

PUBLIC MANAGEMENT OF THE DEVELOPMENT OF THE HIGHER EDUCATION SYSTEM IN UKRAINE

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Abstract: The article considers core challenges and problems of public management of Ukrainian higher education system within the global landscape of higher education development. Systemic analysis of factors influencing higher education system in Ukraine is carried out based on complex vision, including social and political factors. Overall trends and practices observed in higher education of different countries is carried out, with outlining of the state-of-the-art and prospects of Ukrainian higher education on the background of this landscape. Penta helix model is mentioned as one of potentially effective directions to be included in public management of Ukrainian higher education system development.

Keywords: higher education system; public management; penta helix; international student mobility; university; ranking.

1 Introduction

At the present stage of development of Ukrainian society, an important place is given to education as a universal value and as one of the main national projects. Education as a sociocultural phenomenon reflects the state and prospects for the development of the state and society as a whole and at the same time influences them. The Ukrainian education system, in terms of its historical and economic indicators, cannot be isolated from the world education system. Because of this, the beginning of the 21st century is marked by its rapid integration into the continental and planetary educational space on the legal basis, ideas and principles accepted by the European and global scientific and educational community as priorities. The education system of Ukraine solves problems similar to those facing the national educational systems of other countries [11-16]. These include: modernization of the existing education system in the state in order to give it greater flexibility and mobility, a harmonious combination of unified world indicators and national identity; designing of criteria and procedures for examining the dynamics of development of this system, development of effective modern mechanisms for its state support; improvement of legislation in the field of education, etc. [21; 25; 27].

The system-forming principle of modern university management technology is the internationalization of education, covering almost all aspects of educational activity. Modern technologies for managing universities represent an innovative process that includes scientifically developed goals and practical methods for solving existing problems. Internationalization as an innovative management technology in the field of education is applied at the national, regional, sectoral, and institutional levels. Through the use of this technology, the goals, functions, and mechanism for providing educational services become international in nature. Currently, the internationalization of education is included in state policy aimed at solving national, political, social, and economic issues. All this greatly complicates the landscape of public management of the development of higher education in comparison with the management of higher education characteristic of the 20th century.

In a world with globalization trends, where the knowledge economy has become the basis for the development of states, the demand for higher education not only is increasing quantitatively, but also becoming more diversified and adapted to the new needs of the modern economy, which generates new industries due to the development of innovative technologies and is characterized by "globalizing professions". As a result, in the context of globalization, leading to the erasing of economic boundaries and, to a certain extent, the boundaries of national jurisdictions, the global higher education market as a whole, including its components - national higher education markets - has become a separate sector of the world economy with billions in sales volumes and millions of consumers. The competition of national higher education systems in the global higher education market has become a key element in the global competition of national economies, while issues related to generating income in the global higher education market have been considered in recent decades by a number of countries (for example, the USA, Great Britain, France, Germany, and other countries) as part of their foreign economic policy.

Thus, changes in the content and scope of state activities in the management of higher education in the context of the functioning of the national and global higher education market urgently require scientific research into this issue. Meanwhile, as statistical data show, the competitiveness of Ukrainian higher education on the world stage does not show any pronounced positive dynamics. In addition, the potential of the triple helix mechanism, and even more so the quadruple- and penta helix, is poorly used. A number of Ukrainian universities do not have any officially registered scientific topics at all. Of course, it cannot be said that research is not conducted at all in such universities. But still, the absence of this very registered scientific topic (even if it is a research topic that does not necessarily require funding from the state) indicates that not all universities consider science to be a priority activity, in contrast to educational activities, which, naturally, leaves a negative imprint on the quality of higher education in terms of its compliance with the digital society and Industry 4.0. Thus, comprehensive studies of the problems and prospects of public management of the higher education system in Ukraine represent a very urgent scientific task.

2 Materials and Methods

The methodological basis of the study is represented by a set of general scientific and specific scientific methods adapted for the purposes of this study - in particular the dialectical method, problem-based, specific historical, statistical methods, and a number of others.

The study is based on the paradigm that the multifunctionality of modern higher education determines the existing variety of methodologies for its research, focused around pedagogical, philosophical, sociological, economic, historical, etc. paradigms, each of which analyzes its own aspect of the development of this complex phenomenon.

The overall methodological basis of the study is a system of knowledge about systems (open and closed), patterns and principles of development of education systems, their national and supranational characteristics. Works in the field of pedagogical and public management research methodology that reveal the essence of the systems approach serve as a general scientific methodology.

Consideration of management of the development of education as a component of the education system, which in turn is a component of a system of a higher degree of community (society, state), allows identifying the main directions of state management support for the development of the domestic education system, focused on state support for the development of education and its advanced sustainable nature.

3 Results and Discussion

In the conditions of a modern, dynamically changing society, education is rightly considered as its foundation and the most important institution of socialization. A developed national higher education system becomes an indisputable competitive advantage in the intellectual capital market, a resource that ensures the implementation of planned reforms in all spheres of public life. That is why the education system is always in the focus of attention of government authorities and civil society institutions, and plans for its modernization initiate lively discussions about the model of modern education and the need for its modernization. Interrelated projects for the transformation of both secondary and higher schools are especially actively discussed [17]. Projects of transformation of higher education, capable of responding to the challenges of our time, are of increased interest. Modernity here is understood as an era of change in the technological and educational paradigm, initiated by the fourth technological revolution, the prospects of which are difficult to predict [18]. In these conditions, the fate of the classical university, its role and significance in new historical conditions acquires special significance.

A significant historical function of the university at all times has been and remains its influence on the formation of a new sociocultural reality, in which many of the most important social institutions are created and transformed [24]. In the university environment, conditions are emerging for the formation of a new way of life. Scientific research directly related to the pedagogical process, the creation and application of new information technologies, the special atmosphere of university communication, the internationalization of education and teaching methodology become factors in the production of intellectual capital, an essential component of the response to global historical challenges.

Higher education, research, and innovation play a critical role in maintaining social cohesion, economic growth and global competitiveness. The growing demand for the skills and competencies of future specialists, for the productivity of scientific research, for projects to transform the university ecosystem sets new goals for the higher education system in developing strategies for its modernization at the level of the state and universities, and mechanisms for its implementation. At the same time, the dependence of state policy in the field of higher education observed in Ukraine on very dynamic and sometimes momentary political interests and vectors has a very negative impact both on the global competitiveness of national higher education and on the functions of higher educational institutions as drivers of positive sociocultural dynamics and formation of high-quality social capital in Ukraine.

In the unstable conditions of our time, in a situation of unpredictability, the public demand for education is changing. The sociocultural needs of the modern era determine the nature of the formation of an innovative educational paradigm, its content and structure [20]. The challenges and threats of the modern scientific and technological revolution set new directions for the development of education, require the expansion of new educational models/projects, the development of tools and forms of internationalization of higher education in full-time and distance learning formats that can respond to new needs of society. These requests must be answered by a classical university, whose role is not limited to educational and research functions. Its sociocultural mission, which forms a specific scientific, educational, intellectual environment, is of great importance. In many countries, modern universities are considered centers of development of post-industrial society due to special characteristics that distinguish them from any other higher education institutions. The high level of training of specialists at the university is due to students obtaining basic knowledge in the field of fundamental sciences, in an optimal combination of teaching natural sciences and humanities [2]. In the university space, the ability for scientific research is developed, the need to 'serve the truth' in its most developed form - scientific and theoretical - is cultivated. At a classical

university, a special intellectual environment is created in which not only highly professional, but also the moral qualities of an individual and his motivation for creativity are formed. University education is becoming the most important resource for solving modern technological problems through the application of transdisciplinary methodology at the intersection of sciences based on deep fundamental research. The results of such research are used in many sectors of the economy, production, as well as ensuring technological and environmental safety. But the main result of a university education is specialists capable of creating such products. The value of a modern classical university lies not only in the development of fundamental science and the presence of highly professional teaching activities, but also in attracting leading scientists and talented students from different countries through academic mobility tools. These tools are necessary for the implementation of an interinstitutional educational project with the participation of representatives of the state, national institutions of higher education, business, and civil society institutions, whose joint efforts are necessary for developing a strategy for higher education at the state level. In Ukraine, quality indicators of students mobility and dynamics of higher education international rating are quite alarming. As it is evident from Figures 1-4, the top ten of countries of origin of international students in Ukraine are countries of the "second" and "third" world, the so called "Global South", while many Ukrainian students strive to enter the universities of the USA and EU. Moreover, the number of Ukrainian students studying abroad is higher than the number of international students in Ukraine. Let us emphasize that these data do not include period of the current Russia-Ukraine war, that is, they are determined not by extreme factors of war condition, but purely by specific factors of social, economic, political, and educational factors in Ukraine. This evidently demonstrates not sufficient level of Ukrainian higher education competitiveness.

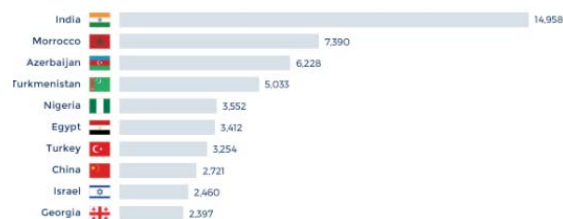


Figure 1. Top ten sending countries of international students in Ukraine [7]



Figure 2. Number of international students in Ukraine by their country of origin [6]

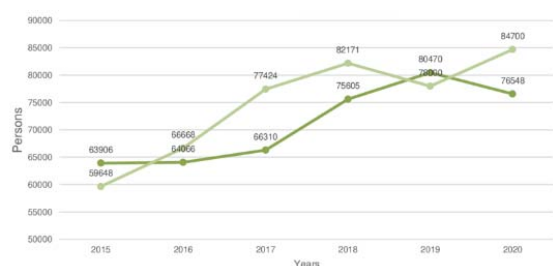


Figure 3. Dynamics of the number of foreign students in Ukraine and Ukrainian students abroad in 2015-2020 [1]

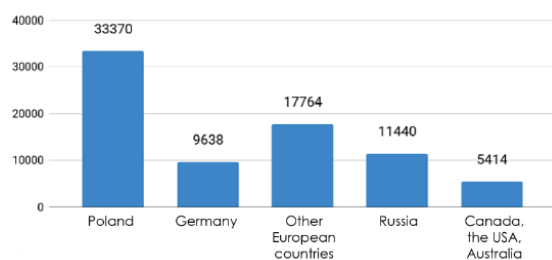


Figure 4. The number of Ukrainian students studying abroad, 2016/2017 academic year [4]

Overall, the international competitiveness of Ukraine's education system appears to have declined in recent years. "While the country ranked 25th in the 2012 ranking of national higher education systems by the Universitas 21 network of research universities, it dropped to position 38 in the same ranking in 2019" [7]. Such situation of dropping in the position by 13 points just in seven years requires immediate taking 'emergency' measures on a state level and radical change of public management paradigms concerning development of higher education system.

Results of the latest reforms in the higher education system in Ukraine can be briefly summarized as follows [19]:

1. KPIs were introduced in contracts with rectors. It includes a number of key performance indicators and deadlines for achieving them. Among the indicative components, there are the following: the level and dynamics of student employment and internships; increase in extra-budgetary revenues for scientific activities, increase in teaching in English.
2. The university funding formula has been changed. Instead of a one hundred percent correlation with the number of students, a formula of five criteria was introduced: regional coefficient, scale of the university, attraction of extra-budgetary funding, international recognition indicator, and number of students (the weight of this indicator was reduced to 80%, in the future it will be equal to 50%). At the same time, some specialties require additional equipment for the educational process. Therefore, one engineer "costs" 60% more than an economist. This "encourages polytechnics not to chase after lawyers" [19].
3. Indicative cost has been introduced. The indicator went into effect in 2019 and provides that the cost of training for contract students will gradually become equal to the cost of training a student who receives government scholarship. The anti-dumping measure (Vinnitsa Agrarian University offers training in computer science for eight thousand hryvnia per year) will redirect contract students to universities that can provide high-quality knowledge.
4. Consolidation of universities. In 2019-2020, three mergers of universities took place. In Kriviy Rig, the Economics Institute merged with the Metallurgical and three other colleges. In Lviv, the Institute of Economics and Tourism joined the University named after I. Franko, a branch of the University of Banking in Kharkov joined Karazin

University, and the university itself moved from Kyiv to the capacity of its branch in Lviv.

The opposite experience of Estonia shows what results can be achieved if to be consistent in reforming education. Having begun to change the system in 1993, the country with a population of 1.3 million people already in 2006 was ahead of post-Soviet countries and most other participants in the PISA rankings. And, for example, the University of Tartu (Estonia) now occupies 285th place in the QS World University Rankings (the top achievement of Ukraine - occupying 477th place in this ranking - belongs to Karazin Kharkov University). The success of the Baltic country is explained by radical, unpopular and, importantly, continuous reforms [8].

Of particular note is the extremely negative impact of politicization on the field of higher education. For example, the recent shocking scandal surrounding the teacher of the Lviv Polytechnic University Irina Farion is an unacceptable phenomenon in the modern higher education system, negatively affecting the image of national education at the international level. Former Ukrainian MP and linguist Irina Farion expressed conviction that only those who communicate in Ukrainian can claim to be Ukrainians. Previously, she accused Ukrainian soldiers, including the Azov fighters, for speaking Russian and has implored the President of Ukraine, the Commander-in-Chief of the Armed Forces, and the Minister of Defense to take action against the 'rude behavior' of Azov commanders [22]. However, similar scandals periodically arise in a number of southern US states over the racist statements of some professors. Such phenomena are the product of latent drivers of tension in society and should also be the object of close attention from government regulatory bodies in the field of higher education - in particular, tolerance, inclusion, and cross-cultural competence should become one of the most important pillars of public management policy for higher education system. Without this, even the most advanced scientific research and development, including within the framework of the triple helix mechanisms, do not contribute to improving the image of the country and its educational system at the global level, as is clearly demonstrated by the example of the Russian Federation and China.

At the same time, when projecting government programs for the development of the higher education system, national security issues should not be ignored. For example, in May 2021, Hungary announced plans to open a branch of the Chinese Fudan University in Budapest. This new campus marks the first time China has opened a branch of its university in an EU member state. The announcement of these plans followed the 2019 liquidation of the Central European University (CEU) graduate school in Hungary, which was 'successfully' forced out of the country through changes to education law. Since then, it has moved to the capital of Austria, Vienna. Both of these events sparked public protests in Hungary; protesters argued that the country's own higher education system was being dismantled in favor of the illiberal policies of Prime Minister Viktor Orbán. For China, the move is part of its One Belt, One Road (BRI) geopolitical strategy aimed at gaining a leadership role in globalization, developing its higher education system and research institutions, and attracting talented scientists by establishing academic partnerships with Western institutions. While these goals are often achieved through completely legal means, the authoritarian nature of the Chinese regime raises concerns about its actual motives and tactics to achieve its goals.

Ukrainian researcher Halyna Todosova back in 2013 rightly noted that the transition from state to state-public management of education will create conditions for expanding the management capabilities of civil society. That is, the role of, first of all, organizational mechanisms is growing. Dialogue with the public is a mechanism through which it is possible to create conditions for the free and constructive exchange of information, as well as the successful implementation of development programs of each educational institution, education for sustainable development. To achieve such a goal, it is necessary to adhere to the basic principles of interaction, namely: the

principle of trust and the principle of openness (information must be conveyed to all participants in the development and decision-making process interested in receiving it) [26].

Regarding the improvement of the mechanisms of state-public management of education, Todosova considers it necessary to supplement the system of state management of education with new public mechanisms, taking into account the European experience in the use of such mechanisms. Since the modernization of education is a coordinated position of the Cabinet of Ministers of Ukraine, in order to achieve a certain goal it is necessary to improve management mechanisms at the level of legislative initiative and the use of power. One of the important political mechanisms should be an analysis of state policy in education, which should take into account changes in the labor market in Ukraine over the past decades: changes in the nature of work; a reduction in the level of long-term contract employment and an increase in the level of employment itself; the growth of unemployment among those who have not received the knowledge necessary in the new economic conditions; shortage of qualified labor; the influence of new information and communication technologies; the growth of internal and external labor mobility [26].

With every new technological breakthrough, problems arise that cannot be solved by previous methods. Emerging methodological crises initiate a reassessment of past knowledge, which forces the state to adjust the tasks of managing the higher education system and the scenarios for its future. The modernization of the classical university is recognized as an urgent task, and the search for its solution is determined by the development strategy of the country as a whole and the education system in particular. The modernization of national higher education is understood as a response to a global scientific and technological challenge, the analysis of which allows developing an adequate project of transformation, increasing the competitiveness of a classical university without losing its national identity [5]. When developing public policy in the field of higher education, it is critical to ensure its continuous alignment with the processes of scientific-technological progress, which has extremely fast pace today. This applies not only to purely engineering and natural sciences, but also to the humanities, since technical progress is inseparable from social progress, and Industry 4.0 and Society 5.0 are mutually generating and mutually defining phenomena.

Meanwhile, dictated by the desire to make higher professional education an important factor in socio-economic renewal, state policy in Ukraine focuses on supporting a selected limited circle of universities, on encouraging their ambitions in the space of global competition, as well as on tightening the systemic conditions of existence for outsider universities. The side effects of influence on the bulk of state universities that arise against this background create certain risks for the development of the university system as a whole.

The race for leadership in international rankings - with a short-sighted assessment of this process and the absence of compensating efforts to support and develop the institutional environment itself - increases the risks of stagnation of the higher education system. Rating makes sense only in conditions of "comparability" of universities, in conditions of the presence of common essential features. Therefore, interest in rankings contributes to the emergence of interest in describing the institutional diversity of higher education systems. Conversely, understanding institutional diversity creates a qualitatively different basis for comparison. In this regard, the experience of European countries is indicative: the creation of a new U-multirank ranking, which was officially presented in January 2013 at a conference under the auspices of the European Union in Dublin, was preceded by many years of work by a consortium of researchers to study the institutional diversity of European higher education and develop a classification of European universities U-Map. The close connection of the two projects, including a single development team, made it possible to combine two tools: U-Map - a tool that helps to understand what

a university is doing, and U-Multirank - a tool that allows understanding how well it does it by implementing those the very principle of "comparability" [18].

The synergy relationship between the university as academia, industry and government is known as the triple helix. The triple helix concept was first introduced by Henry Etzkowitz and Loet Leydesdorff in analyzing the relationship between universities, industry and government. The Triple Helix innovation model focuses on the university-industry-government relationship. Today, the development of the helix consists of five related elements which are called the penta helix. The five elements are universities, government, industry, mass media and communities. The synergy relationship between university/academia, government and industry is a mutually beneficial relationship if executed properly, which is evidenced today even by the experience of developing countries. In particular, in Indonesia, the Product Design Study Program is one of the study programs in the Samarinda State Polytechnic Design Department. Since its establishment for nearly 20 years, it has had positive organizational dynamics.

In the penta helix model, the government regulates every step made by universities and industries in the realm of education. In general, the media aids in the promotion of all activities conducted by academics, business, and government in the subject of vocational education. With the use of mass media, information about all actions will be more rapidly accepted by the environment/community. This community participates in activities that address societal and environmental issues. In reality, this is a practical application of public discourse and civil society participation in the formation of a state-level higher education plan. For example, in the aforementioned Product Design Study Program, the government, as a regulator of the Penta Helix element, is entrusted with developing regulations and overseeing their execution as a regional or national activity. "The perceived role of the government in the Product Design Study Program is related to the regulation of regulations on universities. Regulations regarding tertiary institutions such as the minimum education for lecturers are master education, nomenclature management, as well as several rules in campus activities that affect the space for this department" [23]. The government also gives monetary support to facilities, both physical and non-physical. Facilities and pre-class facilities are examples of physical resources, whereas non-physical resources include scholarship support for faculty and students, as well as help such as research grants and community service.

The integration of science and education is extremely important: thanks to the synergistic effect, improvements occur in both sectors - both the productivity of research and the quality of education increase, and at the same time the level of trained scientific and pedagogical personnel. The teaching staff is being updated and strengthened by increasing the influx of young personnel by enhancing their involvement in the field of research and development. By increasing the effectiveness and quality of research, opportunities are opened for commercializing the results of applied projects, which also contributes to the efficiency of spending state budget funds [9; 10]. Since science is a key driver for the development of knowledge-intensive industries and determines the vector and level of development of the country's economy, in the most progressive countries science is an integral part of university education [3].

Higher education, being one of the leading culture-forming elements in developed societies, due to its specificity, requires comprehension from the perspective of various methodological approaches, therefore modern concepts of higher education operate using the methods of hermeneutics, structural functionalism, structuralism, comparative studies, diachronism and synchronism, systemic, institutional, organizational, cognitive, conflictological, and other approaches, trying to consider the essence of higher education and its state regulation from their own point of view. However, it is clearly obvious that one of the most important areas of activity of a modern social state in Ukraine should be the competent regulation of the

development of the education system, in particular higher education. It should be noted that a significant number of problems in the higher education system of Ukraine arise precisely in connection with the insufficient quality of its state and legal regulation. In this context, the striving to guarantee the necessary level of legal and organizational support for the development of the higher education system determines the need to increase the efficiency of higher education management on an appropriate scientific and theoretical basis, as well as to improve the forms and methods of government influence on legal relations in the educational sphere. The role of the state in this process is not only to develop a legal framework and attract the required resources to the education sector, but also to create effective mechanisms to ensure the functioning of the higher education system, which is a set of methods and tools for management in this area of public life. Modernization of today public administration system should contribute to the creation of optimal conditions for the functioning of the higher education sector in the conditions of innovative development and integration into the European educational space and the establishing and strengthening of Society 5.0.

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