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PROFESSIONAL TOURIST TRAINING OF FUTURE MANAGERS: CONCEPTUAL APPROACHES

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Introduction. The need for reforming the Ukrainian education system, improving it and raising the level of the quality of training specialists is a major socio-cultural problem that is largely conditioned by the processes of globalization and the needs for the formation of positive conditions for individual development, socialization and self-realization in this world.

The process of modernization of higher education in Ukraine in the context of the Bologna Process most certainly affects higher education and higher education institutions. Taking into account the place and role of tourism in the life of society, the state, according to the Law of Ukraine "On Amendments to the Law of Ukraine "On Tourism", proclaims tourism as one of the priority directions of economic and cultural development and creates conditions for tourist activities.

Hypothesis of scientific research. The directions of training future tourism managers are considered on the basis of the model of a competent graduate. The criteria for the activity of teachers in higher education institutions and the possibilities for their selection are formulated. It is noted that the teacher should possess modern technologies of general and professional education, a set of effective methods and techniques, sufficient amount of professional knowledge to provide education for future tourism professionals (teaching, planning, management of didactic and educational systems).

The aim of this study is to highlight conceptual approaches to the preparation of future tourism managers.

Research methods:

– *theoretical analysis* - to determine the state of disclosure of the research problem in the psychological and pedagogical scientific literature, the study of normative and legal documents in the field of education;

– *comparison, classification, generalization* - for definition of joint characteristics of objects on the basis of processing and interpretation of theoretical sources on the problem of tourism education in universities;

– *diagnostics* (questioning, conversation, testing, observation, expert evaluation);

– *mathematical statistics* - for processing the data of education institutions;

Results: an approach is proposed to build a holistic process for the formation of a student's personality, which should be based on the characteristics of his upbringing in the system of tourism: education through nature, culture (the principle of visualization), the formation of tolerance; humanization of relations, education in a group (team), ecology of the individual.

Conclusions: Work on developing the concept of professional training for future tourism managers led to the conclusion that a conscious and thoughtful program of actions for the organization of the educational process and vocational training precedes the training of students.

Keywords: vocational training, tourism, student, educational, process.

Formulation of the problem. The need for reforming the Ukrainian education system, improving it and raising the level of the quality of training specialists is a major socio-cultural problem that is largely conditioned by the processes of globalization and the needs for the formation of positive conditions for the individual development of man, his socialization and self-realization in this world. In Ukraine, as in other developed countries of the world, higher education is recognized as one of the leading sectors of the development of society. The strategic directions of the development of higher education are determined by the Constitution of Ukraine, the laws of Ukraine "On Education", "On Higher Education", the National Doctrine of Education Development, decrees of the President of Ukraine, decrees of the Ministry of Education and Science of Ukraine.

The main goal of the state policy in the field of education is to create conditions for the development of the personality and creative self-realization of every citizen of Ukraine. Priority directions of the state policy regarding the development of higher education are: the personal orientation of higher education, the formation of national and universal values, the creation of equal opportunities for citizens in obtaining higher education, the introduction of educational innovations and information technologies, the formation in the education system of regulatory legal and organizational economic mechanisms attracting and using extra-budgetary funds, raising the social status and professional workers education, strengthening of their state and public support, development of education as an open state-public system; integration of domestic education in the European and world educational spaces and the rise of higher education in Ukraine to the level of higher education of the developed countries of the world [Modernization of higher education in Ukraine and the Bologna process // Education of Ukraine. 2004.-No. 60-61, - P.7-11].

The process of modernization of higher education in Ukraine in the context of the Bologna Process undoubtedly affects higher education. Taking into account the place and role of tourism in the life of society, the state, according to the Law of Ukraine "On Amendments to the Law of Ukraine" On Tourism ", proclaims tourism as one of the priority directions for the development of the economy and culture and creates conditions for tourism activities [In the Law of Ukraine "On Amendments to the Law of Ukraine "On Tourism" (№1282-IV from November 18, 2003), article 4].

In parallel with the above mentioned, the problem of the qualitative preparation of tourism managers for activization of the physical culture, health and cognitive movement of the Ukrainian population is becoming topical. It is conditioned by the sphere of organized recreation of citizens, full-fledged leisure; a decrease in the scale of health work in educational institutions, in the organization of additional education at the place of residence.

It is known that the quality of work on education, health improvement, education of the population using tourism is determined by the state of the resource base, cultural, ethnographic and expeditionary work.

Analysis of the latest publications and the unsolved part of the problem. The analysis of literary sources on the problems of theory and practice of tourism proves that activity, physical exercises combined with the formation of spiritual culture, satisfaction of the spiritual needs of the population of Ukraine in studying their native land, folklore and folk art contribute a better attraction of people to a healthy lifestyle [1, 6–10].

These ideas lead us to the idea that in the content and structure of the professional training, future tourism managers must understand such subjects as the tourist and regional profile, the programs for the intellectual development of children, information about the moral and ethical aspects of the public consciousness and behavior of the person, the theory and methods of physical activity etc. [2].

The process of preparing future tourism managers, in our opinion, should provide the assimilation of a set of professionally-oriented sections of education, both economic, pedagogical, sports and recreational activities. The content of the above sections should be aimed at building the skills and abilities of the individual work of future tourism managers; the development of programs for animation, the use of funds in combination with active forms of movement, the formation of the ability to ensure the safety of life of tourists and familiarize them with the beautiful world of nature, culture, social reality. Moreover, a large number of scientific research in Ukraine (V.K. Fedorchenko, N.A. Fomenko, M.I. Skripnik, G.S. Tsekhmistrova, A.P. Konokh) and in Russia (B.X. Gadzhiev, V.K. Kvartalnov, S.V. Chepik, and others) experience that tourism and local history work provides a comprehensive approach to the education of tourists [3].

The aim of this study is to highlight conceptual approaches to the preparation of future tourism managers.

Results of the study. Our analysis of the conversations with the heads of tourist companies in the cities of Vinnitsa, Zhytomyr, Chernigov, and Kyiv showed the need for qualified tourism specialists who were well versed in tourism and local history, knew several foreign languages (Russian, German, English), were physically and mentally well prepared. It is established that to ensure high efficiency and safety on the routes of non-category tourism, a "guide" position with specialization (water, hiking, mountain tourism, etc.) is required.

We believe that the work of the future tourism specialist is closely related to preparing him for educational activities. Therefore, in our opinion, in addition to the training component, it is necessary to lay the goals, tasks, content, and methods of educational activities in the competence of continuing education for future tourism managers.

According to Yu.M. Laguseva, mission of the higher school is a fast and methodical professionalization of the industry of tourism, strengthening of its positive influences on all spheres of a life. Achieving this goal is impossible without effective educational impact [4].

Thus, the construction of a holistic process for the formation of a student's personality should be based on the characteristics of his upbringing in the system of tourism activities, which include: nature, culture (the principle of visibility), the formation of tolerance; humanization of relations, education in a group (team), ecology of the individual.

In the opinion of B.C. Ledneva, the section of the theoretical preparation of the future tourism specialist and organization of sports and health tourism should encompass the education of a professional positive orientation - fostering love for the chosen profession and fostering vocational, professional, communicative and vocational-physical qualities [5].

Therefore, the planning of educational work at the university was designed, first of all, for the professional education of students, which was carried out in the course of all its traditional directions. However, the main ones were the physical and labor education of students. Both labor and physical education of future tourism managers was carried out through their voluntary participation in the organization of tourist trips and competitions in the spring-summer and winter period in the Carpathians. In this regard, the basic components of education, in the pedagogical process of the university can have the following content:

1. Education of a free personality, which is inherent in: a high level of consciousness; citizenship, sense of personal dignity; self-respect, self-discipline, honesty, truthfulness; orientation in the spiritual values of life; activity and independence in making personal decisions, responsibility.

2. Education of the creative personality: development of abilities, knowledge, skills; development of sensory and intelligence, intuition.

3. The education of a humane personality with its inherent sensitivity, mercy and kindness to man, the ability to compassion, altruism, tolerance, integrity, modesty, understanding of the values of life, peace, nature etc.

4. Education of the spiritual personality: the need for constant knowledge of the world, self-knowledge of oneself, one's spiritual world, beauty, communication, reflection, search for the meaning of life; integrity and independence of the internal personal world.

5. Education of a practical person: knowledge of the fundamentals of the economy; diligence, economy; possession of foreign languages, knowledge of folk crafts and crafts, religious customs; healthy lifestyle; physical training, aesthetic taste, etiquette, good manners, hospitality, the desire to build a house, ensure the welfare of the family.

6. Education of a highly qualified specialist: erudition, competence; managerial abilities; communicative; ability to creative professional thinking, knowledge of history, theory and practice of tourism; mastering pedagogical skills; Stability, knowledge of psychology.

In order to form a fully developed personality in the process of education, it is necessary to solve the tasks of mental, physical, moral, aesthetic and professional education. It is practically impossible to separate these tasks from each other, since the main thing in the educational process is harmony, unity and integrity.

It is well known that the formation of personality is carried out by such means of education as microenvironment and macroenvironment; the personality of the teacher (educator), various types of tourism, including professional and practical. The most important aspect of the educational process is the personality of the teacher. That is why the preparation and selection of the teaching staff, which ensures the implementation of curriculum content and professional education, is the essence of one of the main and serious organizational problems. Given the content, goals and objectives of training future tourism managers, we formulated the criteria for the activities of university teachers and the possibility of their selection.

The teacher should possess modern technologies of both general and professional education, a set of effective methods and techniques, sufficient amount of professional knowledge to provide education for future specialists (teaching, planning, management of didactic and educational systems).

Throughout the world, pedagogy knows the best way to influence students – this is a personal example of a teacher. Therefore, forming the qualities necessary for the future tourism manager through the content of the academic discipline, the teacher must personally possess these qualities. So, a number of serious requirements are put forward to the personality of the teacher.

The main requirements: love of students, to pedagogical activity, the availability of special knowledge in the field in which he teaches students; wide erudition, pedagogical intuition; highly developed intellect, a high level of general culture and morality; professional possession of various methods of teaching and educating students.

Additional requirements: sociability, artistry, sense of humor, good taste, etc.

In the structure of pedagogical activity, organizational, constructive, gnostic and communicative components must be implemented.

When forming the faculty members, such ways were justified: competitive selection of scientific and pedagogical workers with experience of pedagogical work related to tourism; Training of teachers from among the best graduates of the University.

Conclusions and offers. Work on the development of the concept of professional training for future tourism managers led to the conclusion that a conscious and thoughtful program of actions for the organization of the educational process and vocational training precedes the training of students.

Prospects for further research in this direction will be carried out in the practical implementation of the concept of professional training for future tourism managers, the implementation of the above concept requires appropriate legal, socio-economic, material and financial conditions.

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PHYSICAL CULTURE AND SPORTS SERVICES CONTENT: CRITERIA AND COMPONENTS

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Introduction. The analysis of the research has established the lack of a clear internal logic in the construction of a set of criteria for classification services in the field of physical culture and sports. A large variety of criteria, on the one hand, provides an opportunity to get acquainted with the various components of the content of services, which is important for solving practical problems, for example, for the development of a strategy of marketing by sports organizations, the definition of target markets, or for the formation of social standards of consumption of services by the state. On the other hand, relying on such approaches to the classification of sports and sports services, it is extremely difficult to solve the tasks of scientific research. First of all, this relates to the scientific analysis of the system of market relations in the field of physical culture and sports, the nature of the functioning of subsystems or individual components of which is determined by the specific features of this or that kind of physical culture and sports services.

The purpose of the study is theoretical and methodological justification of the classification of physical culture and sports services in the context of determining the indicators of the impact of the results of professional activities on the field of physical culture and sports.

Results. The article analyzes the main approaches to the classification of sports services in order to determine the economic indicators of influence on the industry. The criteria of the classification of physical culture and sports services have been determined, which made it possible to establish a classification of physical culture and sports services, where all services are divided into physical education, physical culture and health, sports training, sports-entertainment, physical education and rehabilitation, which form these services.

Conclusions

1. It has been considered that the criteria for classification of sports services are: the social significance of needs that are satisfied as a result of the consumption of a particular service; a way of compensation for the use of services; the form of the existence of a particular service; regularity of consumption of services.

2. The classification of physical culture and sports services is defined, where all services are distributed to physical education, physical culture, health, sports and fitness, sports training, sports-entertainment, physical education and rehabilitation, and the indicators that form these services.

Keywords: sports services, classification, factors, professional activity, physical culture and sports, rehabilitation, health.

Formulation of the problem. In countries with socio-economic systems of a market type, the functioning and development of the sphere of physical culture and sport has certain features. It is conditioned by external factors to the sphere of physical culture and sports – political, social, economic, cultural etc.

At the same time, it should be borne in mind that the originality of the sphere of physical culture and sport as a social system, its self-sufficiency is largely determined by internal factors of the inner plan, the effect of which is the process of functioning and development of the sphere of physical culture and sport, signs of law.

In our opinion, the origin of these factors should be sought in the professional activities inherent in the field of physical culture and sports, namely in the content and outcome of this activity. The validity of this formulation of the question is confirmed by other studies. In the socio-economic sense, physical culture and sports are considered by researchers as a service sector. A professional activity of the subjects of this sphere is interpreted as being embodied in a specific result – the service of physical culture and sports. These services belong to the class of socio-cultural services, that is, services that provide satisfaction of spiritual, intellectual needs and maintenance of normal life of the consumer. This emphasizes the important social role of physical culture and dispute as an effective means of improving the overall culture of man.

Analysis of recent research. In particular, the study of the economic aspects of the functioning of the physical culture and sports industry was carried out in the scientific papers of such foreign and domestic scientists: S. Guskov [2], M.Y. Zolotov [6], O. Ivanova [7], M. Kut'epov [9], Yu.P. Michuda [10], P. Rozhkov [14], O. Stepanova [16], G. Arnaut [17], G. Bartunek [20], M. Koleman [22], R. Giulanotti [25], M. Mondello [26] and others.

Unsolved issues. The analysis of the scientists researches [3, 5, 8, 12, 13, 18, 19, 21, 23 and others] established the lack of a clear internal logic in the construction of a set of criteria classification services in the field of physical culture and sports. A large variety of criteria, on the one hand, provides an opportunity to get acquainted with the various components of the content of services, which is important for solving practical problems, for example, for the development of a strategy of marketing by sports organizations, the definition of target markets, or for the formation of social standards of consumption of services by the state. On the other hand, relying on such approaches to the classification of sports and sports services, it is extremely difficult to solve the tasks of scientific research. First of all, this relates to the scientific analysis of the system of market relations in the field of physical culture and sports, the nature of the functioning of subsystems or individual components of which is determined by the specific features of this or that kind of physical culture and sports services.

The purpose of the study is theoretical and methodological justification of the classification of physical culture and sports services in the context of determining the indicators of the impact of the results of professional activities on the field of physical culture and sports.

Main results of the study. There is no doubt that the classification of physical education and sports services should be simple and understandable, and criteria reflect the most significant components of the socio-economic content of the service. However, the most important requirement for classification should be consistent with its purpose and research objectives. In our case, the attribution of sports and sports services to a certain type should be carried out in the interests of analysis of features, as well as the regularities of the functioning and development of subsystems of the market relations of the sphere of physical culture and sports. In addition, the set of criteria should be well-ordered. In our opinion, it is methodologically advisable to rank the criteria according to the degree of socio-economic significance of the services, with taking into account the determining features of their commercial form. Therefore, the set of criteria for classification of physical culture and sport services should be divided into two levels. The first level is the main (determining) criterion. Such criterion is the content of the need that is satisfied by the use of certain physical education and sports services. The second level is the rest of the criteria, which are auxiliary and reveal the essential parameters of physical culture and sports services, classified to the types determined by the main criterion. Among them: the social significance of the needs satisfied with the consumption of services; regularity of consumption of physical education and sports services; the form of the existence of physical culture and sports services; a way to compensate the consumption of physical education and sport services (Table 1).

Let's define and consider each type of sports and sports services.

Physical education service is a kind of physical culture and sport activity, which is based on the use of means of physical culture in order to achieve the optimal individual level of health, as well as the development of motor skills and psychophysiological indicators necessary to maintain a healthy lifestyle and professional human activities.

The direct producers of physical education services are educators of pre-school educational institutions, teachers of secondary schools and teachers of higher educational institutions. The production of such services is carried out in the form of a training session (lesson, etc.), which is conducted in accordance with special methods. The unit of measurement and registration of physical education and educational services is one training session of the appropriate duration. Consumers of physical education services are pupils of pre-school educational institutions, students, cadets, military servicemen.

Consumer categories indicate that physical education is the most massive kind of physical culture and sports services, which belongs to the immediate needs of a person. Almost every person in a certain period of his life enjoys them. Every year in Ukraine, almost a third of the population are consumers of physical education and educational services. It should be emphasized that physical education service require regular consumption, which is provided by the appropriate organization of the educational process in educational institutions.

Table 1

Classification of physical education and sports services

Criterion	Sports and fitness services
Contents of the needs satisfied with the consumption of the service	Physical Education
	Physical Fitness and Wellness
	Physical-rehabilitation
	Sports-entertainment
	Sports-training
	Physical education and rehabilitation
The social significance of the need, satisfied with the consumption of services	Service that meets the immediate needs of life
	A service, consumption of which is not caused by the primary necessity of life
Regular consumption	Service is effective only in case of its regular consumption
	Service that does not require regular consumption
Forms of existence	Service that exists as a real process of physical culture and sports activities ("live" service)
	Service that exists in the form of an electronic version (television report, video recording, video copy etc.)
Method of compensation for the consumption of the service	Free of charge
	Paid

Fitness and health service is a kind of physical culture and sports activity, which is based on the use of physical exercises in order to preserve and strengthen the health of people, to form their skills in a healthy way of life. Such services are provided by sports and recreation organizations – sport clubs, fitness clubs, fitness centers, health centers, etc. The direct producers of physical culture and health services are relevant specialists – instructors, methodologists, trainers, organizers. Production-consumption of physical education and health services is carried out in the form of a health-improving class or in the form of classes aimed at the development of motor skills and skills from individual sports. Classes can be conducted both in the group (collective consumption) and individually with the use of techniques that take into account the individual needs of the client.

The unit of measurement and accounting of services is one kind of recreational activity, the duration of which is determined according to scientifically grounded methods. Consumers of services are representatives of various age and professional groups of the population. To get the desired effect from consumption of physical culture and health services, their regular consumption is mandatory. This is due to the substantial costs of the consumer's time and requires him a lot of perseverance and will. Despite this, in the highly developed countries consumption of physical culture and health services is massive.

Sports and recreation service is a kind of physical culture and sport activity based on the use of sports in order to preserve and strengthen the health of people, to involve in the values of sport, the formation of healthy lifestyle skills. Sports and health services are provided by sports organizations (sports clubs, sports centers, sports facilities etc.). The direct producers of sports and health services are trainers and instructors.

The organizational form of production-consumption of sports and health services is a training session aimed at developing skills and the development of physical qualities from individual sports. The unit of measurement and recording of sports and health services is one sporting and recreational activity, the duration of which is determined in accordance with scientifically grounded methods. Consumers of services are representatives of various age and professional groups of the population - amateur athletes. In order to obtain the necessary effect from the consumption of sports and recreational services, their regular consumption is mandatory. It should be noted that the regularity of consumption of sports and health services is, comparatively with physical culture and health services, achieved a little easier, because by its nature sports, which are inherent in game components, are more attractive than physical exercises.

Sports-entertainment service is a kind of sports activity based on the use of sports in order to achieve a specific psycho-emotional state of people and is characterized by the emergence of a sense of empathy and aesthetic pleasure. Sports and entertainment services are provided by sports organizations – sports clubs (teams). The direct producers of this service are athletes, trainers, judges. Production-consumption of sports and entertainment services is carried out in various forms. This may be a sporting event, a sports and sports event of spectacular nature (theatrical performance, a holiday, a concert etc.). The unit of measurement and recording of sporting and entertainment services is one sporting and entertainment event, the time and other parameters of which are determined in accordance with officially approved rules of sport and rules of competition.

Consumers of these services are viewers. Compared with entertainment services of other sectors of the economy (for example, arts), sports-entertainment services are more crowded. To a large extent, this is due to the relative democratic nature of their content, the simplicity of perception. For the mass spectator it is quite enough to know the meaning and rules of sports competition to meet their need for a spectacle. In addition, in contrast to the artistic spectacle (opera or drama performance), the sports spectacle does not require significant intellectual tension, which simplifies its perception-consumption.

Sports-entertainment service also differs from other types of sports and sports services. As it was noted, in order to fully meet the needs of physical education, physical education and health-improving services, consumers should consume them regularly according to scientifically grounded techniques. Consumption of sports-entertainment services does not require this. The effect of the viewer's perception of a specific sports spectacle practically does not depend on how many competitions he previously visited. That is, each separate service can be fully consumed autonomously, regardless of the previous one. Sports-entertainment service has one more difference: its production does not involve the direct participation of the consumer-viewer in sporting activities. In this case, the consumer plays a more passive role than the consumer of physical culture and health services.

Sport-training service – a kind of physical culture and sports activities aimed at achieving the desired psychophysiological state of the athlete, which is manifested in the level of his athletic form. The direct producers of such services are trainers from various sports. Production-consumption of sports-training services has the form of a training process (training session), which is carried out in accordance with scientifically grounded methods. The unit of measurement and registration of sports training services is one training session, the duration of which is determined in accordance with scientifically grounded techniques. The consumers of these services are athletes.

Unlike other sports and fitness services, the sports training service provides for a more rigid form of consumer behavior, regulating its actions not only during the period of consumption (training), but also beyond its borders. In order to achieve the desired level of form, the athlete must follow the training techniques, withstand high stress, subjugate his life to a strict regime. It requires significant emotional and intellectual efforts. Sport-training service can be considered as pre-sporting entertainment service. As a rule, they are closely interconnected. The first one provides the necessary prerequisites for ensuring the high quality of the second one. It is hard to hope for a bright sports spectacle, meaningful game or martial arts if they were not preceded by a complete training process.

Physical-rehabilitation service – a kind of physical culture and sports activity, aimed at restoring health of people after their diseases by means of physical culture. The direct producers of such services are specialists in physical rehabilitation.

Production-consumption of physical education and rehabilitation services has the form of rehabilitation lessons, which is carried out in accordance with scientifically grounded methods. The unit of measurement and registration of physical education and rehabilitation services is one physical education and rehabilitation class. Consumers of the indicated services are those who need recovery after suffering diseases. Each type of service is consumed with appropriate additional and related services that are not rigidly fixed. Their list may vary depending on many factors and is determined by the owner of the physical culture and sports organization in accordance with well-founded recommendations of management specialists. This, in particular, shows the practice of providing additional and related services to US sports clubs [4, 10, 11, 16, 24 and others].

One of the important criteria for the classification of physical culture and sports services is the social importance of the needs that are satisfied by the consumption of a particular service. According to this criterion, physical culture and sports services are divided into two types: 1) services to meet the immediate human needs of life; 2) services whose consumption is not caused by the primary necessity of life.

The first kind of services include physical education, physical education, health and rehabilitation services. This is objective, because any society interested in (including economically) have a population with a fairly high level of health, so that each new generation enters an independent working life physically tempered with the ability to lead a healthy lifestyle. This goal is achieved through the physical education of the population, that is, providing it with physical education. Given the high social significance of these services, they are recognized by the society as being mandatory for consumption by people of the respective age groups.

Physical education by conducting compulsory classes is carried out in pre-school, secondary, vocational, educational and higher educational establishments in accordance with the curricula approved in accordance with the established procedure.

Primary life needs are also provided by athletic, recreational, sports and health services. Therefore, the production-consumption of services of these kinds of highly developed society also considers as one of its main tasks in the field of social policy.

Services that are not critical to a person include sports training and sports-entertainment services. It's natural. After all, sports training services are consumed in a relatively narrow circle of people, whose activities are expanding in the field of sport of higher achievements, in order to create purely professional qualities. And for athletes-professionals, such consumption is primarily a condition for securing oneself for life, and not a prerequisite for the development of the individual. As for sporting and entertainment services, they cannot be considered as the only means of self-improvement of a person. Consumption of them is, rather, a form of leisure, entertaining. And the functions of self-improvement can be successfully performed, for example, services in the field of culture.

Regularly, consumption of physical culture and sports services is divided into: 1) services that bring the effect only due to their regular consumption; 2) services that do not require regular consumption.

The first type, as already noted, includes physical education, physical culture and health, sports and recreation, sports training and physical rehabilitation services. Their consumption takes place in accordance with special methods (technologies), which provide for a certain periodicity of classes (educational, health, training) in order to achieve the desired result.

The only service that belongs to the second type is the sport-entertainment service: its consumer-viewer can achieve the desired effect as a result of attending one particular sporting event or other sports spectacle. Moreover, visiting several consecutive competitions does not guarantee the desired effect due to the objectively inherent in this service of instability quality: an extremely exciting spectacular game can be alternated with boring and uninteresting.

According to the form of physical culture, sports services are divided into: 1) services that exist as a real process of physical culture and sports activities ("live" service); 2) services existing in the form of electronic versions (television broadcast, video etc.).

The first kind of services include the above-described physical culture and sports services: physical education, physical culture and health, sports and recreation, sports and entertainment, sports training and physical rehabilitation services. All of them represent the process of "live" work of the relevant specialists in physical education and sports. In modern conditions, when a significant level of development reached the means of mass communication, it can be argued about the existence of a secondary, derivative sport and fitness service - its electronic copy. By its content - it is an ersatz-service, because the consumer perceives the process of rendering services (physical education, recreational activities, sports spectacle, etc.) to a large extent by the eyes of the manufacturer of an electronic copy of the service (operator, director, commentator).

In addition, of course, the electronic copy represents not the entire service, but its individual fragments, which significantly affects the overall impression of the true content. For example, a television broadcast of a football match is a set of sequential snippets of events: their content and duration are determined by the operators and the broadcast director. In addition, the perception of broadcast by the audience is largely dependent on the commentator, which gives his own interpretation of this or that episode of the competition.

It should also be borne in mind that the user of the electronic version of physical education and sports services is separated from its manufacturer. Given this, he does not get the opportunity to directly influence the quality of the service. He can do this only indirectly, through a market mechanism, because of a change in demand for services, that is, by visiting or not attending a fitness center or athletic competitions involving the athlete or team involved. In this sense, the electronic version of physical education and sporting services has much in common with the material product.

However, we should note some of the benefits of the electronic version of physical education and sports services. Thanks to it, it is able to satisfy (albeit not fully) the need for physical culture and sports services of a large number of people. Broadcast sports contests gather millions of viewers in many countries around the world. Thanks to the technical capabilities of the television, viewers can watch the most interesting moments of the competition several times and from different angles, and the comment gives additional information about the course of the competition, its participants, etc. All this undoubtedly raises the usefulness of the electronic version of the service, the effect of its consumption, offset to a certain extent those defects that were discussed.

There is another criterion for the classification of physical education and sports services. This is a *way of compensation for the use of the services*. Modern economic systems are characterized by two methods: free and paid use of services. The sports services themselves are divided into: 1) free; 2) paid.

The attribution of physical culture and sports services to free or paid is due to the social importance of the need they satisfy. Services that satisfy the immediate needs of life (physical education, educational and recreational services) are consumed, as a rule, free of charge or on preferential terms. This makes it possible to ensure their consumption by the widest sections of the population. The rest of the services that satisfy not the immediate needs of the person (sports-entertainment and sports training services) are paid.

Based on the above material, we can draw the following **conclusions**:

1. It has been considered that the criteria for classification of sports and sports services are: the social significance of needs that are satisfied as a result of the consumption of a particular service; a way of compensation for the use of services; the form of the existence of a particular service; regularity of consumption of services.

2. The classification of physical culture and sports services is defined, where all services are distributed to physical education, physical culture, health, sports and fitness, sports training, sports-entertainment, physical education and rehabilitation, and the indicators surveyed that form of services.

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MOTIVATION MODEL OF STIMULATION OF ACTIVITY OF ENTERPRISE EMPLOYEES

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Introduction and aim of the research: The current stage of Ukraine's economic development requires solving the practical tasks of managing the work of the personnel of the enterprise through the application of new socio-economic methods of motivation of labor that would increase the economic interest of employees in productive and qualitative work. But the scientific elaboration of this task remains inadequate, and especially with regard to the creation of a comprehensive system of motivation for workers of production enterprises. The essence of the problems posed is the development of a comprehensive methodology for stimulating the work of workers of production enterprises.

Research hypothesis is to develop a mechanism to increase the employee's interest in implementing the goals and objectives of the company with a high level of competition in the industry and relatively low profitability of production..

The aim. Definition of the theoretical basis and methodological foundations of the complex system of labor motivation by establishing personal interest of all categories of personnel in the final result of the activity.

Methodology: at the stage of collection, systematization and processing of information for the research – inductive; in the process of theoretical understanding of

the problem – deductive, methods of analysis and synthesis – to combine various components of economic phenomena into a single process. By studying the process of motivation of labor at the stage of developing proposals for its improvement, methods of detailing, grouping, generalization, graphic, analytical, logical, economic and mathematical modeling were used.

Results: The main directions of labor motivation, motivates the activity of employees as a factor in increasing the profitability of production and doing business, making up the motivation for work, measures to develop labor motivation systems, and recommendations for improving it in the enterprise management system using motivational mechanisms.

Conclusions: It is substantiated that the process of motivation of labor in the conditions of a production enterprise should be considered as a complex process, which consists of several components, among which labor remuneration, valuation, evaluation of personnel, non-material incentive methods, system of estimation of efficiency of existing methods of promotion of labor are distinguished.

Keywords: motivation, activity efficiency, labor remuneration, personnel, effective management, human resources, motivational management mechanism.

Formulation of the problem. Effective business activity of the enterprise is mainly provided by the qualification level of its employees. Skilled workers who are motivated to create added value at the enterprise provide increased competitive positions, market status and ensure sustainable development in the strategic period. For enterprises of the entrepreneurial nature of activity it is especially relevant, as competition is increasingly developing, private capital is

gaining ground in new market niches. In these conditions, a competent policy of human resources management is a prerequisite for the formation of strategic efficiency and the stability of their activities.

This requires identifying ways to increase motivation and develop mechanisms for increasing the productivity of labor in general in enterprises and encouraging workers to manage their activities while finding promising directions for the implementation of strategic goals. An enterprise can realize its potential for economic growth only under conditions of effective motivation. Insufficient motivation in the enterprise may act as a deterrent to the growth of performance indicators. That is why the issue of improving the motivation of the staff at the enterprise is relevant and predetermined the choice of the topic of research, formed its purpose and objectives.

Analysis of recent research and unsolved part of the problem. The questions of increasing the motivation of labor, its methods and stimulation of labor are researched in the works of such scholars as: M. Meskon, M. Albert and F. Hedouri, L. Strout, E. Mayo, A. Maslow, F. Herzberg. Also found their reflection in the writings of such economists as: O.A. Bogutsky, V.G. Voronkova, V.A. Shahovogo and others.

To the question of effective motivation of labor at the enterprise were devoted scientific works of such scholars as: A. Afonin, V. Abramov, D. Bohinia, A. Grishnova, G. Dmitrenko, M. Doronina, A. Yeskov, I. Zavadsky, M. Carlin, A. Kolot, A. Vihansky, N. Lyubomudrova, V. Sladkevich, K. Aldefer, V. Vrum, F. Gertsberg, A. Kuzmin, D. McGregor, D. McClelland, A. Maslow, E. Mayo, M. Meskon, R. Owen and others.

However, there are still insufficiently studied issues related to the introduction of modern conditions of management approaches and mechanisms of motivation of staff. The importance of studying the problem of motivation in today's economic conditions is conditioned by the special value of the human factor to maintain the competitiveness and success of any business. The economic literature does not sufficiently substantiate the understanding of the process of motivation of labor resources, the peculiarities of the formation of forms, methods, and also recommendations for improving the system of motivation of labor at enterprises.

The purpose of the study is to analyze and justify the promotion of the work of workers as a factor in increasing the profitability of production, the components of labor motivation, development of systems of motivation of labor, the development of recommendations for its improvement in the enterprise management system using motivational models.

Research results. Management of human resources in general and personnel of enterprises in particular was and remains in any state the most actual problem, which can not be compared with any other, because the most

correct solution to the problem of labor management and labor behavior is largely determined by the progressive socio-economic development of enterprises and states. Personnel motivation has always been, but depending on certain factors, the economic situation of the company and the country as a whole, have changed.

The lack of a scientifically-based system of planning, organization, motivation and control of the company's activity, as well as balanced criteria for the work of its structural subdivisions led to an actual equalization in the bonus system. And the lack of highly skilled personnel capable of ensuring the proper organization and functioning of the enterprise in market conditions, virtually eliminates all attempts to develop, and especially the introduction of a highly effective system of target management, in which the dominant position belongs to the system of motivation. Further weakening of labor motivation will inevitably lead to an aggravation of negative social and economic processes in our state.

Motivation is an attribute of human consciousness that activates activity or causes its termination. The notion of wider than motivation is the admiration of labor, that is, the conviction of the worker in the expediency, the content of his work [13, c. 59]. Strong enthusiasm for employees of the organization causes a reduction in personnel turnover, but does not have a clear impact on improving the efficiency of labor. Motivation is a factor in labor efficiency, but too high individual motivation leads to numerous complications in its functioning. Therefore, it is necessary to optimize the process of motivation. Hence, there is an objective need to create a scientifically grounded mechanism of motivation of the personnel of enterprises that would be able, with the help of effective levers and incentives, to increase the interest of employees in productively and qualitatively working, to promote their competitiveness, to ensure a qualitative renewal of the working mentality. Necessary and a toolkit motivational mechanism, able to combine in a single node the goals and results of the staff to implement in practice the purpose-oriented motivation of his high-performance work.

The mechanization of the realization of the core policy is the system of plans, organizational, administrative and social measures, which are used for the elimination of certain problems and the satisfaction of the prospects for the organization in the personal.

The policy of staff is a glimpse of the strategic orientation of politics of entrepreneurship. It explains the relationship between directors and subordinates, the main problems and methods of work with personnel. The policy is directed for the formation of a corresponding, strong team, a healthy lucidly, to constant changes of the requirements of customers. The policy of a politician includes the following elements: the type of society, the style of empowerment,

the philosophy of the organization, the internal affairs, the collective agreement, the status of the organization, and their realization.

The motive of human activity is the satisfaction of their needs, which have a complex hierarchical structure, different from many individuals. Each person is directing his efforts to achieve those goals that allow him to meet his needs. Therefore, the most effective motivation is achieved when employees expect that they will receive a sufficient remuneration (material and moral), which will meet their own needs, while performing their duties and contributing to the achievement of the goals of the organization. In other words, for effective motivation, the coincidence of the goals of the workers and the organization is required. Of great importance for motivation is the awareness of the worker of the fairness of the remuneration received in comparison with the efforts expended and the benefits brought by the organization, on the one hand, and the efforts brought to the benefit and reward of their colleagues – on the other hand.

Thus, the optimization of the system of personnel motivation can give [11, c. 163]:

- increasing the effectiveness of employees;
- operational achievement of the company's goals;
- the correlation between the performance of employees with payment and non-material incentives - that is, the interrelation of efforts with the result;
- transparency of the remuneration system;
- reduction of staff turnover and overcoming personnel shortages;
- Activation of the motivation to achieve significant results and strategic goals for the company;
- balanced budget for material and non material incentives;
- improvement of the psychological climate in the team;
- increasing employee loyalty;
- improvement of team work.

In the process of motivation, it is necessary to take into account objective factors, that is, those that create independent of the subject of the prerequisites of his activity and subjective, which are associated with the perfect transformation of external conditions in the minds and psychics of people. Factors of an objective nature are considered as a sphere of external motives for activity (incentives), and subjective – as the basis of internal motives [8, p. 59].

Motivation involves tangible and intangible motives, which are based on the purposeful formation of motives of work and the use of already existing motives. In the process of motivation, many economic, organizational, legal, socio-psychological, technological and other factors should be regulated in such a way that the activities of the employees are carried out in the desired direction. Under the condition of the right actions on the part of the leadership it is possible to intensify the personality, its intellectual, emotional and volitional

spheres, to ensure the implementation of intellectual potential, creative and psycho-physiological capabilities of each working person.

It should be noted that the form and indicators of stimulation should be simple, understandable for all employees and they should be sure that their efforts and performance will not remain unnoticed. In practice, the manager must use the motives in a certain ratio, which was paid attention to the Nobel Prize winner J. Galbraith [5, p. 137]. He noticed that some motives reinforce each other, others unite weakly, and the other mutually exclude, neutralize each other.

Motivation can be done through the exchange of experience and knowledge between managers and subordinates, frank expression of opinions at meetings and conferences. To this end, managers should create an atmosphere of openness and benevolence, have a constant interest in the initiatives of subordinates, always refer to their business proposals.

Effective factors of motivation in well-managed enterprises is the awareness of the performer that his work is important and socially useful, then in the workers there is an element of professional pride, empathy for the successes and failures of the enterprise. J. Nehru rightly noted that under the wise and far-sighted leadership it is easy to see that in the end the best way to profit is to care for the benefit of the whole society, the member of which is a person (an individual).

Motivation is a psychological condition for the organization of the inner spiritual world of the individual, which determines the choice of direction of its behavior. Even more ancient thinkers have formed the law of spiritual life, according to which a person, having reached a certain level of satisfaction of his primary material needs, should not turn to self-destruction, shift his direction to achieve the spiritual goals that ennoble the person.

In management, not only material and moral incentives play a major role, but also social sanctions in relation to a person whose activity has a disagreement with certain norms of the social environment (remarks from colleagues, ridicule, etc.). It is the desire to "justify the hopes of colleagues, their loved ones", to earn their approval is sometimes a strong internal motive that helps a person successfully fulfill his duties, overcome certain difficulties [10, p. 378–384].

It is possible to point out some of the negative moments in the practice of motivation of workers in the manufacturing sector of the Ukrainian economy: excessive enthusiasm for monetary (material) incentives, the use of limited forms of incentives (money, gifts, certificates of honor, etc.), non-compliance with certain psychological and ethical norms and so on. That is, they do not fully adhere to the principles of stimulation, acquired by science and tested by many years of practice: the complexity of stimulation (material, creative, prestigious,

combination of incentives and sanctions), its publicity, involving all those involved in solving incentive issues, differentiating incentives, with taking into account the social needs of employees and their attitude to incentives, timeliness and equity of stimulation, the choice of effective remuneration or imposition of a penalty.

To negative motivation sometimes cause problems of socio-psychological nature: the relationship in the team, the prevailing psychological climate, frequent conflict situations. Practice convincingly suggests that it is more effective to eliminate anti-stimuli (negative motivations) than to overcome their harm with positive motives [1, p. 23–27]. In management, all forms of external influence on the personality of the worker should be used in order to make the desired actions on their own motives than under the influence of formal instructions.

The complexity of the motivation problem lies not in the fact that it is difficult to take into account the motivating motives of human activity with sufficient fullness, but that the structure of needs is unequal among different people, in addition, they change over time and in a certain situation.

The motivational model should be based on the current system of material and non-material stimulation. The following factors are related to material incentives: basic wages: unit (direct, part-bonus), hourly, chord-bonus, stimulation by brigade (family) contract method; additional payment for overcoming the plan of production and sale of products, payment for the quality of works and products, payment for the preservation of products; bonuses: for the final results of work, on the basis of performance of self-supporting tasks, the most important types of work, high quality of work, the implementation of scientific achievements and best practices, for innovative work and invention, the economy of raw materials and materials.

Non-material incentives, in turn, are based on the following factors: adverting gratitude with the entry (without putting) on the board of honor; awarding diplomas, valuable gifts; the awarding of honorary titles; submission to government awards.

The spectrum of the needs of the population of our country is quite wide and here we can not restrict ourselves to a certain sum of material goods, the creation of some household amenities, etc. Nowadays there is great hope for privatization as an additional source of labor activity. According to many scholars and practitioners, private property causes instinctive motivation and spiritual motives for hard work for a person, it stimulates economic entrepreneurship and personal initiative [14, p. 32–37].

In order to solve these problems, it is necessary and appropriate to use effective motivating factors, such as: organization of the production process (provision of ergonomics, hygiene, environmental friendliness, aesthetic

working conditions, clarity of the working rhythm etc.), a system of incentives for labor (adherence to principles of social justice, social assistance, compulsory compensation for material costs incurred by the employee due to carelessness), individual measures of material and moral incentives for high-quality work (remuneration, professional category, orders complex and responsible tasks, travel for training, abroad etc.), personal example and commission business.

An important element of the general moral and psychological state of man is the factor of job satisfaction. Its value can not be reduced only to the productive effect, the degree of return of the employee. Found that satisfaction with work creates a good mood, an emotional background for optimism is required, even in difficult and tense situations. At the same time, dissatisfaction with work over a long period of time causes a depressed state, pessimism, inertia. Elimination of various interruptions in the work, and the application of new, more sophisticated forms of organization of labor, which act as motivators of high-yielding labor. In developed countries, new means of motivation include "enrichment of labor", "complex optimization", "flex", "participation in decision-making" etc.

This group of motivators can include: a) the expansion of the "vertical set" of responsibilities, that is, ensuring greater autonomy and responsibility of the employee in the performance of the assignment, the inclusion in his duties of some functions of planning and control of the quality of products produced; b) the expansion of the "horizontal set of duties", that is, the introduction of greater variety in the work within a single function; c) production rotation of workers, i.e. change of professions in order to reduce the monotony of labor; d) creation of so-called "centers of quality", stimulating the initiative of workers in solving various production tasks etc. Nowadays, "centers of quality" are the form of group labor organization, which is the most dynamically developing in many countries with a market economy. The effectiveness of this form of organization of labor relies on a whole complex of very specific methods, which make up the Japanese model of intra-firm management [9, p. 112].

The manager must be able to disclose the system of perspective lines of personality, links of future activities with distant perspectives. That is, in order to ensure the success of the work of the staff was able to stimulate the immediate, medium and long-term goals and objectives of the person. The target, which becomes a driving force, becomes a motive. Goals have a great stimulus. A person who does not have a clearly defined goal, as a rule, has less achievements in work, lives today, is satisfied with elementary needs and it is difficult to pick up motivating motives for it (Fig. 1).

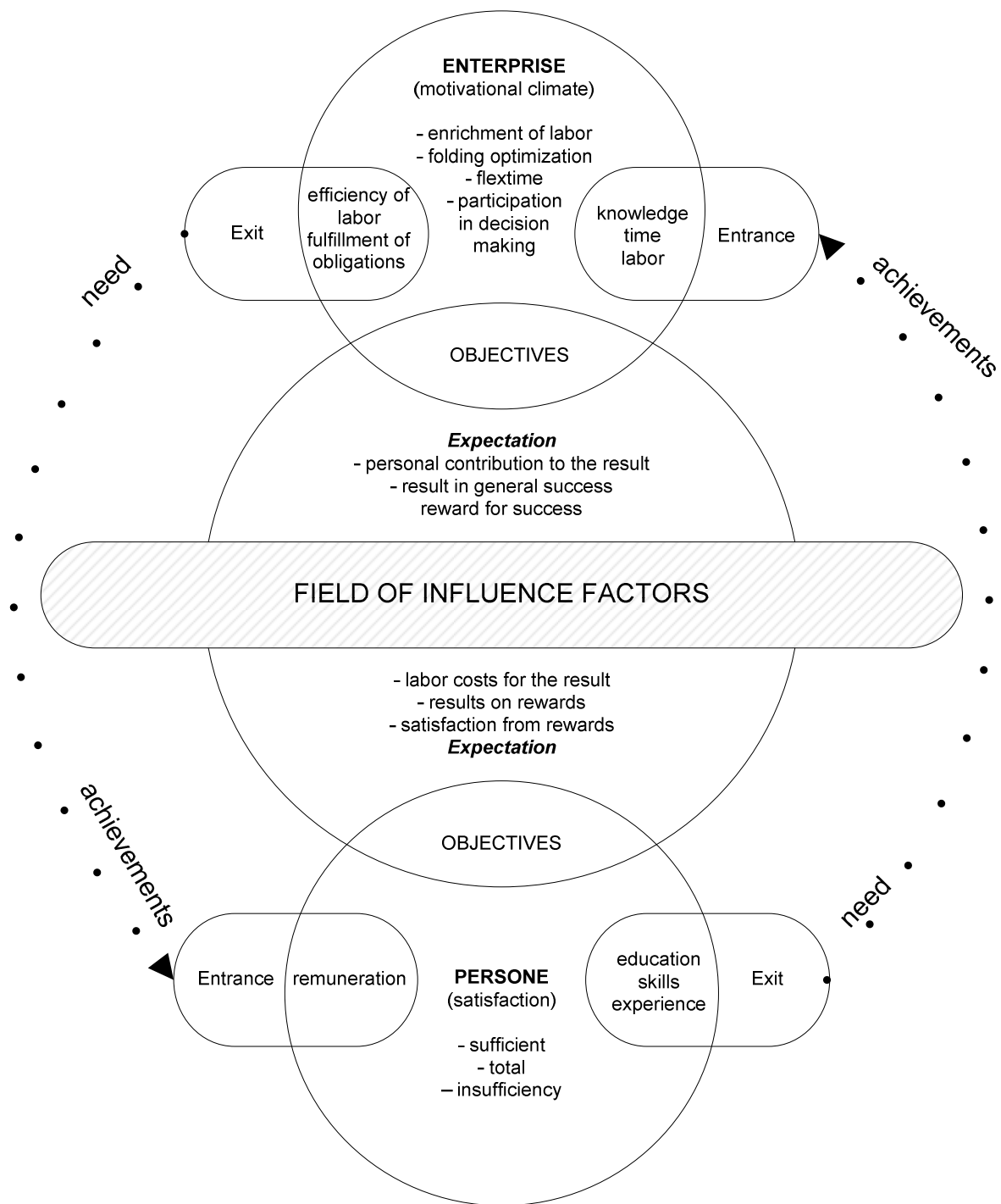


Fig. 1. Motivational model of stimulation of enterprise workers

The manager must be able to disclose the system of perspective lines of personality, links of future activities with distant perspectives. That is, in order to ensure the success of the work, for the staff to be able to stimulate the immediate, medium and long-term goals and objectives of the person. The target, which becomes a driving force, becomes a motive. Goals have a great

stimulus. A person who does not have a clearly defined goal, as a rule, has less achievements in work, lives today, is satisfied with elementary needs and it is difficult to pick up motives.

The diversity of views confirms that motivation is a complex process, the effectiveness of which is estimated by the results of the enterprise. The main tasks of motivation: the formation of each employee's understanding of the essence and importance of motivation in the process of labor; training of personnel and management personnel on the psychological basis of in-firm communication; the formation of every leader of democratic approaches to personnel management using modern methods of motivation. To solve these problems, an analysis is needed: the process of motivation in organizations; individual and group motivation; changes occurring in the motivation of human activity in the transition to market relations [2].

Motivation, as the main function of management, is associated with the process of inducing oneself and other people into activity by forming motives for achieving personal goals and goals of the organization. The content of the function of motivation is to determine the needs of staff and ensure their satisfaction in the organization; developing remuneration systems for the work being performed; the application of various forms of remuneration; the use of incentives for effective collaboration between employees in teams and the enterprise as a whole [18]. With the help of motivation, the company's management can solve the following tasks: attracting and retaining the organization of the best specialists; recognition of the work of the workers who achieved significant results, with the purpose of further stimulating their creative activity; demonstration of the attitude of the management to the high results of labor; popularization of the results of the work of the best employees; application of various forms of recognition of merit; improvement of the morally-psychological state of workers through the appropriate form of recognition; ensuring the increase of labor activity of the collective of the enterprise.

The connection of the functions of motivation and control is at all stages of the tasks subordinates, but it is especially bright at the previous and final stages of work. Preliminary control is known to be carried out before the task is started. Its means, which have a significant motivating influence on employees, can be: the development of clear norms, standards and requirements; proof of specific goals and tasks to performers; development of remuneration systems; providing all necessary; selection of qualified specialists. With the help of these tools people are given a specific content orientation, they define clear benchmarks and standards of conduct, for which workers will receive remuneration [10].

In order to improve the efficiency of the enterprise, it is necessary to improve the motivation of employees, which can give:

- increase of staff performance;
- operational achievement of the goals of the enterprise;
- a link between employee performance and payment with non-financial incentives;
- transparency of the system of encouragement;
- decrease of personnel turnover;
- improvement of the psychological climate;
- improvement of team work [4].

Under such a system of labor indicators should be understood - a set of quantitative and qualitative indicators of the effectiveness of the use of live labor in the production process [15]. The main labor indicators include:

- labor productivity (average monthly output per employee of the staff) and labor complexity of production (production program);
- number of staff (average monthly, average annual, including by categories of employees);
- enterprise wage fund, including by categories of personnel and by structural divisions;
- average wage (average monthly, annual average per enterprise: by categories of personnel, by structural units);
- general working time fund;
- fund of working time of one worker;
- average working day (change);
- number of days worked (changes, hours) by one employee or worker.

Motivation directly through work is achieved through redistribution from top managers to managers of the lower link of most non-government functions that are traditionally executed by managers. Practice shows that to create an effective motivation mechanism, it is necessary to provide almost the same level of motivation for managers and subordinates. If the individual incentives of the subordinate are stronger than the system of inducing the leader, then the subordinate becomes his opponent, or if the system of inducing the head is much stronger, and the subordinate does not have the initiative and is satisfied with the minimum of work, then in the end it negatively affects the work and calls into question the achievement of the goals [6, p. 53].

It is important to create a motivational climate of authority and control of activity, to establish trust relationships between people, to develop communication processes, to meet the needs of employees in emotional contact, to increase the degree of motivation of individual needs, to take into account the individual sensitivity to various forms of stimulation.

It is necessary to provide a fair assessment of merits or misdemeanors, avoiding exaggeration of merits or disadvantages in the activities of subordinates. Moreover, the incentive (penalty) will act with full impact when

the form and degree of promotion or charge of the head coincides with the assessment and opinion of the whole team. The incentive system should not involve frequent rewards and penalties, since under such conditions they are devalued [17, p. 33].

To overcome the disorganization of consciousness, a sense of tension, danger, disbelief, anger, etc., timely provision of the individual information about the quality of his work is essential. In the face of objective assessment, such information, on the one hand, contributes to increased confidence in the work, maintaining a good relationship between executives and subordinates, as there is no unnecessary need to remind subordinates of their lack of efforts in the work. On the other hand, information about the quality of their own work can facilitate the process of self-education and self-realization of personality [15].

In addition, we need to keep in mind one more aspect of the problem of motivation. The use of identical performance evaluation indicators for all members of the team makes it possible to successfully implement the principle of equitable distribution of the wage bill. In addition, it is important not only that payment is fair, but also to the extent that it is also recognized by all employees. Some employees, for example, indicate that the personal contribution of each manager or specialist to providing high performance indicators is usually non-equivalent to the official salary. However, often bonuses are distributed in proportion to the basic salary.

Summing up the results of this section, we will conclude that productive work delivers pleasure. Scientists believe that the feeling of a well-executed work is a pleasure for itself and, obviously, contributes to improving the effectiveness (efficiency) of labor. The management practice confirms this view and notes that high performance is the cause of total satisfaction, not its investigation.

Scientifically proved that there are various ways of motivation, the manager must:

- 1) first, establish a set of criteria (principles) that have the most qualitative effect on employee behavior. These criteria form the employee's personal philosophy, which is the basis for choosing their own behavior. By developing this philosophy, the manager can create a work environment that will motivate employees. This organizational climate will have a significant impact on the attitude of workers to the cause and they will be easier and less painful to perceive the rules and regulations of the organization;

- 2) second, to create an atmosphere conducive to motivating the workers;

- 3) thirdly, to actively communicate with their employees, because in order for the worker to be fully motivated and working with full dedication, he must clearly imagine what is expected of him. This is important not only because employees are aware of the expectations of their managers, they need to talk

about how they perform their work. Direct communication with the leader testifies to its equal availability for all workers. Feedback provides a solid foundation for motivation.

Consequently, the main measures to improve the system of motivation of labor at enterprises can be attributed: increase in sectoral minimum wages; creation of a mechanism that ensures the remuneration of employees in strict dependence on the real results of their work; increasing the motivation of the staff in increasing the efficiency of production by increasing the share of saved resources remaining at the disposal of production managers; improvement of certification system of managers and specialists of the industry, increase of objectivity and accuracy of results of attestation; clarification of the indicators of the evaluation of the activities of sectoral workplaces, subdivisions and enterprises in order to more fully reflect the tasks facing them and the functions being implemented; formation of a council for social protection for the coordination of social policy and, in particular, all elements of the system of motivation of labor (payment of labor, granting of social privileges, etc.).

Conclusions and suggestions. Thus, considering the main theoretical aspects, we believe that competently constructed system of motivation allows you to get the maximum return on each employee. That is, the main purpose of the system of motivation is to create such incentives and working conditions that employees wanted to work in order to achieve their tasks, which will increase the effectiveness of the enterprise. And the lack of employees' desire to work, that is, motivation, often leads to some problems, namely: low productivity and quality of labor, high turnover of staff, and the inability to attract the necessary specialists. Thus, the effectiveness of motivational activities in an organization can be achieved by providing a management subsystem of maximizing the level of organization of work and management, as well as encouraging staff to self-development for further professional growth. For a fair assessment of work in quantity and quality it is necessary to have levers to stimulate the factors of productive labor, such as qualifications of the worker, place and complexity of work, contribution to the final result. There are various types of incentive payments for this, which include: pay-as-you-go, bonus payments, intensity and high performance benefits, payout for particularly important and urgent work, pay for continuous work, tension bonuses and special working conditions ; raising factor to the salary.

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DEVELOPMENT OF COMPETITIVE PERSONNEL FOR SMALL AND MEDIUM ENTERPRISES

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Introduction: One of the most important tasks of the company's activity is to achieve and maintain such a level of competitiveness, which allows us to take a stable competitor's position on the market and realize the purpose and mission that the company is planning at this stage of its development.

Hypothesis of scientific research: the personnel, being one of the main components of the enterprise, together with others, ensures its competitiveness. The competitiveness of any structural unit is determined by its competitive position, and the competitive position, in turn, is the presence of competitive advantages or competitive advantage.

The purpose of the study of the authors of this article is to identify the necessary competitive advantages of the company staff, which contribute the achievement of exclusive competence of staff, and, ultimately, the competitiveness of the enterprise as a whole.

Research methods: comparative analysis - to identify, develop and enhance competitive advantages; system analysis – to substantiate the specific features of competitive advantages of personnel; matrix – for

positioning competitive advantages of personnel of enterprises; taxonomies – to calculate their magnitude and forecast directions of development.

Results: The acquisition, development and maintenance of competitive advantages as the basis for achieving the competitiveness of the enterprise is proposed to be considered in three directions: to achieve the competitiveness of the company's products; to achieve the competitiveness of the organization itself; to acquire certain, necessary for this organization, the exclusive competence of the personnel of the enterprise.

Conclusions: One of the prerequisites for proper development of an enterprise against the backdrop of acute competition is the formation of a strategy for personnel management that is adequate to the overall strategy of the organization, and one of the main prerequisites for the creation of an adequate competitive strategy for managing the personnel of the enterprise is the presence of competitive advantages of personnel, their identification or acquisition, development and consolidation.

Keywords: competitive advantages, personnel, competitiveness, competitive position.

Formulation of the problem. Creation of a system for the formation and use of labor potential involves activities aimed at providing the enterprise with the required number of employees of the necessary qualifications and competencies, their motivation and use for economic as well as social efficiency. The task of effective management is to organize the work of the personnel of the company in such a way that the competitive advantages of the staff organically fit into the synergetic unity of the overall activities of all aspects of the enterprise. In order to achieve effective influence of competitive advantages of the personnel of the enterprise on the result of its activity, it is necessary to estimate the value of this competitive advantage at the beginning of the investigated period, and then at the end of the determined period during which measures were taken to improve these

competitive advantages. The obtained indicators will give an opportunity to see and assess the degree of influence of the competitive advantages of the company's personnel on strengthening the competitive position of the company and, ultimately, on increasing its competitiveness.

Analysis of recent research and unsolved part of the problem. According to most experts, the competitive advantage of a particular object is the specific quality of this object, which is more developed in comparison with the similar property of other objects of competition. Thus, in the opinion of H. McKay, B. Carlof, the competitive advantages are all that all the strategies in the field of business are directed and formed under the influence of numerous factors: efficient production, possession of patents, advertising, literate management, attitude towards consumers [1, p. 148]. Porter defines competitive advantages as a set of factors that determine the success or failure of the enterprise in competition, as well as the productivity of resource use [2, p. 65–67]. A.P. Gradov also considers competitive advantages as the productivity of using resources, which is manifested in comparison with other economic entities (enterprises, industries, national economies of other countries) [3, p. 33–37]. At the same time, according to J. Glinn, V. Markova, D. Perkins, competitive advantages are not in the productivity of the use of resources, but in their presence and uniqueness, which will allow to win in the competition [4, p. 166]. By the definition of J.J. Lamben, the competitive advantage is those characteristics, properties (and qualities) of goods or brands that create for the firm certain advantages over their direct competitors [5, p. 251]. The achieved level of competitive advantage of an object determines its competitive position. M.I. Knysh characterizes a competitive advantage as a consequence of a more advantageous market position (ownership of a larger market share) in a particular segment [6]. M.V. Semikina, one of the first ukrainian researchers who used the term "competitive advantages of the personnel", proved that "competitive advantages open up additional opportunities for obtaining higher income (profit) for the enterprise, higher wages to the employee" [7, p. 16]. V.G. Scherbak, O.Yu. Slavgorodskaya offer on the basis of classification of competitive advantages of personnel of the enterprise to put a functional-competent approach [8, p. 94–97].

The discrepancy of the opinions of scientists regarding the definition of competitive advantages of the personnel and their impact on the competitiveness of the company has caused the relevance of the study.

The aim of the study. To analyze the influence of competitive advantages of the personnel on the level of competitiveness of the enterprise.

Research results. One of the factors of achieving the competitiveness of an enterprise is the creation and use of competitive advantages of the personnel of the enterprise, as a combination of characteristics of employees, unique in nature and inherent in this personnel structure of the company, which determine

its competitive position and promote successful competitive struggle in the market. Therefore, the competitiveness of personnel can be defined as its ability to realize its competitive advantages in such a way as to promote the promotion of the company to a better competitive position compared to other competition subjects in this market.

One of the tools of the analysis of the competitive position of the enterprise, which is created on the basis of skills and abilities of the enterprise, which, differing from the skills and abilities of competitors, gives the enterprise the opportunity "to organize more efficient in comparison with competitors, functioning of all elements of the chain of values" [9, p. 173] (Fig. 1).

Building a chain of values for the enterprise allows you to study the connection between different sections within the chain, as well as the relationship between carriers and consumers; to identify those activities that are crucial for satisfying consumer needs and success in the market; conduct a comparative estimate of the company's costs and compare the cost structure with competitors. According to some authors (M.I. Karlin, Yu.B. Ivanov) [10, p. 88], the chain of values of the group "Labor potential of the enterprise" is realized through the interaction of a whole subsystem of indicators, which include the qualification and professional level of personnel, the system of motivation labor, system of reproduction of labor potential, social and psychological stability of the personnel. The relationship between these indicators is given in the following scheme (Fig. 2).

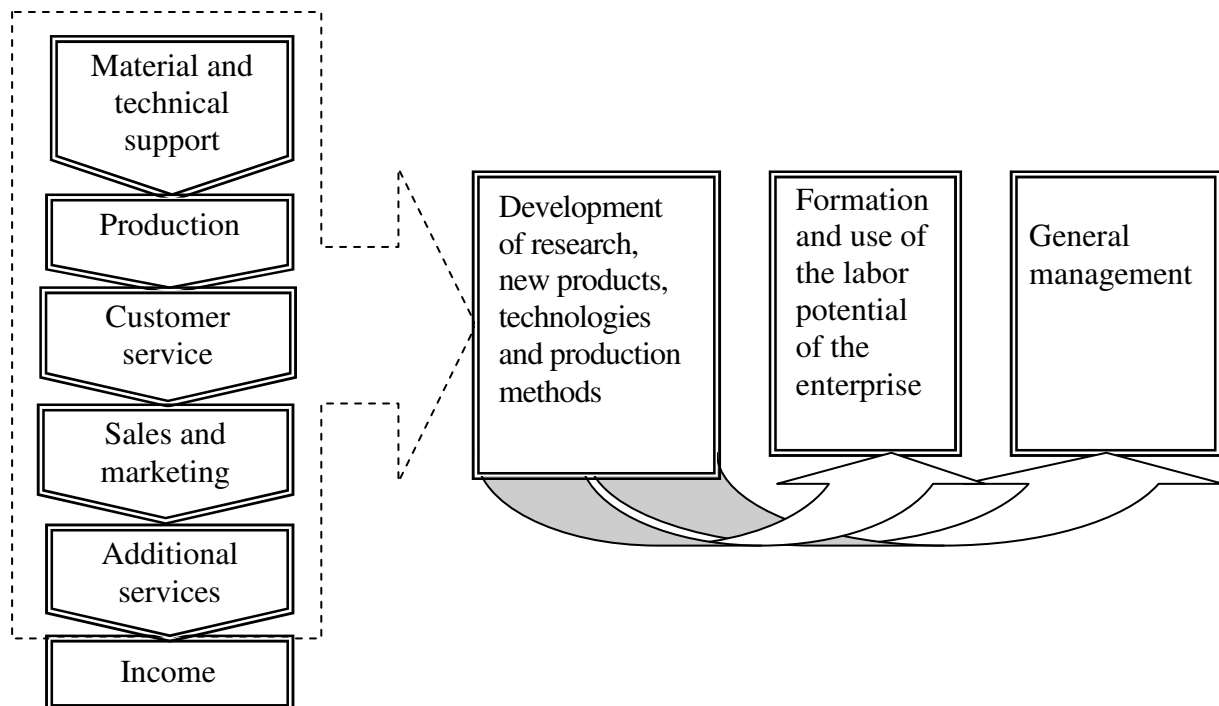
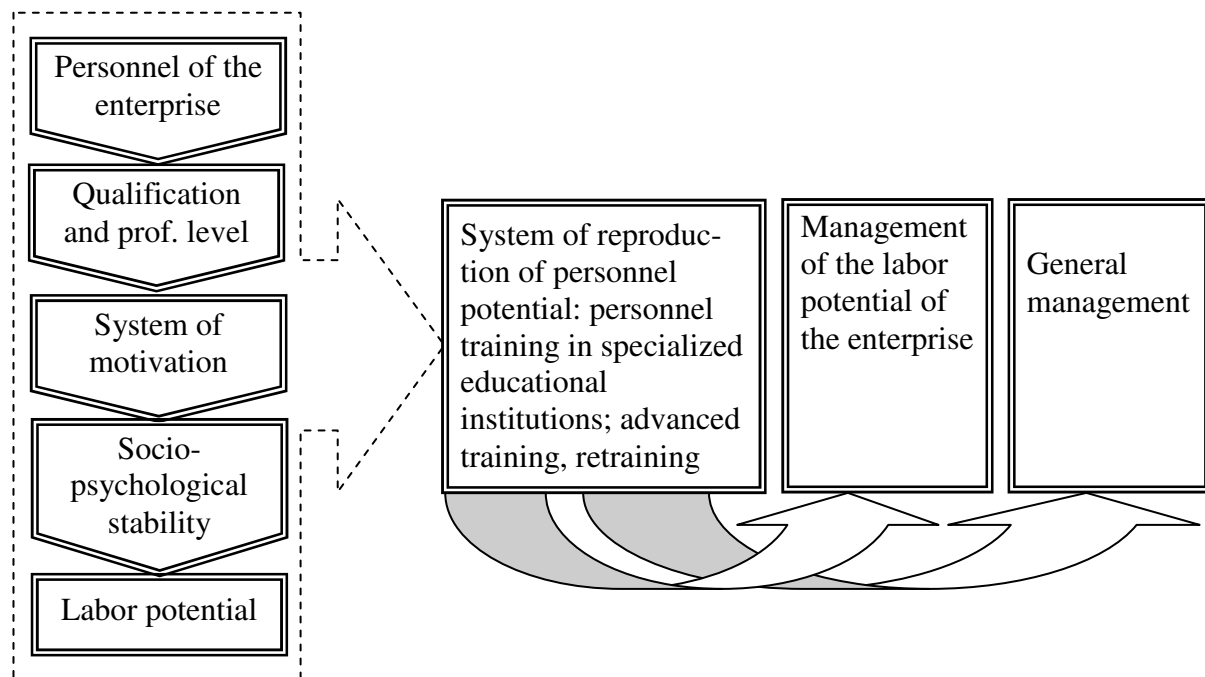


Fig. 1. The chain of values of the enterprise



**Fig. 2. Principal scheme of the chain of values of the group
"Labor Potential of enterprises"**

Competitive opportunities of the company are directly dependent on improving the quality of staff. The synergistic effect of the interaction of all factors, presented in the scheme, greatly enhances the resulting influence of the personnel on increasing the competitive position of the enterprise. This approach is most appropriate in terms of the objectives of this study, because it allows us to assess the competitive position of the enterprise in terms of its labor potential through the prism of all factors that affect the quality of the personnel of the enterprise.

The theoretical basis of the actual research is the matrix of the classification of competitive positions, depending on the level of attractiveness of the market segment and the level of achieved competitive advantage of the structural unit. The prototype of this matrix is the matrix "Competitive positions of the enterprise", proposed by the method of actual analysis, which in foreign practice is called the method of East analysis. Real-time analysis is a variant of a portfolio approach. The two Criteria for Existing Analysis, mentioned above, allow us to uniquely assess the position of an enterprise on the market at this time, which is especially important in a competitive environment.

The author considers it necessary for the purpose of greater accuracy of research results to develop on the basis of the method of multidimensional spaces a system for determining the integral index for each component of the formation and use of the labor potential of the enterprise. Integral indicators are

calculated on the basis of partial indicators of each subsystem of formation and use of labor potential of the enterprise. Determining the position of the company's personnel in the coordinate system "The situation of the enterprise relative to competitors / Competitive advantages of the personnel", even using expert evaluation methods, is often quite difficult. Therefore, in this analysis it is necessary to accept two gradations of the indicated values ("High-low"), in addition, it is necessary to replace the coordinate along the X-axis "Position of the enterprise with respect to competitors" to "Competitive advantages of the personnel", and on the Y-axis – "Attractiveness of the market" on "The situation of the company with respect to competitors", which will more closely correspond to the objectives of this study (Fig. 3).

In the proposed matrix, we can distinguish four quadrants, where each one corresponds to a certain competitive position of the company's personnel in the target market. The system of measures for the formation and use of the labor potential of an enterprise with a high competitive advantage in a highly attractive segment of the investigated market (position A1) is to increase the number of staff and increase its qualification level.

The system of measures for the formation and use of the labor potential of the enterprise, which has a low competitive advantage with a high attractiveness of the position of the company on the market (B1 competitive position), calls for the differentiation of the managerial actions of the enterprise in order to create new competitive advantages with a view to differentiating it on the highly attractive target market. Therefore, management influences on the personnel of the enterprise are mainly aimed at increasing its level of qualification through the training of its own and attracting from the outside of highly skilled personnel.

The situation of the enterprise relative to the competitors	High	B1	A1
	Low	B2	A2
		Low	High
		Competitive superiority of staff	

Fig. 3. Proposed approach to the definition of competitive advantages of the personnel of enterprises

Competitive position that corresponds to the quadrant A2, forces the enterprises to carry out administrative actions aimed at supporting the achieved high level of competitive advantage in the low-attractive segment of the investigated market. Therefore, in relation to the staffing, it is necessary to increase the efficiency of all functional departments and improve their interaction among themselves.

Competitive strategy of the enterprise, which corresponds to the competitive position B2, forces the company to leave the target market in search of a more attractive segment, because the results of the conducted research showed that this market is unattractive. Therefore, measures for the formation and use of labor potential of the company is aimed at reducing the available and recruiting personnel, which corresponds to the specialization of new market segments.

Thus, the author of this approach works on the development of a reasonable system of measures for the formation and use of the labor potential of the enterprise, an adequate competitive position of the company and the level of competitive advantage of the personnel, with the help of only two parameters that characterize the competitive position of the enterprise in a particular product segment of the market. These parameters are the position of the enterprise relative to the competitors and the level of competitive advantages of the personnel. These factors can be estimated using a system of objective partial indicators that characterize the internal and external environment of the enterprise. Partial indicators are aggregated into an integral index, the value of which varies from 0 to 1.

Each integral indicator is calculated based on the use of a group of partial indicators that assess the degree of staff utilization in each particular subsystem of the formation and use of labor potential of the enterprise. Processing of the received partial characteristics is carried out by the method of multidimensional spaces, which allow to uniquely estimate the level of development of objects (in this case, enterprises and personnel), having different numerical and qualitative estimates. In this study, it is proposed to apply a taxonomic analysis approach to calculate integral indicators that characterize the level of enterprise development in general and its personnel in particular.

An indicator of the level of enterprise development is a characteristic of its competitive advantage in the market. The indicator of the level of development of the labor potential of the enterprise is a characteristic of its competitive advantage in the market, which allows to take into account this factor when forming the strategy of management of labor potential:

for the company:

$$\eta^d = 1 - \frac{L_i^d}{L^d + 2\sigma^d}; \quad (1)$$

for competitive advantages of the personnel of the enterprise:

$$\eta_i^p = 1 - \frac{L_i^p}{L^p + 2\sigma_i^p}. \quad (2)$$

To use the proposed methodology, the use of a system of partial indicators characterizing the competitive advantages of the personnel on the example of small and medium-sized transport enterprises was substantiated (Table 1–2).

Table 1

**Partial indicators of competitive advantage of the company
in the market of transport services**

Name of the indicator	Formula	Marks
1	2	3
by size of market share	$D_{ij}^S = \frac{V_{ij}^t}{\sum_{j=1}^M V_{ij}^t}$	V_{ij}^t – cargo turnover (passenger turnover) of the enterprise by the i-th type of services j-type of activity S_{ij}^t – the size of the i-th market share of the enterprise (the volume of realized services in market prices) in the t-th period of time;
by the grow of the share of the market	$D_{ij}^{TS} = \frac{S_{ij}^t}{S_{ij}^{t-1}}$	S_{ij}^{t-1} – the size of the market share of the enterprise (the volume of services sold at market prices) in the t-1 period of time
as the market share grows	$D_{ij}^C = C_{ij}^t$	C_{ij}^t – tariffs for the i-th type of services for the j-th type of activity in the t-th period of time
for the price	$D_{ij}^F = \frac{F_{ij}^t}{F_j^t}$	F_{ij}^t, F_i^t – respectively, the number of i-th positions of the assortment portfolio of services for the j-th type of activity and the total number of services in this segment for the j-th type of activity
the flexibility of price policy	$D_{ij}^{CP} = \frac{V_{ijmin}^t}{V_{ijmax}^t} \div \left(\frac{C_{ij}^t - C_{ij}'^t}{C_{ij}^t} \times 100 \right)$	V_{ijmax}^t – the maximum cost of transportation, at which they are carried out at the lowest possible rates; V_{ijmin}^t – the minimum cost of transportation, at which they are carried out at the lowest possible rates; $C_{ij}'^t$ – reduced tariffs for the i-th type of services for the j-th type of activity in the t-th period of time

Continuation of table 1

1	2	3
for the profitability of transportation	$D_{ij}^R = \frac{P_{ij}^t}{V_{ij}^t}$	P_{ij}^t – income from the i-th type of services for the j-th type of activity
for the threat of new competitors coming	$R_i^M = \frac{M_i^t}{M_i^{t-1}}$	M_i^t, M_i^{t-1} – respectively, the number of enterprises providing the i-th type of services in the t-th and the previous t-th period of time
on the effectiveness of staffing	$D_{ij}^L = \frac{P_{ij}^t}{L_{ij}^t}$	L_{ij}^t – the average number of employees working at the j-th enterprise in the t-th period of time
by the intensity of advertising activity	$D_{ij}^{AD} = \frac{P_{ij}^t}{AD_{ij}^t}$	AD_{ij}^t – advertising and promotion costs for i-th type of services j-th type of activity in the t-th period of time

Table 2

Partial indicators of the level of development of competitive advantages of the personnel of the enterprise

Kind of competitive advantages	Name of the indicator	Formula of calculation	Symbols	Characteristic of the indicator
1	2	3	4	5
Level of personnel qualification, $P_{квал.}$	Share of employees with professional education	$y_{\text{фак.}}^t = \frac{u_{\text{фак.}}^t}{u_{\text{серед.}}^t}$	$u_{\text{фак.}}^t$ – number of employees with professional education; $u_{\text{серед.}}^t$ – average number of workers	Determines the share of employees with specialist education in the total number of personnel of the enterprise
Level of personnel qualification, $P_{квал.}$	Dynamics of the level of education of employees of the enterprise	$T_{\text{фак.}}^t = \frac{y_{\text{фак.}}^t}{y_{\text{фак.}}^{t-1}}$	$y_{\text{фак.}}^{t-1}$ – the share of employees of the enterprise with a professional education in the previous period	Evaluates the dynamics of changes in the level of education of employees of the enterprise
Experience of the staff, $P_{стаж.}$	Average work experience	$C_m^t = \frac{\sum_{n=1}^n C_n^t}{u_{\text{факт.м}}^t}$	C_n^t – experience of n-th employee, $u_{\text{факт.}}^t$ – the actual number of employees in the m-category	Determines the average work experience of workers in each category
	Average length of work in specialty	$C_{\text{мф}}^p = \frac{\sum_{n=1}^n C_{\text{нф}}^t}{u_{\text{факт.м}}^t}$	$C_{\text{нф}}^t$ – experience of n-th employee, $u_{\text{факт.}}^t$ – the actual number of employees in the m-category	Determines the average length of work in the specialty of workers in each category
The level of competence of the personnel of the enterprise, $P_{комп.}$	Level of competence of the personnel of the enterprise	$y_{\text{комп.м}}^t = \frac{\sum_{n=1}^n B_{\text{комп.п}}^t}{u_{\text{серед.}}^t}$	$\sum_{n=1}^n B_{\text{комп.п}}^t$ – the total score of the competence of the m-th category of employees, obtained as a result of attestation in the t-th period of time	Determines the level of competence of each category of company employees

Continuation of table 2

1	2	3	4	5
	The share of certified workers	$C_{\text{мф}}^p = \frac{\sum_{n=1}^n K_{\text{ат}}^t}{\chi_{\text{серед}}^t}$	$K_{\text{ат}}^t$ – the total score of the competence of the m-th category of employees, obtained as a result of attestation in the t-th period of time	Determines the share of certified employees of each category
The degree of stability of competitive advantages, $P_{\text{стійк.}}$	Personnel Dynamics Index	$I_{\text{динам.}}^t = \frac{\chi_{\text{пост.}}^t - \chi_{\text{звільн.}}^t}{\chi_{\text{нач.}}^t}$	$\chi_{\text{пост.}}^t$ – the number of staff recruited in the t-th period; $\chi_{\text{звільн.}}^t$ – the number of dismissed workers in the t-th period, $\chi_{\text{нач.}}^t$ – the number of employees at the beginning of the t-th period	Allows you to assess the dynamics of the company's personnel for a specified period
	Staff Stability Index	$I_{\text{стаб.}}^t = \frac{\chi_{\text{пост.прац.}}^t}{\chi_{\text{серед.}}^t}$ $\chi_{\text{пост.прац.}}^t = \chi_{\text{серед.}}^t - \chi_{\text{тимч.}}^t$	$\chi_{\text{пост.прац.}}^t$ – the number of permanent workers of the enterprise for the t-th period, $\chi_{\text{тимч.}}^t$ – number of temporarily working workers of the enterprise for the t-th period	Allows you to evaluate the stability of the number of personnel of the company for a specified period due to the presence of a permanent staff
The degree of stability of competitive advantages, $P_{\text{стійк.}}$	The coefficient of career growth of employees	$K_{\text{кар.}} = \frac{\chi_{\text{підв.}}^t}{\chi_{\text{серед.}}^t}$	$\chi_{\text{підв.}}^t$ – the number of employees who had a promotion in the t-period of time	Evaluates the share of employees of the enterprise, who had an increase in service for t-period of time
	Completeness of use of working time	$K_{\text{фрч}} = \frac{\Phi P \chi_{\text{факт.}}^t}{\Phi P \chi_{\text{норм.}}^t}$	$\Phi P \chi_{\text{факт.}}^t$ – the actual fund of working time in the t-th period of time; $\Phi P \chi_{\text{норм.}}^t$ – normative fund of working time in the t-th period of time	Determines the degree of completeness of the use of working time in the whole company
	Discipline of the staff	$K_{\text{дисц.}} = \frac{H_{\text{непов.}}^t}{\chi_{\text{серед.}}^t}$	$H_{\text{непов.}}^t$ – the number of non-outputs of employees of the enterprise for disreputable reasons in the t-th period of time	Determines the level of discipline of employees in the t-th period of time
Reproduction of competitive advantages, $P_{\text{відтв.}}$	Expenditures for training and professional development of employees of the enterprise	$Z_D = \frac{3_{\text{навч.}}^t}{\chi_{\text{серед.}}^t}$	$3_{\text{навч.}}^t$ – the cost of training the staff in the t-th period of time	Determines the proportion of the cost of training and professional development per employee of the enterprise
	The average amount of time spent by one employee on advanced training	$T_{\text{серед.}}^t = \frac{T_{\text{ф.підв.кв.}}^t}{\chi_{\text{серед.}}^t}$	$T_{\text{ф.підв.кв.}}^t$ – the actual time spent by all employees on the qualification improvement for the t-th period of time	Evaluates the amount of time that an enterprise allocates during the t-th period of time to enhance the skills of one employee in order to enhance the effectiveness of the organization

Table 3

Results of calculation of level of development of enterprises and competitive advantages of enterprises personnel

Trade mark	Symbols	Level of development of competitive advantages	
		enterprises	personnel of the enterprise
Kamaz-trans-service LLC	1	0,86	0,76
Trans-Legion Ukraine Ltd.	2	0,82	0,61
Orlan-trans Group Ltd.	3	0,73	0,43
Zakhiduktrans TEK	4	0,64	0,54
Rise Transservice Ltd	5	0,55	0,33
Ukrainian transport company Ltd.	6	0,46	0,42
Auto-Lux LLC	7	0,37	0,31
Intertrans CJSC	8	0,33	0,29
Trans-Group SP Ltd.	9	0,29	0,27
Magistral-trans Ltd	10	0,24	0,20
OAD AK Ukrtrans	11	0,21	0,31

The level of development of competitive advantages for the personnel of transport enterprises is directly dependent on the efficiency of its staffing. Results of calculations of integrated indicators of the level of development of competitive advantages of small and medium-sized transport enterprises and their personnel are given in Table 3 and graphically represented in Fig. 4.

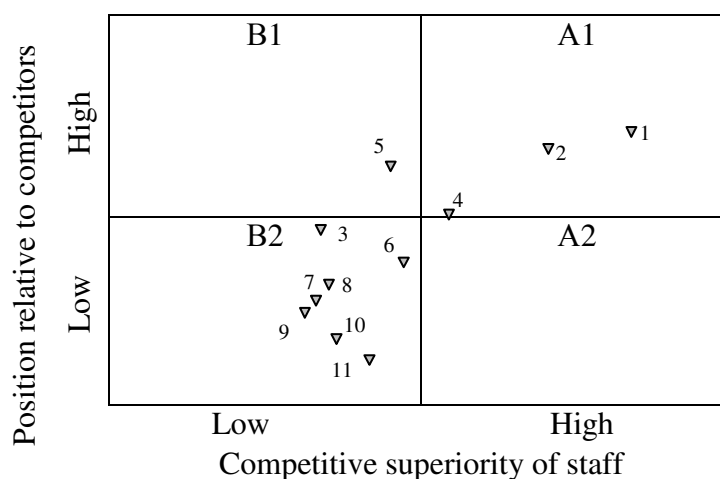


Fig. 4. Competitive advantages of the personnel of the enterprises being studied

Fig. 4 gives an opportunity to analyze the competitive position of the personnel of the enterprise relative to the position of the enterprise itself, reflecting the compliance of the developed system of formation and use of labor potential of the chosen direction of development of the transport industry enterprise. So, the companies Kamaz-trans-service LLC, Trans-Legion Ukraine

Ltd., Zakhiduktrans TEK are in the quadrant A1 because they have a strong market position, including through their own personnel, which has great market benefits. This fact suggests that, with respect to their own personnel, the enterprises carried out well-founded and effective measures for the formation of labor potential, which allowed the most effective use and development of the competitive advantages of the personnel that are currently taking place.

The second group of companies – Orlan-Trans Group LLC, Rise Transservice Ltd., Ukrainian Transport Company Ltd. – is located in the quadrant B1, indicating the presence of a strong market position. But this position is achieved at the expense of the internal resources of the enterprise, and not at the expense of its own personnel, because the coordinates of the personnel do not exceed 0.5. This means, the management of enterprises must review its own HR policy in order to identify, transform and strengthen its competitive advantages. The third group of companies – Auto-Lux LLC, Intertrans CJSC, Trans-Group SP Ltd., Magistral-Trans LLC, OAO AK Ukrtrans - is located in quadrant B2, which corresponds to the low competitive position of both the company itself and the personnel of the above-mentioned enterprises. The low level of coordinates of the competitive position of the staff (less than 0.5) testifies to the need to review the system of formation and use of labor potential in order to identify, improve the existing and gain new competitive advantages for the personnel.

Conclusions and suggestions. The main conditions for ensuring the competitive advantages of personnel include the following: application of scientific approaches to strategic management; consideration of the unity of quality (useful effect) and aggregate expenditures at all stages of the life cycle of the personnel; application of modern methods of research and development (functional-cost analysis, modeling, forecasting, optimization, economic justification of each solution, program-targeted planning, etc.); consideration of interconnections of management functions with any process at all stages of the personnel life cycle; the formation of a system of measures to ensure the competitiveness of labor potential.

In order to further determine the possible directions of development of competitive advantages of personnel, it is expedient to construct a tree of indicators that allow forming the competitive advantages of the personnel: 1) the quality of the management system, due to the quantity and depth of applied scientific approaches, principles and methods of formation and use of labor potential; 2) expenses of the management of the enterprise for recruitment, hiring, selection, training, adaptation, advanced training and other operational activities for personnel management; 3) the degree of satisfaction of the needs of the enterprise in the personnel in the appropriate quantity and qualification.

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EXHIBITION ACTIVITY AS AN INSTRUMENT OF TOURISM BUSINESS MARKETING PROMOTION TO THE NATIONAL AND FOREIGN MARKETS

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Introduction: The necessity of creating an effective system of innovative development of enterprises of exhibition business makes the issues of theory and methodology particularly important. with taking into account the peculiarities of this sphere and the specifics of the services provided. Scientific support for solving these problems will help to create effective functioning of all spheres of activity. It is the successful development of exhibition activity, with increasing competition and increasing demands from consumers, allows companies that use exhibition services to successfully compete in the market.

Hypothesis of scientific research. It is anticipated that the use of innovations in the exhibition business will enable the creation of efficient quality management systems for tourist services adapted to work in modern conditions.

The purpose of this study is to develop a model of justification of the use of exhibition services for the promotion of tourism business to the national and foreign markets.

Research methods:

- systematic analysis was used to justify the place and specific features of the exhibition

business in the field of services of the modern economy; for substantiation of the strategic map of the system of balanced indexes of typology of enterprises of the exhibition business by the System "Possibility of attraction / rendering of services";

- cluster analysis – for analysis and generalization of the current state of the domestic exhibition business;

- discriminatory analysis – to build a "profile of the results of exhibition activities, which will ensure the competitiveness of enterprises in this business sector.

Results: the proposed approach to the management of exhibition business, the directions of improvement of the process of providing exhibition services, the model of formation of the concept of exhibition behavior.

Conclusions: the proposed project of formation and development of exhibition and fair complex will strengthen the development of tourism infrastructure: transport, catering, hotel industry, which meet the current market needs.

Keywords: exhibition business, congress-exhibition activity, professional and business tourism, exhibition.

Formulation of the problem. Existing pace of Ukraine's development makes it necessary to use modern interactive tools for business activation. One of these is exhibitions. The modern exhibition offers a wide range of goods and services: from sample models of products and complex automation systems to the transfer of know-how conducted by expert advice.

International exhibitions are divided into two main types – general and specialized. Currently, the development of international fairs and exhibitions goes both along the way of quantitative increase, and in the direction of qualitative transformation. Along with general industry exhibitions of means of production and consumer goods exist many thematic, showing several related

branches of the economy; specialized fairs (salons, exhibitions) on certain exhibition themes and nomenclature of goods; specialized exhibitions (salons), exhibits of which are not as much about goods as about intend to show the solution of specific technical and other problems.

The tourism business for Ukraine is one of the ways of integration into the international economic community, therefore, the level of development of the country depends on the growth rate of this industry. Exhibitions and fairs represent a versatile, multipurpose marketing tool. They reflect the state and prospects of developing a specific market of goods / services in a global or local context (depending on the type of exhibition: international, regional), bringing together suppliers, buyers, science professionals, government officials and the media. These issues are of particular importance in the context of the integration of the domestic economy into the world economic system, which determines the need for reasonable use of domestic enterprises and organizations.

Analysis of recent research and unsolved part of the problem. Various theoretical and practical aspects of exhibitions and fairs have been reflected in the writings of foreign and Ukrainian scholars such as I. Gryshchenko [5], Y. Krytsakis [4], F. Sharkova [11] and others. The management of the exhibition activity as an effective tool for solving marketing tasks, an indicator of the development of individual enterprises and industries is devoted to the works of M. Arshevskaya [2], G. Zakharenko [3], S. Miller [7], T. Tsigankova [10] and others. Different methodical and practical approaches to organization of exhibition activity are studied by O. Humenna [6], V. Pekar [8], N. Tarasova [9] and others.

However, these works are mainly applied and are mainly aimed at considering the organizational moments of the exhibition. The task of developing a new one, which meets the needs of modern economic development, is the toolkit for forming a comprehensive exhibition product, integrating it into organizational forms of entrepreneurial activity in its entirety, are addressed to researchers not only in Ukraine, but also in many countries of the world.

The purpose of the study is to develop scientific and practical recommendations for the exhibition promotion of tourism business to the national and foreign markets.

Research results. Exhibition and fair activity is an instrument of macroeconomic and investment policy. Today, exhibitions and fairs provide market mobility, create the necessary information field, generate significant financial flows, and bring additional revenue to the budgets of all levels. Exhibitions are a link between domestic and international markets and promote the attraction of foreign investments for the implementation of investment projects of Ukrainian organizations.

The basis of exhibition-fair activity (EFA) is an exhibition product, which represents intangible product that has the form of exposure (Fig. 1).

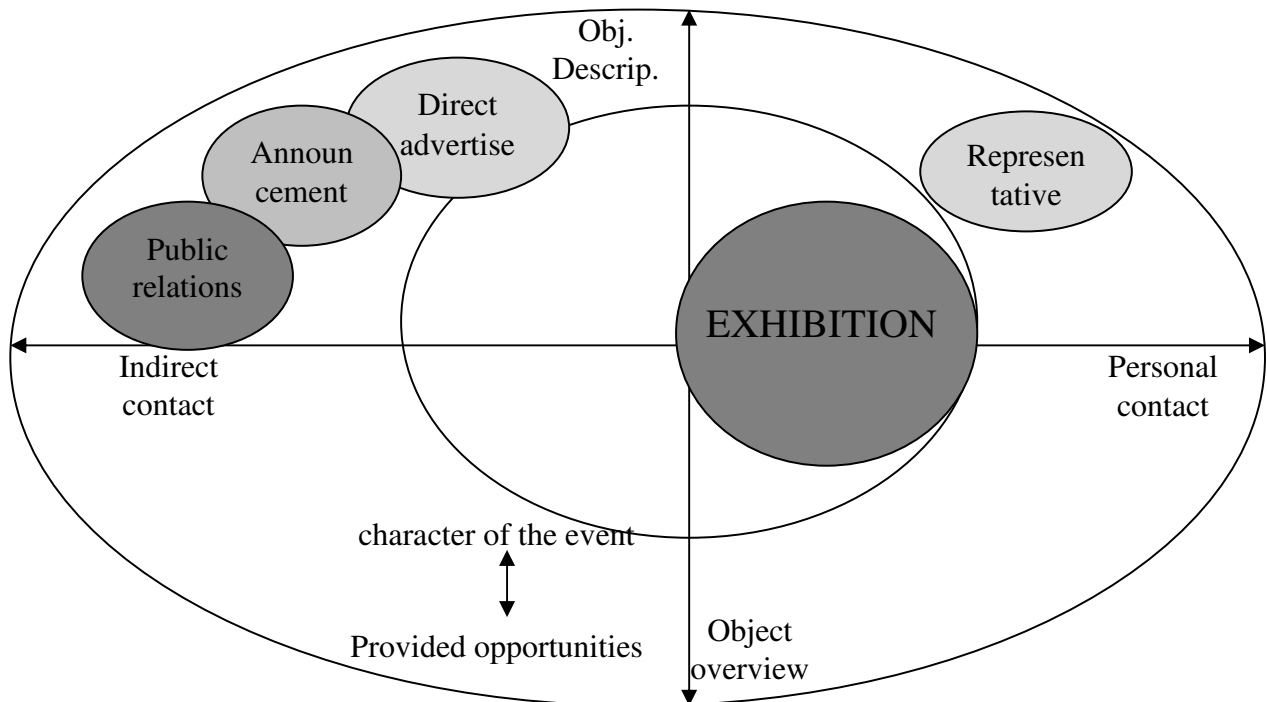


Fig. 1. Exhibition product among the tools of marketing communications

The features of the exhibition product is that it: 1) has two groups of consumers (exhibitors and exhibition visitors), whose interests do not always coincide, and often are competitive; 2) has four specific features of services: intangibility, inseparability from the source, inconsistency of quality and unsecure. The above characteristics of the exhibition services largely determine the development of marketing programs of exhibition companies.

The exhibition product, as any product in modern interpretation, can be represented in the form of five levels: 1) core profit – this is the main service or advantage acquired by the buyer; 2) the main product – based on its key benefits (for the exhibitor – the presence at the exhibition stand at a certain time in a certain place, for the visitor – a number of stands according to the proposed industry specialization); 3) expected product – the manufacturer prepared a set of properties and conditions that the consumer expects to obtain when buying a product; 4) the supplemented product is a product that exceeds the usual expectations of the consumer (for example, an electronic guide for the exhibition, organization of the VIP zone, package proposals for participation in the exhibition); 5) a potential product is a product that represents possible future additions and transformations of an existing product. Experts believe that modern competition is being expanded mainly at the level of complemented goods. The strategy of completing the goods requires taking into account a

number of circumstances: firstly, any addition requires an increase in costs; and secondly, the additional benefits quickly turn into expected; and thirdly, along with the proposal of some companies of supplemented products at elevated prices, their competitors may submit "simplified" products at significantly lower prices. As for a potential product, it is at this level that the search for new ways to meet consumers and improve market offers.

The modern exhibition and fair industry performs a number of important economic and socio-cultural functions. The European School of Business, at the request of the International Association of the Exhibition Industry, has developed a macroeconomic model of the benefits of conducting NNDs (Fig. 2).

Existing exhibitions are currently very heterogeneous. The analysis shows that exhibitions differ, first of all, according to the category of visitors, namely:

- Trade shows (business to business) – exhibitions closed to the general public. Exhibitor of such exhibitions, as a rule, is the manufacturer or distributor of goods or services typical or desirable for the industry;
- Consumer Exhibitions – Exhibitions, open to the general public. Exhibitors are usually retailers or manufacturers who want to bring their products and services directly to the end user;
- Mixed exhibitions – exhibitions that are open both for trade and for the public. Exhibitors are usually manufacturers or distributors.

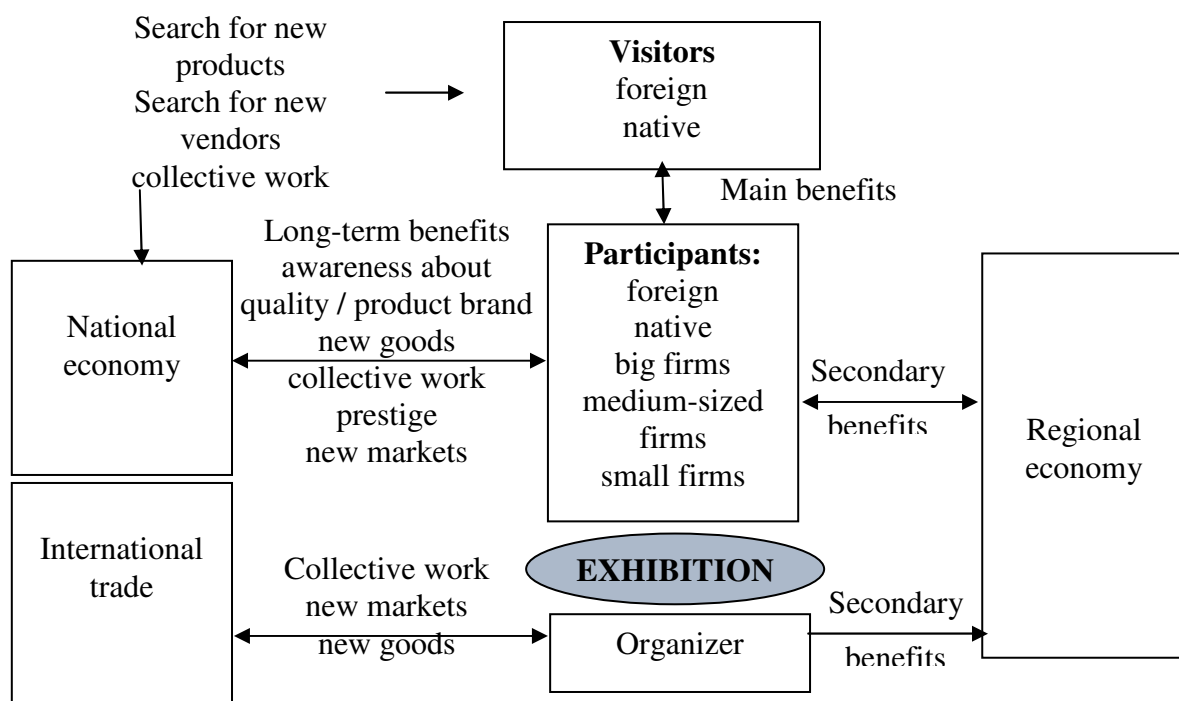


Fig. 2. Macroeconomic model of benefits from conducting exhibition and fair activity

The development of international business ties has resulted in the creation of a large number of international, national, regional, and local associations, including in the form of associations, at the exhibition market, namely: the International Association of Exhibitions and Events (IAEE), the World Council for the Management of Exhibition Centers (WCVM), the World Association of the Exhibition Industry (UFI) and others. The mission of these associations is the comprehensive promotion of the development of modern exhibition and fair infrastructure by creating a single information space for suppliers and consumers of services, promotion and development of the world business travel concept, educational and educational activities. These associations are a powerful tool for: professional counseling and training; provision of information, marketing and legal support to members of the association; integration development.

Exhibition activity in the modern world is becoming one of the most important factors in the evolution of the world economy and a key area of international cooperation, which makes it possible to demonstrate domestic innovations and achievements in one or another field, the study of foreign samples of goods and services [1]. Table 1 shows the results of the study of the structure of exhibition space in the world, conducted by the World Association of Exhibition Industry (UFI) [11].

Table 1

Distribution of exhibition complexes in regions of the world

Region of the world	Amount of complexes	Closed exhibition area, million sq. M.	Share in the world (in area), %
Europe	496	1,6	46
North America	389	7,9	24
Asia and the Pacific	184	6,6	20
South America	70	1,3	4
Middle East	33	0,8	2
Africa	25	0,5	2

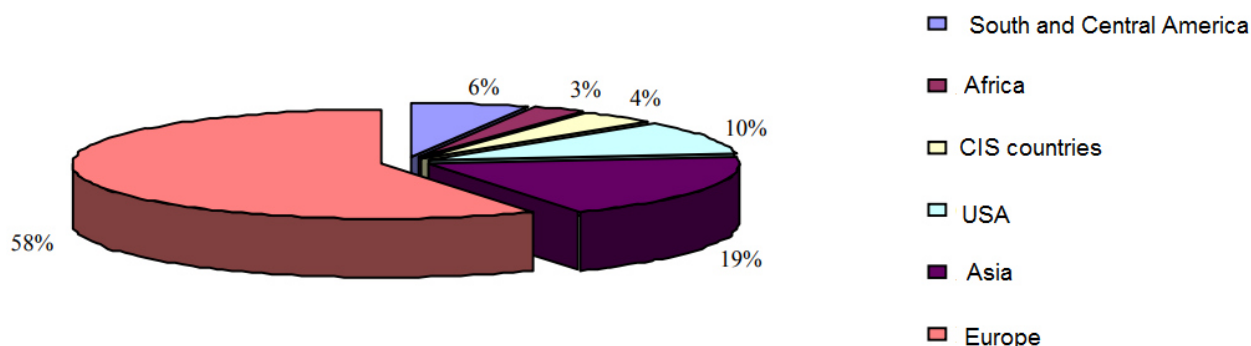
Source: [11].

As can be seen from Table 1, Europe is an absolute leader in the number of exhibitions held – its share is 46% of the total exhibition market. In three of the leading countries in terms of exhibition areas are the United States, where the area is 6.7 million square meters, or 21%, China, whose exhibition space is estimated at 4.76 million square meters, or 15%, and Germany with the exhibition area in 3.38 million square meters, or 10%. In addition, the United States is the world leader in the exhibition industry, assuming that the number of functioning exhibition venues is the main criterion [12]. In all industrial countries, NDF is an important instrument of state policy, an effective means of developing a free market and a very significant source of replenishment of the state and local budgets. Therefore, enterprises and industries for which the state

determines the priority development, receive state support in the exhibition-fair sphere, that is, subsidies and tax privileges. In many European countries, circulation in many European countries is controlled and supported by state structures, and exhibition complexes are in most cases either owned by the state or controlled by local authorities. This control is most noticeable in countries such as Germany, Italy, France and Spain. In some countries, legal acts specially devoted to NAFs have been developed and in force (for example, Italy – "Framework Law on Exhibition Industry" No. 7 of January 11, 2001, France – Ordinance No. 45 – 2088 of September 11, 1945, "On Exhibition Fair measures", supplemented by six government decrees, USA – Law "On the participation of the United States in international exhibitions").

In addition, in a number of European countries, national exhibition and trade associations are active in the field of NDFs (for example, in Germany, the German exhibition association *Ausstellungen und Messe-Ausschuss der Deutschen Wirtschaft* (AUMA). According to the German Trade Fair (AUMA e. V.), up to two-thirds of the most significant international exhibitions are held in Germany. Every year in Germany there are about 150-170 international exhibitions and fairs, the number of exhibitors is 160-170 thousand, the number of exhibition areas used – 6–7 million m², the number of visitors are 9–10 million people [11]. International exhibitions in Germany are held in 22 exhibition centers, the total area of which is about 2.75 million m², ten exhibition centers have an area of more than 100 thousand square meters, another six – more than 50 thousand. The world's largest exhibition centers from the exhibition area, gross: 1) Hannover (Germany), 495265 m², 2) Frankfurt am Main (Germany), 345697 m²; 3) Milan (Italy), 345000 m²; 4) Guangzhou (China), 340000 m²; 5) Cologne (Germany), 284000 m² [11].

According to UFI, about 30 thousand exhibitions are held in the world. The share of different regions of the world in the total volume of EFA is presented in Fig. 3.



Source: [11].

Fig. 3. The share of different regions of the world in the total volume of exhibition and fair activity

Along with the exhibition, a powerful tool for promoting goods and services, as well as for the exchange of up-to-date information, is congressional activity. This activity includes the organization of forums, congresses, summits, conferences, symposiums, assemblies, seminars, business contacts and related events, and thus is an "event". In the part of the "event" constituent of the congress activity corresponds to the development of national and regional tourism and is often classified as congress tourism or as a component of professional and business tourism.

It should be noted that exhibitions are also considered as part of the industry of business tourism, as they, according to experts, stimulate the travel of two categories of people: exhibitors traveling for the purpose of advertising and selling their products; visitors of the exhibitions that visit them for cognitive purposes, including in order to get acquainted with the latest achievements in various areas of the national economy, concluding contracts, making purchases. It should be noted that professional and business tourism is one of the priority directions of development for Ukraine.

Joint European economic development, construction of new and modernization of existing enterprises in various branches of the economy, intensive entry into the Ukrainian market of foreign companies will determine the further growth of professional and business tourism in most cities-megapolises. At present, with the growing unity and interdependence of the world, the expansion of international contacts in the field of economics, the investment aspect of tourism is increasing [2]. Professional and business tourism includes: congress-exhibition tourism; business trips; incentive tourism. In international practice, the concept of MICE-tourism is used, which stands for: Meetings Incentives Conferences Events (meetings, incentive trips, conferences, exhibitions, events). Promotion of the Ukrainian MICE-tourism industry based on the latest information technologies, the latest global achievements in this area can become one of the effective directions of development of domestic companies and their integration into the world economic process.

According to the European Association of Inventory-Tourism, the United States (60%), Great Britain (20%) and Germany (11%) are the main contributors to the incentive-tourists market. At the same time, the main directions of tourists insights are: Europe (80%), USA (10%) and countries of Southeast Asia (6%). In Ukraine, incentive tourism has begun to develop relatively recently and represents a few cases in the international market. In the sector of business tourism, the share of this type of tourism is small and is about 8%, but the increase in the number of incentive tours has been an impetus for expanding the topics of congress-exhibition activities and conducting specialized forums for incentive tourism [5].

According to the ICCA estimates for 2015, the ranking of leading cities and countries for major MICE events (Country and city rankings Report 2015) is as follows: the list of major congress cities was headed by Vienna, where in 2015 it held 181 events. They are followed by: Paris (174), Barcelona (150), Berlin (147). On the top lines of the ranking of MICE-leader countries - the United States (with more than fourfold increase in volumes per year), Germany, Spain, Great Britain and France.

This analysis shows the need to develop and implement a comprehensive approach to the development of the system of congress-exhibition activity in our country. The proposed methodology for the formation and development of the Exhibition and Fair Complex is shown in Fig. 4.

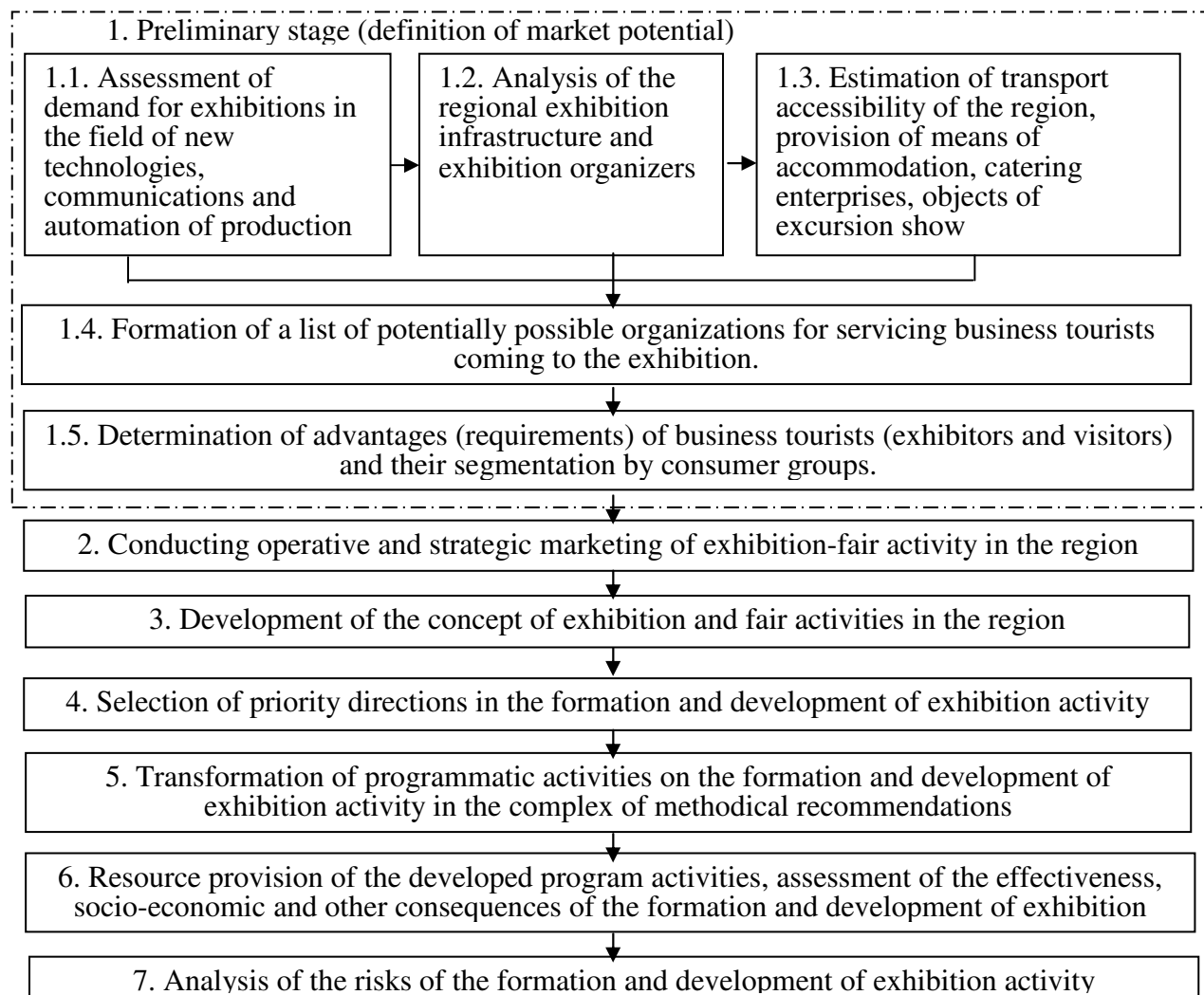


Fig. 4. Integrated method of formation and development of exhibition-fair complex in the region

The purpose of the formation of EFA is to create conditions for the growth of business activity in the region by means of revitalization of the NDF. Growth of business activity involves: increasing the quality and quantity of services provided to business tourists (hotels, restaurants, transport, communications, advertising, publishing, active trading activities, organization of cultural programs, business congresses, seminars, conferences); creating new jobs; increase of production volumes at the expense of trade agreements and sales made at exhibitions; coming to the region of companies from other regions of Ukraine and other countries.

Professional and business tourism is an integral part of the modern production process, becoming the most profitable industry of tourism. According to the World Tourism Organization (UNWTO), the share of professional-business tourism in the world is about 20%. It is one of the most profitable and promising types of travel, characterized by high and stable growth and relative resistance to the effects of economic, political, weather and other factors [3, p. 203].

The development of wind energy in the region can be achieved by solving three tasks (Table 2), which will allow the formation of a modern exhibition infrastructure that meets international standards.

Analysis of the strengths and weaknesses of each of the three ways of solving the problem allows the region to conclude which way of forming exhibition-fair infrastructure is better for it (Table 3).

Table 2

**The most important directions of work on development
of exhibition-fair activity in the region**

Objects	Results	Indicator
1	2	3
Improvement of the EFA system in the region	1) Organization of a training system for the development of EFA 2) Effective use of exhibition space 3) Increase in the number of exhibitors 4) Change in the ratio of international and regional exhibitions	The number of specialists in the field of EFA Capacity of exhibition grounds The annual average number of exhibition exhibitors The ratio of the number of international and regional exhibitions, %

Continued tab 1

1	2	3
Increasing the status of the region as a major exhibition and fair center of Ukraine	5) Increasing the number of business tourists 6) Increase in the total number of people employed in the service of exhibition and tourist infrastructure	Number of business tourists The total number of employees in the EFA and the hospitality industry
Creation of modern exhibition infrastructure in accordance with international standards	7) The presence of world-class exhibition grounds 8) The growth of the number of international exhibition organizers 9) Development of the accompanying infrastructure (hotels, catering establishments, excursion show objects)	Area, sq.m. Number of organizers Annual average occupancy of hotels

Table 3

Possible ways to solve the problem

Method	Strengths	Weak sides
Construction of a large exhibition center	Great modern project of international importance. The administration of the region (city) gives the project a special significance, including a land plot.	A large-scale project requires large investments, which is associated with the risk of delaying the project timetable and returning investment
Construction of small exhibition grounds	Ability to organize a permanent exhibition of products of enterprises	· Lack of funding for construction. · The complexity of attracting international participants. · Incompatibility of exhibition grounds with the technical requirements of UFI, the impossibility of placing large-sized products
Modernization of existing exhibition areas	Popularity as a venue for exhibition and fairs events. Owners of existing sites have experienced staff for exhibitions and fairs	Can not be used, even under modernization, for large-scale exhibitions, as they do not meet the requirements of international exhibition grounds.

The analysis of statistical data provided by exhibition organizations showed that the main problems of assessing the effectiveness of exhibition activities is the complexity of quantitative measurements and the definition of economic indicators of the measures, the distribution in time of acquiring the effect of the actions taken. The solution of this problem is possible on the basis of the formation of a comprehensive methodology for evaluating and conducting regular analytical work in all areas of exhibition activity in order to correct and refine the exposure policy. Using the proposed approach allows assessing the effectiveness of exhibition activities by compiling a "profile of the results of exhibition activity" as a graphical representation of successful and unsuccessful aspects of the exhibition activities (Fig. 5).

Thus, the analysis and evaluation of the results of the exhibition activity can form a set of organizational and economic measures to change the exposure (for example, increasing the display advertising, increasing the accompanying measures, increasing the budget of exhibition activities, expansion of bench equipment etc.).

Conclusions and suggestions for further research. In Ukraine, the pace of development of event tourism is not so rapid, which is explained by a number of subjective and objective factors. The main factors include the following: insufficient information about the congress-exhibition opportunities of our country on the world market; absence of state conception of development of congress-exhibition activity; insufficient number of highly skilled professional staff providing organization of congress-exhibition events; insufficient security of stay of tourists in the country (in particular, the absence of special points for the treatment of foreign tourists); insufficient financing of infrastructure development as a whole, and consequently - insufficient number of congress and exhibition areas, hotel room fund, air transportation, subway lines etc.

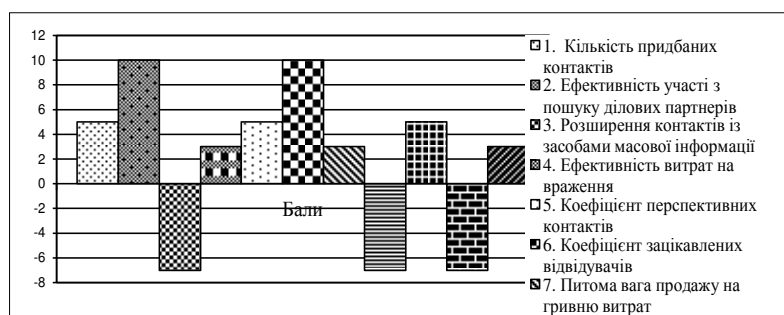


Fig. 5. Profile of the evaluation of the results of the exhibition

The proposed project for the formation and development of an exhibition and fair complex in the region will strengthen the development of tourism infrastructure: transport, catering, hotel industry. In addition to the colossal economic value, the exhibition industry plays an important role in expanding the boundaries of mutual understanding and establishing mutual trust between peoples of different countries, representatives of different religions and cultures. Exhibit enterprises, united in large business complexes, overcome the national barriers and frameworks of individual states.

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JEL Classification: L10

UDC: 338:378

**ENERGOMODERNIZATION OF BUDGET
EDUCATIONAL INSTITUTIONS ON THE BASIS
OF IMPLEMENTATION OF THE MECHANISM
OF ENERGY CONSTRUCTIONS**

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Introduction. Taking into account the rapid growth of energy tariffs and the lack of proper budget financing, efficient use of energy resources and energy efficiency is one of the tools for increasing the competitiveness of universities [5], since it enables to redistribute the saved funds to develop its own scientific and educational potential. As practice shows to date, outsourcing energy service projects are one of the most effective mechanisms for implementing the energy potential of universities. An important feature of such projects is to increase the efficiency of the use of energy resources as a result of their implementation. After the implementation of the energy service project, an educational institution can obtain significant cost savings and improve energy management. It is this circumstance that has become the basis for widespread practice of implementation of such energy-saving projects, through the creation of specialized energy service companies (ESCOs) in the world and is beginning to be intensively implemented in Ukraine.

Aim. Study of the legislative field and ways of energy modernization of higher educational institutions of Ukraine with the help of investment programs, based on the introduction of the ESCO energy service contracts mechanism and the use of renewable energy sources.

Research methods. In the article were used such general scientific empirical and theoretical methods as: expert analysis; systematic and analytical analysis (to determine the feasibility of implementing energy service contracts when making managerial decisions and disclosing the principles and tools of the energy services mechanism), the method of analogy and comparative reflection.

Results. The expediency of introduction of the energy management mechanism of budget institutions of higher educational institutions of Ukraine on the basis of ESCO's energy service contract is considered. The results of the development of a financial model for the use of renewable energy sources are presented.

Conclusions. Recommendations are given and negative and positive aspects of the implementation of the energy service contracts mechanism are based on international experience and in connection with the improvement of the legislative field aimed at supporting energy service projects in the budget sphere in Ukraine.

Keywords: energy service contract, ESCO, energy management systems, increase of energy efficiency, higher educational establishments.

Problem statement and its connection with important scientific and practical tasks. Investment projects related to energy saving tend to be characterized by lower rates of internal rate of return (IRR) and periods of payback due to the need to invest significant funds at an early stage. However, the main reasons that prevent most HEIs from using energy saving potential is the lack of sufficient qualified own experts and experience in implementation of

energy saving projects, as well as lack of financial resources for their implementation. In addition, at this stage, the investment development of projects is poorly developed with the purpose of attracting investments for modernization of objects of the budget sphere, and banks are concerned about the high risks of implementing energy-saving projects and the lack of legal guarantees for the repayment of the loans granted. In these circumstances, one of the opportunities for improvement is the implementation of energy efficiency projects by involving energy service contracting mechanisms and partnerships with energy services companies (ESCOs).

In Ukraine, a number of legislative acts aimed at enhancing the investment attractiveness of the country, including in the field of energy efficiency and energy saving, were adopted by introducing a new mechanism for energy modernization of buildings of budget institutions - the mechanism of the energy service.

Such acts include the Laws of Ukraine: "On Amendments to the Budget Code of Ukraine (regarding the implementation of energy efficiency measures in budgetary institutions)", "On Amendments to the Law of Ukraine" On Energy Conservation"; "On Investment Activity"; "On introducing new investment opportunities, guaranteeing the rights and legitimate interests of business entities for large-scale energy modernization" [2]; "On the Energy Efficiency Fund" [3], which establishes the general legal, economic and social conditions of investment activity in Ukraine and aimed at ensuring the protection of the rights, interests and property of the subjects of investment activity, as well as determine the legal and economic bases of the implementation of the energy service to increase energy efficiency, the efficiency of objects of state and communal property. In pursuance of these Laws, the Model Energy Service Contract [5] and the Ministry of Finance of Ukraine approved the Order of 06.11.2015 №996 "On Making Changes to the Economic Classification of Budget Expenditures", according to which an economic classification was added – the classification of budget expenditures under item 2276 "Payment for the Energy Service" (Order of the Ministry of Finance No. 11 dated January 14, 2007 "On Budget Classification"), which will allow budget institutions to formulate expenditures, with taking into account the costs incurred by "energy service contracts". Particularly significant are the existing changes to the Budget Code, which stipulate the existence of a long-term commitment to the energy service contract - the conclusion during the budget period of an energy service contract, under which it is necessary to make payments during the same period and / or in the future, subject to the availability of cost savings for the payment of utilities and energy. Thus, the legislative basis for the successful introduction of the energy service mechanics in the universities of Ukraine has now been formed.

Analysis of recent publications on the problem. Although the modern approach to defining the basic principles and concepts for the implementation of the energy service contract mechanism is rather new, a large number of studies in this area have now been published. A recognized leader in the modern paradigm of the development of this mechanism is the researcher Shirley Hansen (Hansen, Shierly J.), who has given a large number of his scholarly works to interpret this question. Among them there is a well-known book: "ESCO Worldwide: Lessons Learned in 49 Countries", in which Pierre Langlois and Paolo Bertoldi, the scientist, gave an assessment of the current development of ESCO's energy services in different countries around the world [9].

The significant contribution of foreign researchers to the implementation of energy services and mechanisms based on the ESCO approach has been formulated in the writings of such researchers as J. Weisman, Steve Sorrell [12], Sandra Backlund, Patrick Thollander [6], Edward Vine [14], Felix Suerkemper, Paolo Bertoldi, Wolfgang Irrek, Bruno Duplessis, Nicola Labanca [11] and others.

Among national scholars and scientists in the post-Soviet space, who are studying the issues of energy service mechanisms and other issues of project financing were I.A. Bashmakova, V.V. Bocharova, S.P. Denysyuk, B.S. Irniyazov, M.P. Kovalko, E.E. Nikitina, A.V. Prahovnik, S.B. Sivaev, V.A. Stepanenko, O.M. Sukhodoli, O.O. Lyakhova, Yu.I. Shulga and others.

The results of individual studies related to renewable energy sources that are used as an alternative substitute for traditional energy sources in energy service projects and aimed at the implementation of sustainable development goals are not studied. In this direction, we can mention the work of Daniel Schinnerl, Jan W. Bleyl and others. However, it should be noted that the number of studies in this direction is not significant and requires further versatile research.

Presentation of the main results and their justification. The prototype of the term "energy service contract" was the so-called Performance Contract (ESPC – Energy-savings performance contract). For the first time, the legal instrument originated in the United States. Currently, the legal regulation of performance contracts is carried out in accordance with the provisions of the US Energy Policy Act of 1992 (EPACT 1992). The Code of Federal Regulations (CFA) consolidates the concept of performance contract and the main responsibilities of the parties.

The US experience has been used in the European Union, where performance contracts have been used since the 80's of the last century. The legal definition of a performance contract, the so-called "energy contract", was entrusted by the European Commission only in 2006, within the framework of the Energy Services Directive 2006/32/EU of 5 April 2006 and improved by a

new definition in accordance with Directive 2012/27E of 25 October 2012 "On Energy Efficiency" as an "Energy Efficiency Contract". "Energy performance contracting" is a contractual agreement between a beneficiary and a supplier of energy efficiency improvement measures that is subject to verification and control throughout the contract period, where investments in such an event (work, supply or service) are paid in accordance with an agreed energy efficiency improvement contract or another agreed energy efficiency criterion such as cost savings" [1]. That is, the payment for the attracted financial resources and performed ESCO work is carried out by the customer after the project implementation at the expense of funds that are economic effect of the introduction of energy-saving technologies. In addition, the customer does not distract his own funds for the implementation of the project Fig. 1.

Q_{Σ} , energy consumption

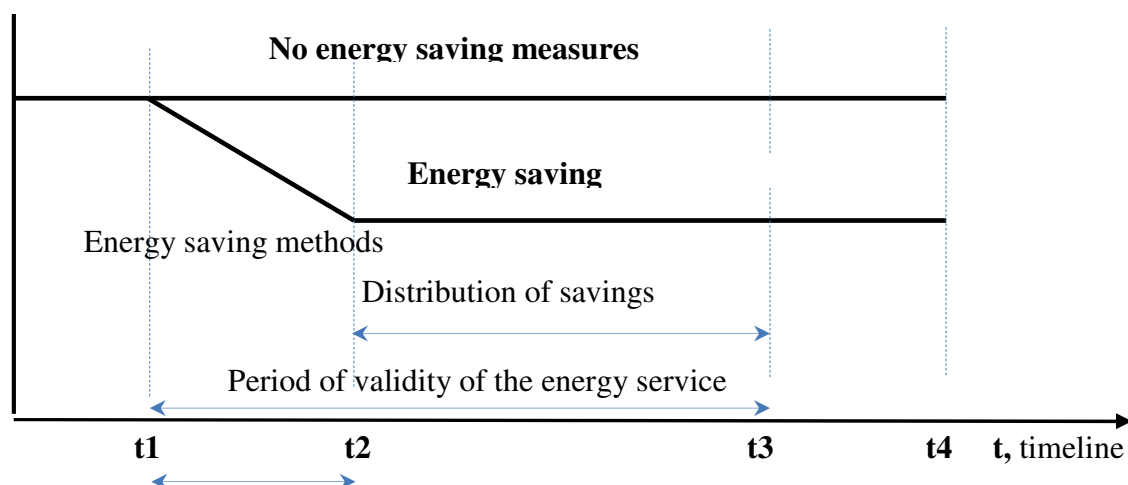


Fig. 1. Scheme of energy consumption after the introduction of an energy service contract

In accordance with the Model of Energy Service Contract [4] payment of the billing period Px_n is calculated by formula:

$$Px_n = \frac{B \times (BP_n - \Phi P_n) \times T_n}{100\%}, \quad (1)$$

n – defined settlement period (not more than 10 years); B – agreed by the parties the percentage of the annual reduction of customer costs; BP_n – the basic level of consumption of fuel and energy resources and / or housing and communal services in natural terms for the relevant billing period; ΦP_n – the actual level of consumption of fuel and energy resources and / or housing and communal services in the relevant accounting period, recorded by accounting

devices; T_n – price (tariff) for fuel and energy resources and / or housing and communal services, effective at the end of the relevant billing period.

The exemplary energy service contract provides for the definition of such essential conditions: a list of measures, terms and conditions for the implementation of the energy service (paragraph 1, appendix 1–2), the contract price (paragraph 2), the base level of energy consumption and utilities (p. 4–6, annex 3), the level of reduction of consumption and / or expenses (Annex 4.5), the validity of the energy service contract (items 9–10), the procedure for payment for the energy service (paragraphs 11–15, annex 6), rights and obligations parties (p. 21–26), responsibility for non-fulfillment of obligations under the agreement (p. 27–30), conditions, order and consequences of termination of contracts (p. 31–33), the procedure of transfer of property (section 34), the adjustment procedure and assessment by the implementation energy service (p. 35, Annex 7).

The existence of such a normative basis greatly simplifies the management decision to enter into a contract in order to obtain energy services. In this case, the effectiveness of such an energy service contract E_{ec} can be represented as a functional complex dependence:

$$E_{ec} = f(Q_{ec}, L_{ec}, t_n), \quad (2)$$

Q_{ec} – the share of savings to be paid by ESCO to the customer (at least 80% and no more than 90% savings); L_{ec} – level of reduction of customer's expenses on energy:

$$L_{ec} = Q_{no} \times T_0, \quad (3)$$

Q_{no} – Declared by ESCO company savings in physical units; T – tariff, valid on the date of announcement of purchase;

t_n – period of validity of the energy service contract) – according to the current legislation it should be no more than 10 years.

These indicators are determined by the ESCO at the stage of preparation of the tender offer. On its basis, the estimated efficiency indicator of the proposed energy service contract is calculated by the customer.

An important stage in the management decision regarding the conclusion of an energy service contract is the choice of the type of acceptable business model and ESCO executor.

In order to assess the ESCO qualification, the international standard BS EN 15900, which defines the minimum requirements for energy efficiency services, and Annex A provides an example of the process for providing energy efficiency services, can be used as additional material. BS EN 15900 can be used as a guide for customers and suppliers of energy efficiency services, as referred to in Article 1 of Directive 2006/32 / EU.

The study of existing options gives the author the opportunity to offer three options for selecting for a specific situation model of Table 1.

Table 1

Variants of business models of energy service contracts for ESCO

	Business model of the energy service contract		
	Light (low cost)	Base (medium-cost)	Complex (high cost)
	1	2	3
Feature of the model	Energy efficiency measures with zero investments are carried out by ESCO, which include energy conservation guarantees within the term of the agreement 2–3 years. ESCO recommends further measures with a certain level of investment. If a decision is taken on the implementation of such measures, the share of achieved savings from these measures can be attributed to the guarantee provided by ESCO for saving. All fixed assets and technical equipment belong to the owner of the facility.	ESCO carries out a full range of works: planning and implementation of technical measures, financing of technical equipment, maintenance and energy management during the term of the contract; Guarantee full cost recovery due to energy savings and maintenance costs over a specified period. The customer of the energy service pays the savings that is actually achieved. The term of the contract is 3–5 years. Fixed price (payment) related to the implementation of the main requirements of the project, throughout the term of the contract. The technical equipment is transferred to the customer after the project has been approved.	This business model expands the area covered by the base model. ESCO is additionally responsible for the planning, installation and financing of thermal insulation of buildings. Significant investment costs. Long term payback period of the project. Longer term of the contract (more than 5 years with further prolongation)
Energy-saving measures	Operative optimization of systems of lighting, heating, ventilation and use of hot water generation. Training and motivation of the Customer's personnel. ESCO is responsible for maintenance of technical equipment.	Measures in the field of electricity consumption (lighting, air conditioning, ventilation etc.). Measures in the field of heating (installation of heat pumps, central (individual) heat points, solid fuel boilers), installation of distribution heating system, heat recovery system, cooling system, hot water generation).	ESCO in addition to the Basic Model carries out: - measures for the repair of fencing constructions and complex insulation of the customer's buildings; - replacement of most power plants; - installation of integrated control systems;

Continuation of Table 1

	1	2	3
		Installation of thermal equipment using alternative energy resources (boiler on biomass, wind turbines, solar collectors etc.).	- cogeneration; - utilization of heat; insulation of protective structures: external walls, overlappings, basements; the use of alternative energy sources etc.
Financial Scheme	ESCO carries out staff costs for the periodic inspection of buildings and technical equipment. They receive monthly or quarterly payments from a budget institution, and the rest of the payments – after the final account of achieved energy savings.	The main financing method is financing by ESCO funds, which can attract credit funds from financial institutions. Other funding methods: additional financing of projects by the customer of the energy service financing of projects with the attraction of funds for energy efficiency, financing of all works on project planning and investment costs from the customer's own budget, the energy service or at the expense of loans borrowed by the customer.	Basic funding methods: - financing from ESCO funds (ESCO can attract loans from financial institutions) financing from ESCO funds in conjunction with financing from energy efficiency funds. Other funding methods: - additional financing of projects by the customer of the energy service one-time or parts during the duration of the contract); - financing of projects with attraction of state subsidies; - a combination of the above methods of financing.
Assessment and monitoring	Energy savings are calculated on the basis of invoices for the energy consumed and the specified energy cost baseline or (if it is not yet available) – then based on metric readings. It is necessary to take into account the annual correction of climate, at need, change to use building or high level of savings	Energy savings, which is confirmed by a fixed price for energy during the contract period, is subtracted from energy and water costs or meters. ESCOs periodically control energy and water consumption, often through remote monitoring and remote access to the building automation system. All energy consumption data is collected and documented, together with revisions in the annual report and in the annual savings account.	All energy savings (from repair and technical measures) are subtracted from energy and water accounts or readings of fixed-energy meters ESCO is responsible for periodically controlling energy consumption, adjusting technical parameters, annual reports from energy saving and annual savings accounts.

Continuation of Table 1

	1	2	3
	in implementing measures, carried out by the owner of the building.	ESCO takes care of the quality assurance and maintenance of all installed technical devices	
ESCO risks	Determination of the baseline energy consumption, energy saving guarantees and operational errors. Adjustments related to user behavior adjustments related to other energy saving measures, made by the owner of the building control over energy saving	Economic risks (possibility of non-achievement of savings and, consequently, non-reimbursement of expenses of ESCO; wrong calculation of the base level of energy consumption and, consequently, incorrect calculation of energy saving; increase in investment in projects). Technical risks (failure of technical equipment or errors in its collection). Administrative Risks (Municipality Delay with definition of tariffs or subsidies; untimely adoption installation works).	Економічні ризики Economic risks ESCO (absence of ESCO experience in calculating heat insulation measures; increased complexity of calculation of savings for thermal insulation measures; high possibility of additional costs for replacement of equipment that may fail; limited period of fixed interest on a loan for a long period of project implementation) Technical and administrative risks of ESCO (low quality of planning of ventilation systems, the role of which is much greater due to changes in the heat load on heating, the need for harmonization of legal supply New, connected with the reconstruction of the facades of buildings)
Strategies for risk reduction	Accurate calculation of energy savings; ESCO's experience in operating and optimizing technical equipment; participation of experienced project intermediaries at the preparatory stage project;	Involvement of experienced mediator during project preparation (baseline verification, reliability of the guarantee saving and calculated costs, checking planning); detailed planning and calculation of savings and investments; the establishment and observance of clear rules of contracts that relate to the	Cooperation of ESCO with external architects, engineers and other companies and balancing of all savings; use of a deep approach to the calculation of savings; thermal insulation measures calculation of expenses for repayment of loans,

Continuation of Table 1

	1	2	3
	definition of clear contractual rules to avoid conflicts.	responsibilities of counterparties; ESCO should experience in using technical equipment and employing skilled personnel.	with taking into account possible increase in interest rate; when planning measures to take into account the constraints in the field of heritage protection, a higher degree of coordination of actions
Main benefits	Detailed control over the annual energy consumption of each buildings; real savings are measured and documented; Expanded proposals for measures in buildings with low or high investment; cooperation between the state body (budgetary institution) and experienced ESCO; entry into the market of new ESCOs and municipalities, with little private-public partnership experience, short duration of the contract	Detailed control over the annual energy consumption of each building; the ability to measure and document real savings; obtaining real savings in the amount of 20 to 50%; (depending on activities) increase in the market value of the building; reduction of investment costs of the customer of the energy service in comparison with purchases without ESCO; training of technical staff through trainings.	Reduction of heat load for heating and air conditioning in buildings; improvement of indoor climate; the best quality of indoor space and, consequently, a lower level of morbidity of users; increase of architectural quality through renovation of facades of buildings; Better reputation of the building through the provision of environmentally sound construction.

The next step in the implementation is the need to assess the existing energy saving potential of the university. Based on the studies of the Joint Research Center (JRC) of the European Commission [17], it is appropriate to assume in the first approximation that the typical measure of the energy service mainly concerns lighting and heating systems. LED bulbs, electronic ballasts, presence sensors, and the construction of an internal energy management system are the most interesting technologies on which ESCO can successfully develop a business plan as a first step in cooperation. According to JRC experts, such energy savings measures in Europe are applied to 60% of existing public buildings, including training. The correct combination of these technologies

(depending on the type of building and the main end-use) can lead to an average energy saving (r) of up to 25% with a maximum payback period of 8 years.

Using these assumptions, you can calculate the investment costs associated with these recovery measures in the opposite direction. In fact, they can simply be obtained by multiplying the annual economic savings by the payback period:

$$s = r \times (FEC_H \times (p_{el} \times H_{el} + p_f \times (1 - H_{el})) + FEC_{other} \times p_{el}), \quad (4)$$

r – energy saving factor; FEC_H – final energy consumption for heating of a certain territory and FEC_{other} for other end uses; p_{el} and p_f are prices for electricity and fossil fuel; H_{el} – the percentage of buildings heated by electrical systems.

JRC calculations based on available EUROSTAT data [17] showed that European Union education institutions could save 16719 GW of energy and save 1319 million. EUR with a need for investment of 11301 million. EUR

Currently, due to the difficult economic situation, ESCO services for Ukraine provide an opportunity for universities to introduce energy saving measures that are financed by the customer due to the achieved energy saving and the costs spent on their purchase. ESCO, in the framework of the signed agreement, guarantees the specified savings, as well as that the cost of energy after the implementation of energy saving measures will not exceed predetermined factors. The technical risk of the customers of the energy service is minimal. When preparing an energy service contract, the parties determine the following key factors: financial savings in cash equivalent; saving of fuel and energy resources in kind, etc. At the same time, if the project's level of energy saving during the implementation period of the contract is not reached, ESCO does not receive remuneration in the planned volume.

In practice, there are several ESCO types in the world (Table 2) agreements:

- Energy supply and energy management ("Chauffage");
- Distribution of income from achieved savings (Shared Savings);
- First-Out, First Pay-Out, Fast Returns and Returns;
- With guaranteed savings (Guaranteed Savings),
- BOOT: creation – ownership – exploitation – transfer of ownership (build-own-operate-transfer (BOOT)).

One of the most economically advantageous for ESCO is energy service projects for energy supply implemented with the use of the green tariff. Such projects are intended for the supply of electricity produced using solar, wind, hydro and bio energy. Electricity generated from renewable energy sources is supplied to the general grid and is paid for by the green tariff on the wholesale electricity market, thus stimulating the replacement of natural gas in the heat supply sector.

Table 2

**Distribution of risks, territorial distribution and key characteristics
of various types of energy service contracts [16]**

Type of contract with ESCO	Key features	Distribution of risks between customer and ESCO			Most spread countries
		not completed	Financial	Technical	
Contract for energy supply and energy management "Chauffage" Schauffage (translation from French – heating).	The resource provider is the provider of energy services. Supply of energy resources is carried out at a fixed price during the term of the contract. Long term contract. Guaranteed reduction in resource consumption at the level of 3–10%. ESCO is the owner of energy saving equipment	ESCO	ESCO / Customer	ESCO	France, EU countries
An agreement to distribute revenues from achieved savings (Shared Savings)	Distribution of revenues from savings resulting from technical re-equipment of the customer. ESCO finances the implementation of the project and assumes all financial and risks associated with failure to reach the planned level of energy efficiency. The share of the customer in the distribution of income is about 20. Suitable at the initial stage of development of the national market of energy services services [16, p. 6].	ESCO	ESCO	ESCO / Customer	China, Japan, Australia, Brazil, Philippines, India South Africa
First-Out, First Pay-Out	This type of contract is a variation of the model of saving distribution. The difference - 100% of the proceeds received from the implementation of the project, remains in ESCO until full payback with the predicted level of profitability. Distribution of income between ESCO and the customer after the return on investment or full transfer of all rights to the project from ESCO to the customer, including the right to receive the entire amount of profit from	ESCO	ESCO	ESCO / Customer	USA, OAI, Jordan

Continuation of Table 2

Type of contract with ESCO	Key features	Distribution of risks between customer and ESCO			Most spread countries
		not completed	Financial	Technical	
Guaranteed Savings Agreement	ESCO takes a commitment to the customer to reduce the cost of energy resources. During the term of the contract ESCO is responsible for covering the costs of energy suppliers. The customer does not pay for the energy directly to the suppliers, and monthly pays the energy service company through an intermediary, which usually amounts to 85-90% of the basic cost of the customer's energy. The amount actually provided by the savings does not directly affect the customer's payments. In all circumstances, the customer reduces energy costs by 10-15%. ESCOs have a full risk of saving.	ESCO	ESCO / Customer	ESCO	Canada, Japan
BOOT contract for: building-own-operate-transfer (BOOT) .	The basis of the agreement is a public-private partnership in which ESCO concludes a contract with a partner in the public sector. The BOOT project is considered as a way of developing a large public infrastructure project through private funding.	ESCO	ESCO / Customer	ESCO	South Africa, Thailand, Colombia

According to the "Energy Strategy of Ukraine for the period up to 2035 "Safety, Energy Efficiency, Competitiveness", approved by the Cabinet of Ministers of Ukraine from August 18, 2017, No. 605-p, it was determined that by 2020 the share of "green" energy, at the expense of renewable resources , in the general fuel and energy balance of Ukraine (GFEBU) should be at least 8%, and by 2035 this figure should reach 25%. Particular attention deserves attention to the projects related to the construction of cogeneration (trigeneration) systems using biomass, biofuels and waste energy, the share of which in the GFEBU of the indicated Energy Strategy is planned at the level of 4.9% in 2020 and 11.9% in 2035.

The use of cogeneration units in universities will reduce the cost of heating and hot water supply, and the possibility of selling ESCOs, generating electricity using the "green" tariff, will significantly reduce the payback period of the implemented investment project.

The financial model, which confirms the assumptions, was designed by specialists of LLC "CLIAR ENERGY" in the framework of preparation of a commercial proposal for the NTU of Ukraine "Kyiv Polytechnic Institute. Igor Sikorsky". According to the terms of this project, with almost 30% discount on the cost of thermal energy for the consumer (planned annual sales of heat – 28208 Gcal), compared to the approved tariffs in force in Ukraine and the sale of electricity to the wholesale market at the "green" tariff (planned annual electricity sales – 47191 thousand sq. year), the payback period of the project is no more than three years, and internal rate of return (Internal Rate of Return, IRR) of 25%. As a fuel for CHP, it is suggested to use wood waste. The norms of the complex emissions into the atmosphere, according to calculations, are almost three times lower than those set for natural gas boiler-houses. Thus, the environmental microclimate in the university will be improved, the budget for energy costs reduced, millions of cubic meters of expensive Russian gas replaced by local renewable raw materials.

In addition, the value and innovation of the offer of LLC "KLIAR ENERGY" is that, in addition to the construction of a cogeneration complex (electricity generation – 6.3 MW of electricity and thermal generation – 4.5 MW), on its basis it is planned to create a scientific and educational training base for profile students and graduate students, as well as the opening of an experimental research laboratory for the development of Ukrainian technologies in the field of energy.

Conclusions and perspectives of further research. Implementation of the ESCO-mechanism is another urgent step to support the energy-efficient state strategy aimed at improving energy security and reducing Ukraine's energy dependence on imported energy and increasing the number of renewable energy projects.

At present, the domestic legislative base for supporting the development of the energy services market and the long experience of foreign countries is an essential prerequisite for increasing the number of state institutions ready to make a decision on the launch of the ESCO-mechanism. At the same time, the increase in the number of participants in the energy services market, in the budget sphere, prompts the development of tendencies to reduce the contractual price, including at the expense of cheaper loans, and will require the development of specialized educational programs and qualified methods for assessing the effectiveness of energy service projects and risk reduction mechanisms.

The author's experience in practical development of a financial model for the construction of a cogeneration complex in the territory of a higher educational institution confirmed the investment attractiveness of the project and presented new possibilities for introducing innovative forms of its possible functioning, especially on the basis of the specifics of the university.

The mechanisms for the formation and development of energy service clusters and public-private partnerships to support the development of the energy service contracts institute can effectively contribute to solving the above-mentioned tasks. The core of the energy service cluster should be energy service companies that manage the implementation of specific energy saving projects. Implementation of the mechanism of energy service clusters in practice will allow the development of national developments and their inclusion in specific investment projects with subsequent implementation in production in order to achieve the capitalization of the effects of reduction energy intensity of products and increase of value added. In Ukraine, due to the slow dissemination of the idea of an energy service contract, the idea of clusterization requires a more detailed study.

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ANALYSIS OF EFFICIENCY OF IMPLEMENTATION OF INNOVATION APPROACHES IN UNIVERSITY PROFESSIONAL ACTIVITY

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Introduction and aim of the research: The urgency of the topic of research is determined by the need to find ways to improve vocational guidance work with young people in Ukraine in the context of globalization and European integration processes. Integration of our country into the international scientific and educational space, the dynamic development of a market economy, which causes a rapid change in the world of professions, place new qualitative requirements for specialists of all specialties.

Research hypothesis. In the context of the actual principle of humanization of social life and according to professional orientation activity on a separate person the main criterion of efficiency of all procedures of vocational guidance and its system as a whole should recognize the degree of conformity of the chosen profession to his professional abilities and interests.

The aim of this research is a generalization of the experience of vocational guidance work, the definition of shortcomings, the drawing of ways to improve it.

Methodology: The methodological basis of the study is based on the use of general methodological provisions: professional ethics; the philosophy of professions; Theories of professionalism about the factors of formation and recognition of professions; professional pedagogy and labor psychology; professiology; professionography.

Results: The article researches the effectiveness of using the practice of introducing innovative approaches and a complex of professional orientation measures in a new format in work with entrants, in the conditions of increasing competition in the field of higher education in Ukraine. The urgency of this problem is the need to improve the quality and efficiency of recruiting future students in higher education.

Conclusions: The result of the development of an integrated approach to the implementation and realization of new recruitment activity at the university, aimed at finding gifted students and facilitating their further development in areas where their strongest talents will be the formation of a qualitatively new contingent of students. This will give impetus to the development of research projects under the auspices of leading scholars with the active involvement of interested students in this activity and will allow massive involvement of talented entrants, increase the prestige of higher education and create innovative and high-tech educational programs and projects.

Keywords: recruiting, professional orientation, higher education, entrant motivation, university strategy.

Problem statement and its connection with important scientific and practical tasks. The conducted research will allow to analyze the current status of informational support of entrants, criteria of their choice of the higher educational institution, will help to determine the degree of influence of various factors on the recruitment of students. The qualitative composition of the admissions and future students depends largely on the system work and a set of activities conducted by the university in partnership with secondary schools, colleges, etc. Implementation of joint educational projects with an innovative research component, implementation of digital technologies in the recruiting activities of the university. The results of the research can be used to develop new effective directions in the university's vocational guidance programs, including the pre-university education, as well as in conducting empirical research on the motivation of choosing higher education institutions for future students, in particular, pupils of the 10th and 11th grades.

Analysis of recent publications on the problem Questions for the implementation of vocational guidance activities of universities and recruiting students are reflected in the works of P. Russell [10]. In particular, they present the results of the effectiveness of the use of social media in working with potential students in higher education. So, the study conducted in 2011 and devoted to the use of social media tools by universities, was attended by 950 educational institutions in the United States, and an absolute majority of them (almost 96%) noted that they are actively using social media in their work. However, the author notes that sometimes these actions are excessive and excessive use of this tool, lacking of a clear communication strategy and understanding of what information is interesting to the target audience, can negatively affect the results of recruiting.

In turn, N. Barnes and E. Matson describe the study of American universities conducted by the Mass. Institute of Technologies for several years [1]. It was devoted to the role of social media and digital technologies in implementing the marketing policy of universities. As a result, Facebook (98%) was the most popular social network used by universities to work with potential students, and YouTube and Twitter (86% and 84% respectively), with actively using YouTube. The smallest in their recruiting activities, universities are turning to the professional social network LinkedIn (47%).

J. Show, who is studying the use of digital technologies and social media, in his blog on the website of the newspaper Gardian cites the results of a study conducted among current and potential university students and devoted to the impact of various sources of information on the choice of educational institution [11]. It was held in the form of an online questionnaire, which was attended by about 300 people.

One of the main results of the study was that, despite the active daily use of social media (almost 65% of respondents noted this fact), the percentage of respondents, those who trust the information about universities in social media, is less than the number of trusting information, received in days of opened doors in universities and from information printed materials (booklets, leaflets, university brochures, etc.).

Unresolved parts of the study. I.M. Gryshchenko [4–6], D.A. Makatora, T.M. Vlasjuk [6], L.M. Ganuschak-Yefimenko, V.G. Shcherbak, O.M. Nifatova [3] applied their works to the search for new technologies for recruiting students and implementing marketing strategies in higher educational establishments in the conditions of increasing competition in the field of higher education.

However, the consideration of basic innovative approaches to vocational guidance work at the university did not find a systematic study and generalization.

In particular, in our opinion, it is precisely the introduction of innovative approaches and a complex of vocational guidance measures of a new format in dealing with entrants, the role of state structures and educational institutions themselves in this process is considered insufficient.

The aim of the study. Analysis of the effectiveness of the implementation of innovative approaches in the professional orientation activities of the University.

Presentation of the main results and their justification Objective and detailed analysis of the needs of entrants and the factors influencing the choice of educational institution, allows developing a marketing strategy for the provision of educational services and outlining directions for improving the university management system in order to fully satisfy the needs of consumers. The presence of a university strategy with potential entrants allows more efficient recruiting of students (including the most gifted ones), increasing the prestige of higher education, developing a marketing policy in the field of development of new specialties and preserving existing, establishing long-term and mutually beneficial relations with employers in the context of the use of their practical base, internships and placement of graduates of higher educational institutions [4].

One of the prerequisites for the effective functioning of a higher educational institution in the modern world is its orientation towards the consumer of educational services, namely the entrants, the implementation of a client-oriented approach. The opinion of future students is essential in assessing the quality of the work of a university.

In the field of higher education of Ukraine there is high competition between higher educational institutions (both public and private) for involving talented entrants.

At the same time, the fact that a significant segment in the education system in Ukraine is engaged in paid educational services [6] is also important. Therefore, the conduct of sociological and marketing research in this area is necessary in order to study the interests of potential consumers of educational services of universities. Objective assessment of the quality of education in a university can only be obtained on the basis of a comprehensive analysis of all the results.

The study of the motivation of professional choice and the system of value orientations for potential university students is an important tool for identifying the changes that are taking place with regard to the prospects of obtaining higher education in the educational chain "school-university-employer" [5]. This will allow the formation of a single ecosystem of continuous training "specialist of the future", capable of solving problems in interdisciplinary teams. The training of such a specialist is possible only in conditions of advanced vocational guidance, which allows, at the stage of general education, to recognize as soon as possible the child's ability to certain academic disciplines and develop them with various forms.

The global education system in Ukraine is significantly influenced by the globalization processes, which have led to a significant increase in the demand for high-quality higher education in the international markets of these services. At the same time, in the domestic market, the leading universities of the country, given the adverse demographic processes, are in a state of fierce competition for talented graduates of schools and entrants who enter into extra-budgetary conditions. In connection with this, absolutely new forms and technologies of professional orientation activities of higher educational institutions are needed, including both individual work with talented students and mass projects (conducting of city, regional and inter-regional festivals of science, popular science "Open Fire" and BTL-actions, the Olympiad under the auspices of the university), which will allow to attract as many children as possible in the field of activity.

Relevance of the creation of a unified system of vocational guidance work with pupils of different levels of education: general (school), higher (undergraduate, postgraduate, post-graduate), post-secondary (additional education and vocational retraining) due to new challenges of the country's scientific and technological development in conditions of fierce competition for qualified professionals in the global labor market. In these conditions, it is necessary to overcome the institutional and psychological barriers of the student when joining the university.

The main goal of the outgoing professional orientation in the conditions of continuous education is the formation of a unified information and educational environment, which helps to create an effective system of early career guidance, detection and support of gifted children and young people in solving the problems of scientific and technological development of Ukraine.

Kyiv National University of Technologies and Design (hereinafter KNUTD) has always paid and pays great attention to the development of vocational guidance, interaction with leading schools, lyceums, gymnasiums of Ukraine, participation in the organization of all-Ukrainian Olympiads, seminars, fairs, roundtables for future students in order to form a potential contingent. Students and the involvement of gifted students in the university. There are two vocational guidance centers in KNUTD: "The Center for Pre-University and Individual Education" – pre-university training is carried out directly in the KNUTD, as well as on the basis of the research and production complex, which currently includes: 24 technical colleges, 35 colleges and lyceums, 22 higher vocational colleges, 4 vocational schools and 143 general secondary schools located in 11 regions of Ukraine and the Center for Labor and Career, whose mission is to create a "school of the future", aimed at the development of the initiative for students in, the ability to think creatively, to find non-standard solutions. Within these centers, KNUTD creates a cross-cutting system for ensuring the quality of school education, contributes to the implementation of special courses, electives, provides leadership in teaching and research work of students with the use of modern scientific and educational infrastructure.

As part of the implementation of the KNUTD policy in the area of introducing new forms and methods to work with entrants, the formation of a comprehensive way for the university in the school environment, as well as within the framework of the tasks for determining the motivational constituents of the choice of admissions of higher education institutions for training from 2012 to 2016 during the summer introductory campaigns, the authors conducted a series of sociological studies.

The method of collecting primary information in the framework of this study was an online questionnaire. The questionnaire consisted of 22 questions, which determined the reasons for formulating the attractiveness of a particular institution of higher education, a source of information on which regions and settlements were the incoming high schools, their advantages in choosing the direction of training, the level of wages during the year after graduation and other

The general audience in this study is the number of applicants who submitted applications in the KNUTD during the summer introductory campaigns 2012–2016 (Table 1).

Table 1

**The statistics of the applications submitted to the KNUTD
for the summer admissions campaign 2012–2016**

Applications filed in KNUTD	2012	2013	2014	2015	2016
	9711	9835	10063	9620	11495

Source: Systematized according to data [8].

The average of the total population is 10,144 people. To calculate the sample size, use the statistical method. The sample will be representative if it describes the characteristics of the general population with a minimum acceptable error. Calculate the required sample size by the formula:

$$n = \frac{t^2 * \delta^2 * N}{t^2 * \delta^2 + \Delta^2 * N}$$

N – size of the general population; δ – selective dispersion; Δ – limit sample size of error; t – Students statistics.

Using the necessary numerical values we get:

$$n = \frac{3^2 * 1^2 * 10144}{3^2 * 1^2 + 0,1^2 * 10144} = \frac{91296}{110,44} \approx 827$$

Thus, the sample should be achieved through a survey of at least 827 entrants.

Due to certain time constraints and heterogeneity of the flow of entrants, the sample size ranged from 853 to 1 304 respondents, satisfying the minimum value necessary to achieve representativeness.

Based on the results of a study aimed at determining the effectiveness of university vocational guidance activities, as well as the causes and factors that have a dominant influence on the attitudes of applicants in the decision-making process on the choice of higher education institutions, the following indicators are derived and described. The results of the analysis of entrants by gender (Figure 1) show that the number of girls respondents (from 54% in 2012 to 67.77% in 2016) consistently exceeds the number of respondents-boys (from 46% in 2012 to 32.23% in 2016).

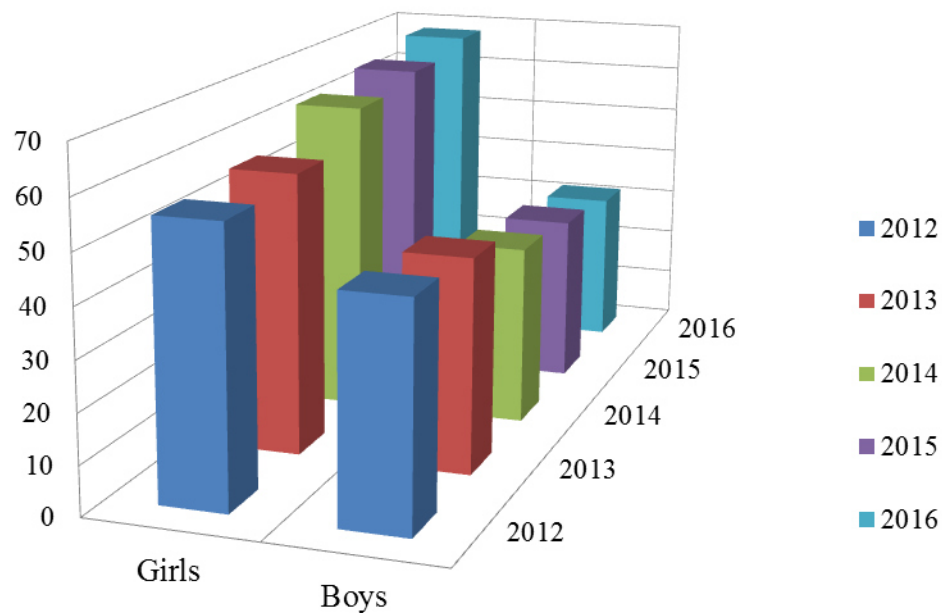


Fig. 1. Distribution of respondents by gender

A comparative analysis of which sources of information about the university were most popular among the entrants of the KNUTD in 2012–2016, showed the following results (Table 2).

Table 2

Popularity of sources of information, %

Options for answers	Year				
	2012	2013	2014	2015	2016
Official site of KNUTD	26.8	22.3	19.8	20.1	36.1
Social networks	17.1	12.5	6.8	19.17	18.27
Professional guidance work in schools, gymnasia etc.	48.9	45.5	34.2	35.6	38.7
From friends, friends, relatives	65.2	69.8	62.1	58.9	60.3
Advertising on TV and radio	3.2	3.7	2.9	2.4	3.9
Advertising in newspapers, magazines, booklets etc.	5.9	7.3	8.6	8.4	3.8

On this question, respondents could choose up to 3 variants of answers from 6 proposed. The obtained results indicate that the most popular sources of information are friends, relatives (from 65.2% in 2011 to 60.3 in 2016); vocational guidance work (from 48.9% in 2012 to 38.7 in 2016); the official site of KNUTD (from 26.8% in 2012 to 36.1% in 2016); social networks on the Internet (from 17.1% in 2012 to 18.27 in 2016).

Analyzing the issue of reducing the significance of social networks as a source of information on higher education in respondents' responses, it should be noted that due to the active development of the official site of KNUTD and its integration with social networks (the creation of official accounts in social networks), the number of entrants who choose the official site KNUTD as the primary source of objective information about the university, from 2012 to 2016. Significantly increased, so "social networks" were chosen by fewer amount of respondents.

A comparative analysis of the reasons influencing the choice of applicants for admission to the University in 2012–2016 showed that, on equal terms, a large proportion of future students, as the main reason for choosing a university, mentions parents' advice (the indicator varied from 44% in 2012 to 38.15 – in 2016), followed by the information received from the representatives of universities (30% in 2012 and 36.46 in 2016), the advice of friends and acquaintances (20.5% in 2012 and 36.3 in 2016) and advertising, ranking of universities (24.2% in 2011 and 8.09 in 2016). The fifth position in respondents' answers is the rate of attendance of preparatory courses (from 12% in 2011 to 4.85 in 2016) (Table 3).

Table 3

**Reasons influencing the choice of future students
when entering the university, %**

Options for answers	Year				
	2012	2013	2014	2015	2016
Parents' Tips	44.0	38.9	43.4	33.6	38.15
Information from higher education institutions	30.0	31.7	23.2	33.7	36.46
Advertising, university rating	24.2	15.1	27.3	15.45	8.09
Tips of friends and acquaintances	20.5	28.3	25.4	27.86	36.3
Visiting preparatory courses	12.0	8.5	7.6	6.9	4.85
Other	7.5	5.3	6.6	7.2	3.93

It is necessary to pay attention to a significant decrease in the role of advertising of universities, as well as attending preparatory courses in respondents' responses from 2012 to 2016. Due to the reformation of the university's advertising policy and the development of digital technologies, including the fundamental update of the KNUTD website and the subsequent active promotion of it on the Internet, as well as through the implementation of new recruitment programs for entrants and the introduction of a more personalized approach to working with schools, teachers and themselves future students, the significance of the influence of traditional advertising on television, radio and in printed publications on entry into KNUTD is reduced.

Conclusions. As part of the implementation of the comprehensive vocational guidance program of KNUTD during the 2012–2016 introductory campaigns the study of the enrollment environment was carried out, which clearly illustrates the current status of the information provision of the entrants to the university, the criteria for choosing an educational institution, and the degree of influence of various factors on the entrants.

Analysis of the reasons for the future students' entry to the KNUTD showed that from 2012 to 2016 there was a steady decline in the demand for preparatory courses, therefore, in these conditions, it is becoming important to reformat the vocational guidance activities from traditional measures to expand work with schools in the implementation of joint educational programs, the development of resource bases in schools, and the creation of scientific and cognitive circles, as well as the implementation of new projects for future entrants, including the involvement of remote technologies and social media.

The accumulated scientific and practical experience of evaluation of vocational guidance activities of KNUTD allows us to conclude about its effectiveness and good prospects in expanding the geography of vocational guidance activities and attracting more of the leading schools of Ukraine to this area of KNUTD influence. The University's professional orientation program involves the use of different formats and technologies for interacting with entrants at different levels: directly at the school through lectures by university professors, in the KNUTD through the opening of doors, popular science festivals, fairs and other mass events, as well as in the exhibition activity .

Only a comprehensive approach to solving the problem of attracting to the University of talented and highly motivated students can ensure the achievement of the goals set by the university.

The result of the development of an integrated approach to the implementation and realization of new recruitment activity at the university, aimed at finding gifted students and facilitating their further development in areas where their strongest talents will be the formation of a qualitatively new contingent of students. This will give impetus to the development of research

projects under the auspices of leading scholars with the active involvement of interested students in this activity and will allow massive involvement of talented entrants, increase the prestige of higher education and create innovative and high-tech educational programs and projects.

This approach has the following benefits:

1) raising the general level of education, knowledge and skills of senior pupils through pre-university training, as well as smooth adaptation to the system of higher education;

2) execution of research works by students under the guidance of leading teachers of the University;

3) expanding the range of events, introducing high school students to the University: excursions to the museums of the University, the days of open doors at the faculties, conducting popular science events, festivals and open-air;

4) introduction of innovative teaching methods;

5) development of Internet resources of the university and network scientific communities under the auspices of KNUTD, including the dynamic development of social media activity, the creation of thematic Internet communities with the participation of teachers and researchers of the University.

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FORMATION AND IMPLEMENTATION OF THE CLUSTER APPROACH IN THE MANAGEMENT OF COMPETITIVENESS OF ENTERPRISES OF TEXTILE INDUSTRY

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Introduction and aim of the research:

Networking as the establishment of long formal and informal relations between the subjects of the cluster, united in the technological chain by vertical and horizontal links, based on trust and common to the cluster, differs from the relations of production cooperation. Collaborative programs with the subjects of the cluster (educational, research, marketing, cross-border cooperation, exports, technological) increase the efficiency and competitiveness of the actors by combining ideas, material, technical, labor and financial resources, joint management and solving common problems. Public-private partnership is an institutional and organizational alliance between state, regional government and business, based on joint financing of projects. The interaction of these two forms of network cooperation determines the features of economic clustering and updates the research topic.

Research hypothesis. It is assumed that the use of the cluster approach to managing the competitiveness of light industry enterprises will allow to determine the sequence and methods of forming clusters in the economy.

The aim of this research. This study substantiates the mechanisms of self-organization and increasing the competitiveness of clusters on the basis of network cooperation and public-private partnership.

Methodology: for the method of identification and structuring of clusters, the criterion for determining the "key product", the questionnaire for the identification of cluster links, and the coefficient of bond strength were used. For the methodology of assessing the quality of network cooperation, histograms of the types of enterprises were used in the breadth of partner networks.

For the methodology for assessing the competitiveness of the cluster, the index method of comparing indicators and the method for calculating the integrated estimate (average geometric) was used, which made it possible to identify the most competitive potential clusters

Results: The model of formation of competitiveness of subjects of a cluster is developed. The objective sources of competitive advantages (localization and agglomeration) that create the conditions for the formation of potential clusters created through the state policy of stimulating cluster organization (network cooperation and public-private partnership) are identified. The formation of real clusters provides their subjects with strategic competitive advantages. This represents scientific novelty in the theory of clusters and determines the directions of their formation.

Conclusions: The proposed approach to assessing the economic results of the organization and development of clusters based on the forecast of economic effect indicators (enterprise competitiveness) and the efficiency of clustering (profitability of total assets) using economic and mathematical models, approbation of which showed that the cluster approach to enterprise competitiveness management is effective. The study based on the developed set of methods allowed to conclude that in the light industry of Ukraine there are prerequisites for organizing clusters, there are potential clusters that are not yet real.

Keywords: competitiveness of enterprises; clusters; light industry; network cooperation; public private partnership.

Formulation of the problem. The tasks of innovative development and effective entry into the world of economic space objectively predetermine the need to increase the competitiveness of domestic enterprises. The urgency of the study is due to the following circumstances: first, the effectiveness of the cluster approach to improve the competitiveness of economic systems is proved by world practice; secondly, the need to increase the competitiveness of Ukrainian enterprises is due to the difficult financial situation due to increased competition, the global financial and economic crisis and management inefficiency; Thirdly, the Ukrainian science has not yet been developed: the concept of clusters of commodity producers, the mechanism of self-regulation and increasing the competitiveness of clusters on the basis of network cooperation and public-private partnership, the cluster approach methodology and the organizational and economic mechanism for its implementation, with taking into account the tasks of innovative development of the economy and features of the sector.

Analysis of recent research and unsolved part of the problem. According to most experts, the competitiveness of a particular object is a combination of certain specific qualities of this object, which is more developed in comparison with the similar property of other objects of competition. Thus, according to M.I. Knysh [1], I. Simonov, Ya. Beleslavskaya [2, p. 95–101], D. Bugrova [3, p. 12–16] competitive advantages are all that all the strategies in the business are aimed at, including directions formed under the influence of many factors: effective production, possession of patents, advertising, competent management, attitude towards consumers. O. Yarotsky proposes for the competitiveness of the production enterprise to use the capabilities of the process approach in the management of the effectiveness of its operation [4, p. 65–67]. However, A. Guryanov and O. Grishko, on the contrary, believes that the systematic approach to strategic management of an enterprise is a key to achieving a high level of competitiveness [5, p. 274–277]. Some scientists (I. Danilov, S. Mikhailova, T. Danilov) suggest using specific methods of achieving competitiveness – benchmarking [6, p. 66–68].

At the same time, according to A. Kutsenko [7, p. 166], I. Gryshchenko [8, p. 284–286], T. Izovit, A. Kurgansky [9, p. 47], the competitive advantages are not the productivity or the use of resources, but the possibility of using the benefits of co-operation and specialization, which will allow to win in a competitive struggle. Recently, in science and practice, the view has emerged that the formation of national innovative cluster-united enterprises can act as a cementing component of the institutional provision of sustainable development, characterizing a competitive advantage as a result of a more advantageous market position (ownership of a larger market share) in a particular segment (L. Ganushchak-Yefimenko) [10, p. 51–53]. The inconsistency of the views of scientists on the role of clusters in managing the competitiveness of textile

industry enterprises and their impact on the competitiveness of enterprises has conditioned the relevance of the research.

The aim of the research is the development of theoretical and methodological foundations for the formation of the cluster approach and the organizational and economic mechanism for its implementation in the management of the competitiveness of textile industry enterprises.

Results of the study. The author's approach to the theory of clusters makes it possible to identify features that distinguish them from other network structures, to formulate the indications of a cluster of commodity producers (localization and agglomeration of enterprises, organizations and public institutions united by horizontal and vertical links, complementarity of subjects, production of a "key" product, the presence of competition relations and development of informal relations and cooperation between the subjects of the cluster, as well as partnership between them and regional bodies on management, a unified infrastructure and the institution of skin and furs environment, the unification of enterprises around the scientific and educational center).

Cluster of commodity producers is a network organization of complementary, territorially interconnected enterprises and organizations (including specialized suppliers, services, as well as producers and buyers) united around the scientific and educational center, which is linked by partnerships with local institutions, state and regional authorities management in order to increase the competitiveness of enterprises, regions and the national economy. The generalization of foreign experience in the organization and functioning of 192 clusters from 34 countries revealed the following patterns of the cluster approach: the objective nature of the occurrence (network cooperation resists the negative processes of globalization); state support of clusters, which consists in the development and implementation of cluster policy; specificity of cluster policy methods in different countries, which depends on the level of development of the economy, national traditions, as well as the accepted concept of the cluster; the duration of the real economic effect from the implementation of the cluster approach (from 3 to 10 years in different countries), which is explained by the complexity of the formation of cooperative and partnership relations in clusters.

The practical need to use the cluster approach to increase the competitiveness of domestic enterprises has necessitated the justification of the mechanism for the formation of competitiveness of the cluster entities themselves (that is, the microlevel), since all production and interpersonal relations are formed here, as well as competitive advantages that are realized in the market in the process market activity.

The second premise is the deterioration of the financial condition of the industry. The shortage of working capital increased by 5.6 times in the analyzed period, the level of supply with working capital acquired a negative value (-6%), the profitability of the industry's products fell by 1.8 times and amounted to 8.1% in 2015. The number of industrial organizations that have losses increased by 2.7 times in 2015 compared to 2005 and amounted to 27 (28.7% of the total number of enterprises).

The third prerequisite is the inefficiency of the competitiveness management system in the industry. Assessment of the competitiveness of 69 textile industry enterprises, including the Textile-Contact group of companies, the Textile-Ukraine corporation, the Cherkasy Shovkoviy Kombinat AT, the AT Ukraina, AT Rivnenelon, VOZKO, AT "Cherkas'ke knitwear company "Lubava" (the sample is 72%, the matrix of the raw data included $69 \times 18 = 1242$ for the year 2015) is presented in Table 1.

Table 1

**Assessment of the competitiveness of textile industry enterprises
in the context of sub-industries as of 01.01.2017, %**

Subsectors	Competitiveness factors								Assessment of the competitiveness of enterprises on average by industry
	competitiveness of goods	marketing efficiency	quality management	financial condition of enterprises	level of production organization	MTO efficiency	innovation activity	competitiveness of staff	
Shoe	32.5	4.6	2.13	1.32	2.61	2.92	0.35	2.86	49.29
Sewing	33.0	5.4	2.48	1.94	2.44	3.23	0.03	2.66	51.18
Knitted fabrics	32.0	4.75	2.08	2.20	2.55	2.64	0.45	2.43	49.10
Textiles and Fur	32.0	5.5	1.08	-0.81	2.35	2.22	1.21	2.37	45.92
Average in the industry	32.38	5.06	1.94	1.16	2.49	2.75	0.51	2.58	48.87

Taking into account the specifics of the Ukrainian economic model, the characteristics of textile industry, the state of society and the external environment, the rationale for a multi-level approach to managing the competitiveness of textile industry enterprises is substantiated. To implement it using the method of organizational design, a multi-level system for managing

the competitiveness of textile industry enterprises was developed on the basis of a cluster approach. The composition of the subsystems is shown in Fig. 1.

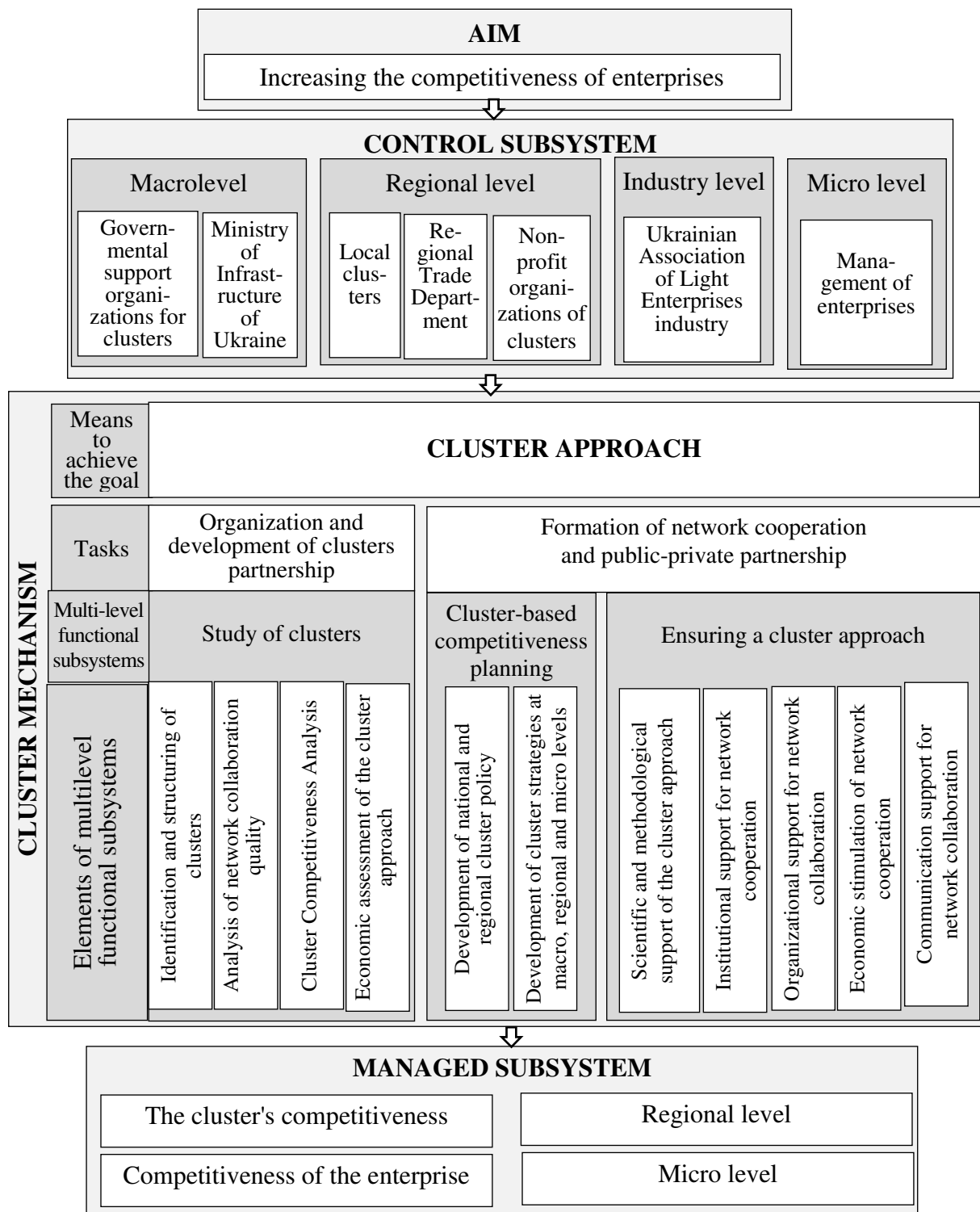


Fig. 1. Multi-level management system of competitiveness of textile industry enterprises on the basis of a cluster approach

The study of the external and internal environment of the functioning of enterprises of textile industry of Ukraine made it possible to identify the following prerequisites for the economic expediency of organizing clusters in the textile industry of Ukraine. The first prerequisite is globalization and increased competition in the domestic and foreign markets, as a result of which the share of the industry's output in the total volume of industrial production in Ukraine for 2005–2015. decreased by 4.2 times and amounted to 7.1%. The greatest decrease (5.5 times) occurred in the textile industry. During the analyzed period, the production of some types of textile industry products decreased (by an average of 2.7 times) and, as a consequence, the capacity utilization rate decreased (by 1.7 times).

The fourth prerequisite was the ineffectiveness of the innovation system. The carried out analysis of innovative activity in the textile industry of Ukraine for 2005–2015 revealed the following negative facts: a low share of innovation-active enterprises (9.8%) and a share of new products in total production (3.2%), an irrational change in the structure of innovative products in terms of novelty (the share of products that underwent significant technological changes or newly implemented); low level of inventive and patent activity.

The fifth prerequisite for the economic feasibility of cluster organization is the global financial and economic crisis. As a result of the reduction in consumer demand and non-payment by buyers in 2011, the remainders of finished goods in the warehouse as a whole increased by 17% in comparison with 2005 for the enterprises of the group of companies Textile-Contact and the corporation Textil-Ukraina.

The proposed multi-level subsystem of cluster research is based on the aggregation of cluster research at macro, regional and microlevels of management and includes the characterization of the goals, subjects, objects and directions of cluster research. In accordance with the multilevel approach, the directions of cluster research are expanded by the following: analysis of the quality of network cooperation and public-private partnerships, assessment of cluster competitiveness, analysis of competitiveness of cluster subjects, which will allow for more in-depth study of clusters, not only for development but also for cluster strategy evaluation.

The methodology for assessing the competitiveness of a textile industry enterprise is based on an integrated assessment of the measures of measuring the competitive potential of the enterprise and the competitiveness of the goods.

The system of competitive potential assessment indicators and their significance are determined on the basis of correlation-regression analysis using the statistical base of textile industry enterprises (the matrix of initial data included 7728 indicators for 2005–2015), which allowed to take into account the specifics of the industry. As a result, the following indicators were determined for assessing the competitiveness of the enterprise: the competitiveness of the goods, the excess of the allowable level of finished goods stocks, the growth rate of sales, the return on investment, the cost of 1 UAH sales ratio, current liquidity ratio, capacity utilization factor, labor productivity, depreciation of fixed assets, decrease in the level of material consumption, material output, the share of innovative goods, the costs of innovation, the coefficient of anticipating the growth of labor productivity in relation to the growth of wages, the coefficient of staff turnover. To translate dimensional estimates of indicators into dimensionless, the index method was used. For the maximum (minimum) value for each indicator was taken the value of the enterprise index – the leader in the industry.

To evaluate the competitiveness of goods was suggested by assortment groups as a weighted average of the degree of satisfaction with consumer parameters of goods on the basis of the expert method. For this purpose, a system of consumer parameters of textile industry goods was developed; a questionnaire evaluating the significance of consumer parameters; questionnaire comparing the parameters of goods from different manufacturers. A comprehensive assessment of the competitiveness of the enterprise is proposed to be calculated as the sum of the product of significance for an index estimate of the enterprise's competitiveness indicators. The values of the enterprise competitiveness assessment can theoretically vary from 0 to 100. For a qualitative characterization of the obtained competitiveness assessments, a scale for assessing the qualitative level has been developed. The methodology allows for a multifaceted analysis of enterprise competitiveness by calculating absolute and comparative competitiveness, the degree of use of elements of the company's competitive potential.

The method of cluster identification and structuring includes two stages: cluster identification and structuring. The task of the identification stage is the identification of potential subjects of the cluster. Identification of clusters is proposed to be carried out on the basis of the definition of a "key" product (an assortment of goods having the largest specific weight in the volume of industrial production of the sub-sector); analysis of interbranch relations in the region based on the calculation of the coefficient of full costs; identification of cluster subjects and products using in-depth interviews with managers and specialists of manufacturing enterprises and organizations, for which a questionnaire was developed.

The task of the structuring stage is the establishment of the strength of the connections between the subjects and the construction of the cluster scheme. Determination of the strength of the connections between the subjects of the cluster to clarify its composition is suggested to be carried out on the basis of the link strength factor calculated as the ratio of the volume of supply / supply of the products of the subject for the cluster to the total volume of sales of the product of the subject. The cluster includes producers along the technological chain, the coefficient of the binding strength of which is in the range from 0.08 to 1 (which is determined on the basis of empirical studies). Further, horizontal links in the production chain are identified to show producers of by-products or services. Then they are defined and shown on the cluster scheme of infrastructure organization, which create conditions for production and development – research, education, marketing etc.

The methodology for assessing the competitiveness of the cluster is based on an assessment of the indicators characterizing the importance of the cluster for the economic development of the region, as well as its investment and innovative potential of international cooperation, and is determined by the formula

$$K_k = 7 D_{add} \times EMP_{cl} \times EXP \times PROD_{cl} \times PROCES \times SUBJ_{cl} \times SUBJ_{org},$$

where D_{add} – value added index created in a cluster; EMP_{cl} – index of the number of employees in the cluster; EXP – cluster export volume index; $PROD_{cl}$ – index of the share of the cluster in the volume of industrial production of the region; $PROCES$ – index of the level of processing of the product in the process chain; $SUBJ_{cl}$ – index of the number of subjects in the cluster; $SUBJ_{org}$ – index of the number of innovation-active organizations in the cluster.

The level of processing is the number of types of products that are created in the cluster along the production chain. Indices of indicators are defined as the ratio of the i -th size index of the cluster's competitiveness to the maximum value of the i -th size index of the compared cluster identified in the region. Values for assessing the competitiveness of a cluster can theoretically vary from 0 to 1. The most competitive will be a cluster that has the most comprehensive assessment of competitiveness. The methodology is intended to identify prospective potential clusters for foreign investments within the framework of programs for creating international clusters, as well as for state support for the organization of clusters identified in the region within the framework of public-private programs, which allows comparing multi-sectoral clusters.

In order to methodically provide a multi-level system for planning competitiveness on the basis of the cluster approach, methods for the formation of cluster programs at the regional and micro-levels of management have been developed. The methodology for forming a regional cluster program includes the following stages and actions: Stage I – analysis of the preconditions of clusters in the region; Stage II – the definition of the idea of the project: the organization of the cluster in the region (or for the already created clusters – the development of cross-border cooperation of the cluster, the organization of an international cluster etc.); III stage – planning: suggested the logical and structural matrix of the cluster project; IV stage – financing: the necessary financial resources and sources of financing are proved, which are: the local budget (the contribution can be property, finance, provision of services, guarantees to banks, tax and other benefits); funds of enterprises and organizations of the cluster (finance, property, management, professional experience); funds of international organizations; Stage V – implementation: the organizational structure of the program management was proposed, monitoring directions and its indicators developed according to Balanced Scorecard (BSC) methodology, VI stage – assessment: evaluation tool (logical and structural matrix), evaluation indicators cluster program and the competitiveness of the cluster, as well as the mechanism for adjusting the program.

The micro-level competitiveness planning subsystem is presented by the methodology for developing a program to improve the competitiveness of enterprises based on clusters, which includes the following stages. At the first stage, a strategic analysis is conducted on the proposed algorithm, for which the factors of competitive advantages of cluster entities in the external and internal environment and the criteria for their evaluation are justified. At the second stage, competitiveness goals are formed – qualitative and quantitative. Qualitative goal is the participation of the enterprise in the cluster, and quantitative – the enterprise competitiveness standard, for the definition of which it is proposed to use the modelling method – the construction of the neural network. An algorithm for planning the enterprise competitiveness standard based on the construction of a neural network is developed.

At the third stage of enterprise competitiveness planning, alternative private strategies form the overall strategy of enterprise competitiveness. The classification of competitiveness strategies of the enterprise is developed, which is based on justified characteristics (type of competitive advantages, position in the market relative to competitors, directions of market development) and types of strategies (main, basic and private). The strategy for participation in the cluster is classified as basic.

The paper defines: the purpose of the strategy for participation in the cluster (promoting the competitiveness of enterprises by taking advantage of network cooperation and PPP) and objectives (organization of network cooperation with cluster entities and partnership with regional government bodies; joint investment in the creation of a common specialized cluster infrastructure; development of special training programs for future cluster specialists in educational institutions of their qualifications, the entry into a non-profit organization Cluster; funding for joint research and development; the organization of joint marketing and sales of products in foreign markets).

At the IV stage, the assessment of the possibilities of the enterprise's participation in the cluster and the selection of competitiveness strategies are carried out, for which the method of forming the overall strategy for increasing the competitiveness of the enterprise according to the criteria of priority and efficiency has been developed.

At the V stage, an action program and budget are drawn up. The competitiveness improvement program is being developed as a multiproject, which includes projects to improve product quality, participate in the cluster, reduce costs, etc. Recommendations are given on the formation of project activities for participation in the cluster, depending on the stage of the clustering process in the region, the stage of the cluster life cycle, the degree of development of cluster relations, the relationship of the top management of enterprises to cluster processes.

At the VI stage, the program is implemented, for which the proposed activities are proposed, at the VII stage – monitoring and analysis of its implementation, the monitoring method (adaptive) and indicators of monitoring and analysis of the competitiveness plan are justified.

Institutional structures that ensure cooperation in education, science, marketing, and textile industry are not developed. Secondly, there was a low activity in the implementation of joint research projects (12 or 12.5% in the corporation Textil-Ukraine in relation to the number of organizations surveyed (the sample comprised 96 enterprises for 2006–2016), which significantly less than abroad (61–97% in different countries). Analysis of the typology of enterprises in the breadth of partner networks based on the constructed histograms showed that only 1.1% of the surveyed enterprises were able to build fairly complete partner networks, including 11 and 12 partners; wider networks (from 5 to 10 partners) possessed 26.8% of enterprises. The largest statistical representation belongs to enterprises that had only two partners for the introduction of innovations (29.6%), with suppliers and consumers acting as partners. Component projects in the field of education, marketing researches, sales on the external market by the enterprises of light industry were not carried out.

In accordance with the methodology for the development of the cluster program, an analysis of network links was carried out on a statistical and analytical basis, comprising 46 textile industry enterprises and 446 organizations of other sectors of the economy, which resulted in the identification of the clusters in the light industry of the Kyiv region, namely:

1) the conditions of economic expediency of creating clusters (decrease in production and sales of products for 2005–2015, deterioration of financial indicators, high depreciation of fixed assets, low innovation and investment activity, low level of competitiveness of enterprises in the industry – an average of 47.5%);

2) local factors of production (raw materials, materials, means of labor, specialized educational and research institutions, skilled labor resources);

3) interrelated and related industries: agriculture – primary processing of leather and fur (full cost factor – 0.137); primary skin treatment and fur – linen industry (0.423); linen – textiles and furs (0.524); linen – knitted (0.193); textiles and furs – sewing (0.202); textiles and furs – shoe (0.391); mechanical engineering and leather – shoe (0.018); chemical – textiles and furs (0.131);

4) high level of competition in the industry, which is confirmed by calculations of generalized indicators of intensity of competition (U_c). The most sycophants and furs compete in the sub-sector "primary skin and fur processing" ($U_c = 0.8$) and sewing industries ($U_c = 0.49$). This provides, on the one hand, the possibility of clustering, and, on the other hand, stimulates the development of innovation and increased competitiveness of the subjects. The conducted competitive analysis (77 enterprises of linen, textile, knitting, sewing and shoe industry) were investigated and identified leaders in the market who can become initiators of the creation of clusters of commodity producers.

Thus, the analysis showed the existence of prerequisites for the creation of clusters, so the next stage in the development of the cluster program was the identification and structuring of clusters in the Kyiv region. As a result of their conduct:

1) identified key products of textile industry – leather and fur products, footwear, clothing;

2) identification of cluster subjects was carried out on the basis of in-depth interviews of key specialists, heads of enterprises and organizations, institutions of cluster infrastructure (the empirical basis for the study included 30 questionnaires), resulting in a list of potential subjects of each cluster;

3) links between enterprises and organizations were identified (based on statistical analysis and in-depth interviews), in particular 1,430 links in the skin and fur cluster between 65 enterprises and organizations from 22 industries, 3,150 ties in a shoe cluster between 175 enterprises and organizations from 18 industries, 3,084 ties in a cluster of clothes between 257 enterprises and organizations from 12 industries;

4) the coefficients of strength of ties between enterprises and organizations from different sectors of the economy were calculated, the values of which served as a criterion for including subjects in clusters (clusters included subjects that had a bond strength of 0.08–1.0). As a result, the schemes of three clusters of manufacturers of light industry goods in the Kyiv region – leather and fur, footwear and clothing – were identified and constructed.

Analysis of the quality of network cooperation in clusters based on in-depth interviews of managers and key specialists (the empirical basis for the study included 30 questionnaires on 10 questions) led to the conclusion that the identified clusters are potential, not real.

The factors preventing the creation of real clusters in the region are revealed: the lack of cooperation relations between competitors in the field of research, education, marketing (100% of respondents); non-awareness of business and authorities about the benefits of cluster links, network cooperation and PPP (99%); undeveloped partnerships with local government (83%); weak links between enterprises and higher educational and scientific institutions (79%).

Analysis of the competitiveness of clusters as of 01.01.2015 revealed the most promising of them for the Kyiv region – leather and fur (a comprehensive assessment of its competitiveness – 0.82) and footwear (0.76). The clothing cluster received a low estimate of 0.47. At the same time, the level of competitiveness of the textile and footwear industries is currently low and amounts to 49.4 and 52.6% of the maximum possible, respectively. Based on the results of the analysis, it was concluded that the clusters identified in the Kyiv region are potential and are at the origin stage. For the organization of real clusters and their development there is a need to develop and implement a cluster program.

The program's goal is to organize three clusters of textile industry enterprises in the Kyiv region (leather and fur, shoes and clothes). This goal will ensure the achievement of the goal of a higher order, which is to increase the competitiveness of enterprises in the Kyiv region. In accordance with the developed methodology for the formation of regional cluster programs, a "strategy tree" has been constructed to define the logic of actions for creating clusters.

Based on the results of the analysis of strategies, the logical and structural matrix of the program is constructed, schedules of activities and resources are drawn up, funding sources are identified and program sustainability is assessed. The conclusion is made that the program is stable and effective, since the institutional capacity of the Kyiv Regional Executive Committee and Kyiv National University of Technologies and Design is high, the size of the membership fees of enterprises for the maintenance of the Association is small (0.002% of the sales volume).

The decision by the state and regional governments of Ukraine to use the cluster approach to increase the competitiveness of enterprises, industries, regions and the national economy will depend on a convincing economic justification for its effectiveness. To this end, a methodology has been developed for assessing the economic results of the organization and development of clusters. In contrast to the method used to evaluate clustering based on the forecast of production and employment, the developed methodology is aimed at assessing the efficiency of clusters at the microlevel using the economic effect indicators (the level of enterprise competitiveness) and efficiency (profitability of total assets). The methods of forecasting are expert and the method of linear approximation, the factors-arguments for constructing models are the costs for 1 UAH realization of products, weighted-by-product assessment of the competitiveness of goods and labor productivity of workers. The forecast period is calculated on the basis of empirical studies and was 7 years. Thus, the economic evaluation of the organization of clusters in the textile industry of Ukraine, conducted using multi-factor models, allows us to conclude that the cluster approach is effective in managing the competitiveness of industry enterprises.

Conclusions and offers. The methodology of the cluster approach in the management of the competitiveness of textile industry enterprises is developed, which, unlike existing exercises, considers the management of enterprise competitiveness from the point of view of the formation of a multi-level system and the process of organizing clusters. To substantiate the cluster approach from the point of view of the system, the methodological foundations for the formation of multi-level subsystems have been developed: managing, managed, target (a "tree of goals" for organizing and developing clusters); functional, including the subsystem of cluster research, for which goals, subjects, objects and directions of cluster analysis are defined; a subsystem of planning, the elements of which are the development of cluster policy and cluster strategies at macro, regional and micro levels; providing a subsystem consisting of methodological support of the cluster approach, institutional, organizational, economic, communication support of network cooperation and PPP in clusters.

The developed methodology for the formation of cluster policy in Ukraine includes: the rationale for its specificity, principles, purpose and objectives; subjects and objects of cluster policy; recommendations on the formation of a cluster strategy as an integral part of the cluster policy. Considering the management of enterprise competitiveness on the basis of clusters from the point of view of the process, it was possible to develop a clustering technology in the textile industry of Ukraine, including a sequence of steps and actions for organizing clusters in the industry and managing them.

A set of methods for the development of cluster programs is presented by the methodology for developing a regional cluster program, the distinguishing feature of which is the application of the methodology of project management and financing, which allowed implementing the principles of PPP. The application of the methodology will allow to coordinate the goals of partners (state and business) in the organization and management of clusters, effectively manage resources, time, budget (through a logical-structural matrix) and expand sources of financing through pooling of funds.

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JEL Classification: J54

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JUSTIFICATION OF ORGANIZATIONAL CHANGES INCLUDING SPECIFICS OF HIERARCHICAL RELATIONS IN DEVELOPING ORGANIZATIONS

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Introduction and study objective: the requirement to create an effective system of enterprise's innovation development brings forward issues of theory and methodology, including specifics of necessary organizational changes and cooperation within the company including management – employees' interaction. Thus, scientific ground for solution to these problems will facilitate the creation of organizational structures for efficiently functioning enterprises.

Hypothesis of scientific research. It is often assumed that the choice of effective and required methods of the enterprise's adjustment to the market environment would allow to systematize the organizational changes enabling performance increase of its economic activity.

The purpose of this study is theoretical and methodological justification of concept approaches and methods in organization change management of enterprise structures and functions during its adjustment to the conditions of economic environment.

Research methodology: application of the system analysis justifies 5 sets of hypothetical relations linking perceived power with perceived behavior of reward and penalty.

Furthermore, two-dimensional correlation, stepwise multiple regression and hierarchical multiple regression analysis help to construct a model of relevant organizational changes.

Results achieved: diagnostic methods were developed that determine external and internal conditions of the enterprise in order to choose the right change strategy; the methodology of evolution analysis of change efficiency was proposed. Additionally, high-quality econometric models were created for assessment of the impact of changes based on the enterprise's performance.

Conclusions: the proposed approach to justification of organizational changes enables the implication of methods designed to analyze the need for restructuring of organization culture, management style, employees' relations and takes into account specifics of hierarchical structure in a developing organization. Furthermore, new methods were developed to assess the effectiveness of management system at an industrial enterprise, including introduction of changes and their dynamics' assessment.

Keywords: organizational changes; hierarchical relationships; self-developing organization; life cycle stages of the organization; organizational structure.

Problem statement. Dynamic economic development determines increased scientific and practical interest in the appeal to use new, most effective instruments and methods for managing organizational changes at both macro and micro economic levels that predetermine the possibilities of organizational structures aimed at stimulating innovation development. The problem of efficiency improvement of organization change management in a relatively unstable business environment, by evolutionary (internal positive transformation) and revolutionary (mergers, acquisitions, integration,

disintegration) change types is highly relevant for current state of global economy.

An increased interest in change management during recent years is conditioned by the higher speed of changes in the external environment versus the speed of management system reaction to these changes. Therefore new tasks are conditioned by: 1) significant discrepancy between technological, production, organization capabilities and the requirements of market economy; 2) the need to change internal production processes and improve enterprise structure related to uncertain external circumstances; 3) no “ready-to-use” methods or recipes exist; quantity change analysis methods are poorly applicable to enterprise restructuring. At the same time spontaneous, insufficiently reasoned from theory and methodology point of view organizational changes lead to significant economic losses.

Furthermore, constantly raising speed of change (according to experts' evaluation, the intensity of economic life will grow by 2–2.5 times by 2025) will lead to the fact that the effective functioning of industrial enterprises will be determined by the dynamics of their adaptive responses to the external and internal environment. Change management is becoming an ongoing process among other company's functions, which proves the relevance of the studied issue.

Analysis of the latest topic-related publications and the unsolved part of the stated problem. Analysis of the theoretical foundations and practical experience of hierarchical relationships in modern organizations indicates that it is impossible to resolve issues in this area without developing new theoretical approaches, tools and methodological support to assess and analyze the effectiveness of organizational changes. These and similar issues are relevant and have not yet received a sufficiently complete and systematic reflection in the scientific literature, which has stimulated an increased demand for their solution. Scientific trend of recent years lies in the fact that the increasing number of scientific discoveries and breaks-through take place on the intersection of different scientific fields, and therefore the key potential of scientific development and paradigm shift, called to create the next era of scientific thought, lies in adjacent and at times even far-apart fields. Therefore, the most astonishing examples of cross-scientific findings are the Behavioral Economics, founded by Richard Thaler [1] on the basis of Economics and Psychology, which laid a new stage in the development of modern economic thought; as well as a model created at the junction of the Economics and Genetics – The Hierarchy Community Phenotype Model by Lem [2], Griffith, Sambrook [3], which formed a principally new concept of organization management, and others.

After a detailed study of currently existing organization structures, it is worth to note their likeness and one-directional approach, as well as their absence of flexibility and no clear connection to the company's goals. Even the most modern and progressive organization structures such as Team, Matrix, Network or Virtual, and even in case of their application in the innovation-oriented enterprises, are created based on only 2 criteria: professional requirements included into the structure roles and hierarchy interaction. Organization management issues that are currently studied by modern academics include: mediator role of the negative feedback to the leaders from their subordinates in the relationship between the quality of the leader-member exchange (Warren Watson, Larry Michaelsen [4]; Timothy R. Hinkin, Chester A. Schriesheim [5]), the evaluation of the effectiveness of the leader (Herman H. M. Tse, Ashlea C. Troth, Neal M. Ashkanasy, Amy L. Collins [6]); personal affects, discrete affects, emotional intelligence, emotional efforts and emotional climate as a result of the leader-leader exchange (Jae Uk Chun, Dongseop Lee, John J. Sosik [7]); the influence of group cohesion and leadership behavior on their subordinates' satisfaction in the organization (Gregory H. Dobbins, Stephen J. Zaccaro [8]); leadership self-awareness and its relation to the subordinate opinions adopted to the organizational hierarchy of an enterprise (Dan Moshavi, F. William Brown, Nancy G. Dodd [9]); the influence of the gender and age factors on the formation of a self-organized system (Dan Moshavi, F. William Brown, Nancy G. Dodd [10]). At the same time multi-dimensional nature of psychological characteristics of a person, and specifics of interpersonal interaction are disregarded, although these very criteria have the most influence on the organization reaching its goals.

Goals setting. The objective of this research is theoretical and methodological justification of concept approaches and methods of organizational change management in structures and functions attributed to the adjustment to the environment conditions and aimed to increase functioning efficiency of all economic system's elements.

Study results. In this research, I propose to prove a fundamentally new approach to Organization management through the model application of a progressive and dynamic organizational structure. The created model will represent an interactive revision of teams' setup that would correspond to specific projects and life cycle stage of an enterprise's development. (Fig. 1). This revision will cover a selection of such employees whose competencies and psychological qualities fit specific work types designed to help the enterprise reach its goals corresponding to its current life cycle stage. The model will also include an assessment of resources and possibilities available as well as limitations and possible threats.

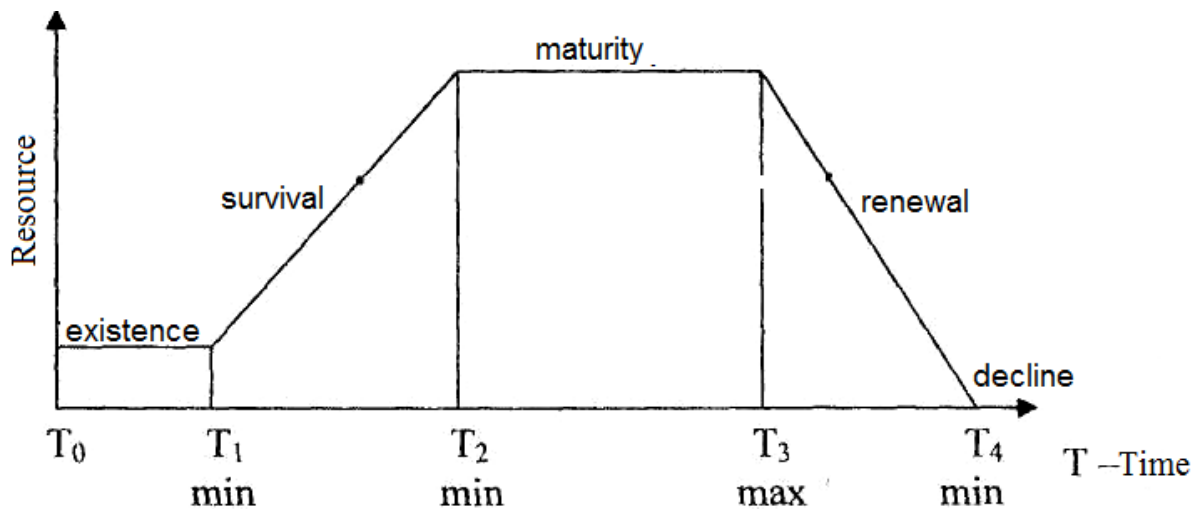


Fig. 1. Organization life cycle stages

At the initial time phase T_0 , resources of the organization cannot be equal to zero. The starting point of the organization creation ($T_0 - T_1$) coincides with the definition of its objectives. The goal is an anticipation of the results that the organization strives to achieve through its activity. The purpose of the business organization must meet the needs of its customers, solve socially significant problems that the society is facing. The basis of the organization's existence is the commercial idea, in other words, the vision of how it will generate economic value, and what will the income be. Profit should be considered as one of the criteria for success, and not as the end goal.

This model will have 5 standard options of the organizational structure/team for each phase of the enterprise's life cycle that will allow it to achieve the goal in the shortest possible time and at the lowest cost according to the stage of the life cycle:

Template 1 – Existence stage (goal: market entry speed-up),

Template 2 – Survival stage (goal: maximum market share and profit growth),

Template 3 – Maturity stage (goal: market leadership position retention),

Template 4 – Renewal stage (goal: negative economic trend exit and achievement of a new growth spiral),

Template 5 – Decline stage (reorganization / restructuring of an enterprise or its bankruptcy).

Each of the five templates are solved using the methods of minimax game theory, that is, simultaneous maximization of profit and minimization of labor costs required to perform a set of tasks to achieve the intended objective. This will be possible in case if each team member performs the most suitable for her/him type of work, while potential interpersonal conflicts are identified and eliminated, greatly increasing motivation and satisfaction from labor process.

Each model will contain the following components:

1. Description via SWOT analysis of resources available to achieve the goal of the given stage of the enterprise's life cycle and therefore associated external and internal obstacles / risks / threats (including the features of interpersonal interaction of different potentially conflicting employees with opposite / poorly compatible psychological characteristics);

2. Description of methods and means directed at achieving intended objectives and eliminating/minimizing obstacles and risks (including description of the types of work and management approaches required at each stage);

3. Employees' psychological characteristics ("Big Five") depending on the type of work described in p. 2.

Obtained results modelling depending on the company size and quantity output measures creation such as work time needed for each set of tasks, number of each type of employees and etc.

Variations are understood as deviations from certain system or environment characteristics at a set moment in time (t_1, t_2), $t_1 < t_2$. Environment changes (t) lead to a loss in the characteristics appropriateness (organizational design) of the system $X(t)$. Appropriateness loss leads to the efficiency and sustainability decrease in the system. Building on that, the postulate of dynamic appropriateness is formulated: in order to maintain or increase the efficiency and stability of the system, a corresponding reaction of its internal characteristics in response to the changes in external environment is required. To achieve this, it is necessary to constantly identify and measure changes in the environment and develop responses to them. Change management is the process of forecasting and planning of future changes, evaluating forecasting and planning effectiveness and monitoring their implementation. Changes are usually associated with the development of the system (Fig. 2).

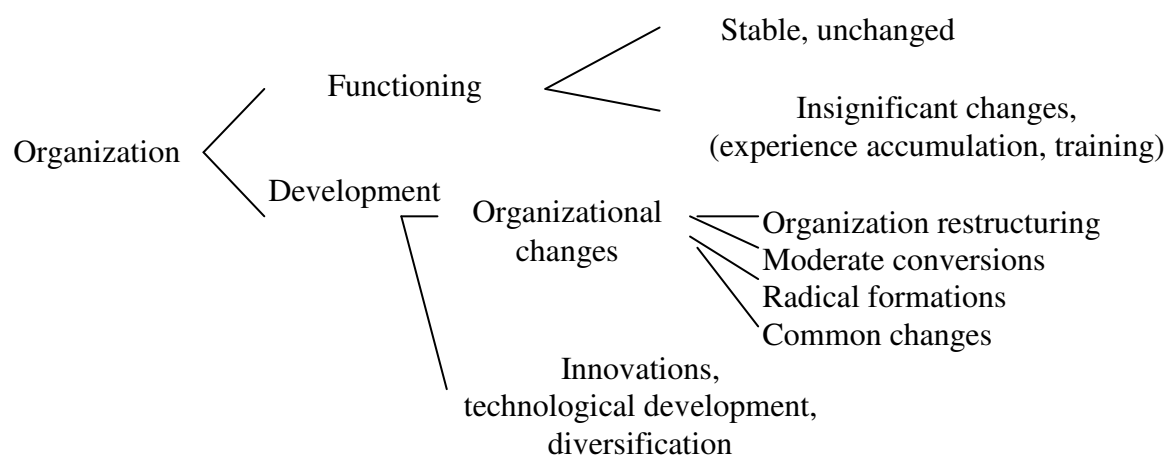


Fig. 2. Relations of organization functioning, organization development and projected changes

The nature of the change in I_c depends on the volume of production q , price P , environmental conditions p_v , quality Q , primary cost P_r (Table 1).

Table 1

Connection between the nature of changes and enterprise reactions

Nature of the change	Reaction type	Characteristics
1. Market demand change	Changes of p_v , q , Q , p_r , product type	Passive or active
2. Tax Policy change	Changes of p_v , Q , enterprise size	By the variable input
3. Customer requirements change	Quality, marketing, production changes	Extreme
4. Competitors' behavior change	Price policy, strategy, volume, market changes	Strategic
5. Employees errors increase	Personnel retraining, selection, recruitment	Control

Depending on the time available as one of change resources, two schemes of change can be considered (Table 2).

Table 2

Characteristics of change conduction schemes at an enterprises

Characteristics	Rapid changes	Slow-pace changes
1. Planning changes	Clear (hard)	Vague (soft)
2. Change initiator	Manager (leader)	Team
3. Involvement level	Minor	Significant
4. Overcoming resistance	At any cost	Resistance minimization through consistent set of actions

The task of change management is to select such a vector of changes $I = (I_1, I_2 \dots, I_n)$, which will give the desired (or maximum) effect $E(I)$, with restrictions on consumed resources and costs.

The process of changes in the organization is a subject to a number of patterns:

1. Adequate design: the organization in its characteristics should be adequate to the characteristics of the external environment; if the environment has N_c elements and R_c ratios, and the system has N_s , R_s , respectively, then the adequacy of A is calculated as a multiplication of elements' affiliation functions and relations between the system and the environment.

2. Equilibrium preservation: any given system is in equilibrium, if problems arise in the organization, resources are redistributed so that equilibrium is restored. At the same time, the stability of the system is determined by its development, so from time to time, if the adequacy of the

system is changed, changes are made to the system aimed at innovation development.

3. Change effectiveness: the result of changes in R should exceed the costs of their implementation of the CT. These changes should cover key areas bringing maximum possible effect. For example, investments need to be done in those industries where their returns are the highest.

4. Feedback: in a stochastic environment, it is impossible to foresee everything, therefore, change management should be based on feedback about achieved results.

5. The law of energy conservation and transformation: stimulus for the organization transformation and development must be either internal changes (transformation of the potential into the kinetics of transformations) or external influence (market, environment, top management requirements).

6. Social inertia: the psychological conservatism of people leads to change resistance that must be overcome with the help of certain techniques.

The need for creativity and leadership: changes based on new ideas, creativity and leadership are the most effective ones. At the same time, in order to justify the effective implementation of changes in the enterprise, it is necessary to solve the optimization problem. If η is the level of changes, $0 \leq \eta \leq 1$, then two loss functions can be assigned to it: $C_{n1}(\eta)$ – implementation costs, $C_{n2}(\eta)$ – losses from the absence of changes in the organization. If these functions have, as practice shows, a type of exponent, then:

$$C_{n1}(\eta) = C_1 e^{k_1 \eta}, \quad (1)$$

$$C_{n2}(\eta) = C_2 \cdot e^{-k_2 \eta}, \quad (2)$$

and optimal level of η_x is determined either by the point of curves intersection (Fig. 3), or by the condition that the derivative of the sum of these functions equals zero. From the condition of equality

$$C_1 e^{k_1 \eta} = C_2 e^{-k_2 \eta} \quad (3)$$

after logarithm we get:

$$\eta^* = \frac{\ln C_2 / C_1}{k_1 + k_2} \quad (4)$$

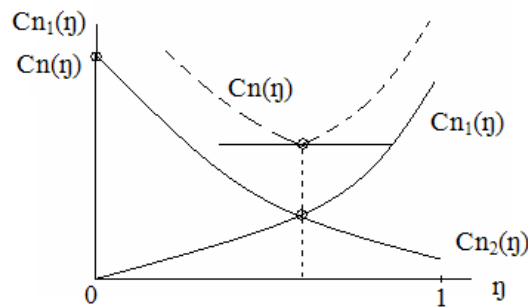


Fig. 3. Graphical representation of loss functions as a rationale for effective implementation of changes in the enterprise

If in an enterprise $C1(0) = 10\,000$ UAH, $C2(0) = 100\,000$ UAH, $k_1 = 4.2$, $K_2 = 3.6$, then $\eta^* = 0.29$, then the optimal change level should be equal to 0.29. This indicator was calculated for 48 surveyed enterprises. The introduction of changes is often a sequential process of transformation with resistance overcoming.

The main tools for choosing what changes should be implemented in the enterprise are: list creation of necessary changes, identification of time needed for their implementation, optimization of the structure and level of the enterprise's change characteristics. Changes may concern different areas (k) of organization's activities: organizational structure, technology, policy, culture, etc. and different types (j) of changes U_{kj} are possible. Therefore, the problem of choosing the optimal list is formulated as a choice of such a list of changes U_{kj} , that will give the maximum overall effect from strategic changes' implementation with the limited different resources consumed and the lowest costs possible. This task has been solved for three enterprises and the optimal change plans were received.

The task of choosing the optimal time for the changes' introduction is formed based on minimizing the function of total losses, depending on the time of change implementation. For example, with loss functions $Cn1 = 10 + 3t$, $Cn2 = 100e^{-2t}$ the optimum change time is $t = 2.4$ months. The third task allows to choose optimal strategy of changes' implementation considering their impact with the help of benchmark method. Change management becomes a strategically important area of management, allowing to solve tasks of an enterprise's management on a new basis.

For compliance assessment, uncertain measures of the system design S and environment complexity Σ were introduced. If the enterprise environment contains Ec elements, connected by Nc relations, and an enterprise uses En elements and Nn relations to reflect the state of the environment, then overall correspondence of enterprise management system to the environment can be estimated by their ratios multiplication.

Higher spread level of system performance's result E indicates lower correspondance of its management system to the work conditions. With a lower dispersion, the probability of enterprise management system achieving set goals is higher. Variance value σ_E^2 characterizes the extent to which system S is inadequate to the environment Σ . If a number of target indicators g_{ij} with assigned g_{ij} and average actual value g_{ij}^ϕ is available, then the measure of inadequacy can be considered as a distance between them. The higher $\rho_{3\phi}$ is, the greater is the inconsistency of N_v existing management process.

The correspondence of the management system will be characterized by the magnitude:

$$O = 1 - H. \quad (5)$$

For example, if $\rho_{3\phi} = 31,6$ and $\rho_{max} = 100$ has $H = 0,316$, then $O = 0,684$, which means the system is consistent and organized for 68,4 % against its goal.

To assess the inconsistency of the management system, one should compare: actual S_a , expected S_e and conditioned by the goal achievement state of an enterprise S_g .

Since changes in the analyzed enterprises have quantitative nature, a method of selecting changes was developed, which aims to ensure an impact increase from their introduction. For example, the profit trend of NGO "Horizon" shows a positive influence on its profit from the introduced changes (Fig 4).

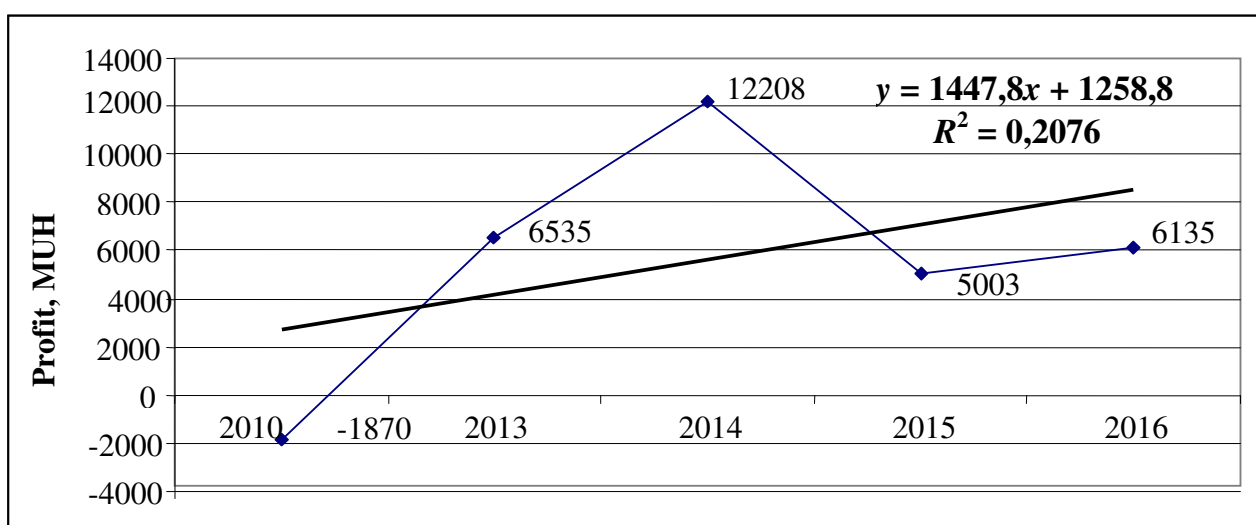


Fig. 4. Profit trend of NGO "Horizon"

In order to develop an effective strategy to manage changes within the enterprise, their possible implementation speed should be considered. According to the proposed classification of internal changes in the organization, a time continuum with three possible ranges of transformations' implementation is constructed: fast (under six months), moderate (0.5–1.5 years) and slow (over 1.5 years).

Transformations that can be realized within a shorter time horizon (with a rapid speed of change), find higher response rate among enterprises. In economic systems, system organization according to its goals represents a particular interest. Change management is an effective mechanism for system's self-organization. There are several ways to translate the state of an enterprise into a strategy of change (Table 3).

Table 3

Characteristics of possible changes and methods of their implementation

Type of changes	Implementation methods
1. Business activity change	Change in the type of economic activity or even industry, diversification
2. Structural change	Decentralization, divisional restructuring, change of "profit centers", shift to matrix organizations. Network structure change
3. Technology change	Replacement of equipment, introduction of new technologies or new production systems
4. Leadership change	Creation of teams, redesign of work flows, redistribution of responsibility, delegation
5. Change in Organization Culture	Change in the value system of motivation, leadership style, behavior patterns
6. People change	Employees' additional training, their qualification improvement, competitive hiring, rotation

If boolean variable is introduced $x_i = 1VO$ depending if i - instrument of change is included into the change list and e_i -effect of i -instrument is marked, then the task of optimal change list determination is stated as a choice of such changes that would maximize target function $G(x_i) = \sum_i x_i \cdot e_i \rightarrow \max$ by limited resources and reasonable cost level. The solution to this problem determines a set of previously substantiated required changes. Since changes should be implemented in a timely manner, it is advisable to consider task optimization of time spent on change implementation. The creation of a change strategy must be linked to the life-cycle curve of the organization (Figure 5).

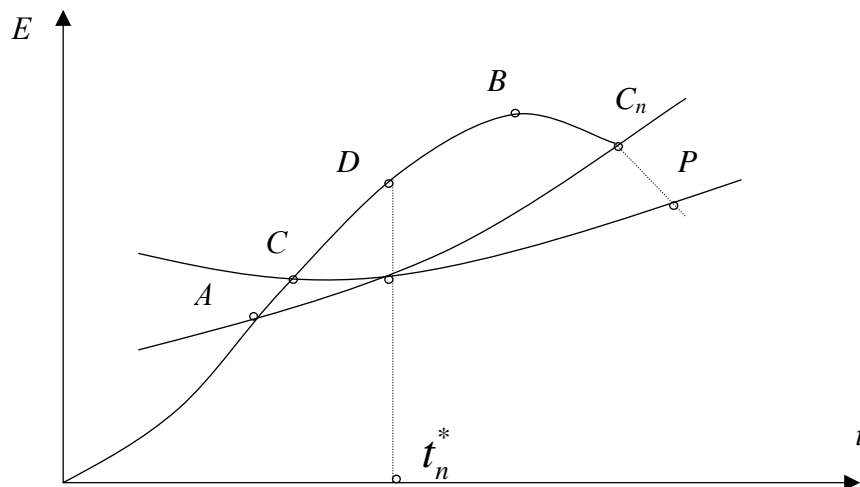


Fig. 5. Losses and costs evolution from change implementation according to the organization's life-cycle curve

If, after point A, the enterprise's performance is approaching point B, then the increase of losses C_n connected to the inefficient management might happen, at the same time the ability to adapt P is starting to decline. During the life cycle, the organization's management system changes, becomes the more rigorous and bureaucratic the closer it approaches its maturity. Therefore, the earlier the adaptation to the environment begins, the lower losses will be. The objective function of choosing the moment of change will represent a sum of two loss functions: delay in required changes introduction and costs of a forced quick reaction to environment changes.

An analysis of the state of NGO "Horizon" showed that the NGO is located in the proximity to Point D, and the changes have timely manner. In the process of choosing change instruments, a new task of necessary changes approval and synergy effect generation appears. If the intensity of the means of change is marked as U_j , then the effects of changes in the two NGO divisions can be expressed by the overlapping chart of two bell-shaped curves (Figure 6).

If $U_j < U_{12}$ for the 1st division and $U_j > U_{21}$, then an effect from the change is low. Within the range of (U_{12}, U_{21}) high outcome for the 1st, as well as for the 2nd division is in place. In this range of changes' intensity, resistance will be the lowest, and therefore synergy effect from the work of 2 divisions has high probability.

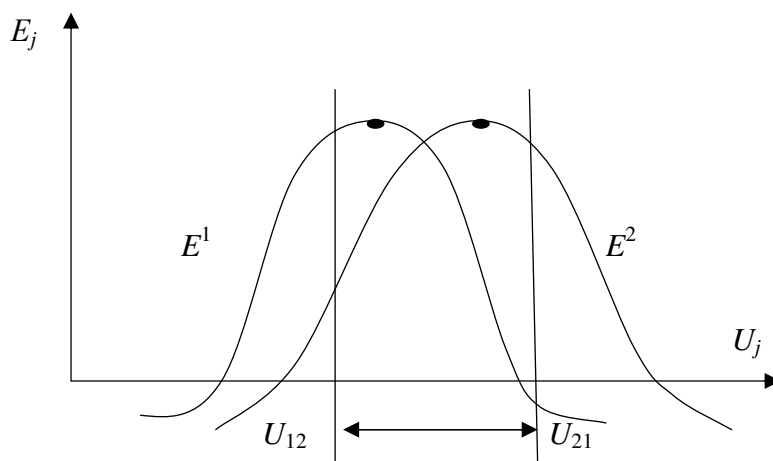


Fig.6. Graph of necessary changes coordination and synergy effect

Since change strategy establishment involves choosing the most effective way to reach the intended objective of an enterprise, it is necessary to carry out an analysis of the degree to which the existing organizational structure and functions of an enterprise correspond to the above mentioned development goals. Although changes more often have qualitative rather than quantitative nature, their results still can be assessed by the values of output variables. If reforms and changes are in place, they can be expressed using the artificial variable x_{2i} , which can take two values:

$$x_{2i} = \begin{cases} 1, & \text{if changes take place,} \\ 0, & \text{if no changes} \end{cases}$$

Then we can observe output dependence, for example, profit y_i from x_{2i} , in the following form:

$$y_i = \beta_0 + \beta_1 x_{2i} + e_i. \quad (6)$$

In the equation (6) when $x_{2i} = 0$ $E(y_i) = \beta_0$, and $x_{2i} = 1$ $E(y_i) = \beta_0 + \beta_1$, changes lead to an average result improvement, determined by the coefficient β_1 . Using statistical data of NGO “Horizon” for 2011–2016, we can calculate model’s parameters (6) using the method of the least squares: $\beta_1 = 2,55$; $\beta_0 = 0,35$, thus the equation has the following mode: $y_i = 0,354 + 2,548x_i$.

The model indicates that the ongoing changes enable an average profit increase of 2.55 million UAH per year and therefore are positive.

If one more growth factor is introduced – production volume x_{1i} , then we can build a qualitative model of the following mode:

$$y_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + e_i. \quad (7)$$

In this case profit growth y_i is determined by x_{1i} (extensive growth) and x_{2i} (intensive growth), which can be divided according to the rules:

	x_{1i}	x_{2i}	Result
S_1	var	0	$E(y_i) = \beta_0 + \beta_1$
S_2	0	1	$E(y_i) = \beta_0 + \beta_2$
S_3	0	0	$E(y_i) = \beta_0$

Finally, it is possible to study the impact of changes on NGOs profits. A scatter forecast gives the following value: $y_i + 1 = 5.97$ million UAH – if no changes are made, and $y_i + 1 = -2.67 + 0.072 \times 120 + 0.95 \times 1 = 6.92$ million UAH – if changes' introduction at NGO "Horizon" is continued. A qualitative assessment of changes effectiveness can be approached from a different angle, using methods of testing hypotheses (test theory). If two samples are in place y_{1i} and y_{2i} , which characterize NGO's performance prior to changes' implementation (y_{1i}) and (y_{2i}) after it, then between average values of samples $\bar{y}_1$ and $\bar{y}_2$ we receive the difference $\Delta\bar{y} = \bar{y}_2 - \bar{y}_1$, that can be related to change results.

Based on the results achieved, it is possible to propose two hypothesis: 1) H_1 : difference $\Delta\bar{y} > 0$ is determined by change impact with reliability $p = 1 - \alpha$; 2) H_0 : difference $\Delta\bar{y} > 0$ is determined by random factors. Hypothesis testing was carried out using a mean difference test and proved H_1 credibility.

Finally, in order to execute the developed methods of monitoring and changes implementation, an expert system based on the stated principles is proposed. It covers constant analysis of the market environment change, competitors' activities and internal changes reflected by deviations of key indicators. The identified needed changes are displayed on the screens of personal computers of company's leadership and serve as a base for their decision making.

Conclusions and proposals. Alternative goals revision that correspond to the chosen direction of company's business activity, allows to justify scenario choice of possible future behavior of the organization, considering external environment. In order to evaluate the effectiveness of implemented changes, two components were identified: 1) costs of changes' implementation; 2) profit increase as an output of the implemented changes.

Based on the methods proposed in the study, in-process measures of the optimal change management at an enterprise were identified: changes' list

determination, their implementation sequence justification and timeliness intervals assessment.

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ZARZĄDZANIE RYZYKIEM W DZIAŁALNOŚCI INWESTYCYJNEJ PRZEDSIĘBIORSTW

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Wprowadzenie i cel badania: w obecnym stanie rozwoju systemów ekonomicznych konieczne jest osiągnięcie wysokiego i stabilnego wzrostu gospodarczego, co osiąga się głównie dzięki innowacyjnym czynnikom. Stopniowe wyczerpywanie się tradycyjnych zasobów i zwiększenie ich ceny wdrożyć wysoce konkurencyjnych rynkach międzynarodowych czynnikiem stałego wzrostu i powikłanie końca i pośrednich potrzeb społeczeństwa zapobiega rozwojowi gospodarczemu poprzez stosowanie ekstensywnych czynników. Tylko gospodarka, która jest zdolna do szybkiej wymiany środków trwałych, technologii, produktów, aby zwiększyć efektywną szybkość dyfuzji zaawansowanej nauki i technologii obecnie osiąga perspektywne konkurencyjności.

Hipoteza badań naukowych. Ocena ryzyka inwestycyjnego powinna uwzględniać mnożnikowe czynniki interakcji między podmiotami procesu inwestycyjnego a połączonymi rodzajami produkcji przy użyciu teorii logiki rozmytej.

Celem tego badania jest opracowywanie i doskonalenie metodycznych podejść do tworzenia strategii oceny ryzyka inwestycyjnego z uwzględnieniem subiektywnego komponentu w warunkach niepewności.

Metodologia badań: metody analizy systemowej, syntezy teoretycznej, syntezy - do badania teorii ryzyka i modele do określania wydajności inwestycji; metoda analizy statystycznej – do badania uczestnictwa w działalności inwestycyjnej; metoda analizy strukturalnej i metoda porównania – badanie istniejących podejść do definiowania, zarządzania i zapobiegania ryzyku

inwestycyjnemu; metody oceny eksperckiej – określenie wpływu ryzyka na efektywność inwestycji; podejście abstrakcyjno-logiczne – do konstruowania porównawczego schematu wpływu ryzyka na działalność inwestycyjną; metody logiki rozmytej i modelowania ekonomiczno-matematycznego – budowa modelu oceny efektywności inwestycji, z uwzględnieniem subiektywnego komponentu ryzyka w warunkach niejednoznaczności środowiska

Wynik: Metodyczne dostarczanie oceny i analizy ryzyka realizacji inwestycji z wykorzystaniem informacji logiki rozmytej w warunkach niepewności środowiska zewnętrznego, co pozwala w większym stopniu uwzględniać obiektywny i subiektywny charakter ryzyka i jest podstawą do stworzenia systemu adaptacyjnego wspierającego decyzje inwestycyjne.

Wnioski: teoria logiki rozmytej jest obiecującym narzędziem w ocenie ryzyka; ponadto umożliwia łączenie wskaźników ilościowych (na przykład finansowych) i jakościowych (na przykład wskaźników) podczas oceny ryzyka inwestycyjnego. Badanie nowoczesnych metod szacowania efektywności inwestycji i ryzyka działalności inwestycyjnej pozwala stwierdzić, że brakuje im informacji przy podejmowaniu optymalnych decyzji inwestycyjnych. W związku z tym istnieje potrzeba stosowania uniwersalnych metodologicznych podejść uwzględniających zarówno stopień ryzyka inwestycyjnego, jak i możliwość uzyskania maksymalnej możliwej wartości zysku.

Słowa kluczowe: inwestycje, działalność inwestycyjna, ryzyko inwestycyjne, zarządzanie ryzykiem, efektywność inwestycji.

Wprowadzenie. Jednym z podstawowych warunków skutecznej realizacji jakiegokolwiek projektu inwestycyjnego jest identyfikacja czynników ryzyka z nim związanych oraz zaplanowanie i skuteczna realizacja działań zmierzających do ograniczenia negatywnych skutków materializacji tego ryzyka. Artykuł prezentuje podstawowe zagadnienia związane z problematyką zarządzania ryzykiem w działalności inwestycyjnej przedsiębiorstw. W części wprowadzającej dokonano przybliżenia istoty projektów inwestycyjnych i źródeł ich finansowania. Zasadniczą część opracowania stanowi identyfikacja i systematyzacja czynników ryzyka występujących na etapie przygotowania, realizacji i rozliczania projektu inwestycyjnego, w tym analiza specyficznych uwarunkowań projektów europejskich i wynikające z nich zagrożenia dla realizacji inwestycji. Zaproponowano również ogólną procedurę postępowania w zakresie zarządzania ryzykiem w działalności inwestycyjnej. Prezentowane rozważania powinny wyposażyć zarządzających w kompetencje, pozwalające na dokonanie właściwego przygotowania i realizacji projektu inwestycyjnego, w tym inwestycji współfinansowanych środkami unijnymi.

Analiza najnowszych powiązanych publikacji i nierozwiązanej części podanego problemu. Przedsiębiorstwo dążąc do realizacji podstawowego celu działania jakim jest maksymalizacja wartości skazane jest na intensywny rozwój, który może nastąpić na jeden z dwóch sposobów: zewnętrzny lub wewnętrzny [5]. Rozwój zewnętrzny polega na poszukiwaniu zasobów niezbędnych do realizacji strategii poza przedsiębiorstwem. Najczęściej ta forma rozwoju przedsiębiorstwa dokonywana jest poprzez fuzje i przejęcia innych podmiotów. Rozwój wewnętrzny przedsiębiorstwa polega na rozbudowie istniejącego potencjału przedsiębiorstwa w drodze realizacji inwestycji rzeczowych. Inwestycje te stanowią nakłady kapitałowe, których głównym celem jest tworzenie nowych lub ulepszanie już istniejących środków trwałych i procesów technologicznych. Zasadniczym celem tak zdefiniowanych inwestycji jest zapewnienie przedsiębiorstwu w przyszłości określonych korzyści, istotnych z punktu widzenia właścicieli przedsiębiorstwa. Tak też najczęściej definiowane jest pojęcie inwestycji. Inwestycja polega na przeznaczeniu zasobów dostępnych dla przedsiębiorstwa nie na bieżącą konsumpcję, lecz na inny cel, wyrażający się w uzyskaniu w przyszłości określonych korzyści [8]. W literaturze przedmiotu spotkać można szereg różnych definicji inwestycji [18]. Wszystkie one jednak akcentują takie elementy jak: bieżące zaangażowanie (kapitału, środków finansowych, nakładów), transformację nakładów w inne dobra, osiągnięcie określonych korzyści w przyszłości (materialnych, niematerialnych, w postaci bezpośredniej lub pośredniej).

Omawiając pojęcie inwestycji należy również zwrócić uwagę na następujące jej cechy: nakład inwestycyjny, czas, korzyść, ryzyko [13].

Nakłady inwestycyjne to wszelkie wydatki ponoszone celem wdrożenia pomysłu inwestycyjnego w praktykę gospodarczą. Obejmują zatem: wydatki poniesione na badania i rozwój, nabycie (zakup, wniesienie aportem, użytkowanie wieczyste) nieruchomości oraz wykonanie niezbędnych robót adaptacyjnych; nabycie maszyn, urządzeń, linii technologicznych, pojazdów, aparatury i pozostałego wyposażenia wykorzystywanego w procesie produkcji, sprzedaży, świadczenia usług oraz wydatki na organizację procesu skutkującego realizacją w przyszłości określonego celu. Efektem poniesienia nakładów inwestycyjnych powinny być określone i założone przez przedsiębiorstwo korzyści. Podstawowym celem inwestycji jest zazwyczaj uzyskanie przez przedsiębiorstwo określonej przewagi konkurencyjnej bądź zapobiegnięcie utraty posiadanej pozycji rynkowej. Są to tak zwane inwestycje rzeczowe. Dają one przedsiębiorstwu szereg korzyści, które można ująć w trzech obszarach: ekonomicznym, społecznym i organizacyjnym [14].

Czas w inwestycjach wyraża się w okresie na jaki następuje zaangażowanie kapitału i w jakim uzyskiwane są przez inwestora korzyści. Inwestycje często wiążą się z długim horyzontem czasowym. Każda inwestycja charakteryzuje się swoim „okresem życia” i niekoniecznie musi on wyrażać się wieloma latami. Dlatego zwrócenie uwagi na czas w inwestycji odnosi się raczej do kwestii przesunięć czasowych pomiędzy zainwestowaniem i skutkowaniem inwestycji, nie natomiast do jej długookresowości.

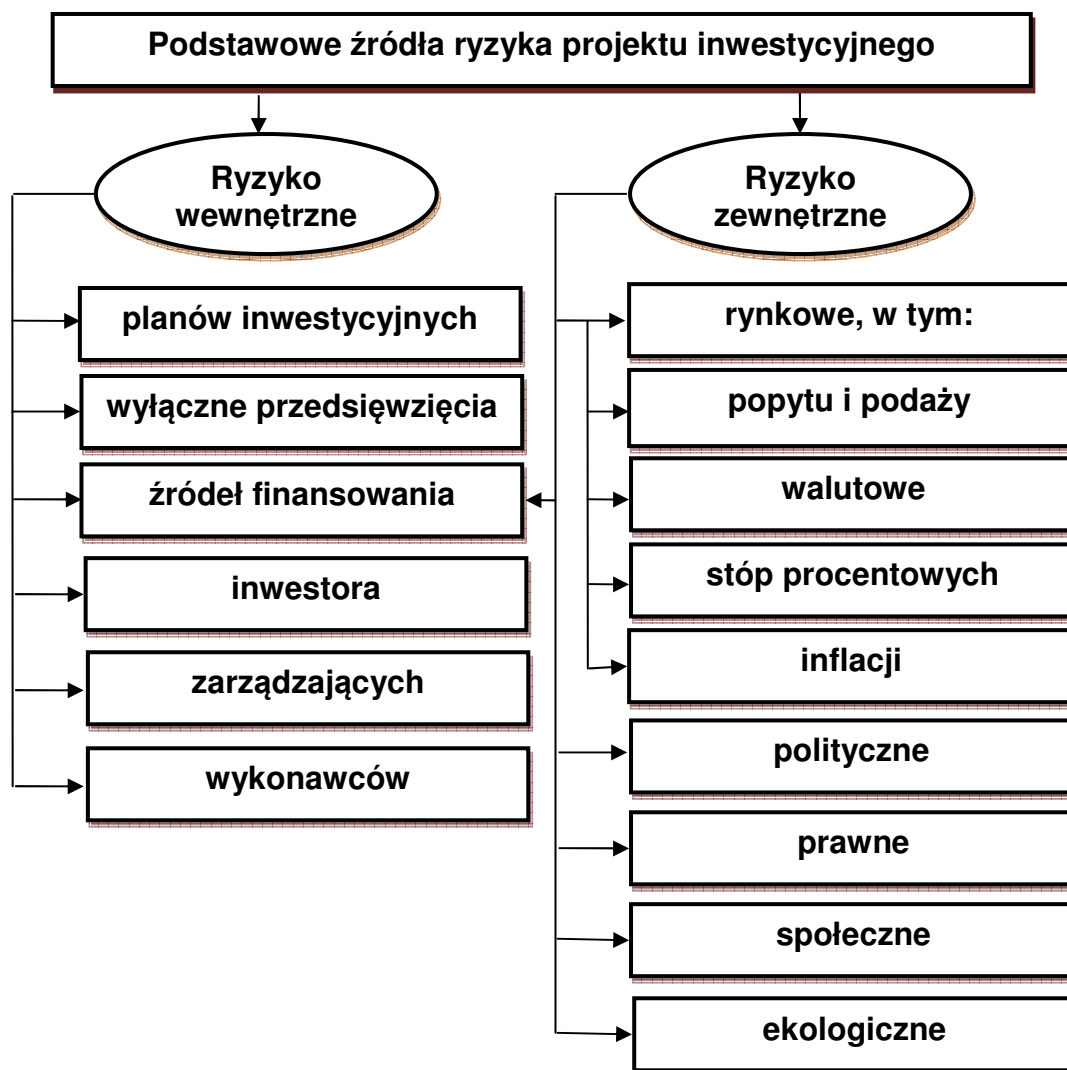
Ostatnią ze wskazanych cech inwestycji jest ryzyko. Podejmowanie działalności inwestycyjnej nieodzownie związane jest z ryzykiem rozumianym jako możliwość wystąpienia sytuacji, w której rzeczywiste parametry inwestycji (nakłady, efekty, okres realizacji) będą różniły się od parametrów zakładanych na etapie przygotowania inwestycji.

Podjęcie decyzji o realizacji projektu inwestycyjnego nierozłącznie wiąże się z dokonaniem wyboru źródła jego finansowania. Ogół źródeł pozyskiwania kapitału finansującego projekt można zakwalifikować, podobnie jak ma to miejsce w zakresie finansowania działalności przedsiębiorstwa, do jednej z dwóch grup: finansowania wewnętrznego lub finansowania zewnętrznego [4]. Do źródeł finansowania wewnętrznego zalicza się zysk przeznaczony na inwestycję oraz wartość zakumulowanej amortyzacji. Natomiast w ramach finansowania zewnętrznego wyróżnia się kapitały własne i kapitały obce. Zewnętrzny kapitał własny to kapitał zebrany w drodze pozyskiwania wkładów i udziałów oraz emisji akcji. Finansowanie zewnętrzne za pośrednictwem obcych kapitałów obejmuje głównie zaciąganie kredytów i pożyczek, emisję obligacji, leasing. Szczególnym źródłem finansowania projektu inwestycyjnego zaliczonym do kapitałów obcych są środki unijne.

Ustawienie celów. Realizacja każdego projektu inwestycyjnego wiąże się z określonym ryzykiem [14]. Ryzyko w projektach inwestycjach to możliwość

zaistnienia sytuacji, że rzeczywiste nakłady inwestycyjne i (lub) rzeczywiste efekty inwestycji będą odchodziły się od pierwotnie zaplanowanych, przy czym odchylenia te mogą mieć pozytywny lub negatywny skutek dla przedsiębiorstwa [9]. Możliwa skala odchylenia odzwierciedla wielkość potencjalnego ryzyka.

Wyniki badań. Ryzyko inwestowania ma swoje źródło zarówno w uwarunkowaniach zewnętrznych jak i wewnętrznych w stosunku do inwestycji (rysunek 1).



Źródło: Opracowanie własne.

Rysunek 1. Źródła ryzyka projektów inwestycyjnych

Ryzyko wewnętrzne projektu wiąże się najczęściej z:

- błędami w prognozowaniu inwestycji (niedoszacowaniu nakładów, niewłaściwe określenie cyklu przedsięwzięcia inwestycyjnego, nieprawidłowe założenia w zakresie sprzedaży, niedoszacowaniu kosztów operacyjnych);

- indywidualnymi cechami danego projektu (ryzyko wyłączone projektu), takimi jak: duży zakres rzeczowy, wartość i złożoność zadania, unikatowość i innowacyjność przedsięwzięcia, nowoczesność technologii, czas realizacji projektu, lokalizacja przedsięwzięcia [20], pośpiech w planowaniu i wdrażaniu inwestycji;

- brakiem możliwości zapewnienia źródeł finansowania projektu (przy czym w tym zakresie ryzyko to jest również w dużej mierze zależne od czynników zewnętrznych);

- inwestorem (brakiem jego wiedzy i doświadczenia w zakresie realizowanej inwestycji, nieracjonalnymi oczekiwaniami dotyczącym stopy i okresu zwrotu z inwestycji, brakiem właściwej kontroli nad realizacją kolejnych etapów projektu);

- zarządzającymi projektem (brak kompetencji, trudności w zatrudnieniu odpowiedniej kadry realizującej zadania inwestycyjne, brak umiejętności pracowników w obszarze projektowym, za który są odpowiedzialni) [18].

Ryzyko zewnętrzne można rozpatrywać w wielu aspektach. Ryzyko rynkowe, prawne, polityczne, społeczne, ekologiczne to podstawowe rodzaje ryzyka, które w różnym stopniu wpływają na powodzenie projektu inwestycyjnego.

Ryzyko rynkowe uwarunkowane jest przez takie czynniki jak: wielkość popytu i podaży na towary/usługi oferowane dzięki realizacji projektu, cena produktów/usług i ich konkurencyjność, podaż surowców, półproduktów, komponentów, maszyn i urządzeń, technologii itp. wykorzystywanych w inwestycji. Ryzyko zmiany popytu (a konkretnie jego spadku) na produkty/usługi oferowane dzięki realizacji inwestycji związane jest ze zmianami preferencji klientów. Może ono wynikać z wielu przesłanek. Pojawienie się na rynku alternatywy produktowej/usługowej do oferowanej przez przedsiębiorstwo (bardziej interesującej ze względu na cenę, użyteczność lub funkcjonalność), nasilenie kampanii promocyjnej przez konkurentów, niekorzystne zmiany przepisów prawnych to podstawowe czynniki wpływające na zmiany w zakresie zapotrzebowania na konkretne dobra. Również czynniki losowe, mogą istotnie wpłynąć na ograniczenie popytu. Użycie wadliwego komponentu do produkcji partii towaru skutkującego obniżeniem jego jakości, przypadkowe zdarzenie powodujące zanieczyszczenie środowiska w ramach procesu technologicznego tworzą negatywny wizerunek marki skutkujący obniżeniem sprzedaży produktów. W okresie spowolnienia gospodarczego główny wpływ na zmianę popytu może mieć wzrost bezrobocia i związana z nim obawa o utratę pracy przez potencjalnych nabywców. W tym przypadku konsumenci albo rezygnują z nabycia określonego dobra nie posiadając środków pieniężnych, albo też w obawie przed „trudnymi czasami” zaczynają oszczędzać. Elementem wpływającym na popyt, który należy również wziąć

pod uwagę w kryzysie, jest prawdopodobna zmiana polityki kredytowej banków finansujących zakupy konsumpcyjne ludności. Nawet jeśli zapotrzebowanie i zainteresowanie zakupami nie spadnie, to ograniczenie wolumenu udzielanych kredytów gotówkowych ograniczy potencjalne możliwości nabywców.

Z drugiej strony w gospodarce konkurencyjnej istnieje ryzyko wzrostu podaży wynikające z rosnącej konkurencji. Istnienie krajowej i/lub zagranicznej konkurencji w danym produkcie, łatwość wejścia podmiotów spoza branży na rynek tego produktu, możliwość pojawienia się „czarnego rynku” to czynniki które mogą spowodować istotne obniżenie wartości sprzedaży przedsiębiorstwa, która w dłuższym okresie wpływa negatywnie na rentowność inwestycji.

Kolejnym czynnikiem ryzyka rynkowego jest zmiana podaży surowców, półproduktów, komponentów, maszyn i urządzeń, technologii oraz ryzyko tkwiące w uzależnieniu inwestycji od dostawców. Im bardziej złożona, specjalistyczna technologia, unikatowe komponenty, rzadkie surowce, ograniczony zakres dostawców tym ryzyko takiej inwestycji większe. Wynika ono bowiem z braku możliwości natychmiastowego uzupełnienia niedoborów w przypadku ich pojawienia się.

Osobnym zagadnieniem jest ryzyko finansowania projektu inwestycyjnego. Polityka kredytowa banków komercyjnych, sytuacja na rynkach kapitałowych, podaż pieniądza ale również ryzyko wynikającego z istoty instrumentów finansowych to tylko niektóre czynniki wpływające na stopień ryzyka finansowania inwestycji. Wybór źródeł finansowania projektu stanowi – na etapie podejmowania decyzji inwestycyjnej – podstawowy dylemat inwestora. Mając na uwadze ryzyko finansowania dobrą praktyką jest rozpoczynanie etapu realizacyjnego projektu inwestycyjnego tylko w przypadku zapewnienia pełnego finansowania przedsięwzięcia, uwzględniającego wszystkie zakładane nakłady inwestycyjne oraz rezerwę, której wielkość powinna być uzależniona od stopnia złożoności przedsięwzięcia inwestycyjnego.

Innymi istotnymi czynnikami rynkowymi ryzyka działalności inwestycyjnej, szczególnie w sytuacji niestabilnego otoczenia gospodarczego, są:

- zmiana stóp procentowych;
- fluktuacja kursów walut.

Ryzyko stóp procentowych w projekcie inwestycyjnym wyraża się w możliwości zmian zakładanej rentowności inwestycji spowodowanych nieoczekiwanymi zmianami stóp procentowych [6]. Jeśli przedsiębiorstwo finansuje inwestycje kredytem o zmiennej stopie procentowej, wówczas wzrost stóp procentowych spowoduje zwiększenie obciążeń odsetkowych. Jeśli w ślad za wzrostem kosztów obsługi kredytu nie ma możliwości podniesienia cen sprzedaży lub zwiększenia wolumenu ilościowego sprzedaży wówczas spadnie rentowność inwestycji, która w skrajnych przypadkach może przybrać wartości ujemne. Projekty inwestycyjne, przedstawione w banku do finansowania,

powinny zatem charakteryzować się stosunkowo wysoką rentownością aby sprostać w tym zakresie oczekiwaniom banków jako kapitałodawców.

Również ryzyko walutowe istotnie wpływa na rentowność projektu inwestycyjnego [14]. Przedsiębiorstwa dokonujące zakupu maszyn i urządzeń, technologii, surowców za granicami kraju najczęściej określają swoje płatności w walucie obcej i przyszłym terminie zapłaty. Narażają się zatem na ryzyko wzrostu kursów waluty obcej. Podobna sytuacja występuje w przypadku finansowania inwestycji kredytem walutowym lub denominowanym w walucie (przy braku wpływów ze sprzedaży w tej walucie).

Ryzyko polityczne związane jest z realizowaną przez państwo polityką: gospodarczą, społeczną, ochrony środowiska czy też działań legislacyjnych [20]. Do czynników ryzyka związanych z sytuacją polityczną w kraju czy regionie zalicza się również: stabilność sceny politycznej, stopień rozproszenia interesów politycznych, radykalizm partii mających wpływ na realizowaną politykę społeczną i gospodarczą, siłę oddziaływania związków zawodowych oraz innych pozaparlamentarnych grup nacisku, w szczególności w zakresie kreowania zmian przepisów prawnych. Niestety negatywne zjawiska związane z kryzysem gospodarczym w każdym niemalże przypadku wpływają destabilizująco na sytuację polityczną. Następuje radykalizacja żądań różnych grup społecznych, istotne poparcie zyskują ugrupowania skrajne, nacjonalistyczne, gospodarka staje się zakładnikiem polityki. Czynniki te wpływają zarówno bezpośrednio na realizowany projekt jak i na tzw. „klimat inwestycyjny”.

Realizując projekt inwestycyjny przedsiębiorstwo spotyka również inne czynniki ryzyka zewnętrznego, których siły zasadniczo nie potęguje fakt występowania kryzysu gospodarczego. Jednym z podstawowych jest ryzyko prawne. Ryzyko prawne, związane z wieloma obszarami prawa, wynikać może z:

- dużej liczby przepisów prawnych odnoszących się do zakładanej inwestycji (czasem ze sobą niespójnych);
- niespodziewanej zmiany przepisów prawnych w obszarze istotnym dla projektu inwestycyjnego;
- interpretacji przepisów prawnych przez inwestora oraz różnego rodzaju organy administracji państwowej;
- źle sformułowanych umów.

Ryzyko społeczne realizacji inwestycji związane jest z wpływem otoczenia społecznego na realizację przedsięwzięcia inwestycyjnego [9]. W szczególności duże inwestycje infrastrukturalne i przemysłowe (np.: autostrady, lotniska, elektrownie atomowe, zapory wodne) wrażliwe są na tego typu ryzyko. Społeczeństwo, często z braku informacji, bądź niezrozumienia inwestycji, nie akceptuje jej sąsiedztwa. Stworzyć to może skuteczną barierę w realizacji przedsięwzięcia. Brak akceptacji społecznej inwestycji może wynikać również z uwarunkowań kulturowych, religijnych czy uprzedzeń mających często kontekst

historyczny. W szczególności dotyczy to inwestycji realizowanej poza granicami kraju, w którym przedsiębiorstwo dotychczas prowadziło działalność bądź posiada swoją siedzibę.

Ryzyko ekologiczne związane jest z możliwością poniesienia określonych skutków finansowych w wyniku oddziaływania inwestycji na środowisko naturalne. Ten czynnik ryzyka potęgowany jest przez niewiedzę bądź nie uwzględnianie na etapie planowania inwestycji norm prawnych z zakresu ochrony środowiska (w tym przepisów międzynarodowych). Ważnym jest również przewidywanie określonych trendów w zakresie ochrony środowiska w przyszłości. Inwestycje bowiem często oddziałują na środowisko w długim okresie. Stąd istotnym jest określenie potencjalnych skutków dla inwestycji, bardziej restrykcyjnych przepisów odnoszących się do ochrony środowiska naturalnego. Skutki te najczęściej wyrażają się w dodatkowych nakładach środków finansowych co oczywiście wpływa na rentowność projektu.

Omówione rodzaje ryzyka wyodrębnione zostały w oparciu o czynniki je wywołujące. Ryzyko można jednak klasyfikować według innych kryteriów [7]. Biorąc pod uwagę wpływ ryzyka na podejmowane decyzje inwestycyjne rozróżnia się ryzyko akceptowalne dla zarządzających projektem lub ryzyko nieakceptowalne. Te drugie determinuje decyzję odrzucenia inwestycji lub istotnej jej zmiany. Biorąc pod uwagę czas w jakim ryzyko oddziałuje na inwestycje występuje ryzyko krótko-, średnio- lub długoterminowym. Z punktu widzenia możliwości zarządzania ryzykiem dzieli się je na kontrolowane i pozostające poza kontrolą. W końcu ze względu na skutki jakie wywoła materializacja ryzyka wyróżnia się ryzyko pozytywne i negatywne.

Specyficzne czynniki ryzyka projektów inwestycyjnych finansowanych środkami unijnymi. Przygotowanie i realizacja projektów inwestycyjnych finansowanych ze środków unijnych narażona jest na wszystkie wymienione wcześniej czynniki ryzyka. Mając jednak na uwadze specyfikę projektów unijnych można wyróżnić określone obszary ryzyka charakterystyczne dla tego typu projektów. Można je na ogół ująć w zdefiniowaną wcześniej grupę ryzyka wewnętrznego projektu inwestycyjnego. Celem ich analizy koniecznym jest krótkie przybliżenie istoty finansowania projektów środkami unijnymi.

Aby można było mówić o projekcie finansowanym ze środków unijnych, co oczywiste, koniecznym jest wykorzystanie środków unijnych w strukturze finansowania przedsięwzięcia. Środki te stanowią formę bezzwrotnej publicznej pomocy finansowej. W zdecydowanej większości pomoc publiczna jest udzielana na podstawie programów pomocy, pod pojęciem którego rozumie się akt normatywny (najczęściej rozporządzenie, ustawa, uchwała jednostki samorządu terytorialnego), który ustala zasady udzielania wsparcia na rzecz beneficjentów. Program taki określa krąg podmiotów udzielających pomocy, jak też i jej beneficjentów, kryteria warunkujące uznanie środków za zgodne z

rynkiem wewnętrznym – w tym: cel, intensywność wsparcia i jego formę [10]. W praktyce występuje wiele form pomocy publicznej, a do podstawowych należy zaliczyć: dotacje, refundacje, rekompensaty, dopłaty do oprocentowania kredytów bankowych, zwolnienia od podatków i opłat, zbycie mienia na warunkach korzystniejszych niż rynkowe, udzielenie pożyczek lub kredytów preferencyjnych, jak również udzielenie poręczeń lub gwarancji.

Celem finansowanych środkami unijnymi programów pomocowych jest niwelowanie różnic gospodarczych i społecznych pomiędzy najsłabiej a najlepiej rozwiniętymi regionami Unii Europejskiej. Odbywa się to poprzez wsparcie finansowe różnorodnych projektów. Jedną z podstawowych klasyfikacji, jaką przyjęto się stosować wobec projektów finansowanych ze środków Unii Europejskiej jest podział na projekty inwestycyjne (infrastrukturalne) oraz projekty szkoleniowe i doradcze. Te pierwsze nazywa się potocznie „projektami twardymi”, a drugie – „projektami miękkimi”. Taki prosty podział nie wyczerpuje jednak całego spektrum możliwości dofinansowania oferowanych przez Unię Europejską.

Przyznanie dotacji oraz uruchomienie funduszy wsparcia odbywa się zgodnie z określonymi zasadami, które przekładają się na wymogi dotyczące realizacji projektów objętych wsparciem. Zasady te są różne w stosunku do poszczególnych programów pomocowych, istnieją jednak pewne cechy wspólne, które odnoszą się do wszystkich projektów. Wnioski o dotację unijną są składane w odpowiedzi na konkurs i podlegają ocenie formalnej. W ramach oceny weryfikowana jest poprawność złożonej dokumentacji z wymogami formalnymi. Weryfikowana jest także zgodność zapisów zawartych w złożonym wniosku z dołączonymi załącznikami. W przypadku stwierdzenia określonych braków istnieje możliwość dokonania uzupełnień wniosku. Aplikacje, które przejdą pozytywnie etap oceny formalnej, podlegają ocenie merytorycznej, za którą przyznawane są punkty. Metodologia przyznawania punktów w poszczególnych kryteriach dla każdego z działań ustalana jest odrębnie. W każdym wypadku jest ustalana minimalna liczba punktów, które wniosek powinien dostać na etapie oceny merytorycznej, aby wnioskodawca mógł otrzymać dotację. Ocenione w taki sposób wnioski tworzą listę rankingową. Wnioski, które uzyskały w procesie oceny najwyższą liczbę punktów są rekomendowane do udzielenia wsparcia. Na tej podstawie przedsiębiorcy mogą przystąpić do podpisania umowy o dofinansowanie.

Już samo złożenie wniosku o dofinansowanie unijne stanowi w praktyce jedno z największych wyzwań dla przedsiębiorstwa realizującego projekt inwestycyjny. Do najczęściej popełnianych błędów na tym etapie realizacji projektu zalicza się:

- nieprawidłowo sporządzone harmonogramy realizacji zadań (zbyt ogólne, bez podziału na kwartały);

- błędnie wskazane lub źle wyliczone wskaźniki charakteryzujące projekt;
- źle określone cele i rezultaty projektu;
- błędy w budżecie (między innymi: duży stopień ogólności, objęcie budżetem kosztów niekwalifikowanych bez ich wyszczególnienia, brak przyporządkowania kosztów do poszczególnych kategorii);
 - błędnie obliczona kwota dofinansowania;
 - brak odpowiednio sporządzonych załączników do wniosku;
 - brak uwiarygodnienia środków współfinansujących realizację projektu;
 - źle przygotowany biznes plan projektu (zaniżanie lub zawyżanie kosztów, zawyżanie przychodów, nie uwzględnianie równego rodzaju zobowiązań, brak analizy ekonomicznej efektywności inwestycji, inne błędy merytoryczne odnoszące się do istotnych obszarów realizacji projektu);
- błędy w studium wykonalności projektu (niezgodność wartości między tymi samymi wielkościami prezentowanymi w biznes planie i studium, niezgodność harmonogramu inwestycji, brak analizy ekonomicznej i finansowej lub błędy w jej przygotowaniu, brak odniesienia do kryteriów oceny merytorycznej) [15].

Powyższe braki często powodują odrzucenie wniosków na etapie formalnego badania lub merytorycznej oceny. W Polsce w przedsiębiorstwach wciąż jeszcze brakuje odpowiednich specjalistów posiadających umiejętność przygotowania wniosku unijnego. Z tych powodów wiele przedsiębiorstw często rezygnuje z aplikowania o dotacje. Inne podmioty w ogóle nie mają świadomości możliwości jakie dają środki unijne. Z tych powodów wiele ciekawych projektów, kwalifikujących się do wsparcia unijnego nie jest współfinansowanych z tego źródła. Pewnego rodzaju rozwiązaniem problemu może być wykorzystanie podmiotów odpłatnie przygotowujących wnioski o wsparcie unijne. Należy jednak mieć na uwadze nie tylko etap aplikowania o dotację ale również kolejne fazy realizacji projektu, w których następuje uruchamianie środków jak również rozliczanie dotacji. Również na tym etapie należy zapewnić sobie właściwe zaplecze eksperckie.

Dotacje na projekty inwestycyjne przyznawane mogą być jako zaliczki otrzymane na poczet dofinansowania projektu lub jako refundacja samodzielnie poniesionych wydatków kwalifikowanych. W tym drugim przypadku oznacza to, że do wypłaty środków przez instytucję wdrażającą należy zapewnić finansowanie projektu we własnym zakresie. Nie ma przy tym określonego minimalnego udziału własnego wnioskodawcy. Może on zatem korzystać zarówno z obcych źródeł finansowania jak i ze środków własnych. Zarówno pierwsze jak i drugie rozwiązanie wiąże się z określonym ryzykiem dla zarządzającego projektem. Ryzyko to wynika z możliwości braku zakwalifikowania określonych wydatków do wsparcia unijnego, na które inwestor liczył. Sytuacja taka może być spowodowana błędami w

przygotowaniu budżetu projektu ale i problemami interpretacyjnymi w zakresie kwalifikowalności wydatków. W takim przypadku przedsiębiorstwo realizujące projekt powinno zapewnić finansowanie nakładów inwestycyjnych we własnym zakresie. Powyższe istotnie wpłynie na rentowność projektu, mogąc czynić go w skrajnych przypadkach nieopłacalnym.

Dotacja przyznana na mocy podpisanej umowy o dofinansowanie projektu nie jest wypłacana automatycznie – warunkiem wypłaty jest przedstawienie rozliczenia projektu i złożenie poprawnie wypełnionego wniosku o płatność. W wypadku projektów inwestycyjnych wnioski takie można złożyć po zakończeniu ponoszenia nakładów (wówczas następuje jednorazowa wypłata środków) lub też możliwe jest podzielenie przedsięwzięcia na etapy i wnioskowanie o tzw. płatności pośrednie – po każdym zrealizowanym etapie. Również tutaj istnieje określone ryzyko dla przedsiębiorstwa. W szczególności wynika ono z dwóch przesłanek: trudności w poprawnym wypełnieniu wniosku o płatność, zwłoki w realizacji płatności przez płatnika. Zarówno jeden jak i drugi przypadek spowoduje perturbacje w relacji z partnerami biznesowymi przedsiębiorstwa realizującego projekt, wynikające z opóźnienia zapłaty zobowiązań. W takiej sytuacji przedsiębiorstwo powinno posiadać rezerwę pozwalającą na dokonanie zapłaty zgodnie z ustalonymi terminami.

Kolejnym warunkiem przyznania dotacji jest zapewnienie przez wnioskodawcę odpowiedniej trwałości efektów realizowanego projektu inwestycyjnego. Może oznaczać to konieczność prowadzenia działalności gospodarczej, zatrudniania określonej ilości pracowników czy też użytkowania środka trwałego zakupionego w ramach realizacji inwestycji przez określony czas. W przypadku gdy projekt inwestycyjny nie przynosi oczekiwanych rezultatów, inwestor i tak zobowiązany będzie do kontynuacji działalności. Jej przerwanie skutkować bowiem może dodatkowymi karami polegającymi na zwrocie środków jakie otrzymał w ramach dotacji wraz z odsetkami ustawowymi. W efekcie spowoduje to jeszcze większe problemy finansowe przedsiębiorstwa.

Wydatki wskazane we wniosku o dofinansowanie mogą być refundowane tylko wówczas jeśli nie zostały poniesione przed określonym dniem. Może to być na przykład dzień następujący po dniu złożenia wniosku o dofinansowanie lub dzień otrzymania od instytucji wdrażającej potwierdzenia, iż złożony wniosek, co do zasady kwalifikuje się do objęcia wsparciem. Oznacza to, że dofinansowaniu nie będą podlegać projekty rozpoczęte wcześniej a nie zakończone (na przykład z braku środków finansowych). Powyższa zasada, jakkolwiek słuszna z punktu widzenia biznesowego, ogranicza zakres podmiotowy wsparcia.

Kolejną zasadą w realizacji projektów europejskich jest zachowanie odpowiedniej kolejności działań. W praktyce oznacza to, iż konieczne jest zachowanie pewnego porządku realizowanych czynności, w których punktem

wyjścia zawsze jest harmonogram określony w projekcie. Powyższe stwarza ryzyko opóźnień w realizacji przedsięwzięcia inwestycyjnego. Instytucja wdrażająca nie dokona wypłaty środków finansujących kolejny etap robót przed zakończeniem realizacji etapu poprzedniego. Aby tego uniknąć należy w sposób właściwy zaplanować budżet projektu i harmonogram jego realizacji. Koniecznym jest przyjęcie nie tylko poprawne kolejności realizowanych działań ale również zachowanie odpowiedniego stopnia szczegółowości ich opisu. W tym przypadku bardzo precyzyjne sformułowanie planowanych działań nie zawsze jest korzystne dla realizującego projekt.

Przedsiębiorstwo, które uzyskało dotację na wykonanie projektu inwestycyjnego, jest zobowiązane do wypełniania określonych obowiązków informacyjnych. Polegają one na przekazaniu do otoczenia informacji o tym, że realizuje ono projekt z udziałem środków wspólnotowych. Jest to związane z koniecznością umieszczenia odpowiedniej informacji w widocznym miejscu w siedzibie przedsiębiorstwa czy też odpowiedniego oznakowania wybudowanych budynków oraz nabytych środków trwałych – przy zachowaniu wymaganych standardów w zakresie właściwej wizualizacji. Powyższe zasadniczo nie stwarza istotnego ryzyka dla przedsiębiorstwa, niemniej jednak należy pamiętać o tej zasadzie.

W trakcie trwania projektu jak i na jego zakończenie, beneficjent jest zobowiązany do dochowania obowiązków sprawozdawczych, wskazanych w umowie o dofinansowanie. W praktyce oznacza to sporządzanie w odpowiednich terminach sprawozdań okresowych oraz sprawozdania końcowego z realizacji dofinansowanego projektu. Prawidłowo sporządzone sprawozdania umożliwiają wychwycenie ewentualnych opóźnień czy też nieprawidłowości pojawiających się w trakcie wykonywania przedsięwzięcia. W praktyce przedsiębiorstwa często mają problemy z realizacją tych obowiązków. Dlatego konieczne jest zapewnienie już we wstępnym etapie projektu właściwej kadry, przygotowanej do realizacji tego typu czynności.

Przedsiębiorca realizujący dotowany projekt jest również zobowiązany do poddawania się kontrolom sprawdzającym prawidłowość wykorzystania przyznanej dotacji. Takie kontrole mogą wystąpić w całym okresie wykonywania projektu, jak też w wymaganym okresie trwałości projektu. W tym przypadku przedsiębiorstwo realizujące projekt narażone jest na ryzyko wynikające z dwóch źródeł: stwierdzenia faktycznie popełnionych błędów w trakcie realizacji projektu, niezrozumienia istoty projektu przez kontrolujących i wynikającej z tego błędnej interpretacji przepisów. Zarówno w pierwszym jak i drugim przypadku konsekwencją może być konieczność zwrotu otrzymanego wsparcia.

Zarządzanie ryzykiem w projektach inwestycyjnych. Omówione wcześniej czynniki ryzyka realizacji projektu inwestycyjnego, w tym specyficzne jego rodzaje odnoszące się do projektów europejskich w praktyce gospodarczej w

różnym stopniu oddziałują na realizację przedsięwzięcia inwestycyjnego. Istotnym jest nie tylko zidentyfikowanie ryzyka ale również podjęcie działań zmierzających do ograniczenia negatywnych skutków jego materializacji.

Jednym z podstawowych warunków minimalizacji ryzyka projektu inwestycyjnego jest przygotowanie profesjonalnego biznes planu i/lub studium wykonalności projektu inwestycyjnego. Dokumenty te powinny stanowić podstawę dla konkretnych i ostatecznych decyzji inwestycyjnych, Dobrze przygotowany biznes plan nie tylko odpowiada na podstawowe pytania dotyczące funkcjonowania projektu inwestycyjnego ale również identyfikuje potencjalne czynniki ryzyka oraz precyzuje działania jakie muszą być podjęte celem neutralizacji ryzyka lub minimalizacji negatywnych skutków jego materializacji. Biznes plan jest zatem podstawowym instrumentem zarządzania ryzykiem projektu inwestycyjnej, w ramach którego wyróżnia się cztery etapy:

- identyfikację ryzyka – polegającą na wyspecyfikowaniu czynników ryzyka na które przedsięwzięcie jest szczególnie wrażliwe;
- pomiar poziomu ryzyka;
- kontrolę ryzyka – identyfikującą działania jakie będą podejmowane celem minimalizacji prawdopodobieństwa materializacji negatywnych skutków wystąpienia ryzyka;
- wnioskowanie o ryzyku i skuteczności podjętych działań [16].

Identyfikacja czynników ryzyka możliwa jest tylko wówczas jeżeli zarządzający projektem ma świadomość wszystkich czynników ryzyka z jakim wiąże się określone przedsięwzięcie inwestycyjne. Posiadając rozeznanie w tym zakresie zarządzający może wykorzystać określone metody identyfikacji. Do najczęściej stosowanych należy zaliczyć metodę listy pytań kontrolnych, polegającą na wyszczególnieniu przez ekspertów – na podstawie doświadczenia – różnych kategorii ryzyka wynikających z poszczególnych obszarów ryzyka. W przypadku projektów finansowanych środkami unijnymi należy wyspecyfikować pytania dotyczące wszystkich zagrożeń charakterystycznych dla tego typu inwestycji. W szczególności powinny one odnosić się do wcześniej określonych czynników ryzyka wynikających ze specyfiki finansowania unijnego. Należy jednak podkreślić, że przedstawiony zbiór czynników ryzyka nie jest zbiorem zamkniętym. W praktyce może występować szereg innych zagrożeń w odniesieniu do konkretnego europejskiego projektu inwestycyjnego, wynikających z jego specyfiki.

Efektem identyfikacji ryzyka powinna być lista źródeł ryzyka, tj. niekorzystnych czynników, które będą wpływały na efektywność projektu inwestycyjnego. Czynniki te powinny zostać poddane ocenie. Do najczęściej stosowanych metod oceny ryzyka inwestycji zaliczyć należy analizę: wrażliwości, scenariuszy i symulacyjną.

Analiza wrażliwości przedsięwzięcia inwestycyjnego polega na ocenie wpływu zmian określonych parametrów przedsięwzięcia inwestycyjnego na kształtowanie się rentowności inwestycji [18]. Zmiany te wynikają z materializacji określonych czynników ryzyka działalności inwestycyjnej. W swojej najprostszej postaci analiza wrażliwości pozwala na zbadanie wpływu zmiany jednej zmiennej na wskaźniki rentowności projektu. W przypadku projektów finansowanych unijnie może być wpływ braku refinansowania wydatków lub nie zakwalifikowania ich części do refinansowania na kształtowanie się NPV i IRR projektu. Ze względów praktycznych wpływ ten wyrażany jest najczęściej w postaci współczynnika zmienności (wrażliwości) obrazującego o ile procent zmieni się badany wskaźnik (zmienna objaśniana) jeśli jeden z parametrów przedsięwzięcia (zmienna objaśniająca) ulega zmianie o 1%. Jeśli za zmienną objaśnianą przyjąć NPV współczynniki zmienności wyraża wzór (1):

$$WZ = \frac{(NPV_i - NPV_b) / NPV_b}{(Z_i - Z_b) / Z_b} \quad (1)$$

gdzie: WZ – Współczynnik zmienności NPV na jednoprocentową zmianę wartości zmiennej objaśniającej; Z_b – wartość bazowa zmiennej objaśniającej (na przykład zakładany udział dotacji unijnej w strukturze finansowania projektu); Z_i – i – ta wartość zmiennej objaśniającej (na przykład faktyczny udział dotacji unijnej w strukturze finansowania projektu); NPV_b – wartość NPV przy bazowej wartości zmiennej objaśniającej; NPV_i – Wartość NPV przy i – tej wartości zmiennej objaśniającej.

Wysoka wartość współczynnika świadczy o dużej wrażliwości rentowności projektu inwestycyjnego na zmianę określonej zmiennej. Analizując w ten sposób wszystkie istotne zależności można zidentyfikować, które odchylenia będą miały najsilniejszy wpływ na rentowność projektu. Dzięki temu zarządzający projektem inwestycyjnym mogą zwrócić szczególną uwagę na określony obszar przedsięwzięcia inwestycyjnego.

Tak przeprowadzona analiza wrażliwości nie zakłada zmiany kilku parametrów przedsięwzięcia inwestycyjnego jednocześnie. Wadę tę eliminują bardziej złożone procedury: metoda scenariuszy oraz metoda symulacyjna [13], które pozwalają na określenie wpływu zmian kilku zmiennych na zmienną objaśnianą oraz uwzględniają różne scenariusze kształtowania się zmiennych objaśnianych. W praktyce bowiem rzadko zdarza się dokładnie zaprognozować wszystkie parametry projektu inwestycyjnego ze względu na ciągłą zmienność otoczenia. Jeśli na przykład na rynku pojawi się inflacja powyżej prognozowanego poziomu, najprawdopodobniej wpłynie ona na wysokość stóp procentowych (a zatem kosztu kapitału finansującego inwestycję), wysokość kosztów operacyjnych ponoszonych w związku z realizacją inwestycji, poziom cen sprzedawanych produktów/usług oraz wielkość popytu na nie.

W analizie scenariuszy, stanowiącej kontynuację analizy wrażliwości, wykorzystuje się współczynniki zmienności dla określenia różnych możliwych

wariantów kształtowania się zmiennych mających wpływ na rentowność projektu. Na tej podstawie wyznacza się interesującą wartość zmiennej objaśniającej (najczęściej NPV lub IRR przedsięwzięcia). Zakłada się przy tym kilka scenariuszy (przynajmniej dwa). Oprócz wariantu bazowego (najbardziej realnego) przyjąć należy wariant pesymistyczny, zakładający materializację ryzyka we wszystkich obszarach wrażliwych inwestycji. Przyjęcie innych scenariuszy (na przykład wariantu optymistycznego) zależne jest od potrzeb decyzyjnych inwestora. Analiza scenariuszy pokazuje zatem jaki wpływ na rentowność projektu będzie miał brak realizacji na zakładanym poziomie określonych wielkości związanych z inwestycją. Dzięki szeroko przeprowadzonej analizie można wyciągnąć wnioski odnoszące się do poziomu ryzyka podejmowanego przez inwestora. Z tych powodów analiza ta jest niezbędna na etapie podejmowania decyzji o realizacji przedsięwzięcia inwestycyjnego. Analiza scenariuszy pozwala na budowę różnego rodzaju wariantów rozwoju zdarzeń i determinuje do określenia sposobów postępowania w sytuacji materializacji określonego ryzyka.

Rozwinięciem analizy scenariuszy są metody probabilistyczno – statystyczne, które pozwalają na oszacowanie prawdopodobieństwa wystąpienia określonych poziomów zmiennych objaśniających a przez to prawdopodobieństwo ukształtowania się rentowności inwestycji na określonym poziomie. Podstawowym problemem w tych metodach jest określenie wartości prawdopodobieństwa wystąpienia poszczególnych scenariuszy. W literaturze podawane są różne propozycje w tym zakresie. Najczęściej, mając na uwadze symetryczny rozkład prawdopodobieństwa, przyjmuje się dla wariantów optymistycznego i pesymistycznego wartość 0,25 a dla scenariusza bazowego 0,5. Mając określone wartości prawdopodobieństwa poszczególnych scenariuszy można z łatwością wyliczyć oczekiwaną wartość NPV, odchylenie standardowe oraz współczynniki zmienności.

Mając świadomość czynników ryzyka oraz ich możliwego wpływu na rentowność projektu należy określić sposób reagowania na ryzyko projektu inwestycyjnego. W tym zakresie wyróżnić można cztery podstawowe grupy działań:

- unikanie ryzyka;
- ograniczanie jego źródeł oraz skutków;
- transfer ryzyka;
- tworzenie rezerw na ryzyko.

Unikanie ryzyka w praktyce jest trudne do zrealizowania, chyba, że podjęta zostanie decyzja o zaniechaniu realizacji projektu, bądź zaniechaniu jego finansowania środkami unijnymi (jeżeli analizie podlegać będzie ryzyko generowane w tym obszarze). Innym zagadnieniem jest postawa inwestora wobec ryzyka, która może wyrażać się w: neutralności, awersji lub skłonności

do ryzyka [17]. Neutralność wobec ryzyka przejawia się rozsądnym spojrzeniem na rachunek potencjalnych zysków i strat. Decyzja o podjęciu inwestycji podjęta zostaje wówczas gdy szanse na jej sukces przewyższają zagrożenia wynikające z materializacji ryzyka. Postawa awersji paraliżuje decyzje inwestycyjne. Zaangażowanie w przedsięwzięcie nastąpi tylko wówczas, gdy korzyści z inwestycji zdecydowanie przewyższają możliwe koszty związane ze spełnieniem się czarnych scenariuszy. Natomiast odwrotna postawa charakteryzuje inwestorów skłonnych ponieść ryzyko ale i osiągnąć ponadprzeciętne zyski. Ocena ryzyka inwestycyjnego jest zatem procesem w dużej mierze subiektywnym. Zależy bowiem od skłonności inwestora do ponoszenia ryzyka [11]. Pewne czynniki ryzyka uznawane przez jednych inwestorów za nieakceptowalne są ze spokojem przyjmowane przez innych. I często nie wynika to z braku lub nadmiaru wiedzy inwestorów w tym zakresie, ale ich wewnętrznych uwarunkowań.

Zakładając neutralne podejście do ryzyka, zarządzający projektem powinni skupić się na ograniczaniu źródeł i skutków ryzyka. Powyższe można osiągnąć poprzez zaplanowanie konkretnych działań. W przypadku chęci minimalizacji ryzyka związanego z finansowaniem unijnym podstawowe działania powinny koncentrować się na:

- zapewnieniu odpowiednio przygotowanej pod względem merytorycznym kadry opracowującej wniosek unijny oraz monitorującej wykorzystanie środków z tego źródła;
- korzystanie z pomocy zewnętrznych ekspertów w obszarze finansowania unijnego;
- stały monitoring realizacji projektu;
- realizacja wewnętrznych i zewnętrznych audytów dotyczących prawidłowości wykorzystania środków unijnych;
- implementacji w praktykę zaleceń poaudytowych.

Powyższe powinno zapewnić właściwą realizację projektu i zminimalizować ryzyka charakterystyczne dla tego typu projektów.

Kolejna z metod działania – transfer ryzyka – polega na formułowaniu takich zapisów kontraktowych by negatywne konsekwencje materializacji ryzyka przenieść na partnera biznesowego bądź też na ubezpieczeniu ryzyka. W przypadku ryzyka wynikającego z finansowania środkami unijnymi, w praktyce trudnym jest dokonanie transferu odnoszącego się do specyficznych czynników ryzyka. Można co prawda uzależnić wypłatę wynagrodzenia firmie przygotowującej wniosek unijny od powodzenia aplikowania, niemniej jednak nie powoduje to ograniczenia ryzyka braku otrzymania dotacji czy też niewłaściwego jej wykorzystania.

Natomiast tworzenie rezerw na skutki materializacji ryzyka jest uniwersalną metodą możliwą do wykorzystania w zarządzaniu każdym

projektem. Wyraża się ona w tworzeniu rezerw dla zmiennych, które są najtrudniejsze do przewidzenia. Pod pojęciem rezerw rozumie się wielkości dodawane do już oszacowanych parametrów, aby uwzględnić możliwe ich zmiany. W przypadku finansowania unijnego można przez to rozumieć zapewnienie finansowania części nakładów ze środków własnych, które mogą zostać wyłączone jako wydatki kwalifikowane.

Ostatnią grupą działań w ramach zarządzania ryzykiem projektu inwestycyjnego jest wnioskowanie o ryzyku i skuteczności podjętych działań. Powyższe stanowić powinno podstawę do procesu doskonalenia organizacji w zakresie zarządzania ryzykiem projektu przy realizacji kolejnych zadań.

Podsumowanie. Planowanie i realizacja unijnych projektów inwestycyjnych stanowi złożony problem decyzyjny. Zarządzający projektem muszą brać pod uwagę specyficzne uwarunkowania finansowania inwestycji ze środków unijnych. Determinują one istotne wewnętrzne ryzyko realizacji projektu. Ryzyko to może być w dużym stopniu ograniczone. W zasadniczej mierze negatywne skutki materializacji ryzyka wynikają z braku odpowiednich kompetencji osób zarządzających projektem. Dlatego niezwykle istotnym jest zapewnienie właściwego zespołu projektowego, nie tylko doświadczonego w realizacji inwestycji, ale również potrafiącego identyfikować i przeciwdziałać zagrożeniom jakie generuje finansowanie unijne. W stosunku do pozostałych czynników ryzyka wpływających na efektywność projektu stosować należy standardowe procedury zarządzania ryzykiem, uzależnione od konkretnej sytuacji.

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THE IMPACT OF REGULATORY POLICY FOR IMPLEMENTATION OF INTERNATIONAL SCIENTIFIC AND EDUCATIONAL PROJECTS TO THE COUNTRY INNOVATIONAL POLICY OF UKRAINE

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Introduction and goal of the research. In today's difficult economic and political conditions in the country, the project team's consideration of the political factor is a necessary requirement. Despite the fact that political problems have an indirect effect on national economies, they can have a significant impact on the activities of economic actors. **The purpose of this article** is to analyze the influence of the government sector on the development and implementation of international educational projects in the system of innovative development of the country; to determine the coefficients of elasticity and coefficients in order to determine the effect of regression factors on the resulting indicator, which allowed to define the formulation of scientifically substantiated proposals for improving the efficiency of innovation activity.

Methods of research. In this work, methods of statistical analysis were used to compare the development of innovation activity and the implementation of innovative projects in Ukraine over the past 10 years; economic-mathematical modeling to determine the accuracy of the forecast by calculating the relative error; calculation of the upper and lower bounds of the predicted interval by means of determining the half-width of the interval forecast.

Results of the research. In the course of the study, by substituting the values of the arguments into the equation, the author obtained the trend values of the volume of realized innovative products that grow in the

last year of the study; the obtained data of the point forecast of regression factors, with the help of synthesized multifactor regression and the obtained data, determined the forecast volume of the realized innovative products for 2019–2020. Calculated the influence of each factor on the effective index, that is, determined the coefficients and parameters of the matrix of free members. From the above calculations, the author concludes that the second largest factor, the sum of the cost of research and development, has the greatest impact on the effective indicator (volume of realized innovative products).

Conclusions. It is evident from the data obtained that the share of own funds in financing research and development during the analyzed period decreased from 79.64% to 59.35%. The volume of state financing of innovation activity in Ukraine is insignificant due to the deficit of the state budget. Under these conditions and taking into account the tendencies of the active spread of globalization processes, the diversification of sources of financing for innovation is urgent and necessary, and separate – the attraction of foreign investments for the development and implementation of international scientific and educational international projects, the implementation of which facilitates the intensification of the innovative development of the national economy, which in practice can be manifested in the growth of volumes of realized innovative products.

Keywords: state support; innovative projects; economic and mathematical modeling; innovative products; multifactor regression.

Statement of the problem and its connection with important scientific and practical tasks. The problem of political instability is characterizing most of the modern countries of the world (including, for Ukraine). Thereby, the project team takes into account the political factor. Despite the fact that political problems have an indirect effect on national economies, they can have the significant impact on the activities of economic actors. The uncertainty in the political situation of the country leads to a high level of risk in terms of implementation of various activities within the boundaries of this country.

Of particular importance are political factors in the context of research on the implementation of international scientific and educational projects, which are represented by representatives from Ukraine. Implementation of the project involves implementation of the stages of developed plan. However, when it comes to the project activity in the territory of a foreign country, it is impossible to pre-design forecasts and plans that fully correspond to the realities of the country at the time of the immediate implementation of the project activity. Problems may be caused by the volatility of the country's political environment. Changes in the political course of the country may be accompanied by changes in executive bodies. Often, there is also a change in the priorities of development and directions of innovation, which will significantly complicate the project implementation process.

Analysis of the recent publications. Problems of the management of scientific and educational international projects at different phases of the project's life cycle are devoted to the works of N.I. Holyavko [6], L.M. Hanuschak-Efimenko, V.G. Scherbak [5] in their works, where it explores the peculiarities of innovative development of the country in the implementation of innovative projects, problems of higher education in the context of the national strategy for the development of international education devoted to the works of Y. Sulima [10]. In these works, it was emphasized that grants under the international cooperation programs are mainly provided for the implementation of projects coordinated by the EU countries. In particular, the leaders in terms of the number of grants received under the Tempus program are Germany, Italy, France. Instead, Ukrainian science and education organizations usually act as partners, not coordinators (grant recipients and key resource allocators) for projects. Moreover, the positive dynamics of the number of scientific and educational international projects that have been financed with the aim of their further practical implementation in the countries with stable (and, accordingly, predicted, unchanged over a long period of time) political situation is traced.

Unresolved parts of the study. Despite the considerable number of scientific publications in the field of management of scientific and educational projects, the issue of country regulation of these projects needs to be carefully

studied, especially in today's complex political and economic situation in the country.

The purpose of the study. Investigation of the influence of political factors on the development and implementation of scientific and educational international projects, calculation of elasticity coefficients and β -coefficients in order to determine the influence of regression factors on the resultant indicator.

The summary of the main results and their justification. In our opinion, support and assistance from public authorities in the implementation of scientific and educational international projects is an important part of the successful work of the project team. If the main areas of activity within project framework meet the priorities of Ukraine's innovation development plan. In this case, country assistance will act as part of the process of practical implementation of the country innovation policy as a whole. In this context, we can talk about the influence of the political factor on the goals and subjects of scientific and educational international projects. It is meant that in order to obtain country support, the project team can develop projects whose practical implementation is aimed at achieving important goals of the development of the national economy (in the first place, the intensification of innovation activities within the country). The special role of the government in the management of international scientific and educational cooperation should stimulate domestic economic actors to participate in projects, to represent national interests and orientation of the project realization activity to the strategic goals of Ukraine's development. If the objectives of the project conflict with the priorities of the country's development, then its implementation becomes impossible or faced with a number of barriers and obstacles. It will necessarily be accompanied by a lack of country support or even disapproval from country authorities.

In this context, it needs to emphasize the importance of proper and consistent implementation of the principles and priorities of Ukraine's country innovation policy. In particular, the careless implementation by public authorities of innovation policy in practice can lead to significant problems in the application of international science and education projects. As a result, this can point to the significant slowdown in the pace of innovation of the national economy.

The tasks of the country's management in international scientific and educational cooperation in the system of country innovation policy of Ukraine, are reduced mainly to the intensification of international cooperation in the spheres of innovation, education and scientific and technical activities within Ukraine [3]. To control over the observance of the current legislation of Ukraine, to use sanctions against violators of the provisions normative legal acts, as well as systematization of statistical information on activities within the framework of scientific and educational international projects. The dynamism of the external economic environment necessitates thorough forecasting and planning of the

development of international cooperation in the spheres of education, science and innovation on the basis of analysis of data accumulated by country's authorities. Public assistance to international scientific and educational projects should be oriented towards the achievement of budget, socio-economic efficiency of project implementation, obtaining effects from their introduction for the national economy, including through the development of domestic innovation infrastructure [3].

An importance on macro level motivation of domestic economic factors is to intensify innovation [2]. In particular, framework development and implementation of international scientific and educational projects aimed at introducing innovations into the practice of managing economic entities. At the same time, country authorities should represent and protect the interests of Ukrainian project participants, as well as create favorable conditions for the effective implementation of project activities within Ukraine. It is promising to stimulate the involvement of domestic young scientists and students in the development and implementation of projects within the framework of cooperation programs, increase the mobility of Ukrainian researchers.

The expansion of international cooperation highlights the need to preserve the national identity of the Ukrainian people. The success of the implementation of international scientific and educational cooperation will contribute to raise the level of recognition of Ukraine on international arena, accelerating the pace of integration into the international educational and research community, and will provide the development of the intellectual potential of the nation.

The development of international scientific and educational cooperation involves the ratification by Ukraine of international conventions and agreements in the spheres of education and science. And ensuring implementation of the undertaken commitments, including supporting the project form of cooperation of representatives of different countries in the direction of implementation of innovations developed in the course of joint scientific research. Thus, country's support in the development and implementation of scientific and educational international projects is necessary, but it is by no means an exhaustive condition for the activation of innovation activity in the country. Significant is the normal functioning of the country apparatus in the direction of implementing officially approved development priorities [5].

The political factor in the implementation of international scientific and educational projects can also be manifested in lobbying the interests of project participants in the legislative body of the country. It will contribute to obtaining additional assistance from the public administration from the project activity.

In our opinion, the consideration of the political factor for the implementation of scientific and educational international projects needs to emphasize the need to prevent the participants in the project from emerging

conflicts of international scale, the opposition between the partners. The reasons for the latter may be differences in the approaches to professional activities and moral principles, due to the difference in mentality of the participants in the project activity.

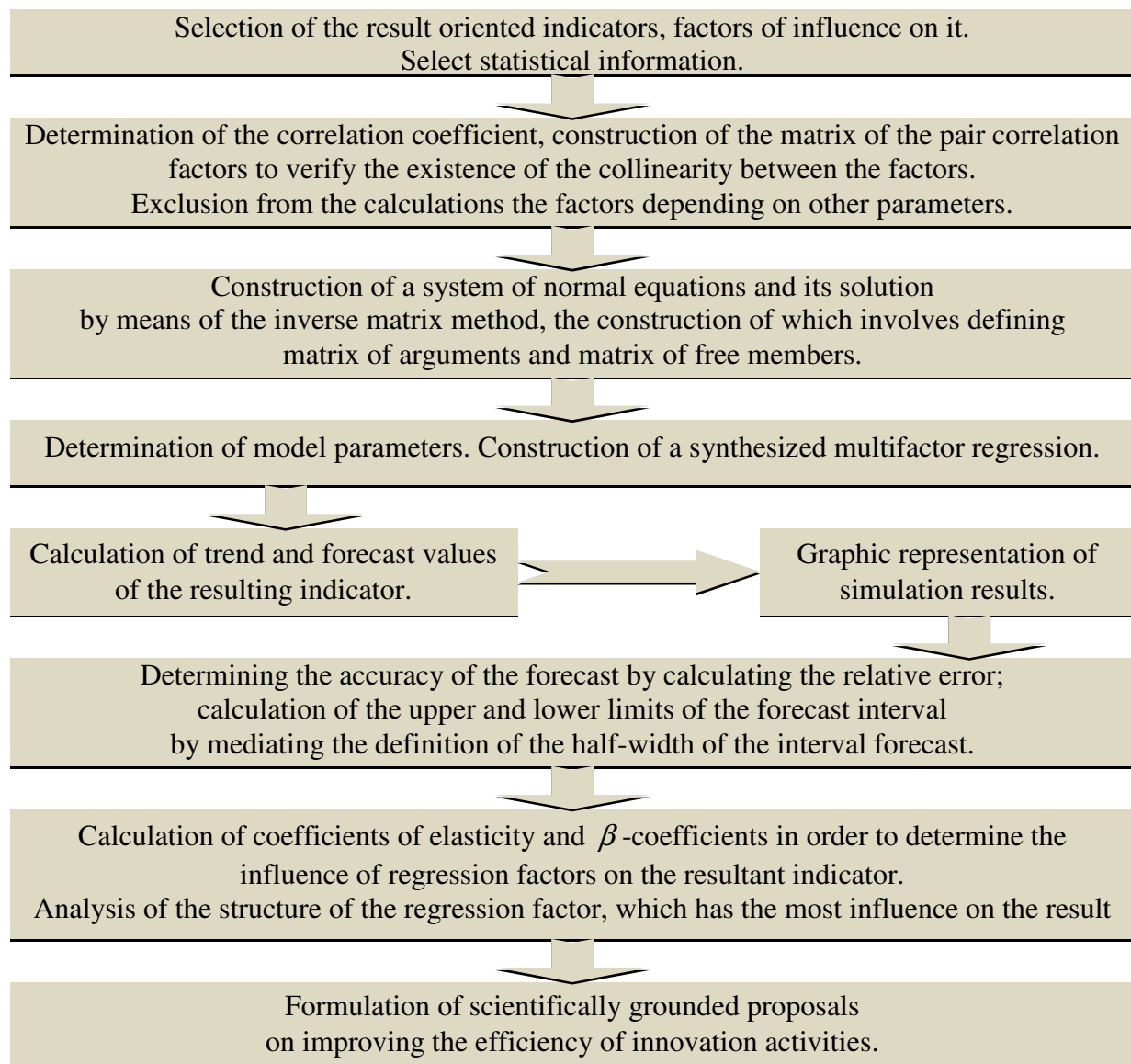
The legal factors for the effective implementation of international scientific and educational international projects are the need to comply with the provisions of the current legislation by all project participants (first of all, by the members of the project team, which are responsible for the development of the project as a whole). Moreover, the implementation of the project activity (coordination of all project activities) is important in the framework of the legislative norms of both the countries directly implementing the project, as well as the other involved participants. Political instability in some countries of the world (in particular, Ukraine) necessitates constant monitoring of legislative changes and making corresponding adjustments to the draft and plans developed for it in order to ensure the legitimacy of their practical implementation.

With the political factors that may affect the implementation of international scientific and educational projects. The socioeconomic factors of effective project implementation are exaggerated. Implementation of projects in different countries usually involves the local specialists who must thoroughly navigate in all the intricacies and nuances of the project activity within the respective country or region. Such a social problem as unemployment (which is characteristic of Ukraine) is quite capable of having a significant impact on the effectiveness of the project activity. It means that prolonged unemployment means a reduction in qualifications and the loss of professional skills and abilities of potential project participants.

Many problems within the project implementation are associated with planning factors: unprofessional, careless, irregularly designed, inaccurate, fuzzy (ambiguous) project plans will lead to a number of problems in the course of their direct implementation in practice.

It is worth noting that one of the key factors in the effective implementation of these projects is increased responsibility and interest of the public authorities in the selection and identification of promising innovative ideas with a view to their further development and practical implementation.

In general, the involvement of country authorities and non-governmental organizations in the project activity should be directed at the implementation of the strategic goals of the national economy, and in the first place – on the intensification of innovation development of Ukraine, which can be expressed quantitatively in the volume of implemented innovative products. Reasonable in this context, we consider the use of methods of economic-mathematical modeling (Fig. 1).



Source: Developed by author based on [1–3, 6].

Fig. 1. Algorithm for modeling the volume of realized innovative products

As a result of the regression indicator, the volume of realized innovative products is set. Taking into account the important role of the human factor in the implementation of international scientific and educational projects, which is substantiated in this section, we will consider founded the distinction as the variables of multifactor regression of the number of scientists, the number of organizations that unite them in order to carry out scientific research. It follows from the expediency of taking into account in the course of implementation of economic and mathematical modeling factors such as the volume of mastered production of innovative types of products and the extent of the introduction of new technological processes by the domestic organizations as a result of the

activities of organizations for the implementation of scientific research. No less important, in our opinion, is the study of the impact of funding on the resulting indicator (the volume of sales of innovative products) [2].

An economic process that depends on more than one factor can be described using a multi-factor regression. Assuming that, $i = \overline{1, n}$ a linear factor model with n -variables has the following form (1):

$$y_i = b_0 + \sum_{i=1}^n b_i x_{it} = b_0 + b_1 x_{1t} + b_2 x_{2t} + \dots + b_m x_{mt} + e_t, \quad (1)$$

where x_{it} – given arguments;

b_i – unknown parameters of the model to be evaluated;

e_t – a random variable, which is a deviation from the theoretical functional dependence in the t -year.

The construction of a multifactor model requires the independence of the selected factors. In other words, the existence of collinearity (multicollinearity) between more than two factors is undesirable and unacceptable. One of the methods for checking the existence of a collinearity, which is chosen for further calculations, is to determine the coefficient of dual correlations (2).

$$r_{x_i x_j} = \frac{\sum_{i=1}^n \{(x_i - \overline{x_i})(x_j - \overline{x_j})\}}{\sqrt{\sum_{i=1}^n (x_i - \overline{x_i})^2 \sum_{j=1}^n (x_j - \overline{x_j})^2}}, \quad (2)$$

where $r_{x_i x_j}$ – pair correlation coefficient between the i -th and j -th factors;

x_i, x_j – given arguments;

$\overline{x_j}$ – the average of the i -th independent variable;

$\overline{x_j}$ – the average value of j 's independent variable.

If the obtained value of the coefficient of the pair correlation modulo exceeds 0.8, we can note that there is collinearity between the factors. To determine the collinearity, we construct an auxiliary matrix of pair correlation factors:

$$B = \begin{vmatrix} 1.00 & 0.84 & -0.71 & 0.45 & -0.52 \\ 0.84 & 1.00 & -0.84 & 0.71 & -0.02 \\ -0.71 & -0.84 & 1.00 & -0.73 & 0.37 \\ 0.45 & 0.71 & -0.73 & 1.00 & -0.56 \\ -0.52 & -0.50 & 0.37 & -0.56 & 1.00 \end{vmatrix}$$

Based on the matrix of pair correlation, we can conclude that the factor x2 (the number of scientists) is dependent on the factors x1 (the number of organizations performing research and development) and x3 (total cost).

To substantiate the results obtained at this stage of the implementation of economic-mathematical modeling results can be as follows. Such a factor of regression as the number of organizations performing research and development, is in its content wider than the factor x2 (the number of scientists). The latter is due to the fact that the number of organizations as a factor of regression includes the number of scientists as one of the components. After all, the functioning of any economic entity involves ensuring its activities by a team of workers (in the investigated context – the scientists). It follows that there is interdependence between the number of scientists and the number of organizations that carry out scientific research.

At the same time, attracting scholars to activities in the framework of scientific and educational international projects is always accompanied by certain expenses, aimed at paying their labor, social payments. In this case, the existence of interdependence between such regression factors as the number of scientists and the total amount of expenses is fully justified. Thus, in order to prevent the appearance of multicollinearity, we exclude the factor x2 (number of scientists) for further calculations. The calculations will be based on the factors and their values presented in Table 1.

Table 1

Input data for constructing multi-factor regression

Years	Number of organizations that carry out research and development	Total cost, mln UAH	The production of innovative types of products has been mastered	Introduced new technological processes	Volume of realized innovative products, mln UAH
	X ₁	X ₃	X ₄	X ₅	Y
2005	1510	5751.1	3152	1808	4818.6
2006	1452	6160.0	2408	1145	5354.6
2007	1404	10821.0	2526	1419	6700.7
2008	1378	11994.2	2446	1647	8538.9
2009	1340	7949.9	2685	1893	8653.7
2010	1303	8045.5	2408	2043	9867.1
2011	1255	14333.9	3238	2510	10349.9
2012	1208	11480.6	3403	2188	11252.7
2013	1143	9562.6	3138	1576	11781.1
2014	999	7695.9	3661	1743	10950.7
2015	978	13813.7	3152	1217	12611.0

Source: is compiled on the basis of the official website of the Country Statistics Service of Ukraine [9].

Unknown parameters of a model can be determined using the least squares method, that is, to minimize the sum of squares of deviations (3):

$$\min \sum_{i=1}^n e_t^2 = \min \sum_{i=1}^n (y_i - b_0 - b_1 x_{1t} - b_2 x_{2t} - \dots - b_{et})^2, \quad (3)$$

where $b_1, b_2, \dots, b_n$ – parameters of multi-factor regression;

$x_1, x_2, \dots, x_n$ – given arguments;

e_t – a random variable that is a deviation from the theoretical functional dependence in t-th year.

To find the value of formula (3), we must equate partial derivatives of this function to zero. As a result, we obtain a system of normal equations, which solves the unknown parameters b , i.e.:

$$\partial \sum_{i=1}^n e_i^2 / \partial b_j = -2 \sum_{i=1}^n (y_i - b_0 - b_1 x_{1t} - b_2 x_{2t} - \dots - b_{et} x_{et}) x_{ji} = 0,$$

where $j = 0, m$.

Proceeding from the foregoing, the system of normal equations for the investigated factors will have the following form:

$$\left\{ \begin{array}{l} b_0 n + b_1 \sum_{i=1}^n x_1 + b_2 \sum_{i=1}^n x_3 + b_3 \sum_{i=1}^n x_4 + b_4 \sum_{i=1}^n x_5 = \sum_{i=1}^n y \\ b_0 \sum_{i=1}^n x_1 + b_1 \sum_{i=1}^n x_1^2 + b_2 \sum_{i=1}^n x_1 x_3 + b_3 \sum_{i=1}^n x_1 x_4 + b_4 \sum_{i=1}^n x_1 x_5 = \sum_{i=1}^n y x_1 \\ b_0 \sum_{i=1}^n x_3 + b_1 \sum_{i=1}^n x_1 x_3 + b_2 \sum_{i=1}^n x_3^2 + b_3 \sum_{i=1}^n x_3 x_4 + b_4 \sum_{i=1}^n x_3 x_5 = \sum_{i=1}^n y x_3 \\ b_0 \sum_{i=1}^n x_4 + b_1 \sum_{i=1}^n x_1 x_4 + b_2 \sum_{i=1}^n x_2 x_4 + b_3 \sum_{i=1}^n x_4^2 + b_4 \sum_{i=1}^n x_4 x_5 = \sum_{i=1}^n y x_4 \\ b_0 \sum_{i=1}^n x_5 + b_1 \sum_{i=1}^n x_1 x_5 + b_2 \sum_{i=1}^n x_2 x_5 + b_3 \sum_{i=1}^n x_3 x_5 + b_4 \sum_{i=1}^n x_5^2 = \sum_{i=1}^n y x_5 \end{array} \right.$$

The calculations made allow to determine the following parameters of the multi-factor model:

$$b_0 = 53,982.18; \quad b_1 = -23.6; \quad b_2 = 2.82; \quad b_3 = -0.3; \quad b_4 = -4.16.$$

The obtained synthesized multifactorial model has the following form (4):

$$y = 53,982.18 - 23.6x_1 + 2.82x_3 - 0.3x_4 - 4.16x_5. \quad (4)$$

By substituting the values of the arguments into the equation, we obtain the trend values of the volume of realized innovation products (Table 2).

Table 2

Trend values of the volume of realized innovative products

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Trend values of the volume of realized innovative products, mln UAH	10414.2	10003.7	13146.7	16175.3	19874.7	23086.7	28703	41984.1	44948.6	33422.3	36465.4

Source: calculated by the author.

The accuracy of the forecast will be determined using the relative error (5):

$$E = \frac{\Delta}{y_{cp}} \times 100\%, \quad (5)$$

where Δ – half width of confidence interval;
 y_{cp} – the average value of the dependent variable.

Using formula (5), we obtain: $E = 5.3\%$, which is quite acceptable and satisfactory, justifying further use in the calculations of the synthesized multifactor model (4).

To verify the adequacy of the multifactor regression, we will use Fisher's F-criterion with $\nu_1 = n - 1$ i $\nu_2 = n - m$ degrees of freedom (6):

$$F_{pozp}(\nu_1 \nu_2) = \left[\frac{\sum_{i=1}^n (y_i - \bar{y})^2}{n-1} \right] : \left[\frac{\sum_{i=1}^n (y_i - y_{ti})^2}{n-m} \right], \quad (6)$$

where $F_{pozp}(\nu_1 \nu_2)$ – estimated value of Fisher's criterion with $\nu_1 = n - 1$ and $\nu_2 = n - m$ degrees of freedom;

y_i – the actual value of the function in i-th year;

y_{ti} – trend function values in j-th year;

$\bar{y}$ – the average value of the dependent variable;

n – number of periods;

m – the number of variables.

From the tables of the F-criterion, we find for the model under study the critical value of the F-criterion of Fisher, which is $F_{crit} = 3.22$. Arguing with formula (6), we find the value of Fisher's F-criterion: $F_{ret} = 27.3$.

So we got it $F_{\text{ret}} > F_{\text{crit}}$, to be rightly considered adequate and suitable for use in the prediction of a dependent variable.

The next step is to determine the determination coefficient (7):

$$R^2 = \frac{\sum_{i=1}^n (y_{ti} - \bar{y})^2}{\sum_{i=1}^n (y_i - \bar{y})^2}, \quad (7)$$

where R^2 – determination factor;

y_i – the actual value of the function in i-th year;

y_{ti} – trend function values in j-th year;

$\bar{y}$ – the average value of the dependent variable.

The application of formula (7) allows the following results: $R^2 = 0.98$ or 98%, which implies that the determination coefficient is directed to 1, and, accordingly, indicates that the regression equation is due to 98% dispersion, to the share of others the factors account for 2%. Taking into account the above calculations and formulated conclusions, it is quite justified and appropriate to consider the forecasting of the effective indicator for 2019–2020, for which we will construct an auxiliary Table 3.

Table 3

Data of the forecast forecast of regression factors

Factor	X_1	X_2	X_3	X_4
Estimated value for 2019	1284.3	8674.04	1116.5	2107
Estimated value for 2020	1265.6	9302.58	500	2171

Source: calculated by the author.

With the help of the synthesized multifactor regression (4) and the table data, we will determine the forecast volume of the realized innovative products for 2019–2020 (mln UAH):

$$y_{2019} = 53,982.18 - 23.6 \times 1,284.3 + 2.82 \times 8,674.04 - 0.3 \times 1,116.5 - 4.16 \times 2,107 \\ = 34,097.1.$$

$$y_{2020} = 53,982.18 - 23.6 \times 1,265.6 + 2.82 \times 9,302.58 - 0.3 \times 500 - 4.16 \times 2,171 \\ = 38,833.7.$$

In order to find the deviations and the upper and lower limits of the predicted interval, it is necessary to determine the half-width of the interval forecast using formula (8):

$$\Delta = t_{\alpha} \sqrt{\frac{\sum (y_i - y_{ti})^2}{n(n-1)}}, \quad (8)$$

where Δ – half width of confidence interval;
 y_i – the actual value of the function in i-th year;
 y_{ti} – trend function values in j-th year;
 n – number of periods.

Using formula (8), we define the half-width of the confidence interval:
 $\Delta_{2019} = 560.36$.

Calculate the upper and lower bounds of the forecast interval for the forecast period:

– upper limit:

$$y_{2019} = 36,465.4 + 1,325.25 = 37,790.7 \text{ (mln UAH);}$$

$$y_{2020} = 38,833.7 + 1,325.25 = 38,833 \text{ (mln UAH);}$$

– lower limit:

$$y_{2019} = 36,465.4 - 1,325.25 = 35,140.1 \text{ (mln UAH);}$$

$$y_{2020} = 38,833.7 - 1,325.25 = 37,508.4 \text{ (mln UAH).}$$

It is reasonable, in our opinion, to determine the degree of influence of each of the selected factors on the performance indicator, that is, the calculation of the elasticity coefficients and β -coefficients by formulas (9) and (10) respectively:

$$\epsilon_k = b_k \frac{\bar{x}_k}{\bar{y}}, \quad \beta_k = b_k \frac{\sigma_{xk}}{\sigma_y}, \quad (9)$$

where ϵ_k – coefficient of elasticity of k variable;

$\bar{y}$ – the average value of the dependent variable;

b_k – model parameter for k-th variable;

$\bar{x}_k$ – the average of the k-th independent variable;

β_k – beta coefficient of k-th variable elasticity;

σ_{xk} – mean square deviation of k-th variable;

σ_y – mean square deviation of the dependent variable.

$$\sigma_{xk} = \sqrt{\frac{\sum_{i=1}^n (x_{ki} - \bar{x}_k)^2}{n}}, \quad \sigma_y = \sqrt{\frac{\sum_{i=1}^n (y_i - \bar{y})^2}{n}}, \quad (10)$$

where x_k – independent variable;

$\bar{x}_k$ – the average of the kth independent variable;

n – number of periods;
 y_i – actual value of the function in i -th year;
 $\bar{y}$ – the average value of the dependent variable.

Using of formulas (9) and (10) we will receive the following results:

$$\begin{aligned} \epsilon_1 &= -25.6 \times \frac{67.93}{11,830.94} = -0.15, & \epsilon_2 &= 2.82 \times \frac{8,959.79}{11,830.94} = 0.79, \\ \epsilon_3 &= -0.3 \times \frac{3,320.55}{11,830.94} = -0.18, & \epsilon_4 &= -4.16 \times \frac{7,364.28}{11,830.94} = -0.1. \end{aligned}$$

At the moment, we can calculate the impact of each factor on the outcome, that is, to determine β -coefficients, and parameters of the matrix of free members. In the end, we get the following values β -coefficients:

$$\begin{aligned} \beta_1 &= -25.6 \times \frac{1,438.6}{25,077.8} = -1.47, & \beta_2 &= 2.82 \times \frac{5,918.6}{25,077.8} = 0.67, \\ \beta_3 &= -0.3 \times \frac{7,364.28}{25,077.8} = -0.09, & \beta_4 &= -4.16 \times \frac{1,557.3}{25,077.8} = 0.26. \end{aligned}$$

From the above calculations we can conclude that the greatest impact on the resultant indicator (the volume of realized innovation products) has a second factor – the sum of the cost of research and development.

The obtained results of the economic-mathematical modeling are completely scientifically proved, since any activity, and especially – innovative (including, within the framework of scientific and educational international projects, the implementation of which is accompanied by the development and implementation of innovations), investment is an essence. Later explains the definition of the key factor of influence (among selected variables) on the indicator results (the volume of realized innovative products) the value of the parameter x_2 , that is, the indicator of the amount of costs for innovation activity.

Conclusions. An important consideration of the analysis is dynamic and structured research on funding in Ukraine. It is evident from the data that the share of its own funds in financing research and development during the analyzed period decreased from 79.64% to 59.35%. The volume of country's finance in innovation activity is insignificant due to the deficit of the Ukraine's budget. Under these conditions and taking into account the tendencies of the active expanse of globalization processes, the diversification of financial sources for innovation is urgent and necessary. The attraction of the foreign investments to develop and implement international scientific and educational projects, the

implementation of which facilitates the increase of the innovative development of the national economy. On practice, it can be manifested into the growth of realized innovative products.

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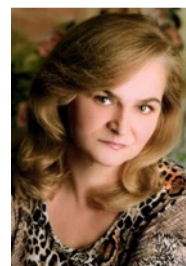
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Редакційна колегія журналу «Менеджмент» приймає до розгляду наукові статті авторів за матеріалами досліджень і науково-технічних розробок. Подані статті розглядаються редакційною колегією журналу «Менеджмент», і після отримання позитивної рецензії приймаються до публікації.

ПРАВИЛА ПОДАННЯ РУКОПИСІВ СТАТЕЙ

Для публікації автори подають в редакцію журналу:

1. Рукопис статті з розширеною анотацією (роздрукований з електронного варіанта статті (файлу), підписаний автором(ами), в 2 (двох) примірниках). Один примірник передається для редакторської роботи та рецензування.
2. Електронний варіант статті з анотацією англійською мовою (файл на CD- або CD-RW-дисках). Файл статті повинен мати таку назву (англ. мовою): П.І.Б. (автора статті англ. мовою) **Наприклад: Stat.:Karpenko_Stat**
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ВИМОГИ ДО СТРУКТУРИ ТА ОФОРМЛЕННЯ МАТЕРІАЛІВ:

- прізвище, ім'я та по-батькові автора (співавторів) – повністю, без скорочень, вчене звання, вчена ступінь, точна назва посади та місця роботи (повна назва кафедри або іншого структурного підрозділу, без аббревіатур), робоча та домашня поштові адреси з індексами, електронна адреса (дуже бажано особиста, а не кафедральна), робочий, домашній та мобільний номери телефонів, основні наукові інтереси;
- на англійській мові подається розширена анотація та ключові слова (словосполучення) – 5–8 позицій (не з назви);

Структура розширеної анотації англійською мовою (до 250 слів), що складаються з наступних розділів:

Вступ і мета дослідження: слід чітко описати логічне обґрунтування для проведення дослідження, виходячи з попередніх робіт по відношенню до досліджуваної. Цей розділ повинен закінчуватися твердженням конкретного питання, що вирішується або висунутою гіпотезою.

Далі слід вказати мету дослідження.

Методи дослідження: слід перерахувати використовувані методи, не вдаючись у великі методичні подробиці і позначити найбільш важливі результати.

Результати: слід перерахувати основні результати без вступу. У дужках слід додавати тільки основні статистичні дані. Не потрібно приводити висновки.

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- **структура тексту статті:** постановка проблеми та її зв'язок з важливими науковими та практичними завданнями; аналіз останніх публікацій по проблемі; невирішені частини дослідження, мета дослідження, виклад основних результатів та їх обґрунтування; висновки та перспективи подальших досліджень;

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