2.7. The impact of funding model on the development of higher education of Ukraine: challenges and opportunities

The development of higher education nowadays is undergoing the huge changes not only under the impact of knowledge-based economy and competency based economy but and under the 4th Industrial revolution, which, as was noted at the World Economic Forum in 2017, must change the requirements to higher education of improving the research activities of universities and the process of commercialization of their results. The actuality of idea of Triple Helix are more increasing under these conditions, because it determines that the potential for innovation and economic development in a Knowledge Society [knowledge-based economy and competency based economy] lies in a more prominent role for the university and in the hybridization of elements from university, industry and government to generate new institutional and social formats for the production, transfer and application of knowledge [1]. Thus, the current situation in global world demonstrates, that to take advantages of global economy – there is insufficient of using general types of economic resources, the most needed resource is becoming – human capital. However, the main feature of human capital is the inherency of valuable characteristics to the person, among which, we consider, education is prevailing, because according to the modern paradigm of human existence, the new knowledge and global thinking are in basis of which, the aim of building of the human society should become education, on the tasks of the continuous human development, the forming by her the possibility of critical thinking and objectivity in decision making and also the social activity in actions. As a result, the global economy requires the necessity to the governments of the countries to strengthen attention to the improving of quality of training the personnel, that can be done primarily through the effective education system, which is a producer of human potential and human capital, in particular [2]. But, the creation knowledge-based capital is possible through the funding in education, the results of which can be scientific investigations and innovations, which in total are the bases of knowledge-based economy and ensure the long term growth of any country. As an evidence the following affirmation, that the weakest national systems [systems of higher education] are those with low government funding but high government control [3].

Moreover, the development of economies within the global environment is becoming more dependent from the systems of higher education, which every year becomes more capital-needed. This leads to increased the demand for the funding models that would ensure the effectiveness of higher education. The problem of effective financial mechanism is inherent mainly for the countries with transition economies, but in is lack of effective («smart») mechanism as the management of financing of system of higher education in general, due to the issue of necessary the active institutional reforms. For example, in developed countries, regardless of the model of the state management of higher education (marketed (the UK), social (the Nordic) and mixed (the Central Europe)), which are defined, the firstly, its traditions

and historical specificities of formation the educational system and as well as related with a mode of ensuring the welfare of population (liberal, social democratic, conservative-corporatist), the systems of higher education demonstrate the effective funding mechanism for higher education, as a result, the highest position of their national system of higher education in the context of international comparisons. That is why the aspect of funding model in terms of its impact on the development of higher education of Ukraine is so relevant in comparing the main trends in European Educational Space, because it has to ensure the development of higher education under conditions of the intensification of the global environment.

The main aim of paper is to examine the contribution of funding model on the development of system of higher education. This aim will be received with the helping of the next objectives:

– to assess the impact of funding on the country's place in the ranking by analyzing the changes in funding and the country's position;

– to conduct the correlation and regression analysis of such indicators as the funding in higher education and the total score of ranking, to test the hypothesis of their dependence;

– to evaluate the structure of funding and the accordance between the established tuition fees and required expenditures on providing the educational service;

– to consider the basic theoretical models of funding of higher education, their advantages and disadvantages.

The methodological basis of conducting this research is the theoretical approaches to the concept of current models of funding of higher education. To make the reasonable conclusion of necessity of some funding model was defined to hold the analysis the data of unique annual ranking of higher education – Universitas 21 and Indicators of Higher education, which were held by OECD, these data became the empirical basis of research, then carrying out the correlation and regression analysis between indicators and evaluation the structure of expenditure and its comparing in different countries, prerequisites for established tuition fees and the real costs, which are needed for preparation the graduates.

The core of research is in hypothesis, the funding model of the sphere of higher education does impact on its development and quality of educational service and, as results, in total on economic indicators of this country. Then, Besides, it is very important to study the theoretical approaches to the essence of existing models of funding, identifying the opportunities for their implementation in Ukraine.

The Universitas 21 Ranking is one of the world to assess national higher education systems, which was developed the Rankings as a benchmark for governments, education institutions and individuals, and the project aims to highlight the importance of creating a strong environment for higher education institutions to contribute to economic and cultural development, provide a high-quality experience for students, and help institutions compete for overseas applicants. U21 points to the best educational systems of each country and includes four areas, in particular: «Resources», «Environment», «Connectivity» and «Output». According to the Figure 1, we can observe, that the strongest systems of higher education are in the

USA, Switzerland, Denmark, the UK and Sweden. The Ukraine took 42th place with 42.1 score, which are the less, than in Ranking of 2015 (43.8 score) [4].

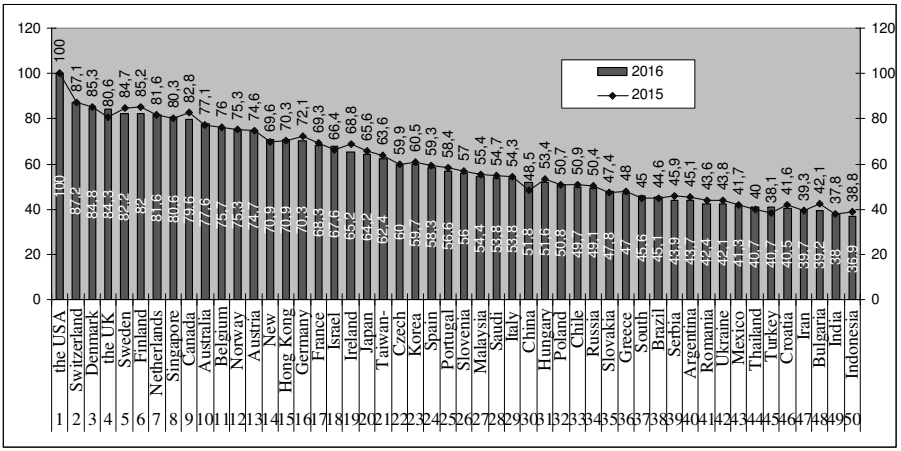


Fig. 1. **The comparative analysis of the Universitas 21 Ranking in 2015–2016 years.**

Source: formed by author based on [5].

Taking account our hypothesis as for that the funding of universities has a direct impact on the competitiveness of these universities and quality of higher education in total, necessary to compare the expenditure on higher education.

Funding of higher education all over the world is a crucial challenge for all stakeholders: governments, enterprises, university administrators, researchers and students. In developed countries, while governments provide some resources to finance higher education, there is a continuous effort on the part of university to mobilize and diversify resources to supplement what governments provide. In the most advanced countries, there has been an upsurge in the demand for policy restructuring to reduce the over-reliance on the governments to financing higher education. At the same time, there has been a gradual shift from the provision of free higher education in countries to a system of cost sharing.

Looking at the achieved results of calculations, which concern the expenditure for higher education in absolute values, which are presented in Table 1, we see: the TOP-10 of ranking of competitiveness of higher education coincides with the TOP-10 countries with the highest spending on higher education in calculating per 10 thousand of population, that allows to reflect the real situation with financing in each country.

Thus, these results confirm our hypothesis. Moreover, we consider, that it's necessary to analyze the dynamics of indicator «Expenditure for HE in absolute values, per 10 thousand of population» for countries-leaders and Ukraine and then to compare the change of indicator and place of country in the ranking.

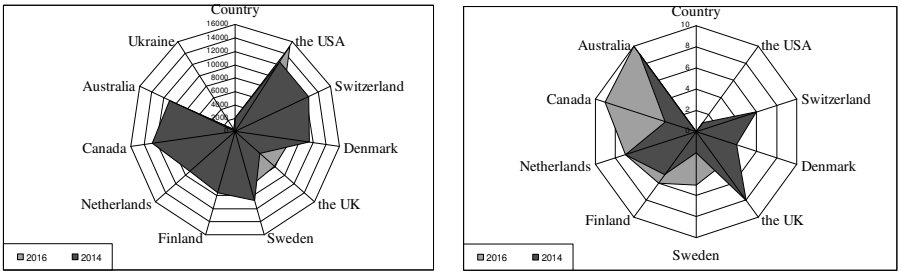
Table 1

Expenditure for higher education in absolute values in 2016

Place in the ranking of national higher education systems [5]	Country	Expenditure for HE as a percentage of GDP (%) [6]	Expenditure for HE in absolute values (billions of USD) [7]	Expenditure for HE in absolute values, per 10 thousand of population (thousands of USD) [8]
1	**the USA**	**2,6**	**482.8**	**15 139**
2	**Switzerland**	**1,2**	**6.4**	**7 712**
3	**Denmark**	**1,7**	**4.9**	**8 575**
4	**the UK**	**1,8**	**50.6**	**7 949**
5	**Sweden**	**1,7**	**8.3**	**8 520**
6	**Finland**	**1,8**	**4.3**	**7 751**
7	**Netherlands**	**1,7**	**14.8**	**8 739**
8	**Singapore***	**1.1**	**3.0**	**5 557**
9	**Canada**	**2,5**	**40.8**	**11 481**
10	**Australia**	**1,7**	**20.1**	**8 569**
22	Czech Republic	1,3	4.8	4 579
26	Slovenia	1,2	0.8	3 906
31	Hungary	1,3	3.5	3 557
32	Poland	1,4	14.8	3 852
35	Slovakia	1,1	1.9	3 436
42	Ukraine [9]	1,6	1.4	340

Source: formed by author based on [5, 6, 7, 8].

From Figure 2 we observed that the indicators of financing of higher education have changed over the years 2014–2016, namely the United States increased the expenditure in 1.2 times, thereby was securing the first position in ranking, the UK increased the expenditure in 1.6 times, thus its position has changed from 8th to 4th, Sweden – reduced the costs in 0.8 times as a result – the position was moved from the 2 to 5, Finland has moved from the 5th position to 6th, through reducing the expenditure in 0.8 times.



a) b)

Fig. 2. **The comparative analysis of change of indicator and place of country in the next: a) «Expenditure for HE in absolute values, per 10 thousand of population; b)position in Universitas21 Ranking.**

Source: formed by author based on calculation of table 1 and on [5].

Thus, we can see the relationship between the development of higher education, component of its competitiveness in world comparison and the degree of funding. Moreover, using the Programme STATISTIKA 12.0, we conducted the correlation regression analysis and we received the next results:

The coefficient of multiple correlation (R), which shows the closeness communication the output variable (Y) from the input variable (X) is 0.8433, so the relationship between the input variables and output variables there is strong relationship.

Calculated Regression coefficient (0.72) shows how will change deterministic component of the country's position in the ranking if factor in our model – funding, changes per one unit.

Next, we consider it is necessary to analyze the structure of funding, including the share of public and private funding (Figure 3).

In tertiary education the private sources have a more crucial role and account for around 30% of expenditure on average or 0.5% of GDP.

In some countries, private sources are very important in relative and absolute terms to assure that a large percentage of national wealth goes into tertiary education. Canada, Chile, Costa Rica, Korea and the United States stand out as the countries with largest percentage of GDP spent on tertiary education. Part of that is explained by the fact that they are also among the countries with the highest shares of private sources. Among countries spending more than 2% of GDP on tertiary education, only Estonia has a small percentage of private sources, at 0.3% of GDP.

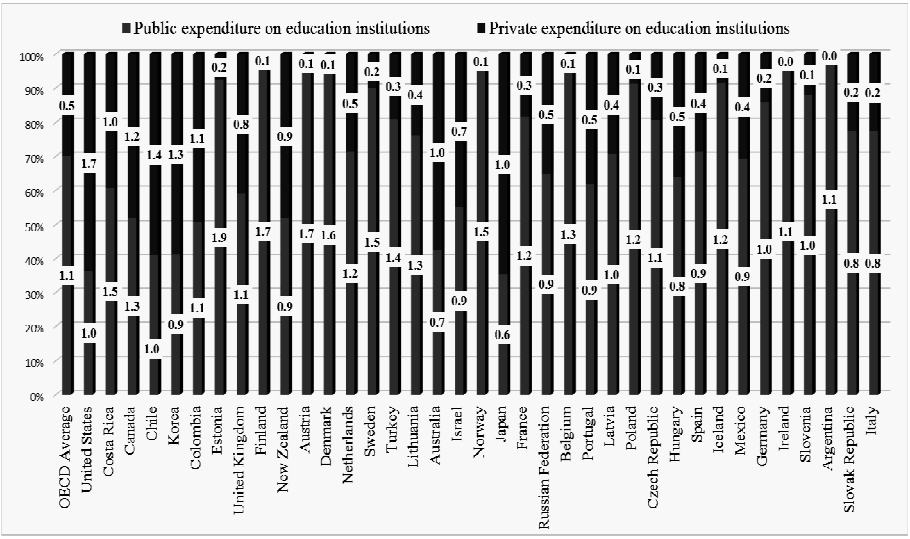


Fig. 3. **Public and private expenditure on higher educational institutions, as a percentage of GDP, (2013).**

Source: formed by author based on [6].

In the Central and Eastern Europe (Poland, Slovak Republic, Slovenia, Hungary), it is largely dominated by public funding, while the private funding is

ranged from 0.1% of GDP (Poland, Slovenia) to 0.5% (Hungary). In Ukraine the public funding dominates above the private. But, unlike the foreign countries, where under the private financing is considered the financing by business or invest-organizations, in Ukraine, in fact, the private funding – is costs of householding.

Furthermore, it should be noted that the structure of expenditures of Ukrainian system of higher education is significantly different from Central European countries, namely, according to UNESCO [11]. Ukraine over the last decade has reduced the share of the costs of equipment, construction and modernization in total spending in higher education from 17% to 4%, while the Czech Republic (20%), Poland (22%) and Lithuania (25%) were increased it. Thus under these moments was reduced the potential of high level of practical preparation of students in comparison with foreign countries.

Ukraine is unable fully to ensure financial needs of the system of higher education, that leading to the following problems:

– material and technical provision of Ukrainian universities is outdated and does not correspond to the modern needs of specialist's training;

– there is no funding for participating of teaching staff in various activities outside Ukraine for the information sharing and increasing the collaboration between colleagues;

– a limited financial provision to conduct the full laboratory research at the universities;

– salaries of the teaching staff and the regulatory policy of employment of teaching staff (load on professor) looks like as demotivator of holding the scientific researches or totally engaging in science.

In addition, due to the funding of higher education in Ukraine, this amount is enough only to pay salaries to professors and the providing the educational services to students. However, taking account the fact, that the requirements for preparing of graduates are increasing every year, and the state is not able to provide a fully free education – university has to set the tuition. The latter is quite common practice in the world. But if we take into account the structure of tuition fees in Ukraine we are observing the funding by state or by households, the financing by business structures is not popular. As a result, the universities can not set the tuition fees at the real need for the provision of educational services of European dimension, because the purchasing power of population is low because universities are set the tuition fees at a level, which the house holding can pay and not at the level of the tuition fees, which would reflect the necessary costs on providing the educational services of appropriate quality.

The situation with the financing by householding leads to the emergence a gap between the real sector of economy and one of the tasks of universities – training the specialists to meet the needs of the labor market. Because the consumers of educational services, the applicants, the learning of which is payed by householding, mainly they are motivated in choice of specialty by their desire to get a particular specialty and not its demand of labour market. So, hypothetically, a graduate who has chosen the profession on the basis of unreasonable desire of the needs of labor market is becoming a potential unemployed. As a result, this leads not only to the increasing in youth unemployment but also demotivation of population to obtain higher education because of mis-information and mis-understanding of the situation, which

is appeared. After all, the main reason is, primarily, the fact that householding in financing, does not take account the current situation at the labor market as a result, their choice hasn't any relation with the real economy and the long-term prospects of further development. Until this tendency exists in Ukraine, the gap will be increased every year and the value of higher education will be decreased.

In Ukraine, to keep universities at a high level, there is no alternative but to charge tuition fees for national students. In this situation, policy-makers (government) must choose the most suitable model of higher education financing to provide better results.

Depending on the combination of public and students' private funds, there are two alternative models of higher education financing: the model of binary financing (MBF) and the model of diversification financing (MDF) [12].

In the MDF all students are liable to pay tuition fees. The financial accessibility of higher education is provided by means of public scholarships and student loans. This model is traditional in American and Western European countries. That is why the problems of sharing finance in higher education are usually considered with regards to the MDF [13, 14, 15].

In the MBF, the students passed university entrance examinations with better results are eligible for free tuitions and academic scholarships, whereas all others receive none of public grants and must pay tuition fees. This model is used in Ukraine as well as in other post-Soviet states. In other words, the expenses on higher education of every student are financed separately in the MBF (either from public or private funds) and simultaneously in the MDF (from both public and private funds).

Next, we consider it is necessary to observe the advantages and disadvantages of both models (table 2).

Table 2

The comparative characteristic of advantages and disadvantages of MDF and MBF models

MDF		**MBF**	
advantage	**disadvantage**	**advantage**	**disadvantage**
possibility to obtain large expenditure per student and thus to improve the quality of higher education.	the necessity to organize the effective student financial support system to help disadvantaged students, if such support system is failed for some reason, higher education becomes inaccessible to low-income students.	free access to higher education for advanced school-leavers regardless of their income. There is no need for large student loan programs.	excessively sensitive to the amount of budget expenses on higher education, thus it becomes very ineffective when public budget is tight.

Source: formed by author based on [12,13,14,15].

We can admit that such disadvantage of the MBF has happened in Ukraine. In spite of a share of public expenditure on higher education in GDP (the share is as in European countries), expenditure per one student remains very low (the share is less in European countries). So, one of the ways to make solutions is in switching from the MBF model to the MDF. The key characteristics of MDF model:

1) higher education is funded via a combination of tuition fees paid by students and budget grants to institution;

2) students from low-income families receive social scholarships;

3) excellent-students are eligible for free tuition;

4) students are eligible for subsidizing loans, the amount of which depends on their income and tuition fees;

5) public resources are redistributed from direct financing and academic scholarships to social scholarships and student loans.

Thus, we conclude that the mechanism of implementation of effective funding models is very important for the countries of transition economy, including Ukraine, because the deepening of cooperation between universities, government and business in a global environment which is open, and jeopardizes such countries and its system of higher education, which are apart of modern approaches to management, including the financial management of system of higher education. Therefore, the study of experience of implementing the funding models of foreign countries should be based on the added value of their implementation, which will get by the economy as a whole. This will be a «reasonable» approach to effective management of higher education.

References

1. Rangaa M. Triple Helix Systems: An Analytical Framework for Innovation Policy and Practice in the Knowledge Society / Marina Rangaa and Henry Etzkowitz // Industry and Higher Education. Vol 27, Issue 4, 2013. [Electronic Resources] – Access : https://triplehelix.stanford.edu/images/Triple_Helix_Systems.pdf.

2. Levchenko, O. Higher education as a factor of human capital development / O. Levchenko, I. Tsarenko // International Scientific-Practical Conference Modern Transformation of Economics and Management in the Era of Globalization : Conference Proceedings, January 29, 2016. – Klaipeda, 2016. – P. 175–179. [Electronic Resources] – Access : http://dspace.kntu.kr.ua/jspui/handle/123456789/3595.

3. Williams, R., de Rassenfosse, G., Jensen, P. and Marginson, S. «The Determinants of Quality National Higher Education Systems», Journal of Higher Education Policy and Management, 35(6), 2013, pp. 599–611.

4. Tsarenko, I. The position of higher education in Ukraine in the comparison of the international trends in higher education / I. Tsarenko // Інноваційний розвиток і транскордонна безпека: економічні, екологічні та гуманітарні аспекти : IV Міжнар. наук.-практ. інтернет-конф. студ. і молодих учених, 21 груд. 2015 р. : зб. матеріалів конф. – Чернігів, 2015. – С. 370–373. [Electronic Resources] – Access : http://dspace.kntu.kr.ua/jspui/handle/123456789/3622.

5. U21 Ranking of National Higher Education Systems source. [Electronic Resources] – Access : http://www.universitas21.com/article/projects/details/152/u21-ranking-ofnational-higher-education-systems.

6. Education at a Glance 2016: OECD Indicators. [Electronic Resources] – Access : http://download.ei-ie.org/Docs/WebDepot/EaG2016_EN.pdf.

7. Organisation for Economic Cooperation and Development. Gross domestic product (GDP). [Electronic Resources] – Access : https://data.oecd.org/gdp/gross-domestic-product-gdp.htm.

8. Organisation for Economic Cooperation and Development. Population. [Electronic Resources] – Access : https://data.oecd.org/pop/population.htm.

9. Державна служба статистики України. [Електронний ресурс] – Режим доступу : http://www.ukrstat.gov.ua.

10. Education at a Glance 2014: OECD Indicators. [Electronic Resources] – Access : http://www.keepeek.com/Digital-AssetManagement/oecd/education/education-at-a-glance-2014_eag-2014-en#.

11. UNESCO Institute of Statistics. [Electronic Resources] – Access : http://uis.unesco.org.
12. Olga Erforta, Irina Erfortb, Larisa Zbarazskayac, Financing higher education in Ukraine: The binary model versus the diversification model. International Journal of Educational Development. Volume 49, July 2016, Pages 330–335. [Electronic Resources] – Access : https://doi.org/10.1016/j.ijedudev.2016.03.009.
13. Altbach and Johnstone, 1993 P. G. Altbach, D. B. Johnstone The Funding of Higher Education International Perspectives Garland Pub, New York (1993).
14. Johnstone and Marcucci, 2010 D.B. Johnstone, P.N. Marcucci Financing Higher Education Worldwide Who Pays? Who Should Pay? Johns Hopkins Univ. Press, Baltimore, Md (2010).
15. Teixeira et al., 2006 P. N. Teixeira, D. B. Johnstone, M. Rosa, H. Vossensteyn Cost-sharing And Accessibility In Higher Education: A Fairer Deal?, Hi Gher Education Dynamics v. 14 Springer, Dordrecht (2006).

2.8. Regulatory and technical support for the introduction of percentage philanthropy in Ukraine

The issue of attracting additional resources is the one of acute importance to NGOs of Ukraine. It is not only the matter of supporting the organizations, but also the issue of providing quality services and meeting the needs of the present in terms of the development, as the needs and demand are increasing rapidly.

Available mechanisms for financial support of NGOs of Ukraine are not effective, and therefore we should pay attention to the alternative ones.

In economically developed countries, there are many advanced methods of fundraising for NGOs that are traditional for them, while in Ukraine they are still not used at all or used only partially. This is stipulated by the peculiarities of the current legislation, as well as the characteristics of current social and economic processes in Ukraine, which are unique compared to other states.

Particular attention should be paid to the newest among the methods of financing NGOs – the method of percentage philanthropy. Numerous discussions are devoted to this method, however, its use is still not legally enforceable in Ukraine.

In the recent years, the issue of implementation and use of the method of percentage philanthropy has drawn the attention of many Ukrainian and foreign scientists. Among them published scientific papers and reports delivered at mass scientific events of such scientists as N. Bullain [2; 3; 4; 5], O. Kyrylenko [10], I. Mészáros [11], E. Haunina [9], B. Shator [13] and the researches published by Ecumenical Social Week [6; 7] and the Institute for Rural Development commissioned by the OSCE Project Coordinator in Ukraine are particularly relevant [12]. However, the practical implementation of percentage legislation (also known as percentage philanthropy) requires legal and technical support, which have not been researched until now.

The method of percentage philanthropy provides an opportunity for the payer of tax on personal income to divert a certain percentage paid to the budget of tax on social needs, such as the activities of civil society organizations engaged in addressing public needs [6; 8].