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дискусії, метод тренінгових вправ, метод змішаного навчання, кейс-метод, тезаурусний метод. Жоден із виокремлених методів не універсальний, тому лише оптимальне поєднання, сукупність методів навчання забезпечить досягнення мети та виконання завдань освітнього процесу, зокрема оволодіння студентами-іноземцями українською мовою.

Вагому роль у навчанні УМЯІ відіграють технології навчання (*структурно-логічні, інтеграційні, ігрові, тренінгові, діалогові, інформаційно-комунікаційні*), адже їх застосування в процесі викладання зазначеної навчальної дисципліни значно розширює можливості всіх суб'єктів освітнього процесу, урізноманітнює форми педагогічної взаємодії, а також сприяє підвищенню мотивації навчальної діяльності, стимулює розвивально-мовленевий потенціал професійного спрямування у майбутніх фахівців медичної галузі.

Для вивчення теоретичних відомостей та формування практичних умінь і навичок з української мови як іноземної необхідно розробити систему вправ, яка буде найбільш ефективною під час вивчення інокомунікантами зазначеної дисципліни. Ми пропонуємо таку систему вправ: підготовчі (пропедевтичні), вступні (мотиваційні, пізнавальні), пробні (попереджувальні, коментовані, пояснювальні), тренувальні (за зразком, інструкцією, завданням), творчі (реконструктивні, конструктивні), контрольні вправи, а також спостереження й аналіз мовних одиниць у зв'язному тексті; аналіз текстів різних типів і стилів мовлення; стилістичне експериментування (синонімічні заміни в тексті); конструювання різних мовних одиниць (за моделями, схемами); конструювання зв'язних висловлювань (творчі роботи); редагування чужого й власного мовлення. Усі зазначені вище види вправ спрямовані на формування практичних умінь і навичок відповідно до здійснення чотирьох видів мовленнєвої діяльності (*рецептивних*: читання та аудіювання; *продуктивних*: говоріння і письмо).

Отже, методична система навчання української мови як іноземної в медичних закладах вищої освіти є доцільною та ефективною в освітньому процесі лише тоді, якщо її складниками будуть правильно дібрані та поєднані підходи до навчання УМЯІ, принципи, методи, технології навчання означеної дисципліни, а також вдало розроблена система вправ, що сприятиме формуванню українськомовної професійно-комунікативної компетентності іноземних студентів-медиків, що є визначальною у веденні майбутньої професійної діяльності.

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PROGNOSTIC VALIDITY OF COMPETITIVE SELECTION OF ENTRANTS TO HIGHER EDUCATION

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Abstract

The article analyzes the statistical relationships between the components of competitive selection and the average performance of undergraduate and graduate students of a particular institution of higher education (HEI). The obtained values of correlation coefficients showed that the competitive score calculation models used in the test HEI have a sufficiently high level of prognostic validity ($R > 0.5$) for each educational level. At the same time, the article provides recommendations on possible areas for their improvement.

Keywords: prognostic validity, correlation coefficient, competitive selection, competitive score, external independent evaluation (EIE), higher education institution (HEI)

Problem statement. In 2006, at the official level, a system of external independent evaluation (EIE) of secondary school graduates was introduced in Ukraine. The main purpose of implementing a set of organizational procedures for external evaluation is to increase the level of education of the population and ensure equal access to quality education in external evaluation. First of all, these tasks are implemented through testing in a number of disciplines, which allows for high-quality and unbiased measurement of knowledge of school graduates. Based on the results of such evaluation, the competitive score of the entrant for transparent participation in the competitive selection to the HEI is formed in the future.

It is positive that the institution of higher education, choosing the weights of the subjects of external evaluation, when calculating the competitive score, affects the formation of the ranking list of applicants. Variation in the values of weighting factors allows to obtain such an optimal model of competitive selection, in which the highest ranking places will be occupied by those entrants who are able to study better in the HEI.

The assessment of the adequacy of the applied model is investigated by the indicator of prognostic validity of competitive selection [1]. Namely, with the help of the correlation coefficient between the competitive score of entrants and the results of their success during the first year of study in HEI. In this case, the efficiency of the entry system is considered high if the correlation coefficient is greater than 0.5; sufficient if the correlation coefficient is in the range [0.3, 0.5]; low if the correlation coefficient is less than 0.3 [1].

Beginning in 2017, a set of organizational procedures for external independent evaluation was gradually introduced for junior masters and junior specialists upon admission to the bachelor's degree. And if the competitive score (C_S) for a law degree was calculated exclusively on the results of a single professional test of external evaluation, then for masters of economics from 2018 in the formula for calculating C_S was additionally introduced only external evaluation in a foreign language.

Similar changes affected junior specialists when entering the 3rd year of bachelor's degree. However, in this case, the competitive score, starting from 2018, is calculated on the basis of the EIE Ukrainian Language and Literature and the professional test conducted on the basis of the HEI. Therefore, research and analysis of statistical relationships between the components of competitive selection and the performance of students of each educational level are of considerable interest. These questions are the subject of this study.

Analysis of recent research and publications.

The study of prognostic validity of competitive selection for HEI is given due attention in many foreign countries (USA, Israel, Spain, Great Britain, etc.), and the results of these studies are systematically covered in collective monographs [2 – 4] and scientific articles [5 – 8]. In these works the efficiency of the current models of selection for universities is studied in detail and possible directions of their further improvement are determined.

In Ukraine, too few scientific works are devoted

to this issue [1, 9 – 17]. In particular, in the scientific and practical publication [1], the most thorough study of the quality of competitive selection of students of higher education institutions based on the results of external evaluation during 2008 – 2015. In this paper it is noted that in general the external evaluation has a fairly high prognostic validity, although it is shown that for the branch of knowledge 07 "Management and Administration" its value is only in the range of 0.41 – 0.54.

The authors also emphasize that the rules of admission to the HEI and the use of EIE tests for final school certification are constantly changing, and therefore the study of these statistical patterns will always be a relevant topic for researchers.

The study of correlations between the results of external evaluation and grades in higher mathematics of freshmen is devoted to [9-12]. However, the conclusions obtained by the authors of these works differ significantly. If for engineering specialties [9-10] the results of students' studies in higher mathematics are weakly related to the scores of the relevant EIE certificates ($R < 0.5$), then for economic specialties [11-12], on the contrary, the correlation between these indicators was quite significant ($R > 0.7$)

Determining the optimal formula for calculating the competitive score for a number of specialties is given in [13-16]. Thus increase in prognostic validity of competitive selection is reached by means of variation of weight coefficients of disciplines of HEI.

Formulation of the goals of the article. The purpose of this work is to analyze the statistical relationships between the components of competitive selection and the performance of undergraduate and graduate students of a particular institution of higher education.

Presentation of the main research material. Competitive selection of entrants, which is carried out by the institution of higher education during the admission campaign, has three main areas:

- 1) Admission to the 1st year of bachelor's degree on the basis of complete general secondary education (CGSE).
- 2) Admission to the 3rd year of bachelor's degree on the basis of a diploma of a junior specialist.
- 3) Admission to a master's degree on the basis of a bachelor's or master's degree.

The formula for calculating the competitive score and building on its basis a ranking list of applicants for each of these areas has its own characteristics. In particular, if for admission to the 1st year of the bachelor's degree C_S is calculated on the basis of external evaluation certificates and the average score of the certificate, then for the other two areas in addition to the external evaluation certificate, entrants need to take an additional professional exam. As an exception, it is worth paying attention to the admission to the legal master's degree, which, starting in 2017, is conducted only on the basis of the results of a single professional test in the format of external evaluation.

This statistical study will analyze the methods of calculating the competitive score for each of these areas and will determine their prognostic validity. Calculations will be made on the basis of indicators of success

of students of the economic direction of a separate institution of higher education, which will be called in the future test HEI.

The average rating score of students on learning outcomes, as well as assessments in individual disciplines, obtained on the basis of electronic information on the success of the automated control system of test HEI and are given further expressed in a single 100-point scale.

Competitive score (C_S) and the results of external evaluation of students of each direction, obtained using the information system "Competition" Public Association "Center for Educational Policy" of the Ministry of Education and Science of Ukraine [19].

It should be noted that higher education institutions, independently choosing the subjects of external evaluation and their weights, influence the formation of the model of competitive selection of entrants. Therefore, it is expedient to analyze the methodology used by the test HEI when calculating the competitive score for a particular branch of knowledge.

1) *Admission to the 1st year of bachelor's degree on the basis of complete general secondary education.*

Starting from 2017, the formula for calculating the applicant's C_S when entering the bachelor's degree on the basis of CGSE had a unified form:

$$C_S = C_1 \cdot E_1 + C_2 \cdot E_2 + C_3 \cdot E_3 + C_4 \cdot A + C_5 \cdot O_s) \cdot R_a \cdot B_a \cdot V_a \cdot P_a, (1)$$

where E_1, E_2, E_3 – points of external independent evaluation; A – the average score of the document on education; C_1, C_2, C_3, C_4, C_5 – non-negative weights set by the university; O_s – a score for the successful completion of preparatory courses for admission to the specialty (specialization), which is given special support; R_a, B_a, V_a, P_a – adjustment factors (regional, sectoral, rural and priority).

However, to calculate the C_S and build on its basis a ranking list of entrants for the branch of knowledge 07 "Management and Administration" does not take

into account sectoral and priority factors, as well as additional points for preparatory courses. Therefore, formula (1) in this case takes a simplified form:

$$C_S = (0,45 \cdot E_1 + 0,25 \cdot E_2 + 0,2 \cdot E_3 + 0,1 \cdot A) \cdot R_c \cdot V_c, (2)$$

In (2) the weight coefficients of the EIE disciplines, which were selected by the test HEI for this branch of knowledge, are also given. The largest value of the coefficient (0.45) corresponds to the profile subject.

It should also be noted that since 2018, test HEI, within one specialty, uses two different, according to the list of subjects of external evaluation, models of calculation of C_S . In the first model, the profile subject E_1 , with the highest weighting factor ($C_1 = 0.45$), is Mathematics, E_2 – Ukrainian language and literature and E_3 – at the choice of the entrant or Geography or Foreign language.

In the second model, the profile subject E_1 is the History of Ukraine, E_2 – respectively, remained the Ukrainian language and literature, and E_3 – at the choice of the applicant or Geography or Mathematics. Thus, according to this scheme, even those entrants who did not pass or did not pass the threshold of "passing / not passing" the external examination in mathematics had the opportunity to enter in the university. It should be noted that enrollment in the HEI in this case took place only on a contractual basis. Such a two-model system of selection of applicants is discussed in more detail in [17].

Table 1 shows the Spearman correlation coefficients between the grades obtained by students during their studies in the test HEI, and the indicators that were used as criteria for selecting students for admission. A higher correlation coefficient means a greater prognostic validity of the criterion.

As can be seen from Table 1, the use of test HEI two-model system of competitive selection of applicants, for one branch of knowledge, has a fairly high level of prognostic validity $R = 0.662$ ($R > 0,5$).

Table 1
Prognostic validity of components of competitive selection of students in the branch of knowledge 07 "Management and Administration" of the test HEI according to the results of the EIE 2018

Prognostic criterion	Correlation coefficient with the average score of the first session	Correlation coefficient with the average score of the second session	Correlation coefficient with the average score of the first year
External evaluation Mathematics	0,421	0,541	0,509
External evaluation Ukrainian language and literature	0,577	0,600	0,619
External Examination History of Ukraine	0,324	0,329	0,364
Competitive score of the I method of calculation	0,643	0,728	0,718
Competitive score of the II method of calculation	0,417	0,581	0,564
Competitive score of the total sample size	0,573	0,674	0,662

The analysis of the data given in table 1 shows that the highest prognostic validity is the method of calculating the competitive score. We will remind that in this technique Mathematics is a profile subject with the highest weighting factor. However, as it turned out, the

results of the EIE only in this discipline are less correlated with the average grades of students of the test EIE ($R = 0.421$ for the first semester and $R = 0.541$ for the second). Therefore, the improvement of the forecast function of competitive selection is achieved through

the use of an integrated model of calculation of the C_S for a successful combination of external evaluation subjects with their corresponding weights (1).

In the II method of calculation of C_S as a profile subject the results of EIE from the History of Ukraine are used. Thus, this discipline had the highest weighting factor (0.45) and the greatest influence in determining the competitive score by formula (2). But, as can be seen from Table 1, the external evaluation of the History of Ukraine is the worst correlated with the success of first-year students in economics, compared to other subjects ($R = 0.324$ in the first semester, $R = 0.329$ in the 2nd semester and $R = 0.364$ for the academic year).

The consequence of this is also a much lower prognostic validity of the second model of competitive selection relative to the first model ($R_{II} = 0.564$ against $R_I = 0.718$ on the average performance of students during the first year of study).

Instead, EIE Ukrainian language and literature, as shown by the calculations given in table. 1, is a strong predictor of the success of first-year students in economics. Therefore, in order to obtain a more optimal model for calculating the competitive score, this subject must be used as a profile with the highest weight instead of the external evaluation of the History of Ukraine.

2) *Admission to the 3rd year of bachelor's degree on the basis of a diploma of a junior specialist.*

Since 2018, the analytical procedures of the External Evaluation have been gradually introduced for college graduates, but only as their state final certification. Thus, this year, as in previous years, the enrollment of junior specialists took place only on the basis of the average score of the document on education and the results of the entrance professional test conducted at the university.

Starting from 2019, the rules of admission of junior specialists to the bachelor's degree have changed, according to which the formula for calculating the

competitive score took into account the result of the external examination in the Ukrainian language and literature.

Therefore, the study of indicators of prognostic validity of competitive selection of college graduates, conducted in 2018 and 2019 is relevant both in terms of their evaluation and comparison with each other, and in terms of finding possible areas for improvement. These issues will be discussed below.

In the test HEI in 2018, the competitive score of junior specialists when entering the third year of the bachelor's degree was calculated by the information system "Competition" Public Association "Center for Educational Policy" of the Ministry of Education and Science of Ukraine [19] by the formula:

$$C_S = C_1 \cdot E_1 + C_2 \cdot E_2, \quad (3)$$

where E_1 – the average score of the document on education; E_2 – score of a separate professional test conducted on the basis of HEI; C_1, C_2 – weights of the respective components of the competition score.

At once we note that in the formula (3) weights are established by HEI in rules of reception, and for the sample formed further they are equal to one.

To assess the prognostic validity of competitive selection and its components, Table 2 shows the results of calculating the correlation between the ratings of entrants and the performance of students in disciplines studied in HEI during the first semester of the third year. A higher value of the correlation coefficient means better prognostic validity of the criterion.

Table data 2 indicate a sufficiently high prognostic validity ($R > 0,5$) competition score calculated by formula (3). At the same time, a significant level of correlation of C_S is observed both with the average indicators of students' learning in the first semester and with success in almost every discipline (only for the discipline "Information systems and technologies of accounting and auditing" the correlation coefficient is slightly less than 0.5).

Table 2
Prognostic validity of the components of the competitive selection in 2018 for the bachelor's degree in specialty 071 "Accounting and Taxation", based on the diploma of a junior specialist

№ п/п	Disciplines HEI	Correlation coefficient with the average score of the document on education E_1	Correlation coefficient with the rating of the professional test E_2	Correlation coefficient with the competitive score of C_S
1.	Business Economics	0,63	0,3	0,64
2.	Financial Accounting	0,67	0,44	0,75
3.	Economic analysis	0,79	0,23	0,72
4.	Econometrics	0,67	0,31	0,68
5.	Management	0,65	0,33	0,67
6.	Higher mathematics	0,67	0,19	0,61
7.	Business Foreign Language	0,55	0,25	0,55
8.	Information systems and technologies of accounting and auditing	0,52	0,18	0,49
9.	Current student performance in the first semester	0,73	0,32	0,73
10.	Overall student performance after the first session	0,67	0,3	0,66

Note also that the C_s correlates better with the results of the current performance of students in the first semester (before the credit-examination session) than with the results of the general success after the first session. As it turned out, this tendency to decrease the correlation index is due to the fact that several students did not participate in the test-examination session, and therefore their average learning outcomes differ significantly from the main observation group.

The data of the average score of the document on education are also indicative for forecasting the results of students' education in the HEI. This indicator, as can be seen from the calculations of the correlation coefficient (Table 2), has a high prognostic validity both to the average learning outcomes of the first semester ($R = 0.73$ and $R = 0.67$) and to each individual discipline ($R > 0.5$). Therefore, when introducing external independent assessment for college graduates, the average score of the document on education should also be included in the formula for calculating the competitive score.

Instead, the professional examination of entrants, which was conducted on the basis of HEI, is a weak predictor of student success during the first semester ($R < 0.5$ for all disciplines of HEI without exception). The resulting slight correlation between these criteria is related to the implemented assessment methodology for professional testing, and therefore needs further improvement.

Given that the above statistical study had a small sample size (based on the learning outcomes of only 18

students), it is advisable to compare the obtained prognostic validity with Spearman's rank correlation coefficient. Finding this coefficient does not presuppose the need for a condition on the normality of the distribution of the studied traits, usually evaluates the rank relationship of small samples and its value is less dependent on the presence of abnormal levels.

The calculation of Spearman's rank correlation coefficient was performed after ranking the results of students' performance and their competitive score according to the formula:

$$R_s = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}, \quad (4)$$

where d_i is the difference between the ranks of student assessment results; n is the sample size.

The result of calculating the rank correlation coefficient is given in Fig. 1 in comparison with the corresponding values of the linear correlation coefficient.

The obtained values of Spearman's rank correlation coefficient (R_s) (Fig. 1) do not differ significantly from the corresponding values of Pearson's linear correlation coefficient (R) and confirm the high prognostic validity of competitive selection. It is also important that the values of (R_s) for the current and final performance are almost equal in magnitude and do not depend on the presence of anomalous estimates. Therefore, for small groups of observations, the calculation of Spearman's rank correlation coefficient is more acceptable in determining both the current and final prognostic validity of competitive selection.

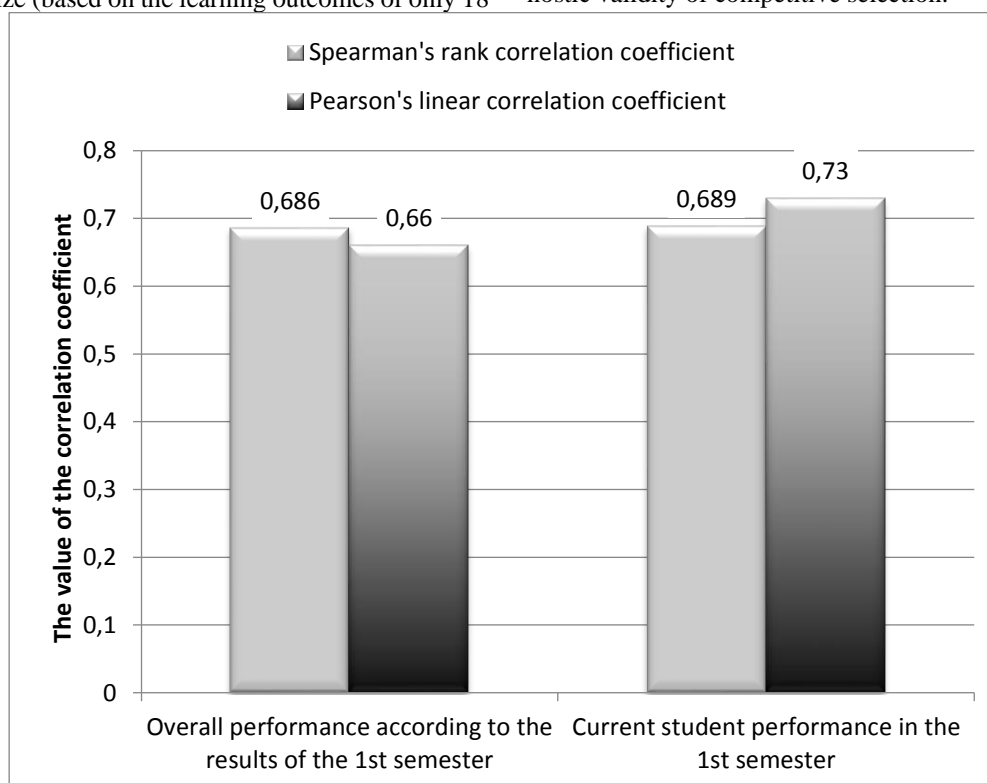


Fig. 1. Prognostic validity of competitive selection for the bachelor's degree on the basis junior specialist diploma (linear and rank correlation)

As noted above, starting from 2019, when calculating the competitive score of college graduates, began to take into account the evaluation of external evaluation in the Ukrainian language and literature, with the formula took the form:

$$C_S = C_1 \cdot E_1 + C_2 \cdot E_2, \quad (5)$$

where E_1 – external evaluation score in Ukrainian language and literature; E_2 – score of the only professional test conducted on the basis of HEI; C_1, C_2 – weights of the respective components of the competition score.

Note also that in the above formula, the weights C_1, C_2 were taken as equal units, as it was during the introductory campaign in 2018.

To assess the prognostic validity of the competitive selection in 2019 and its components, Table 3 shows the results of the calculation of the relevant correlation indicators. Analyzing the data presented in this table, we can note a relatively high

level of prognostic validity. The correlation coefficient of C_S with the average student performance during the first year of study is greater than 0.5, including the results of the autumn and spring sessions. However, it is worth noting that the competitive score of entrants calculated in 2019 is less correlated with student performance compared to the previous year (0.573 vs. 0.66 according to the results of the first session).

Note also that the professional test conducted on the basis of the university is a relatively weak predictor of student success ($R < 0.5$). However, as shown in Table. 3, its inclusion in the calculation formula of the C_S contributes to increasing the level of prognostic validity of the competitive selection in 2019, although a rather insignificant level. An almost similar situation was observed in the previous year. The professional test of 2018 (Table 2) also had rather low indicators of the student performance forecast, and its impact on the overall prognostic validity of the competitive selection was almost absent.

Table 3
Prognostic validity of the components of the competitive selection in 2019 for the bachelor's degree in specialty 071 "Accounting and Taxation", based on the diploma of a junior specialist

№ п/п	Prognostic criterion	Correlation coefficient with the average score of the first session	Correlation coefficient with the average score of the second session	Correlation coefficient with the average score of the III course
1.	External Examination Ukrainian Language and Literature, E_1	0,559	0,550	0,554
2.	Rating assessment of professional test, E_2	0,326	0,370	0,366
3.	Competitive score, C_S	0,573	0,594	0,595

Given the fact that in 2019 in the formula for calculating the C_S of junior specialists, for the first time, was introduced EIE in the Ukrainian language and literature, the analysis of its forecast function is quite important. As shown by the data given in Table 3, the assessments of the EIE in the Ukrainian language and literature correlate much better with the success of students for the appropriate assessment of the professional test conducted on the basis of the test HEI.

However, it should be noted that when entering the 1st year of the bachelor's degree on the basis of (CGSE), the prognostic validity of the EIE Ukrainian Language and Literature is slightly higher ($R = 0.619$ when entering the first year and $R = 0.554$ when entering the 3rd year of the bachelor's degree). This may be due to the fact that in the 3rd year of the bachelor's degree students study the disciplines of the training cycle, in contrast to the 1st year, where the cycle of general training disciplines is studied. That is, the success in the disciplines of general training is better correlated with the assessments of the EIE in the Ukrainian language and literature.

To establish the most optimal model of competitive selection of junior specialists for the bachelor's degree, it is important that the average score of the diploma of education is a strong predictor of their success ($R = 0.67$). Such data will be obtained based on the results of the 2018 accession (Table 2). Therefore, this indicator should be an important component of the

competitive selection of college graduates, and the formula for calculating C_S will then take the form:

$$C_S = C_1 \cdot E_1 + C_2 \cdot E_2 + C_3 \cdot E_3, \quad (6)$$

where E_1 – external evaluation score in Ukrainian language and literature; E_2 – score of the only professional test conducted on the basis of HEI; E_3 – average score of the document on education; C_1, C_2, C_3 – weight coefficients of the respective components of the competition score.

The values of weights, at the first stage of implementation of the proposed model, it is advisable to take equal units, as it was during the introductory campaigns of 2018, 2019. And the next step will be to find their optimal values, based on static data on student performance in the coming years.

Once again, we note that the format of the professional test, which is conducted on the basis of the university needs to be improved, given its low prognostic validity in 2018 and 2019.

3) Admission to the master's degree on the basis of a bachelor's or master's degree

In 2017, for the first time, a set of organizational procedures for external independent evaluation was used to conduct a single professional entrance exam for a law degree. Therefore, it is of great interest to study and analyze the statistical relationships between the assessments of the external evaluation of entrants and the results of their success during the first year of study in the master's program of HEI.

The total competitive score of the entrant to the master's degree, taking into account the relevant weights, was calculated by the information system "Competition" Public Association "Center for Educational Policy" of the Ministry of Education and Science of Ukraine [19] by the formula:

$$C_S = C_1 \cdot E_1 + C_2 \cdot E_2 + C_3 \cdot E_3, \quad (7)$$

where E_1 – EIE score on the test of general educational legal competencies, which includes assessment of analytical thinking, critical thinking and logical thinking (block TGELC); E_2 – EIE score in six basic legal disciplines, which includes constitutional law, administrative law, civil law, civil procedural law, criminal law, criminal procedural law (block "Law"); E_3 – external examination score in a foreign language; C_1, C_2, C_3 – weight coefficients of the corresponding test blocks of EIE which are defined by HEI by rules of reception.

Varying the values of weights, HEI is able to independently influence the formation of the rating list and improve the process of competitive selection.

In the test HEI to calculate the competitive score of entrants to the master's degree in this area was applied such weighting factors:

$$C_S = 0.2 \cdot E_1 + 0.6 \cdot E_2 + 0.2 \cdot E_3. \quad (8)$$

Since the analytical procedures of the external evaluation were used for the first time for admission to the master's program, it is first of all expedient to analyze the results of such evaluation for the entrants of the test HEI (Table 4). The data given in table. 4, indicate relatively low performance results from each test unit with their average variation. But more importantly, there is no correlation between the scores from the «Law» block and the scores from the TGELC block (correlation coefficient 0.071). A weak linear relationship is also observed between these blocks and the foreign language test. The lack of correlation between the different blocks of testing is a somewhat unexpected fact and requires further analysis.

Table 4

Indicators of variation of competitive selection in 2017 to the legal master's degree of test HEI

Indicator	TGELC block	block "Law "	block "Foreign language"	competitive score
1. The maximum score	163	155	160	151,2
2. The average value of the score	131,1	127,6	127,7	128,3
3. The standard deviation of the score	17,93	16,78	16,47	12,3
4. Coefficient of variation	13,7%	13,1%	12,9%	9,6%
5. Correlation coefficient with the TGELC block	-	0,071	0,253	0,419
6. Correlation coefficient with the block "Law"	0,071	-	0,225	0,9

According to the statistics presented in [18], in Ukraine as a whole, the results of assessment from the TGELC block and from the «Law» block of entrants to the master's degree roughly correspond to the normal distribution law with an average value of 120 points. At the same time almost 20% of entrants to the master's degree "Law" did not pass the threshold "passed / failed" of all test units, which is 3 thousand 225 entrants out of 16 thousand 129. In particular, about 9% of excellent students with honors also did not pass this threshold. It is also worth noting that only 2% of entrants from the "Law" block received a score higher than 180 points, and even less than 1% from the TGELC block.

Such low evaluation indicators together with their weak cross-correlation first of all call into question the quality (complexity) of the developed tests. In particular, the testological assessment of the quality of the only professional entrance test presented in [18] revealed a rather poor result of the reliability of the TGELC block, although the author of the study emphasizes that their sufficient quality should be sought in the concept of TGELC.

In [18] it was also noted that the TGELC unit performs well the function of differentiation only for entrants with a high level of educational competencies (scores 163-177), but does not provide sufficient quality information on all other entrants and does not reliably overcome the minimum level of competencies.

In particular, TGELC is not an educational measurement of learning outcomes in a particular subject and does not correspond to any course or program of study and therefore measures non-educational achievement.

The above conclusions are also in good agreement with the obtained and the following results of low prognostic validity of the competitive selection of the TGELC block.

On the other hand, the general negative result of testing may indicate a low readiness of graduates of HEI for this type of assessment, due, for example, the lack of such a training base of typical tasks. This statement is supported by the fact that the top five average results were shown by the entrants of those HEI, on the basis of which the first experiment on the introduction of a single test assessment was conducted in 2016.

It should also be noted that the results of the quality of higher education were used by the Ministry of Education and Science of Ukraine to assess the quality of the external evaluation activities. In particular, it was noted that the best law is taught by law and classical universities, and the worst – private, agricultural and law enforcement universities. This conclusion was made only on the basis of the average score of the external evaluation, while in no way took into account the average competitive score of students, which they had at the time of admission to the HEI.

Since the model of competitive selection for HEI is built in such a way that the highest competitive score is received by those entrants who have the best ability to study, the most popular with the largest number of talented young people HEI (legal and classical) a priori have the best external evaluation results. Therefore, it is not correct to evaluate the activity of external evaluation, relying only on the average results of external evaluation of graduates, neglecting their initial potential, which is expressed by the results of external evaluation of secondary education. More details on the criteria for evaluating the activities of HEI in the field of educational services are discussed in [18].

To assess the prognostic validity of the competitive selection for the law degree, a correlation field (Fig. 2) of the dependence of the average score of masters of test HEI on the results of the first session from their competitive score and calculated the corresponding correlation indicators. Analyzing the data shown in Fig. 2, we can conclude that between the above characteristics there is a linear relationship with the correlation coefficient $R = 0.58$, which in turn indicates a sufficient prognostic validity of the competitive selection for a master's degree in specialty 081 "Law".

The correlation equation, which allows with some error to predict the results of the success of masters, has the form:

$$y = 0,67 \cdot C_S - 12,5 \quad (9)$$

where y is the average score of the master according to the results of the first session.

For a more detailed analysis of the prognostic validity of the components of the competitive selection for the master's degree, the correlation indicators between the ratings of entrants from each block of external evaluation and scores from individual disciplines studied in the test HEI were calculated (Table 5).

Table data. 5 indicate a fairly high prognostic validity ($R > 0,5$) of the general competitive point calculated by a technique (7). At the same time a significant level of correlation of C_S is observed both with the average performance of masters in the first and second semesters, and with individual disciplines. Note also that the C_S correlates better with the results of master's studies in the first semester than in the second.

Of particular interest is the study of the prognostic validity of individual blocks of external evaluation and academic disciplines. The calculations are given in table. 5, indicate that not all test blocks of EIE are equilibrium for the competitive selection of masters. As can be seen from the above data set, only the results of the test block "Law" are sufficiently correlated with the assessments of masters during the first year of study ($R \in [0.46; 0.66]$).

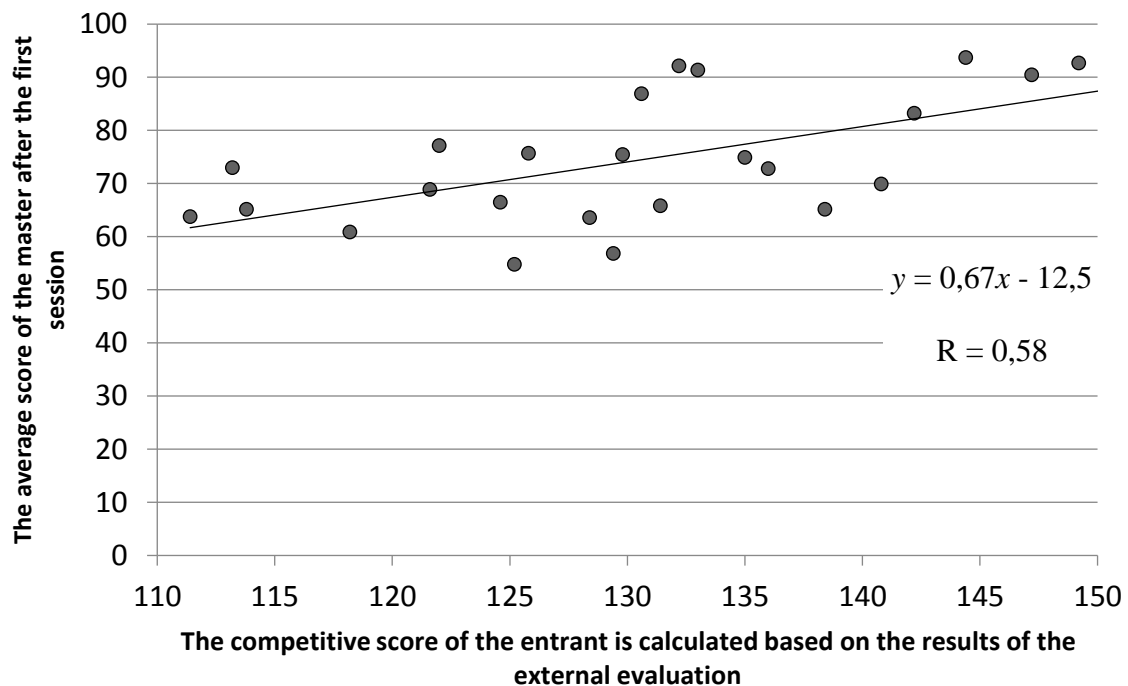


Fig. 2. Correlation field of dependence of the average score of the master HEI on the results of the success of the first semester on the competitive score of the external evaluation, calculated by the formula (8)

Table 5

Prognostic validity of components of competitive selection to the legal magistracy in the test HEI

№ п/п	Disciplines HEI	Prognostic validity of the components of the competition score			
		TGELC block	block "Law"	block "Foreign language"	competitive score C_S
1.	"Legal basis for preventing and combating corruption in Ukraine"	0,06	0,65	0,23	0,69
2.	"Current issues of constitutional law"	0,07	0,66	0,20	0,69
3.	"Legal mechanisms for the protection of human rights and freedoms"	0,07	0,54	0,08	0,54
4.	"Agrarian law of foreign countries"	0,15	0,61	0,19	0,67
5.	"Comparative Law"	0,05	0,49	0,09	0,49
6.	"Legal assurance of quality and safety of agricultural products"	0,15	0,46	0,05	0,52
7.	Average score for the first semester	0,12	0,52	0,21	0,58
8.	Average score for the second semester	0,18	0,46	0,08	0,51
9.	Average score for the first year of study	0,15	0,50	0,14	0,56

Instead, the evaluation of entrants from the TGELC block has very low criteria for predicting the success of masters. The correlation coefficient is less than 0.2 for each of the disciplines listed in table. 5th as a whole on results of training of the first year. This result is natural, as it is consistent with the lack of a linear relationship between the individual units of the EIE and the low reliability of the TGELC, as discussed above. So we have another argumentative in favor of the need to further improve the tasks of the TGELC bloc.

In particular, in [18] it is recommended to introduce TGELC as one of the main tests for admission to the law bachelor's degree, and not the master's degree. In this case, the prognostic accuracy of TGELC would be much higher compared to using only the results of external evaluation.

The prognostic validity of the test block in foreign languages also seems insufficient ($R < 0.25$).

The above analysis of the prognostic validity of the components of the competitive selection for the master's degree also allows, varying the weights of individual blocks of external evaluation, to obtain the most optimal model for calculating the competitive score. Since the highest indicators of the forecast had rating ratings from the "Law" block, their weighting factor in the structure of the competition score should be the highest. This model was used in the test HEI.

To assess and compare other possible methods of calculating the C_S , the competitive score of entrants in this sample was listed in accordance with the selected method, and correlation indicators were determined (Table 6).

Table 6

Prognostic validity of competitive selection for a law master's degree for alternative methods of calculating the competitive score of C_S

Method number calculation of C_S	C_S calculation formula	Prognostic validity of competitive selection for master's degree
1	$C_S = 0,2 \cdot E_1 + 0,6 \cdot E_2 + 0,2 \cdot E_3$	0,58
2	$C_S = E_1 + E_2 + E_3$	0,47
3	$C_S = 0,2 \cdot E_1 + 0,4 \cdot E_2 + 0,4 \cdot E_3$	0,56
4	$C_S = 0,4 \cdot E_1 + 0,4 \cdot E_2 + 0,2 \cdot E_3$	0,49

As expected, the best result of the forecast of success of masters has 1 model applied by test HEI, and the worst – 2 model at which all blocks of EIE were balanced. Unfortunately, such an equilibrium model for calculating the competitive score was approved by the Conditions of Admission to Higher Education Institutions of Ukraine in 2018 [20] and subsequent years. Thus, the HEI actually lost the opportunity to independently choose the weights in the structure of the competitive score when entering the master's program.

A more detailed analysis and statistical evaluation of the competitive selection models for the legal master's degree applied in 2018 – 2020 will be conducted in our next works. In particular, an analysis of the use of external examinations in foreign languages and literature for admission to master's programs in other specialties will be conducted.

Conclusions.

1) The conducted statistical research indicates that: competitive selection for the bachelor's field of knowledge 07 "Management and Administration", on the basis of complete general secondary education, has a fairly high prognostic validity. The best predictor of the success of first-year students of economics is the external examination in the Ukrainian language and literature. The use of this discipline as a profile, with the highest weighting factor, in an alternative method of calculating the competitive score, can improve the overall forecast function.

2) competitive selection up to the 3rd year of the bachelor's degree on the basis of the diploma of the junior specialist has also rather high prognostic validity. Given that the average score of the document on education is best correlated with the assessments of students during the first year of study in HEI, this criterion should be introduced into the formula for

calculating the competitive score to improve its predictive function.

3) the prognostic validity of the competitive selection for the legal master's degree is at the appropriate level. The best predictor of the success of masters during the first year of study is a rating assessment from the block "Law", while the test of general academic legal competencies has no prognostic component and needs further improvement.

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