study

The object of the study are the principles of relations between objects (elements) that are implemented in systems as well as in organized wholes.

As mathematical modeling techniques, analysis and synthesis are key in the study of systems of economic management, the challenge is the inclusion of such relations in the theory of sets, or obtains a reasonable conclusion that such relations are not possible for this area of expertise.

The purpose of the study is to establish the possibility of representing a binary relation in the form of dialectical unity of opposites «general — individual» and the formation of a corresponding sign for the given relationship.

The objectives of the study is to establish the characteristics of an organized whole, which can be characterized as a «single», «special», «general» and formation of binary relations on their basis.

To achieve this goal it is necessary to perform the following tasks:

1. The establishment of the characteristics of an organized whole, which can be characterized as a «single», «special», «general».
2. Establishment of laws (rules) for an organized whole on the basis of binary relations.

4. The results justify the possibility of submission of a binary relation in the form of dialectical unity of opposites in «common — a single» for the model of an organized whole

Process approach as a basis for a systematic approach, based on a consideration of the subject area through a cause and effect relationship.

In the work [9] for the system we have established the possibility of its representation in the form of a physically organized whole consisting of two parts, namely: the input of resources and the final product characterized by the categories of «general» and «single». This follows from the fact that the input resources, being, in fact, physical objects, at the same time quantitatively, qualitatively and in an appropriate form are defined in mental activity. Output resources are given to us in a physical form in the final form of the single result. Their concentration is provided by control mechanisms and transformation (realization of a process), characterized by the category of «special» in existence.

In the work [10] we proposed use the principle dialectical unity of two organizational problems in the framework of a holistic approach to the presentation of activities of the organized whole.

Solving one of these problems provides the formation of the project of the future result, and the solution to the second problem provides this result.

These problems relate to both categories of «general» and «specific». This follows from the fact that the formation of the future outcome of the project is the result of human mental activity and therefore can be characterized by the category of «general» and to ensure the results obtained is the result of his or her physical work and can be characterized by the category of «single». The dialectical unity (concentration) on solving problems by decision of the special additional task by a special mechanism to ensure the compliance characterized by the category «special» in cognition.

At the same time, for the category of «activities», the content of which is not determined as a process, but as the structure of the organizational tasks being undertaken by

the organized whole there are, introduced characteristics of the «integrity of operations» and «unit of activity». It is proposed to consider integrated activity «unit operations» in the form of a draft of future result and outcome, characterized in terms of «general» and «unit» in cognition.

Between the process and the activity of the « the unit the activity» there is also set dialectical relationship «single» and «general» in the form of dialectical unity of «a particular result» of the process (single) and «philosophical zero» for the activity (total).

In the work [10], we also analyzed the relationship between the categories «the system» and «an organized whole» and it shows that they relate to each other as «single» and «general». This follows from the fact that the result of the system in the form of a process always has a concrete physical meaning (it is an isolated case), and the result of an integrated activity of an organized whole in the form of a «unit of activity» is always the same — «philosophical zero».

We have also shown that the general principle of the formation of both of the process and activities of «unit operation» is the principle of the dialectical unity of opposites of categories of «single» and «general» in the presence of mechanisms of such concentration, characterized by the category of «special».

5. Discussion of the results justify the possibility of submission of binary relations in the form of dialectical unity of opposites of categories «single» — «general»

Thus, the introduction of additional consideration categories of «activity in the form of the structure problems», along with the traditional view of «activity as a process» and «unit operation» with the result of the re-integrated activity in the form of «philosophical zero», allowed us to obtain essentially a new type of an organized whole a dialectically organized whole.

This dialectically organized unit consists of two parts, characterized dialectically by opposite state forms, which are implemented in the form of two organizational tasks. The solution to the first task ensures the formation of the project of future result, and the decision of the second problem provides the programmed result. At the same time, their union is ensured by a special mechanism entrusted with the task of ensuring compliance with the result obtained by the project.

For thus dialectically formed organized whole the following laws can be installed.

5.1. The activity rule. Activity of a dialectically organized whole has a dual character: on the one hand «unit operations» is realized in the form of integrated operations, its result is a «philosophical zero», characterized by the category of «general», and on the other hand the physical process of getting a specific result, characterized by the category of «single» is realized.

The consequence of this rule of a rule of causality. The dialectical relationship between the parts of an dialectically organized whole is set to their states at the stage of its formation. The cause and effect relations are established between the parts and/or for processes within the very parts of the implementation phase of the integrated activity.

On the basis of this rule it is possible to solve the problem of forming factor. What is the formative factor for a dialectically organized whole? The answer is unequivocal: the presence of dialectically by opposite states expressed in their quantitative and qualitative characteristics. In general systems theory, this task is formed as the problem of system family factor.

The consequence of the rule of causality is the problem of primacy in the implementation of organizational goals. Which is the primary task in the implementation of integrated activity? The answer is obvious. Without a solution to the problem of formation of future progress in the project of integrated activity «unit of activity» is not possible.

5.2. The rule result. The result of an integrated activity of a dialectically organized whole is always equal to «philosophical zero». Therefore, a balance of characteristics of the project of the future result and the result obtained must be ensured and the result obtained must be ensured. The condition for achieving this balance is the availability of a mechanism to ensure this compliance.

The consequence of this rule is the requirement of full mutual information definition (conditionality) of project characteristics desired result and the characteristics of the obtained result.

5.3. The Rule of duality. Dialectically integrated activity of an organized whole includes:

— There are two parts able to implement two organizational tasks.

— Processes to solve these problems can be related to the organizational processes (the formation of the future of the results project) and product process (getting result). For them there can be established on the basis of dialectical relationship the principle «general — individual».

— Resources used for the implementation of these processes forms can also be attributed to the implementation of the resources of the organizational processes and resources of the realization of technological processes. They can be installed on the basis of dialectical relations on the principle «general — individual».

— The time periods during which to solve organizational problems are solved, may be characterized as a period of time of drafting future outcome (organizational time), a period of obtaining the desired result (processing time), the period of existence of the result obtained. Between the time of drafting the future result and the obtained result they can be installed on the basis of dialectical relationship «general — individual».

As an interesting consequence of the rule of duality there is the possibility of establishing a link between the categories, with hints of information theory: «data» and «information».

The category of «data» is encouraged to identify asfollowing:

— The data is a reflection of the characteristics of the state of the object, phenomenon, or its essence in a different (media).

The category of «information» is proposed to define as following:

— Information is the data reflected in the concept of the object, phenomenon, or its essence.

It follows that these data are inextricably linked with their carrier. Without data carrier, there are no actual data.

The storage medium is always a physically (materially) existing object. Therefore, it can be characterized by the category «single».

In turn, the information is inextricably linked with the notion of thought formed in the process of mental activity. Therefore, it can be characterized by the category of «general». This implies the presence of a dialectical relationship in the form of «single — general» between the categories. Therefore, the category of «information» and «data» cannot be determined separately.

5.4. The rule concentration. Combining the two parts of the dialectically organized-whole is possible only by the presence (the ability to form) the internal mechanism for ensuring compliance (balance) of their states. To identify this mechanism in the formation of the set-theoretic mathematical model of the dialectically organized whole we proposed to use the mark «yin-yang».

6. Conclusions

As a result by the solution to, the first problem we have established the possibility of representing the system in the form of physically organized whole consisting of two parts, namely of inputs and the final product characterized in terms of «total» and «unit».

Also, the possibility of submission of activity of an organized whole based on the principle of the dialectical unity of the two organizational problems, solving one of which provides the formation of the project of the future result, and the solution to the second problem provides this result. These problems relate to both categories of «general» and «specific».

Between the process and the activity of «unit the activity» there is also set dialectical relation «single» and «general» in the form of dialectical unity of «a particular result» of the process (single) and «philosophical zero» for the activity (total). It is shown that for the categories of «system» and «an organized whole» there are also true dialectical relationship categories «single» and «general».

As a result, the solution to the second task a new object of condition is formed a dialectically organized whole.

This dialectic organized unit consists of two parts, characterized by dialectically opposite state forms, which are implemented in the form of two organizational tasks.

For this dialectically usually organized whole there is formulated the rule of activity, the rule of result, the rule of duality and the rule of concentration, allowing to form it and to implement its activity.

References

1. Pospelov, G. S. Programmno-tselevoe planirovanie i upravlenie (vvedenie) [Text] / G. S. Pospelov, V. A. Irikov. — M.: Sov. radio, 1976. — 404 p.
2. Von Bertallanfi, L. Obshhaya teoriya sistem — kriticheskij obzor. Issledovaniya po obshhej teorii sistem [Text]: sbornik perevodov / L. von Bertallanfi; Eds.: V. N. Sadovskiy, E. G. Yudina. — M.: Progress, 1969. — 520 p.
3. Gegel', G. V. F. Nauka logiki. Pervaia chast' Obiektivnaia logika [Text]. Vtoraia chast'. Subiektivnaia logika [Text] / G. V. F. Gegel'. — Sankt-Peterburg: Nauka, 1997. — 800 p.
4. Ficapal-Cusí, P. New Human Resource Management Systems in Non-Based-Knowledge Firms: Applications for Decision Making on the Business Performance [Text] / P. Ficapal-Cusí, J. Torrent-Sellens // Modern Economy. — 2014. — Vol. 05, № 02. — P. 139–151. doi:10.4236/me.2014.52016
5. Obeidat, B. Y. The Relationships among Human Resource Management Practices, Organizational Commitment, and Knowledge Management Processes: A Structural Equation Modeling Approach [Text] / Bader Yousef Obeidat, Ra'ed (Moh'd Taisir) Masa'deh, Ayman Bahjat Abdallah // International Journal of Business and Management. — 2014. — Vol. 9, № 3. — P. 9–26. doi:10.5539/ijbm.v9n3p9
6. Elwyn, G. Sticky knowledge: A possible model for investigating implementation in healthcare contexts [Text] / G. Elwyn, M. Taubert, J. Kowalczuk // Implementation Science. — 2007. — Vol. 2, № 1. — P. 44. doi:10.1186/1748-5908-2-44
7. Juaneda Ayensa, E. El reto de la calidad para el Tercer Sector Social. Análisis de casos de implantación del modelo EFQM [Text] / E. Juaneda Ayensa, L. González Menorca, C. Marcuelo Servós // Cuadernos de Gestión. — 2013. — Vol. 13, № 2. — P. 111–126. doi:10.5295/cdg.110285ea
8. ISO 80000-2:2009. Quantities and units — Part 2: Mathematical signs and symbols to be used in the natural sciences and technology [Electronic resource]. — Available at: \www/URL: http://www.iso.org/iso/rss.xml?csnumber=31887&rss=detail
9. Dotsenko, S. Process and activities of the «unit of activity» — two forms of the organized whole [Text] / S. Dotsenko // Technology audit and production reserves. — 2014. — Vol. 5, № 1(19). — P. 9–12. doi:10.15587/2312-8372.2014.28079
10. Dotsenko, S. On the issue of system methodology crisis and ways to overcome it [Text] / S. Dotsenko // Technology audit and production reserves. — 2014. — Vol. 4, № 1(18). — P. 12–17. doi:10.15587/2312-8372.2014.26230

РАЗВИТИЕ ПРИНЦИПА БИНАРНЫХ ОТНОШЕНИЙ В ТЕОРИИ УПРАВЛЕНИЯ ЭКОНОМИЧЕСКИМИ ПРОЦЕССАМИ

В статье выполнен анализ содержания бинарных отношений в форме причинно-следственных отношений. Показано, что данная форма отношений является основной для моделирования и познания закономерностей отношений между элементами систем различной природы. В тоже время показана возможность использования отношений в форме диалектического единства противоположностей категорий «единичное — общее» для раскрытия новых закономерностей для систем в форме организованных целых.

Ключевые слова: система, целое, деятельность, целостность, категория, понятие, механизм, движение, управление, соответствие.

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