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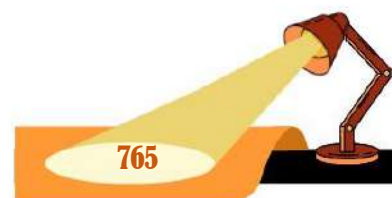
SYNERGETIC APPROACH TO MANAGEMENT ACTIVITIES IN ECONOMIC PROCESSES

Abstract. The synergetic approach to management activities in economic processes is considered. Synergetics is understood as an interdisciplinary scientific direction, one of the objects of study of which are synergetic/cooperative, as well as self-organizing effects/processes in natural and social systems. The synergistic approach reveals a common basis for the functioning of living and economic/business systems.

It is shown that the synergistic approach is intended to solve some of the most important problems of the modern economy, as well as education, namely, the phenomenon of half-life of the competencies of a modern specialist (stemming from the rapid development of scientific data, production technologies, which quickly become obsolete), narrow specialization and profiling of a modern specialist, which enhances the effect of the mentioned phenomenon.

A synergetic model of organizing and managing a company's business is represented (reflecting the general theory of a functional system, when functional systems – temporary associations of body structures with different functional modularities – are constantly created in the human body to perform certain operations) using temporary target management teams, which consist of representatives of different departments of the company, as well as public organizations, united for a while in order to solve certain management/production problems, while performing such functions as analytical and prognostic, reflexive and monitoring, managerial and executive. The functions of temporary target management teams are compared with the phenomenon of "team spirit", which was studied by scientists and realized in such concepts and phenomena as: collective subject of activity; joint activity, organizational identity. psychological climate. team roles, group mental states; cooperative learning, brainstorming, professional spirituality, etc.

Keywords: synergetics, human capital, self-organization, phenomenon of half-life of modern specialist competencies, management, campaign, social synergy, functional system, diffuse specialization.





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СИНЕРГЕТИЧНИЙ ПІДХІД ДО УПРАВЛІНСЬКОЇ ДІЯЛЬНОСТІ В ЕКОНОМІЧНИХ ПРОЦЕСАХ

Анотація. Розглядається синергетичний підхід до управлінської діяльності в економічних процесах. Синергетика розуміється як міждисциплінарний науковий напрям, одним із об'єктів вивчення якого постають синергетичні/кооперативні, а також самоорганізаційні ефекти/процеси в природних та соціальних системах. Синергетичний підхід розкриває спільну основу для функціонування живих і економічних/ділових систем.

Показано, що синергетичний підхід покликаний вирішити деякі з найважливіших проблем сучасної економіки, а також освіти, а саме, феномен напіврозпаду компетенцій сучасного фахівця (що пов'язаний зі швидким розвитком наукових даних, виробничих технологій, які достатньо швидко застарівають), вузька спеціалізація, профілізація сучасного фахівця, що посилює дію зазначеного вище феномену.

Репрезентується синергетична модель організації та управління бізнесом компанії з використанням тимчасових цільових управлінських команд (що відображають загальну теорію функціональної системи, коли функціональні системи – тимчасові об'єднання структур організму з різними функціональними модульностями – постійно створюються в організмі людини для виконання певних операцій), які складаються з представників різних відділів компанії, а також громадських організацій що об'єдналися на деякий час з метою вирішення тих чи інших управлінських/виробничих проблем, виконуючи при цьому такі функції, як аналітико-прогностичну, рефлексивно-моніторингову, управлінсько-виконавчу. Функції тимчасових цільових управлінських команд порівнюються з феноменом «духу спортивної команди», який досліджувався вченими та реалізувався у таких поняттях та явищах, як: колективний суб'єкт діяльності; спільна діяльність, організаційна ідентичність. психологічний клімат, командні ролі. групові психічні стани, кооперативне навчання, мозковий штурм, професійна духовність та ін.

Ключові слова: синергетика, людський капітал, самоорганізація, феномен напіврозпаду компетенцій сучасного фахівця, управління, кампанія, соціальна синергія, функціональна система, дифузона спеціалізація.





INTRODUCTION OF THE ISSUE

In the context of radical socio-economic transformations in Ukraine, revealing the democratization of social processes, it is important to introduce new models of management in economic sphere. The problematic aspect of the latter, in our opinion, lies in the fact that the management by most scientists is associated with the peculiarities of the controlling process rather than with the systems being controlled.

At the same time, until now, the specifics of the implementation of control functions in business systems in the process of their development have not been sufficiently studied concerning the use of *synergetic/interdisciplinary approach*.

CURRENT STATE OF THE ISSUE

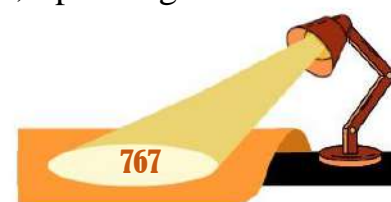
At large, we can mention a lot of applications of synergetics principles and phenomena in physics, biology, medicine, cognitive science, computer science, psychology, physiology, sociology, economy, ecology, philosophy, epistemology, linguistics, information theory, neuroscience, control and management theory: the synergetic concept of self-organization, indirect/soft control of processes via control parameters, etc. [1; 2; 3].

R. Benedict has revealed the processes of high level of cooperation, low level of aggression, profound sense of responsibility, high degree of trust among members of primitive societies with high level of social synergy, characterized by minimal centralization [4]. The phenomenon of social synergy has been applied to the individual behaviour by A. Maslow who has shown a correlation between high individual synergy in a community and psychological health of its members [5].

V. Bekhterev, a neurologist and the father of objective psychology, investigated the phenomenon of the group energy that stands in direct ratio with mutual consensus of group's members [6]. The group energy reveals the phenomenon of psychological field of K. Lewin [7], as well as the functional synergy of the hemispheres of human brain. These phenomena can also be analysed on the level of planetary processes: V. Kaznacheev has put forward a theory of cosmic consciousness of humanity.

The concept of social synergy has been further deepened in the theory of social capital relating to social processes in terms of social interactions and social ties being a resource for obtaining benefits due to exchange in social contracts, social emotions [8], social behaviour and social trust among people engendering their dynamic participation in public associations, fostering the electoral activity, enhancing respect for the norms of reciprocity, a sense of security, trust in neighbours and social institutions, the satisfaction with relationships [9].

In social and economic sphere the phenomenon of social synergy/social capital is revealed in so called social *system of exchanging services*, operating with





the time spent on providing services which can be used as money a person can make thus revealing the socio-economic phenomenon of “time bank” associations [10].

The analysis of scientific sources gives reason to assert that *control and management in the sphere of organizational structures for business systems* is one of the main objects of research by both scientists and practicing managers. M. Albert, M. Meskon, F. Khmil, V. Shatun, A. Shegda, and others considered the issue of control improvement in their scientific publications [11].

Any type of management presupposes certain *organizational structure* (determining how information/functions flow/distribute between levels within the organization), being a *system* characterized by certain activities (including rules, roles, responsibilities, decision making, etc.) directed to achieving the goals of an organization (having such types of its structure, as: the hierarchical, functional, horizontal/flat, divisional, matrix, team-based, network, process-based, circular, line, etc.) [12–15].

It is also important to mention some elements that help make a successful company/business system:

- 1) core values, a solid foundation,
- 2) community, respect,
- 3) communication, friendship,
- 4) company dedication to development,
- 5) consistency.
- 6) incentives,
- 7) work environment,
- 8) the right people on a company/team,
- 9) processes in place,
- 10) a profitable structure,
- 11) credibility and fairness,
- 12) effective leadership and management,
- 13) history, powerful narrative, pride,
- 14) belonging, codes, rituals,
- 15) vision and strategy, an intention and plan, mission, etc.

The mentioned elements being incorporated into a certain system, must focus around an element that is a system-forming one. We believe that *this system-forming element is effective management*, that determines the company/business system’s efficiency and success. That is why the researching of management processes and management structure became relevant starting from the 30s of the 20th century [16]. At the same time, the current state of socio-economic development of the world requires new approaches to the solution of the mentioned problem.

The aim of the research is to investigate the management structure and processes in the context of the development of the most effective – systemic/





synergistic – style of controlling the economic systems, as well as to propose some innovative approaches in the sphere of organizational structures for business.

Research methods: theoretical analysis, including, synthesis, comparison, modelling, which allows to build a model of the process of synergetic control of economic systems.

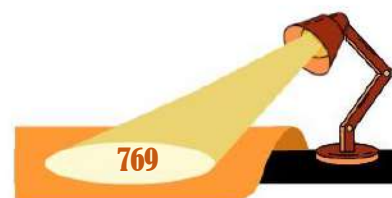
RESULTS AND DISCUSSION

The *synergetic* approach to the development of business systems can solve the so called problem of “*specialization and differentiation in labour/managerial activities*” which reveals a serious problem for the sphere of professional education, which cannot adequately respond to the rates of technological development of modern world, since the content of education undergoes fundamental changes over the course of five-ten years of professional training, revealing the problem of the “*half-life of specialist's competence*”: the average annual growth rate in new knowledge on our Planet is 4-6%, therefore, a specialist should receive about 50% of professional knowledge after graduating from relevant educational institution. At the same time, the amount of time required to update professional knowledge for specialists with higher education is 28% of the total amount of time that an employee has at his disposal during the entire working period.

This problem can be solved by using the mechanism of self-management realising the self-regulative processes “from below” since the excessive specialization in managerial activity is quite detrimental from the point of view of psychology of labour as well as labour productivity. In this respect, we can mention the principle of “diffused” specialization which has been realized in the book *Range: Why Generalists Triumph in a Specialized World* by David Epstein [17].

It is very important to note that according to cyber-law of correspondence of the diversity of the controlling element (the controller) to the diversity of the element being controlled (W. R. Ashby's *law of necessary diversity*), the diversity (or information uncertainty) in a controlled element can be decreased due to corresponding increase in the diversity of the controlling element [18]. So, the management efficiency can be achieved when the information diversity of the controlling subsystem is no less than the information diversity of the controlled subsystem [19].

In modern economic systems the information diversity of a controller (a manager) cannot be more than the information diversity of manager's subordinates. This problem can be solved by a such *synergetic coordination of the management activity* that presupposes the use of *temporary committees (teams)* for solving especially difficult problems appearing in the systems. It should be noted that the first application of the target business teams found its place in Ukraine where A. Makarenko organized the so called “temporary working teams” [20]. This





synergetic method coordination of the management activity is used in Japan in the form of *self-directed temporal target business/management teams* (TMT), when specialists from diverse subdivisions come together for solving specific problems [21].

The functions of TMTs can be compared to a phenomenon “*the spirit of the sports team*”, which has been investigated by the scientists and has been realized in such concepts and phenomena: the collective subject of activity; the joint activity [22]; the organizational identity [23]; the psychological climate [24]; the team roles [25]; the group mental states (S Moscovici); the cooperative (learning, the brain storm, the professional spirituality, A. Makarenko's temporary working teams [20].

It is important to note that the method of cooperative/synergetic management of business processes presupposes involving each TMT member to joint activities in the course of which an exchange of specific/unique skills, competencies and knowledge takes place that lead to integrative/*efficient* results in management activities.

Any TMT member reveals twofold character: on the one hand, the member belonging to certain department of the business organization (firm, company, corporation, etc.) is characterized by a certain position/post in this organization; on the other hand, the member must assume one of the several replaceable psychological and functional roles, such as: “*generator of ideas*”, “*functionary*”, “*inspirer*”, “*leader*”, “*anatomist*”, “*critic*”, “*nihilist*”, “*researcher*”, etc.

Each member of the team possesses a certain set of competences in a particular social/educational/economic area. This set of competences is limited by the character of member's activities and due to this limitation reveals the possibility of his/her errors. Let us suppose that the member can make one mistake in two hundred. Then the probability of the correctness of the subjective assessment given by the member, due to the above factors, is 0.995

Hence, the overall probability of the correctness of the subjective assessment given by the member equals: $P_1 = 0.7 \times 0.7 \times 0.995 = 0.487$,

and the probability of an erroneous assessment equals: $P_2 = 1 - 0.487 = 0.513$.

The probability of obtaining an erroneous assessment based on the simultaneous acceptance of erroneous assessments by all members can be defined as:

$$P_2 = [1 - (1 - 0.3)^2 \times 0.995]^4 \approx 149 \times 10^{-6}$$

It is obvious that an increase in the number of members of temporary self-ruled managerial target teams reduces the probability of making erroneous decisions.

At large, there are different hierarchical levels/planes of TMT. These planes can be combined according to the cooperative-purpose principle in order to solve managerial problems.

Let us represent the contextual example of the use of synergetic *temporary self-ruled managerial target teams* in the ***business organization and management*** (Figure. 1). The functional ties of the elements of a TMT can form different





functional configurations within certain temporary relationships, and the time limits of TMT can extend from several weeks to several years when several TMTs can be integrated into different management activities, forming *a complex spatial-temporal hierarchical organization patterns*.

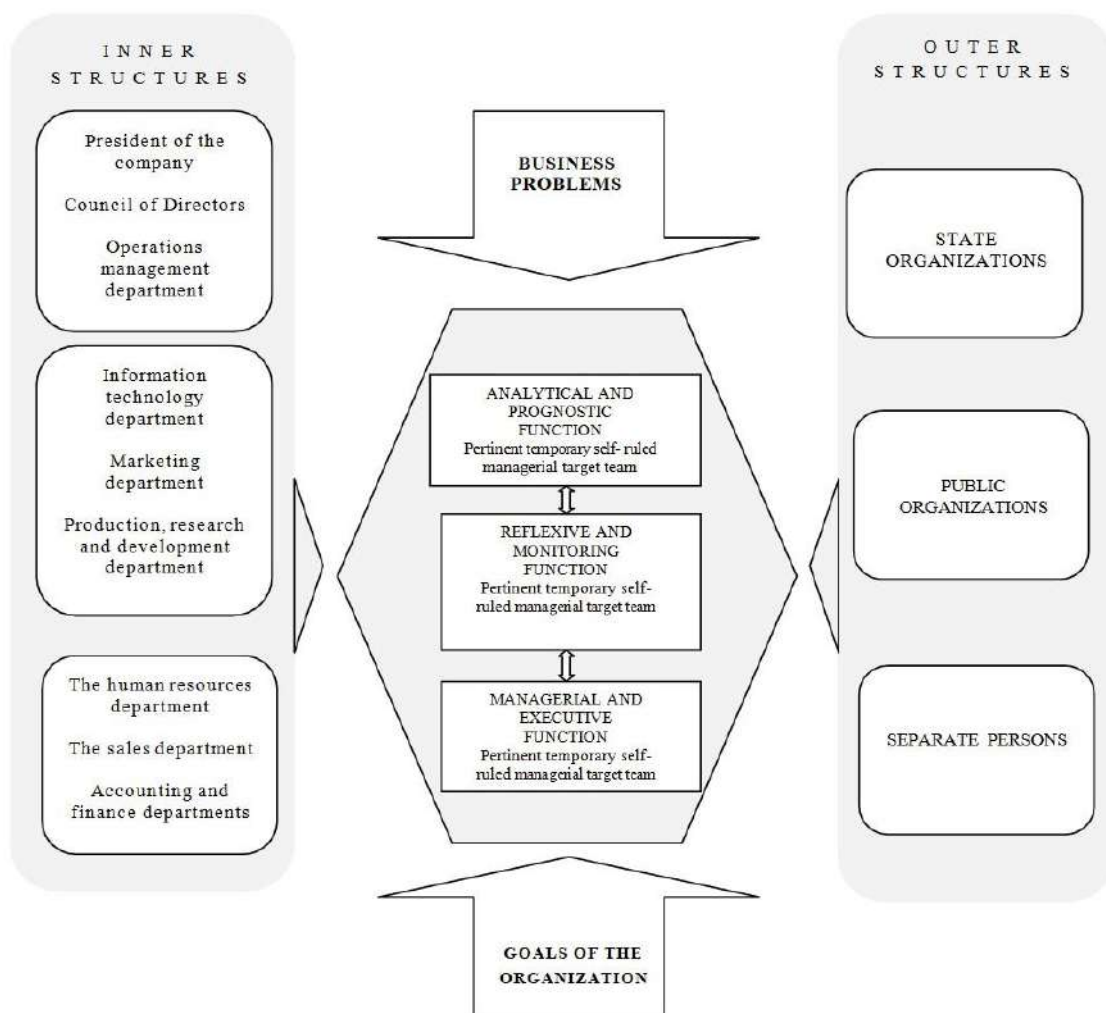


Fig. 1 The synergetic model of company business organization and management with use of TMTs

So, the peculiar features of TMT lies in joint activities of its members who are involved on the process of exchanging specific knowledge, skills, competencies for obtaining integrative/effective results in management activities.

CONCLUSIONS

The article outlines the main characteristics of economic management with the use of synergetics approach being implemented in the TMT. “Basically, the





major tasks facing the temporary team are similar in nature to that of a permanent team. Team members need to build relationships, establish a supportive emotional climate, and work out methods for (1) setting goals, (2) solving problems, (3) making decisions, (4) ensuring follow-through and completion of tasks, (5) establishing open lines of communication, and (6) ensuring an appropriate support system that will let people feel accepted and yet keep issues open for discussion and disagreement” [27].

Hereby the number of operations are reduced, especially when the workers gain the universal qualification in the process of their activities. In our opinion, this is the way of solving the problem of half-life of a specialist's competence. Thus, the synergetic business systems can be organised within the so-called *target business teams, or temporary self-ruled managerial target teams* reflecting *the general theory of a functional system* (P.K. Anokhin [28]) when functional systems (temporary unions of body structures with different functional modalities) are constantly created in human body for performing certain operations. Thus, the synergetic approach centers on the organic processes going on in nature and in human society that reveal common foundation for functioning living and economic/business systems.

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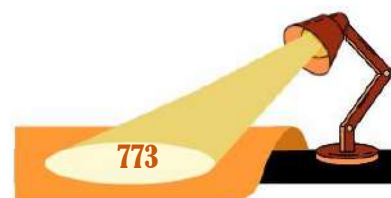
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