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# FORMATION AND ASSESSMENT OF THE EFFICIENCY OF UNIVERSITY CLUSTERS IN THE CONTEXT OF REGIONAL DEVELOPMENT

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**Chaika I. P., Kononenko O. A. Formation and Assessment of the Efficiency of University Clusters in the Context of Regional Development**

*This article summarizes the results of the scientific discussion on the role and mechanisms of forming university multi-center clusters as a tool for regional development and implementation of the «third mission» of universities. The main aim of the research is to develop theoretical foundations and methodological approaches to the formation and assessment of the efficiency of such clusters, taking into account international experience and the specifics of the Ukrainian context. The systematization of literary sources and approaches to solving the problem of interaction of universities with the external environment testified to the growing attention of scientists to cluster initiatives as an efficient mechanism of combining education, science and practice to promote the socioeconomic development of territories. The relevance of solving this scientific problem lies in the need to enhance the role of Ukrainian universities in regional development, stimulate innovative activities, and improve the competitiveness of local economies in the face of global challenges and transformations. The authors' contribution to solving the studied scientific problem lies in defining the fundamental principles of forming a multi-centered university cluster, developing a conceptual model of its functioning based on the analysis of the successful experience of the Ruhrvalley38 industrial-university cluster (Germany), and proposing a methodology for evaluating the efficiency of such clusters, considering the specifics of socially significant projects. The study of the formation and efficiency assessment of multi-centered university clusters in the article follows the following logical sequence: the relevance of the research is substantiated and its aim defined; a literature review is conducted on the conception of the «third mission» of universities and cluster initiative experiences; fundamental principles for forming the institutional foundation of a multi-centered university cluster are formulated; the project-based approach and interaction formats of the Ruhrvalley38 university-industrial cluster are analyzed to identify possibilities for its adaptation to Ukrainian conditions; a conceptual cooperation scheme within a multi-centered university cluster is proposed; a methodology for assessing the efficiency of a multi-centered university cluster is developed, using the socially significant educational project «University of the Tertiary Age» as an example, applying a qualimetric approach. The methodological tools used in this study include methods of systematization and generalization of scientific literature, comparative analysis, modeling, expert surveys, and qualimetric evaluation. The object of the research is the process of formation and functioning of multi-centered university clusters, as well as the assessment of their efficiency based on a specific socially significant project. These clusters serve as key elements in implementing the «third mission» of universities and contribute to their integration with the external environment. The proposed conceptual scheme of cooperation in a multi-center university cluster involves establishing close interaction between the research and production cycles, as well as the creation of a permanent project office to coordinate innovation activities. The study empirically confirms the possibility of using a qualimetric approach to assess the efficiency of socially significant projects implemented within university clusters, using the example of an existing project. The results of the expert assessment confirmed the practical value of the proposed methodology. The scientific novelty of the obtained results lies in the development of the theoretical foundations for the formation of multi-centered university clusters based on the integration of synergy principles, social orientation, and holistic marketing. For the first time, a conceptual model of cooperation among cluster participants has been proposed, along with a methodology for assessing the efficiency of their activities using a qualimetric approach adapted for the evaluation of socially significant educational projects. The practical significance of the results obtained lies in the possibility of using the developed theoretical foundations and methodological approaches for the formation and assessment of the efficiency of university multi-center clusters in Ukraine, which will contribute to the activation of innovative activity, the development of regions and the improvement of the quality of education. The proposed methodology for assessing efficiency can be applied to monitor and improve the activities of existing and future university cluster initiatives.*

***Keywords:*** *third mission of universities; multi-centered university cluster; project-based approach; efficiency; qualimetric approach; holistic marketing.*
***Fig.:*** *2.* ***Tabl.:*** *6.* ***Formulae:*** *2.* ***Bibl.:*** *15.*

***Chaika Inna P.*** *– PhD (Economics), Associate Professor, Associate Professor of the Department of Management, Poltava University of Economics and Trade (3 Ivana Banka Str., Poltava, 36003, Ukraine)*
***E-mail:*** *nchajca@ukr.net*
***ORCID:*** *https://orcid.org/0000-0002-8489-3015*
***Kononenko Olena A.*** *– Senior Lecturer of the Department of Business Foreign Languages, Poltava University of Economics and Trade (3 Ivana Banka Str., Poltava, 36003, Ukraine)*
***ORCID:*** *https://orcid.org/0000-0002-8307-9302*



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***Чайка І. П., Кононенко О. А. Формування та оцінка ефективності університетських кластерів у контексті регіонального розвитку***

*У статті узагальнено результати наукової дискусії щодо ролі та механізмів формування університетських багатоцентрових кластерів як інструменту регіонального розвитку та реалізації «третьої місії» університетів. Основною метою дослідження є розробка теоретичних засад і методологічних підходів до формування та оцінки ефективності таких кластерів з урахуванням міжнародного досвіду та специфіки українського контексту. Систематизація літературних джерел і підходів до вирішення проблеми взаємодії університетів із зовнішнім середовищем засвідчила зростаючу увагу науковців до кластерних ініціатив та ефективного механізму поєднання освіти, науки та практики для сприяння соціально-економічного розвитку територій. Актуальність вирішення цієї наукової проблеми полягає в необхідності посилення ролі українських*

*університетів у регіональному розвитку, стимулювання інноваційної діяльності та підвищення конкурентоспроможності місцевих економік в умовах глобальних викликів і трансформацій. Авторський внесок у вирішення досліджуваної наукової проблеми полягає у визначенні фундаментальних принципів формування багатоцентрового університетського кластера, розробці концептуальної моделі його функціонування на основі успішного досвіду промислово-університетського кластера Ruhrvalley38 (Німеччина) та пропозиції методології оцінки ефективності таких кластерів з урахуванням специфіки суспільно значущих проєктів. Дослідження формування та оцінки ефективності багатоцентрових університетських кластерів у статті викладено в такій логічній послідовності: обґрунтовано актуальність дослідження та визначено його мету; проведено огляд літератури щодо концепції «третьої місії» університетів та досвіду кластерних ініціатив; сформульовано фундаментальні принципи формування інституційного підґрунтя багатоцентрового університетського кластера; проаналізовано проєктний підхід і формати взаємодії університетсько-промислового кластера Ruhrvalley38 з метою виявлення можливостей його адаптації до українських умов; запропоновано концептуальну схему кооперації в межах багатоцентрового університетського кластера; розроблено методологію оцінки ефективності багатоцентрового університетського кластера на прикладі суспільно значущого освітнього проєкту «Університет третього віку» із застосуванням кваліметричного підходу. Методологічний інструментарій, використаний у цьому дослідженні, включає методи систематизації та узагальнення наукової літератури, порівняльного аналізу, моделювання, експертних опитувань і кваліметричного оцінювання. Об'єктом дослідження є процес формування та функціонування багатоцентрових університетських кластерів, а також оцінка їхньої ефективності на прикладі конкретного суспільно значущого проєкту. Ці кластери слугують ключовими елементами в реалізації «третьої місії» університетів та сприяють їхній інтеграції із зовнішнім середовищем. Запропонована концептуальна схема кооперації в багатоцентровому університетському кластері передбачає встановлення тісної взаємодії між дослідницьким і виробничим циклами, а також створення постійно діючого проєктного офісу для координації інноваційної діяльності. Дослідження емпірично підтверджує можливість використання кваліметричного підходу для оцінки ефективності суспільно значущих проєктів, що реалізуються в межах університетських кластерів, на прикладі діючого проєкту. Результати експертного оцінювання підтвердили практичну цінність запропонованої методології. Наукова новизна отриманих результатів полягає в розробці теоретичних засад формування багатоцентрових університетських кластерів на основі інтеграції принципів синергії, соціальної орієнтованості та холістичного маркетингу. Вперше запропоновано концептуальну модель кооперації між учасниками кластера, а також методологію оцінки ефективності їхньої діяльності із застосуванням кваліметричного підходу, адаптованого для оцінювання суспільно значущих освітніх проєктів. Практичне значення отриманих результатів полягає в можливості використання розроблених теоретичних положень і методологічних підходів для формування та оцінки ефективності університетських багатоцентрових кластерів в Україні, що сприятиме активізації інноваційної діяльності, розвитку регіонів та підвищенню якості освіти. Запропонована методологія оцінки ефективності може бути застосована для моніторингу та вдосконалення діяльності існуючих і майбутніх університетських кластерних ініціатив.*

***Ключові слова:*** *третя місія університетів; багатоцентровий університетський кластер; проєктний підхід; ефективність; кваліметричний підхід; холістичний маркетинг.*

***Рис.:*** *2.* ***Табл.:*** *6.* ***Формул:*** *2.* ***Бібл.:*** *15.*

***Чайка Інна Петрівна*** *– кандидат економічних наук, доцент, доцент кафедри менеджменту, Полтавський університет економіки і торгівлі (вул. Івана Банка, 3, Полтава, 36003, Україна)*

***E-mail:*** *nchajca@ukr.net*

***ORCID:*** *https://orcid.org/0000-0002-8489-3015*

***Кононенко Олена Анатоліївна*** *– старший викладач кафедри ділової іноземної мови, Полтавський університет економіки і торгівлі (вул. Івана Банка, 3, Полтава, 36003, Україна)*

***ORCID:*** *https://orcid.org/0000-0002-8307-9302*

A community that has a university on its territory has the potential to transform its region by educating people and implementing research results. The formation of a university multi-center cluster on a specific topic, combining education with research within it and their subsequent practical application is a way to implement the "third mission" of universities, which is understood as "the economic and social mission of universities in terms of their contribution to the development of communities and territories" [11, p. 123] and is implemented through the following main areas: transfer of technologies and innovations, continuous education, social participation [15]. The formation of a bridge between science, industry (service sector) and society gives rise to the development of small and medium-sized enterprise startups. Both Ukrainian and foreign scholars argue that cluster structures can serve as a key driver for enhancing the innovation potential of various economic sectors and stimulating regional development [1–3; 12]. At the same time, clusters require well-developed methodological foundations for their formation and the establishment of systematic cooperation among all entities involved [4; 6; 7]. Furthermore, developing applied tools to evaluate the performance of such entities, technology transfer, and joint project implementation is gaining critical importance [8; 10; 13]. However, "moving beyond the university's activities into the regional socioeconomic system and becoming a real partner in the current transformation and change process is problematic even for large universities of applied sciences…" [14, p. 371].

The *aim of the article* is to provide a theoretical substantiation of the principles of formation and to develop organizational and applied tools for the functioning of a university multi-center cluster by modeling the system of interaction among its participants and elaborating an approach to evaluating project efficiency.

To achieve the set aim, the following research objectives were defined and solved:

- to identify the fundamental principles of forming the institutional basis and outline the stages of developing a university multi-center cluster based on holistic marketing;
- to analyze international experience of functioning and the structure of the innovation-educational project portfolio to evaluate its adaptation potential in Ukraine;
- to develop a conceptual cooperation model and an interaction scheme for participants (authorities, business, higher education institutions, community) within a multi-center university cluster;
- to propose and test a methodology for evaluating the efficiency of cluster projects to ensure objectivity in subsequent management decision-making.

At the initial stage, it is necessary to determine the fundamental principles and distinguish the stages of the formation of a university multi-center cluster. According to the author, the fundamental principles of forming the necessary institutional basis for the functioning of the university multi-center cluster should be:

**1.** Cooperation within the cluster is not based on competition between participants, but on complementing each other's capabilities in order to obtain a synergy effect from this activity.

**2.** Adherence to participatory decision-making methods in management, setting goals and directions for development, which involves democratization and decentralization of management due to the partnership participation of stakeholders in these processes.

**3.** Transdisciplinary approach to project execution – "reading" of the task from the unique point of view of the involved performers.

**4.** The focus of attention is not only on the commercialization of results, but wider – on the creation of social added value.

**5.** Application of holistic marketing as a holistic approach to planning, development and implementation of marketing programs, processes and activities that ensure the functioning of the cluster.

## LITERATURE REVIEW

It is advisable to organize the work of the cluster at the initial stage, relying on the existing successful experience. For example, on the experience of the project approach of the university industrial cluster Ruhrvalley38, which was founded to promote the development of the Ruhr region (Germany): "Cluster management is based on a project approach, which consists in the formation of a project portfolio, professional management of individual projects and controlling and development of various formats of innovation and education" [14, p. 370]. Financing combines State and private investments [14, p. 373]. Let us consider a set of project formats and interaction formats in the Ruhrvalley38 to further analyze the possibility of applying this experience in the formation of national multi-center university clusters (*Tbl. 1*).

The result of cooperation between partners from industry and science within the framework of the projects, the portfolio of which is given in Tbl. 1, is the successful implementation of engineering developments into practice. In addition, the results are new educational formats and measures of social involvement of citizens.

## METHODOLOGY AND RESEARCH METHODS

In order to achieve the set aim and solve the research objectives, a set of complementary scientific research methods was applied:

- systematization and generalization of scientific literature allowed us to identify key issues related to the formation and assessment of the efficiency of university clusters, in particular regarding their impact on regional development;
- comparative analysis was used in the process of studying international experience in the functioning of university industrial clusters in order to identify the potential for its adaptation in Ukraine;
- a conceptual model of cooperation in a multi-center university cluster was developed using the modeling method, which reflects the key elements and relationships between its participants;
- an expert survey was used to assess the practical significance and efficiency of the activities of the university multi-center cluster;
- the quantitative assessment of the qualitative parameters of the efficiency of the socially significant educational project "University of the Tertiary Age" was carried out on the basis of a qualitative assessment, which involves the construction of a hierarchical structure of indicators, the determination of their weighting coefficients and an expert assessment of the significance of the criteria followed by the calculation of integral indicators of efficiency.

Methodological limitations of the study are the impossibility of covering a wide range of existing models of university clusters due to the scope of the article. A certain limitation of the study is also the illustration of the proposed methodology for assessing efficiency

Table 1

**Ruhrvalley38 project portfolio**

| Project format | Type | Description |
|---|---|---|
| RuhrValley FOUNDATION | Research and development | Typically designed for 2–3 years. R&D projects are industry and university consortia. They have a clear development goal and a plan for dissemination and exploitation for further transfer into use. These projects are also educational in terms of collaboration in a consortium |
| RuhrValley FLOT | Research and development | FLOT projects have a strong research focus and do not necessarily end in application. They become the basis for the following FOUNDATION projects |
| RuhrValley BENEFIT | Recruitment | The BENEFIT tool focuses on bringing in the right experts. It combines various tools for attraction and recruitment |
| RuhrValley FREELY | Experiment | The FREE tool serves as a pool of several small tools for implementing innovations and projects. This can be available staff/time, money, technology (e. g. laboratories) and consulting |
| RuhrValley INNOCOLLEGE | Training | INNOCOLLEGE is a tool for training, continuing education and discussion. It is affiliated with the Ruhr Master School, which is the main provider of new personnel |
| RuhrValley Startup | Transfer | The STARTUP format combines consulting, training and finance for entrepreneurship and the creation of new companies |
| RuhrValley small and medium-sized enterprises | Transfer | Designed for small and medium-sized businesses with specific project formats that enable the transfer of innovations from the RuhrValley into marketable products |
| RuhrValley LEADERSHIP | Management | It is the coordinating center for activities in the RuhrValley. It is also complemented by the RuhrValley CORE TEAM, the RuhrValley MANAGEMENT BOARD and the RuhrValley CONVENTION |

**Source:** composed based on [14, p. 376].

by one social project, which may limit the use of the results for projects of other types. The obtained results of the statistical analysis are based on the subjective assessments of experts, which is a characteristic feature of this method and its limitations. In order to increase the reliability of the results of the qualimetric assessment, a representative sample of qualified experts was taken and a standardized assessment scale was used. Therefore, we believe that the described methodological approaches and research methods are sufficient to verify the main provisions of the article and justify the obtained results.

## RESULTS

Ruhrvalley38 puts forward a number of requirements for its management system, which are useful to take into account when forming multi-center university clusters in Ukraine:

**1.** Organization based on the project approach allows achieving the general goal of cluster activity by achieving the goals of individual projects. The interaction of partners in individual projects brings results for other projects, partners, clients, and the Ruhr region as a whole. Therefore, when forming a multi-center university cluster, Ukrainian universities must take into account the need to develop a portfolio of different types of projects that could complement each other, enrich other projects with the results obtained within the framework of one project. Such a system requires skillful management.

**2.** The strategy is embedded in the Ruhrvalley38 road map: projects are defined, executed and monitored within it according to the principle of the pipeline. This pipeline includes a corresponding gateway stage for further promotion of projects. For a national multi-center university cluster, the implementation of such an approach should consist in creating a kind of innovation funnel, which includes: generating a way to solve a problem or meet the needs of potential consumers; scientific and research works for the development of a suitable product or service; direct production; social involvement of citizens in the perception of innovation and its further use. The proposed innovation funnel includes stages from the setting of a "trend radar" to determine the priority of projects that will enter the pipeline, to diffusion with society – the process of its perception of a new technology.

**3.** The Ruhrvalley38 approach is not only about creating, but also about transferring innovations through the development of people. That is why the

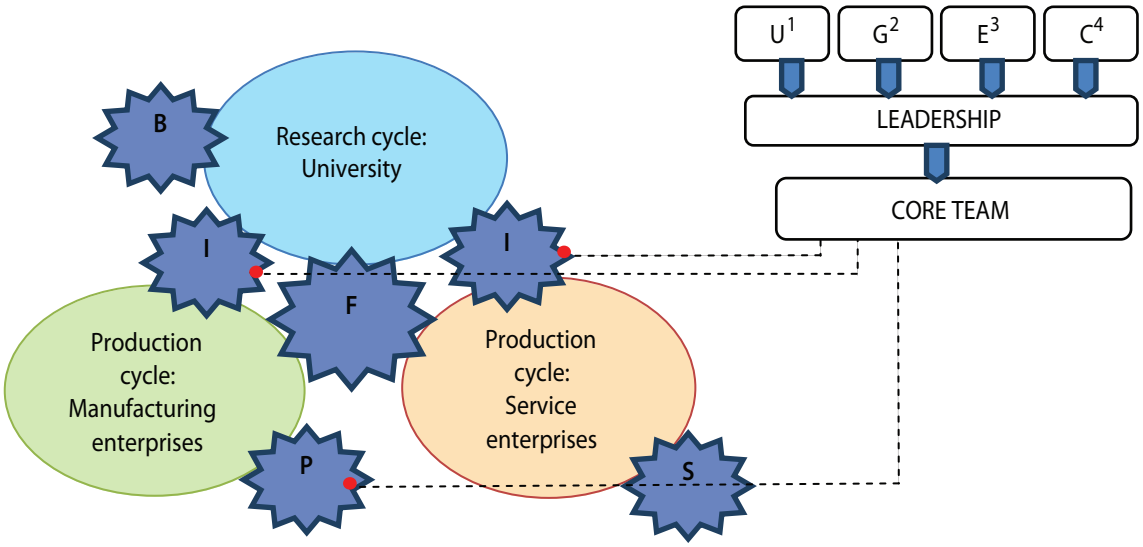
industrial-university cluster is combined with the Ruhr Master School and continuing education programs. For the national multi-center university cluster, this means the need to create efficient mechanisms for the professional adaptation of adults and the elderly through the development of a lifelong learning system. It is extremely important to communicate the results of this or that project to the community, to encourage the use of the new process, and to adapt the system in such a way as to make it a training ground for partners to expand the possibility of application in other industries, a driver of further cooperation.

**4.** For the development of partnership and trust, Ruhrvalley38 builds a high-density network of interaction of partners, based on individual formats of cooperation. For a national cluster, this means building cooperation on the basis of high intensity of contacts between representatives of the authorities, local governments, educational institutions and business. We propose a project of a cooperation system in a multi-center university cluster, which is organized as an interaction of partners and stakeholders within the framework of a specific consortium (*Fig. 1*).

Formed cycles (research, production) form partnerships by interacting with each other and other stakeholders, developing long-term, mature systems, in which cooperation is built holacratically (power and decision-making are distributed among self-organizing teams). Such a flexible management system encourages self-organization and personal responsibility at all levels, uses short decision-making paths for faster and more efficient work, and helps reveal the best in talented people. By moving away from traditional management hierarchies, moving to management at the level of flexible teams and decentralized decision-making, a valuable environment is developed that gives everyone the freedom to realize their own ideas and projects together with other highly motivated people.

Innovation is generated if the research and production cycles establish contact and cooperate. Each of these partner systems will have its own specific traditions, standards, procedures and ways of cooperation of the cycles within the framework of joint projects. At the same time, along with the different traditions and procedures of the involved cycles, the project formats should be adapted step by step according to the purpose of the cooperation. The management of the interaction of cycles, including all different project formats, forms a kind of «project ring», which is organized by the leadership of the multi-center university cluster through interaction with the «core team» (see Fig. 1), which functions on a permanent basis and, in turn, cooperates with all partner systems.

In practice, the «project ring» puts forward certain requirements for the management of the indus-




Where:

$U^1$ – University;
$G^2$ – local government bodies;
$E^3$ – enterprises;
$C^4$ – community, other stakeholders

B – BENEFIT project;
F – FOUNDATION project;
I – INNOCOLEDGE project;
S – STARTUP project;
P – Small and medium-sized enterprises project

**Fig. 1. Scheme of interaction in a multi-center university cluster**

**Source:** adapted by the authors based on [14, p. 375].

trial-university cluster. Management should directly support its role as an environment for testing ideas and development, develop it as a kind of innovative incubator and training ground for all involved in order to determine the optimal formats of interaction between partners. Therefore, the mission of the management is to develop target settings for the cluster's work and propose solutions to them, form the commitment of project participants and make them drivers of the cluster's development.

The core team as a permanently functioning management office coordinates the pipeline of innovation, finance and commercialization. In addition to the professionals permanently working in the office, their managers are automatically included in the core team for the period of project implementation. Those managers are responsible for performing tasks at the operational level of cluster management within their area of responsibility, namely: generating reports for investors and supporting inspections during the monitoring of the stages of projects being implemented, systematically informing stakeholders (State bodies, local self-government bodies, the community) about the results achieved within the project, popularizing new products and services obtained thanks to the project, etc.

In turn, the responsibilities of permanent members of the core team include: searching for ideas for creating new projects with a focus on commercial research and development, monitoring activities and financial control according to the system of indicators of the cluster, forming general reports on the activities of the cluster and the pipeline of its projects, developing and presenting strategic plans for the development of the cluster to the management (*Fig. 2*).

The leadership, which consists of representatives of the university administration, student self-government bodies, local self-government bodies, enterprises, and civil society, considers and approves the cluster development strategy and monitors the activities of the core team. At the same time, the university is a scientific foundation that provides the architecture of a three-level system of actions (according to 4, Fig. 1) and the scheme of interaction in a multi-center cluster (according to Fig. 1), covering their full technological chain, forming long-term cooperation with partners for the commercialization of the obtained innovations.

We would like to point out that the university multi-center cluster should be distinguished from other associations (whose goal is joint lobbying of their business interests) by a clear focus on producing innovations and increasing the competitiveness of participants due to efficient cooperation and collaboration. This requires measuring the efficiency of activities on the basis of developed key performance indicators – both financial and non-financial, which will allow cluster participants to assess the degree of achievement of strategic goals.

Generally accepted methodology for assessing the efficiency of a project is an algorithm consisting of three stages [9]: 1) expert assessment of the social significance of the project; 2) calculation of project efficiency indicators as a whole – integral economic

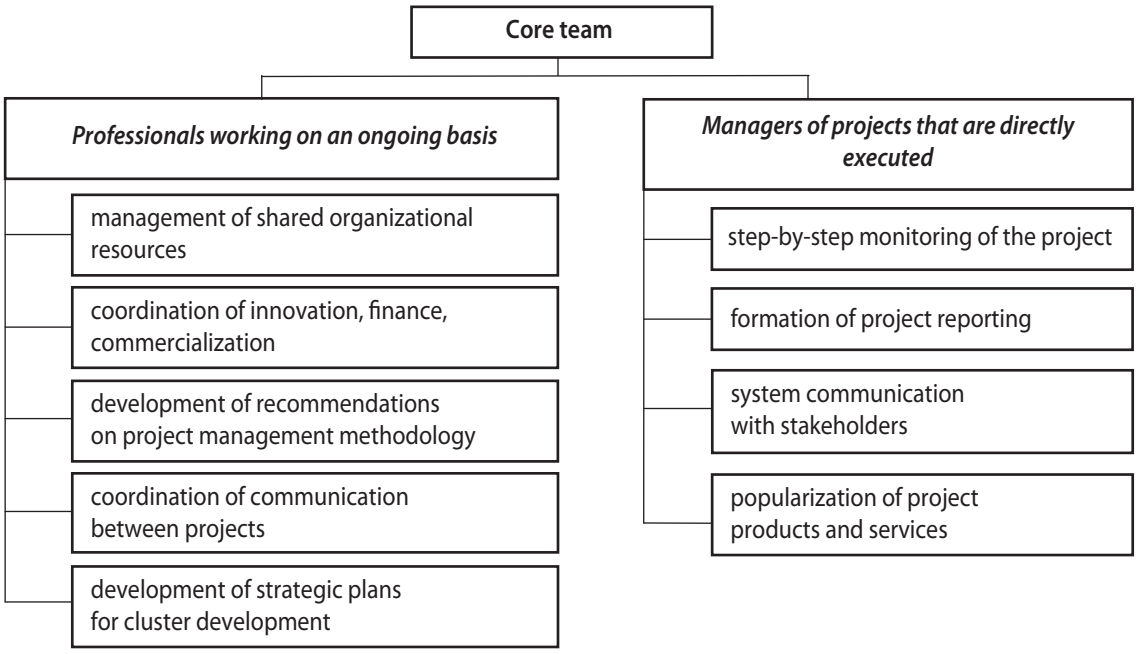



**Fig. 2. Structure and areas of activity of the core team of the multi-center university cluster**

**Source:** created by the authors.

evaluation of project decisions; 3) clarification of the composition of participants and determination of the financial feasibility and efficiency of participation in the project of each of them. Further, on this basis, we propose a methodology for assessing the efficiency of the activities of a university multi-center cluster, taking into account the specifics of this type of interaction.

Let us consider these stages on a specific example. The university together with partners (public organizations, municipal organization, two other universities of the city) implements the project «University of the Tertiary Age» (UTV) for people aged 60 and older. Its goal is to create conditions for people aged 60 and older, which contribute to the achievement of the 4th Global Goal of Sustainable Development of the United Nations at the regional level (city level): «Ensuring comprehensive and fair quality education and the opportunity to study in for everyone». The project receives support from the City Council and is partially financed from the funds of city programs.

Therefore, at the first stage, we will conduct an expert assessment of the social significance of the project. Traditionally, large-scale, global projects are considered socially significant. In our case, the project is geographically implemented for residents of one city, one territorial community, but is part of a global project implemented by the country within the framework of the State policy in the field of adult education, contributing to Ukraine's achievement of the UN Sustainable Development Goals. Therefore, from this point of view, the project can be considered socially significant.

For further assessment, it is first necessary to formulate the task of the examination – the main question that embodies the essence of the problem. In our case, the task will be to determine whether the functioning of the UTV as an institution affects the improvement of the quality of life of people aged 60 and older by providing them with the opportunity for lifelong learning, as stated in the project objective. The results of expert assessment should contribute to increasing the validity of decisions regarding the use of a certain set of offered training courses and the means that provide them. After formulating the main question, it must be divided into sub-questions in such a way as to limit the field of consideration only to those without answers to which the answer to the main question cannot be obtained.

It should be noted that in our case, the expert forecast is focused on the consumer and is designed to establish the desirability and necessity of individual training courses, the terms of their provision and the degree of provision (educational materials, technical means, etc.).

The next step is to develop a detailed expert assessment program. It consists in developing an exhaustive list of events and parameters to be assessed by defining a list of factors that characterize these events or parameters. The resulting list of parameters allows us to determine the number and profile of experts who need to be involved in the assessment. The main requirements for experts are the availability of relevant qualifications and experience in the researched issues, which will allow the expert to understand the variety of connections between individual components of the phenomenon under analysis.

When assessing the efficiency of a separate project within the framework of a multi-center university cluster, it would be advisable to use a qualimetric approach, which involves the implementation of the following actions [5]:

1. Construction of the hierarchical structure of indicators.
2. Definition of the absolute indicators.
3. Determination of absolute reference indicators.
4. Determination of weight coefficients.
5. Definition of comprehensive assessment.

That is, the qualitative approach allows you to carry out a quantitative assessment, measure the efficiency of a complex process using a scale of points, which, in turn, allows you to make informed decisions. In *Tbl. 2*, we offer a list of indicators for determining the efficiency of a socially significant project implemented by a university cluster.

Tbl. 2 proposes 10 factors that determine the efficiency of the implementation of a socially significant project, as well as their approximate weight coefficients. It is these weight coefficients that were proposed based on the analysis of the scientific and methodological development «Quantitative Methods of Expert Evaluation» [9, p. 23–24] and taking into account the specifics of the project that was selected for the study. Experts should determine the quantitative indicators according to each criterion (weight of the criterion), taking into account that the reference absolute indicator of each criterion is equal to one. Also, experts should determine the absolute indicators of the criteria, formulating their assessment for each in the following way: completely inefficient, inefficient, poorly efficient, efficient or highly efficient. In this case, one is chosen as the reference absolute indicator of the criterion (*Tbl. 3*).

As a result, the qualimetric method allows us to quantitatively assess qualitative parameters – to reflect them in coefficients. The estimated factor efficiency indicator is calculated as the sum of the products of the weight and significance of the criteria [9, p. 24]:

$$\Phi_i = \sum K_i^{\epsilon} K_i^{з}, \quad \textbf{(1)}$$

Table 2

**Indicators for assessing the efficiency of a socially significant educational project**

| Factor | Criteria | The importance of the criterion |
|---|---|---|
| 1 | 2 | 3 |
| 1. Structure of the training content | Compliance of the proposed training courses with the requirements of time and the purpose of the project | 0.30 |
| | Assessment of the level of transformation of empirical and theoretical knowledge (obtained by the trainees) into beliefs, skills and abilities | 0.30 |
| | Correspondence of the training schedule with the purpose of the project | 0.25 |
| | Assessment of duplication of the educational content of the proposed training courses | 0.15 |
| 2. Content of training courses | Correspondence of the content of the training courses to the declared topic and purpose | 0.30 |
| | Correspondence of the training materials to the tasks and competencies declared in the training program, which the student must acquire | 0.30 |
| | Clarity of the tasks set in the training program | 0.25 |
| | Correspondence of the actual attendance of classes by the students, the ability to learn and master the training materials | 0.15 |
| 3. Control over the activity | Certainty of project control at the institutional level | 0.40 |
| | Monitoring of the main areas of activity | 0.60 |
| 4. Managerial decision-making procedure | The relevance of the decisions of the project manager | 0.25 |
| | Level of collegiality in decision making | 0.25 |
| | Level of decentralization regarding decision-making | 0.25 |
| | Support for the expression of initiative by the personnel | 0.25 |
| 5. Management of personnel | Project Executors Selection Procedure | 0.30 |
| | Project Executors Training | 0.30 |
| | Performance Evaluation System | 0.40 |
| 6. Organizational culture | Vertical project relationships | 0.25 |
| | Attitude of project participants towards work | 0.25 |
| | Horizontal project relationships | 0.25 |
| | Pride in the project | 0.25 |
| 7. Incentive system | Correspondence of the level of payment of project executors to their expectations | 0.30 |
| | Correspondence of the level of payment of project participants to their real contribution | 0.30 |
| | Availability of a bonus system | 0.25 |
| | Availability of a system of intangible incentives | 0.15 |
| 8. Political culture | Openness and transparency of project work | 0.35 |
| | Leadership style | 0.30 |
| | The level of relationships between project managers and representatives of the city (regional) administration and public organizations | 0.20 |
| | Openness of the project for media representatives | 0.15 |
| 9. Interaction of different institutions in the project | Level of interaction of partners in the project (from the authorities, local governments, educational institutions and businesses) | 0.25 |

*End of the Tbl. 2*

| 1 | 2 | 3 |
|---|---|---|
| | Participation of partners in the decision-making process (openness) | 0.25 |
| | Established system of citizens' access to information about the project and consultations | 0.25 |
| | Level of support for citizen proposals | 0.25 |
| 10. Interaction with local governments | Level of cooperation of the project with local governments | 0.60 |
| | System for resolving potential conflicts between the project and local governments | 0.40 |

**Source:** created by the authors based on [9, p. 23–24].

**Table 3**

**The scale for evaluating the coefficients of significance**

| Criteria of the coefficients of significance | | | | |
|---|---|---|---|---|
| **completely inefficient** | **inefficient** | **poorly efficient** | **efficient** | **highly efficient** |
| 0 | 0.25 | 0.5 | 0.75 | 1.0 |

**Source:** created by [9, p. 24].

where: $\Phi_i$ – estimated indicators of factors that affect the efficiency of the project;

$K_i^в$ та $K_i^з$ – coefficients of weight and significance of the criteria of the corresponding *i*-th factor.

Having received the values for each factor, the overall indicator of the efficiency of the project implemented by the university cluster is estimated:

$$E = \sum \frac{1}{N} \sum \Phi_i, \quad (2)$$

де $N$ – the total number of factors being evaluated.

*Tbl. 4* presents a scale for interpreting the final results of a study on the efficiency of the implementation of a socially significant project.

**Table 4**

**Project Implementation Efficiency Assessment Scale**

| Efficiency factors | | | | |
|---|---|---|---|---|
| **very low** | **low** | **average** | **high** | **very high** |
| 0.1–0.2 | 0.21–0.4 | 0.41–0.6 | 0.61–0.8 | 0.81–1 |

**Source:** improved by the authors based on [9, p. 25].

In January 2025, we conducted an expert evaluation of the UTV project. The experts were individuals who previously gained experience working in the project or continue to be teachers of the project. All experts have the appropriate qualifications and experience in the issues under study, which allows them to assess both individual components of the project and the variety of connections between them. The total number of teachers participating in the UTV project in the 2024–2025 academic year is 36 people. Approximately the same number of teachers participate in the project every year. A total of 11 experts responded, which is 30.6% of the total number of project participants. Such a sample can be considered representative according to the statistical significance formula, that is, one that adequately reflects the general opinion of the group. The result of the evaluation of one of the experts is presented in *Tbl. 5*.

*Tbl. 6* shows the final results of the expert assessment, and *Fig. 3* visualizes them.

As can be seen from Fig. 3, nine out of eleven experts consider the project to be highly efficient, two – classified it in the category of «average efficiency» with the highest possible result for this category – 6.0. It is worth noting that four out of ten experts rated factor seven – the «incentive system» as inefficient. It should be noted that the overall result of the assessment of the factor was significantly influenced by the criterion «presence of a bonus system» – here all experts gave 0 points, and such an assessment is objective, because bonuses are not provided for in the project and funds for bonuses are not laid out according to its terms. Project teachers are familiar with these terms in advance. At the same time, the overwhelming number of experts rated above average the criteria «correspondence of the level of payment of project executors to their expectations» and «correspondence of the level of payment of project participants to their real contribution», which also belong to the «incentive sys-

Table 5

**The result of the evaluation of the educational project «University of the Third Age» by one expert**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Validity | 0.3 | 0.3 | 0.4 | 0.25 | 0.2 | 0.2 | 0.25 | 0.35 | 0.25 | 0.5 |
| | 0.2 | 0.3 | 0.6 | 0.2 | 0.15 | 0.2 | 0.2 | 0.3 | 0.2 | 0.4 |
| | 0.25 | 0.25 | | 0.2 | 0.3 | 0.25 | 0 | 0.1 | 0.25 | |
| | 0.15 | 0.1 | | 0.25 | | 0.25 | 0.15 | 0.15 | 0.25 | |
| Significance | 0.75 | 0.75 | 1 | 0.75 | 0.75 | 0.75 | 0.5 | 0.75 | 0.75 | 1 |
| F1 | 0.68 | 0.71 | 1 | 0.68 | 0.49 | 0.68 | 0.53 | 0.68 | 0.71 | 0.9 |
| Total | | | | | | | | | | 0.71 |

**Source:** created by the authors.

Table 6

**Full results of the expert evaluation of the «University of the Third Age» educational project**

| Experts | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Result | 0.75 | 0.63 | 0.77 | 0.78 | 0.6 | 0.6 | 0.61 | 0.66 | 0.71 | 0.69 | 0.7 |

**Source:** created by the authors.

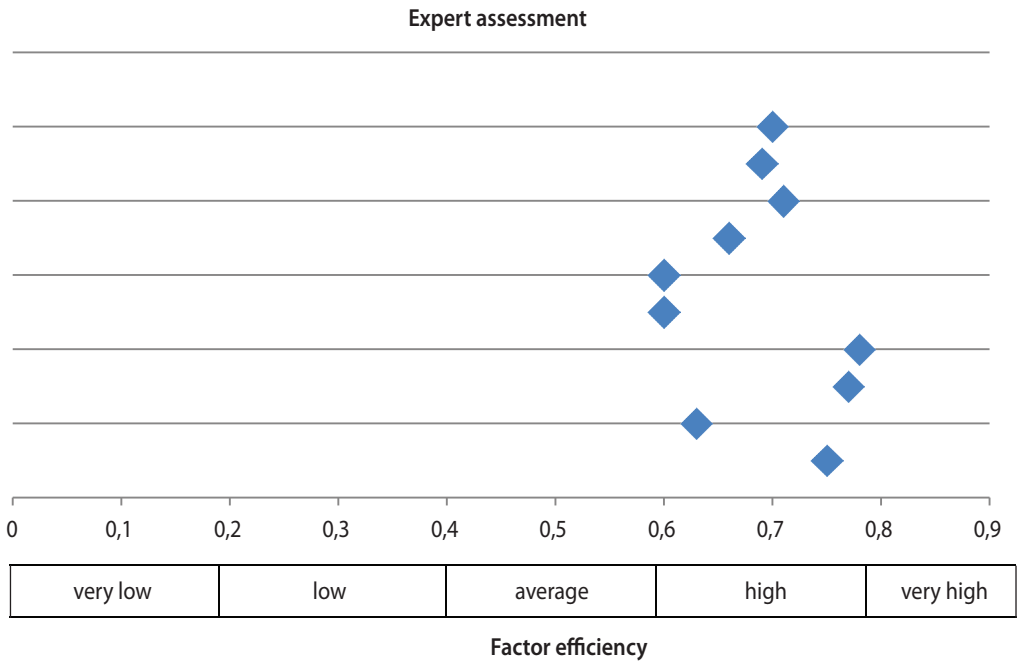



**Fig. 3. Full results of the expert evaluation of the «University of the Third Age» educational project**

**Source:** created by the authors.

tem» factor. This is certainly a positive factor, indicating that overall project participants are satisfied with the remuneration for work in the project.

In our opinion, the use of a qualimetric approach allows us to fairly objectively assess the quality of the support provided by the project, the quality of implementation in the project, the level of interaction of project partners, etc., to assess the overall efficiency of the project and, based on the data obtained, to make reasonable decisions regarding its improvement.

## CONCLUSIONS

Summing up, we note that the management of a multi-center university cluster based on a project approach involves project portfolio management, professional management of individual projects (which include various formats of innovation and education) and controlling. Management is carried out by a central project office, which works in close cooperation with the leadership of the university (or several universities, other educational institutions), enterprises,

local governments, other organizations and the public. The efficiency of activities is measured by assessing key performance indicators for both an individual project and the cluster as a whole.

In general, the formation and further successful functioning of a university multi-center cluster will contribute to solving the tasks of increasing the efficiency of the functioning of higher education institutions on the basis of marketing management through continuous improvement and innovation; clear goals and objectives of the activity; modern, high-quality academic programs for training students with elements of practical training; interested in professional development and motivated teachers; students who are successful in personal and professional development – that is, the practical implementation of the conceptual model of increasing the efficiency of the functioning of higher education institutions based on its key components.

Future research in this area should focus on expanding the diversity of the university multi-center cluster's project portfolio by integrating new formats of research, innovation, and educational initiatives. ■

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