

BENCHMARKING AS A TOOL FOR ASSESSING THE QUALITY OF RESEARCH MANAGEMENT OF STUDENTS IN AGRICULTURAL UNIVERSITIES OF UKRAINE

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Abstract

The purpose of this article is to evaluate the quality of research management of students in agricultural universities of Ukraine using benchmarking. The external evaluation of agricultural higher education institutions (HEIs) of Ukraine was conducted on the basis of the data of the State Scientific Institution "Institute of education content modernization" and the Ministry of Education and Science of Ukraine regarding the results of the All-Ukrainian competition of student scientific papers in the fields of knowledge and specialties in 2019/2020 and 2020/2021 academic years. The leaders according to the results of participation in the II round of the competition in the analyzed period were 9 HEIs: Mykolaiv National Agrarian University (NAU), National University of Life and Environmental Sciences of Ukraine, Kharkiv Petro Vasylenko National Technical University of Agriculture, Lviv NAU, Sumy NAU, Vinnytsia NAU, Poltava State Agrarian Academy, Kharkiv NAU named after V. V. Dokuchayev, Polissia National University. They annually had more than 10 winners of the competition of various degrees. Other agricultural HEIs of Ukraine should focus on their indicators in order to improve the quality of research management of students. The obtained results enable agricultural universities not only to determine the leaders based on the number of works awarded with I, II or III degree diplomas in the All-Ukrainian competition, but also to evaluate, compared to them, their strengths and weaknesses; to get new ideas for research management of students; to plan further scientific activities taking into account the indicators of HEIs-leaders.

Key words: benchmarking, agricultural universities, Ukraine, management quality, student research papers

INTRODUCTION

Scientific and pedagogical workers in higher education institutions (hereinafter – HEIs), in addition to educational activities, must also engage in scientific activities, in particular, supervise the scientific work of students. But the quality of such work is different. The Ministry of Education and Science of Ukraine creates conditions for developing the intellectual potential of talented Ukrainian youth, supporting the scientific and creative work of students and cadets, stimulating their interest in research work, and mastering innovative technologies. For this purpose, the Ministry has introduced the All-Ukrainian competition of student scientific papers in the fields of knowledge and specialties, which takes place in two rounds: the first – in HEIs, the second – in basic HEIs. Students (cadets) who obtain a higher education with a bachelor's and master's degree in HEIs [11],

including agrarian ones, can participate in the competition.

To analyze the quality of management of students' scientific work and its improvement in agricultural universities, it is possible to carry out an external evaluation of these HEIs using the benchmarking method. Note that Hrylovska I. V. (2010) defines benchmarking as "improving oneself by learning from others". It allows you to answer the following questions:

- How do we work compared to others?
 - What should we strive for?
 - Who works best in certain areas?
 - How do they manage it?
 - How can we apply what others are using?
 - How can we become better than the best?
- [3].

Benchmarking in agricultural research was used by the following scientists: Bedradina G. and Nezdoyminov S. (2021) – quality of services provided by rural tourism tour

operators [1]; Ladyka V. and Lozynska I. (2019) – evaluation of the efficiency of the Lebedynska breed of dairy cows [5]; Sârbu O. (2015) – analysis of the evolution of agriculture in its many aspects, focusing on the concepts of rural development from the point of view of durability and multifunctionality [8]; Wolf C. A. *et al.* (2020) – indicators of profitability of dairy farms in the upper Midwest of the USA over time and depending on herd size [12]; Yasar A. (2023) – models of convolutional neural networks for varieties of bread wheat [13]; Zbanca A. *et al.* (2023) – economic and financial estimates of lavender cultivation [14]; Zbanca A. *et al.* (2018) – estimates and comparative economic analysis of berry cultivation in the Republic of Moldova [15]. The following researchers compared the performance indicators of agricultural HEIs: Knapczyk A. *et al.* (2018) – comparison of selected agricultural universities in Europe based on academic output [4]; Mehlhorn J. E. *et al.* (2015) – the level of entrepreneurial education in agricultural colleges and programs in Australia, New Zealand and the USA [6]; Totska O. (2023) – financing of scientific work in agricultural universities of Ukraine [10].

In addition, Totska O. L. (2022) investigated the financial aspects of the scientific activity of HEIs in the regions of Ukraine [9].

The purpose of this article is to evaluate the quality of management of the scientific work of students in agricultural universities of Ukraine using benchmarking.

MATERIALS AND METHODS

External evaluation of agricultural HEIs of Ukraine with the help of benchmarking will be conducted on the basis of the data of the State Scientific Institution “Institute of education content modernization” (2021) and the Ministry of Education and Science of Ukraine (2021) regarding the results of the

All-Ukrainian competition of student scientific papers in the fields of knowledge and specialties in 2019/2020 and 2020/2021 academic years [2; 7]. The following two academic years are not included in the analysis due to the fact that the second round of the competition at basic HEIs was canceled due to reasons for ensuring the safety of the participants in the educational process, as there is a special situation in the country.

RESULTS AND DISCUSSIONS

The list of agricultural HEIs that had winners in the II round of the All-Ukrainian competition of student scientific works in the fields of knowledge and specialties in the 2019/2020 academic year is given in Table 1, in the 2020/2021 academic year – in Table 2, where in blue the data that are equal to or exceed the indicators of the previous year are highlighted, yellow – less than the previous ones.

As you can see, in the 2019/2020 academic year, the winners of the competition were students of 20 agricultural HEIs, in the 2020/2021 academic year – 21 HEIs.

18 agricultural HEIs had winners in both periods. Among them, 5 universities improved all indicators: Mykolayiv NAU, Sumy NAU, Polissia NU, Podillia State Agrarian and Technical University, Bila Tserkva NAU. The overall indicator was improved by 13 HEIs, and worsened by 5 HEIs. Separate partial indicators (the number of works awarded with I, II or III degree diplomas) improved in all HEIs, except for Stepan Gzhytskyi NU of Veterinary Medicine and Biotechnologies of Lviv. This is evidence that agricultural universities improve the quality of management of the scientific work of students.

The leaders in terms of the total number of works awarded with diplomas are clearly visible in Fig. 1.

Table 1. Results of the participation of agricultural HEIs in the II round of the All-Ukrainian competition of student scientific works in the fields of knowledge and specialties in the 2019/2020 academic year

No	Name of the higher education institution	The number of works awarded with diplomas of the I degree	The number of works awarded with diplomas of the II degree	The number of works awarded with diplomas of the III degree	To-gether
1	Mykolaiv NAU	6	17	34	57
2	National University of Life and Environmental Sciences of Ukraine (NULESU)	8	13	24	45
3	Kharkiv Petro Vasylenko NTU of Agriculture	6	13	17	36
4	Lviv NAU	5	7	23	35
5	Sumy NAU (including Hlukhiv Agrotechnical Institute named after S. A. Kovpak)	6	3	18	27
6	Vinnitsia NAU	1	4	12	17
7	Poltava State Agrarian Academy	4	8	4	16
8	Kharkiv NAU named after V. V. Dokuchayev	3	6	4	13
9	Polissia NU (Zhytomyr National Agroecological University)		3	8	11
10	Dmytro Motornyi Tavria State Agrotechnological University	1	5	5	11
11	Dnipro State Agrarian and Economic University	2	3	4	9
12	Stepan Gzhytskyi NU of Veterinary Medicine and Biotechnologies of Lviv		1	5	6
13	Podillia State Agrarian and Technical University	1	2	3	6
14	Bila Tserkva NAU	1	1	2	4
15	Separated subdivision NULESU "Berezhany Agrotechnical Institute"	1	1	2	4
16	Odesa SAU	1		3	4
17	Kherson SAU	3	1		4
18	Uman NU of Horticulture		2	1	3
19	Zhytomyr Agricultural Technical College			1	1
20	Ladyzhyn College of the Vinnitsia NAU			1	1
Together		49	90	171	310

NAU – National Agrarian University, NTU – National Technical University, NU – National University, SAU – State Agrarian University.

Source: Formed by the author based on data from the State Scientific Institution "Institute of education content modernization" (2021) [2].

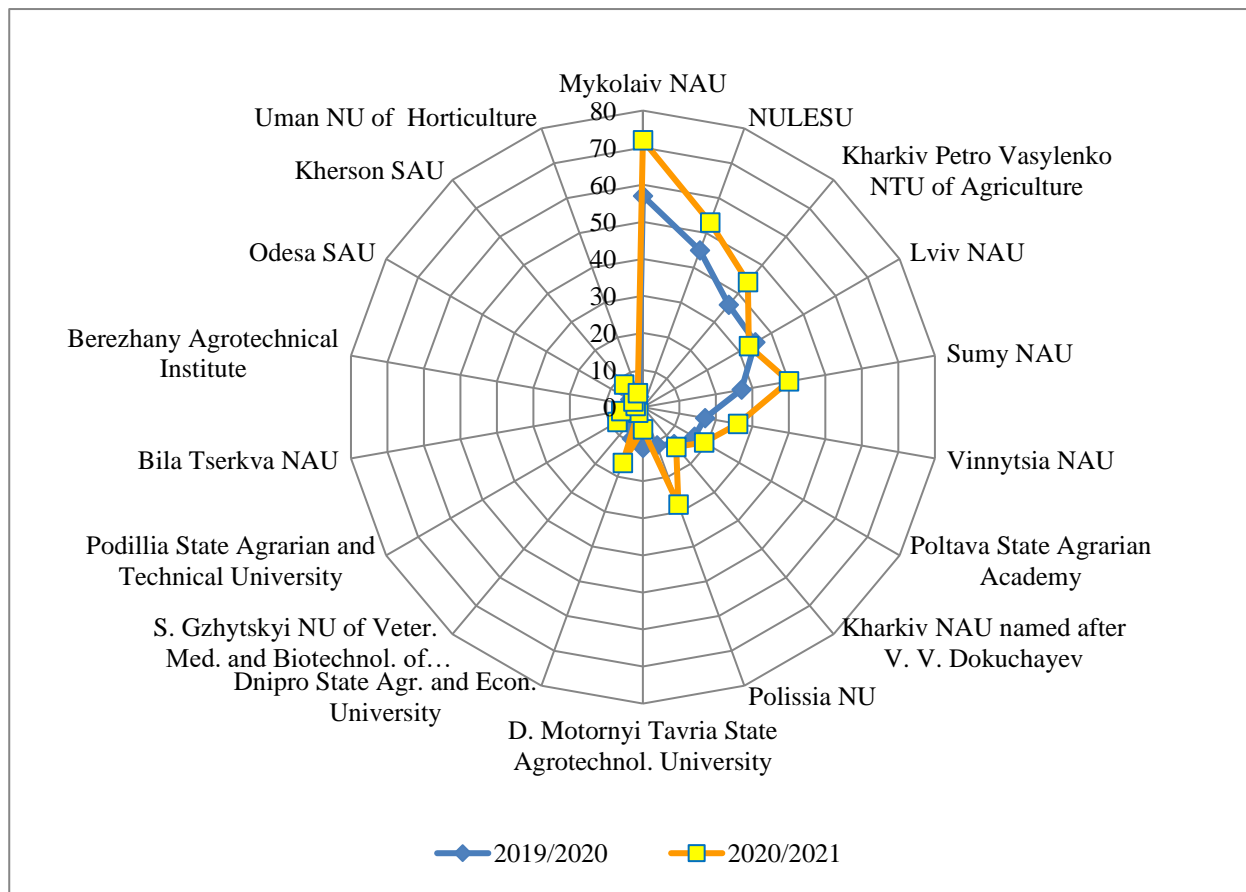
Table 2. Results of the participation of agricultural HEIs in the II round of the All-Ukrainian competition of student scientific works in the fields of knowledge and specialties in the 2020/2021 academic year

No	Name of the higher education institution	The number of works awarded with diplomas of the I degree	The number of works awarded with diplomas of the II degree	The number of works awarded with diplomas of the III degree	To-gether
1	Mykolaiv NAU	7	21	44	72
2	NULESU	7	19	27	53
3	Kharkiv Petro Vasylenko NTU of Agriculture	6	12	26	44
4	Sumy NAU	9	11	20	40
5	Lviv NAU	2	4	27	33
6	Polissia NU (Zhytomyr National Agroecological University)	5	9	14	28
7	Vinnitsia NAU	3	1	22	26
8	Poltava State Agrarian Academy	1	6	12	19
9	Dnipro State Agrarian and Economic University	1	2	13	16
10	Kharkiv NAU named after V. V. Dokuchayev		5	9	14
11	Podillia State Agrarian and Technical University	1	3	4	8
12	Kherson State Agrarian and Economic University	1	4	3	8
13	Dmytro Motornyi Tavria State Agrotechnological University	2	2	2	6
14	Bila Tserkva NAU	1	3	2	6
15	Separated subdivision NULESU "Nizhyn Agrotechnical Institute"		4	2	6
16	Uman NU of Horticulture		2	2	4
17	Odesa NAU	1	1	1	3
18	Separated subdivision NULESU "Berezhany Agrotechnical Institute"	2			2

19	Stepan Gzhytskyi NU of Veterinary Medicine and Biotechnologies of Lviv			2	2
20	Separated structural unit “Berezhany Vocational College of the NULESU”			1	1
21	Kharkiv State Zooveterinary Academy			1	1
Together		49	109	234	392

NAU – National Agrarian University, NTU – National Technical University, NU – National University, SAU – State Agrarian University.

Source: Created by the author based on data from the Ministry of Education and Science of Ukraine (2021) [7].



NAU – National Agrarian University, NTU – National Technical University, NU – National University, SAU – State Agrarian University.

Fig. 1. Comparative diagram of agrarian HEIs of Ukraine according to the results of participation in the II round of the All-Ukrainian competition of student scientific papers in the fields of knowledge and specialties

Source: Author's development based on the data of Tables 1 and 2.

As we can see, the leaders according to the results of participation in the II round of the All-Ukrainian competition of student scientific works in the fields of knowledge and specialties in the analyzed period were 9 HEIs: Mykolaiv NAU, NULESU, Kharkiv Petro Vasylenko NTU of Agriculture, Lviv NAU, Sumy NAU, Vinnitsia NAU, Poltava State Agrarian Academy, Kharkiv NAU named after V. V. Dokuchayev, Polissia NU. They annually had more than 10 winners of various degrees. Other agricultural HEIs of

Ukraine should focus on their indicators in order to improve the quality of management of the scientific work of students.

CONCLUSIONS

So, in order to become leaders among agricultural HEIs in Ukraine in terms of the quality of management of students' scientific work, it is necessary to prepare at least 10 winners of the All-Ukrainian competition. In addition, it is possible to study in which

fields of knowledge and specialties they prepared their works, as well as to study the content of the works on the websites of the basic HEIs that conducted the second round of the competition.

The obtained results enable agricultural universities not only to determine the leaders based on the number of papers awarded with I, II or III degree diplomas in the All-Ukrainian competition of student research papers in the fields of knowledge and specialties, but also to evaluate, compared to them, their own strengths and weaknesses; to get new ideas for guiding students' scientific work; to plan further scientific activities taking into account the indicators of HEIs-leaders. The result of this will be the development of the intellectual potential of education seekers, stimulation of their interest in in-depth research work, and their mastery of innovative technologies. In the future, students can realize their scientific potential in further professional activities.

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