Quality of Universities Admission Based on External Independent Assessment in Ukraine

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Abstract

Universities admission in Ukraine is based on External Independent Assessment (EIA) of candidates starting from 2008. EIA implementation process was extremely sensitive from political point of view. Sociological research demonstrated strong cutting of corruption in higher education admission system and consequently growth or resistance of some circles around higher education.

Research was focused on three following aspects:

♦ Predictive validity of EIA for student's studies in university
♦ Fairness of universities admission based on EIA
♦ Public opinion about universities admission reform.

Research was based on data of 2008 and 2009; 25 universities from all regions submitted first-year student grades in 2008-2009.

Main results:

1. Predictive validity (PV) of EIA equals 0,52 (Spearman correlation). PV is better for law students, social science students and much lower for engineering.

2. Fairness is fine for all social groups except of school graduates 2008 and earlier.

3. Students and school teachers strongly support the universities admission reform while university professors and especially rectors are more critical.

Methodology of research seems to be recognized by Ukrainian society as rather qualified. Authors are going to develop methodology and technique for longitude monitoring of the quality of universities admission based on EIA.

Introduction

Research Purpose

▪ Develop methodology and techniques for assessing and monitoring quantitative indices expressing quality of the university admission system based on using the analysis of worldwide practice and Ukraine's own educational and cultural traditions.

▪ Examine quantitative indices indicating quality of the university admission system based on EIA.

The Project Research Group and Co-Executors

The research was carried out by the International Public Organization "The Center for Testing Technologies and Education Quality Monitoring" supported by the International Renaissance Foundation grant in the period from October 2009 to March 2010. To complete different stages and parts of the project, experts were engaged from the following organizations and agencies:

1. National Academy of Pedagogy of Ukraine (NAP)
2. Ukrainian Center for Educational Quality Assessment (UCEQA)
3. Editorial Board of Testing and Monitoring in Education Newsletter (TIMO)
4. The Institute for Sociology at Karazin National University of Kharkiv
5. Ukrainian Standardized External Testing Initiative (USETI)
6. OPORA Public Organization

Background

It is acknowledged that the primary goals of the Ukrainian educational system include creating nurturing environment for the development and self-accomplishment of each individual, forming generations capable of life long learning, creating and developing civil society values. One of the priorities defined by the

national education development policy is to create equal opportunities for youth and children in obtaining quality education.

At the end of the 20th century, one of the most critical issues in obtaining education in Ukraine became the university admission issue, particularly due to certain bias and lack of objectivity in the assessment of candidate's academic achievements, outdated methods of entrance examinations in the form of oral and written subject-specific exams, and the existence of corruption schemes during the university enrollment process.

Sociological survey has shown that young people in Ukraine consider external assessment as one of the ways to solve these problems. The lack of a specific knowledge about new entrance examination methods as anti-corruption measures led to the establishment of the Centre for Testing Technologies which set out systemic work to study conditions and possibilities for implementing standardized external assessment of candidates during university admission processes. In 2002, an association agreement in relation to these matters was concluded between the International Renaissance Foundation, the Ministry of Education and Science and the Ukraine's Academy of Pedagogy. This actually launched a wide-scale educational experiment in implementation of standardized external assessment based on testing technologies (further in the text – EIA). The experiment included several stages such as studding various assessment models, preparing the legislative platform, conducting various testing procedures and the tests in Ukrainian Language, Mathematics and History. The core of the experimental work was chiefly conducted at the Center for Testing Technologies and the six power Ukrainian universities presented all regions of a country (the Center, East, West, South, North).

Positive results obtained in the pilot experiment, the support of the pedagogical community and the public response to the implementation of the EIA facilitated the introduction of this advanced technology into educational practices in Ukraine. In 2004 and 2005, the Cabinet of Ministers of Ukraine issued two regulations[1] legislating the deployment of the all-inclusive implementation of standardized external assessment in Ukraine.

Methods

Research methodology included the correlation analysis of statistically relevant data samples, methods of sociological research, and the study of worldwide expertise for monitoring quality of university admission systems.

The Research Program, its techniques and tools were developed jointly by the National Academy of Pedagogy of Ukraine, the Ukrainian Center for Educational Quality Assessment, the TIMO, the Center for Testing Technologies and Education Quality Monitoring, the Institute for Sociology at Karazin National University of Kharkiv. The research consists of the following three components:

1. Study of effectiveness of the university admission system based on standardized external assessment (prediction of academic performance at the university level by using external testing scores presented in assessment certificates (or predictive validity of the external assessment tests)): this study estimated the correlation of the average score of a EIA certificate with the first year grade point average; the study database included information on 22,372 first year university students from 25 higher educational establishments[2] which varied in specialization, type of ownership, industry affiliation, and location; this database was formed by integrating the standardized external assessment registration database of 2008 made up by the Ukrainian Center for Educational Quality Assessment with corresponding university performance records; predictive validity was also examined with the focus on specialization areas, on gender criterion, on the location of a secondary school (in which a student completed his/her secondary education), with the account of using admission privileges, etc.; the data was obtained from universities using the KONKURS system technology and then processed by the relevant experts – developers of the KONKURS system (the Ukrainian Standardized External Testing Initiative); complete information on the research findings is presented in the Report prepared jointly by the USETI experts and the TIMO Editorial Board.

2. Study of fairness of the university admission system based on EIA (estimation of successful university enrollment for individuals representing socially relevant subgroups of the Ukrainian population): within this study the database was compiled to include information on all students who were enrolled for univer-

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[1] Regulation #1095 "Some Issues of Implementing Standardized External Assessment and Education Quality Monitoring" of August 25, 2004, and Regulation #1312 "On Urgent Measures for Implementing Standardized External Assessment and Education Quality Monitoring" of December 31, 2005

[2] The Ministry of Education and Science of Ukraine issued a special letter inviting 70 higher educational establishments from 8 regions of Ukraine to take part in the project; however, only 25 institutions provided the required data.

sity study by the results of the EIA administered in 2009; this database was completed by entering the university admission data presented to the Ministry of Education and Science by higher educational establishments to the standardized external assessment registration database of the Ukrainian Center for Educational Quality Assessment for 2009; the database contains information on 264,500 students (full database on students admitted to universities in 2009 as of for January 1, 2010); the data was processed jointly by the experts of the Ukrainian Center for Educational Quality Assessment, the Ukrainian Standardized External Testing Initiative, the TIMO Editorial Board; analytical data on the level of fairness of the assessment-based university admission system on the national and regional scale, by the secondary school graduation year, types of secondary education institutions (in which a student completed his/her secondary education) is presented in the Project Report prepared by the TIMO Editorial Board.

3. Study of public acceptance of the university admission system based on EIA (carrying out surveys to study the perception of the assessment-based university admission system by secondary school graduates, secondary school teachers, university students and faculty): within this study, 3,974 individuals were surveyed by using specially designed questionnaires (1,487 secondary school graduates, 718 secondary school teachers, 1,373 students, 396 university professors and instructors) from 10 regions (Donetsk, Zakarpattia, Ivano-Frankivsk, Kyiv, Luhansk, Lviv, Sumy, Kharkiv, Kherson, and Chernihiv regions); the survey was conducted by the OPORA Public Organization; scanning and verifying of the results was performed by the Ukrainian Center for Educational Quality Assessment, sociological research and preparation of the Report were completed by the Institute for Sociology at Karazin National University of Kharkiv together with the TIMO editorial staff; detailed analysis of responses obtained for the 20 questions in questionnaires for different subgroups of respondents (by age, gender, education, place of residence, specialization, type of institution, family social background, etc.) is presented in the Project Report.

Results

1. EFFECTIVENESS OF THE UNIVERSITY ADMISSION SYSTNEM BASED ON STANDARDIZED EXTERNAL ASSESSMENT

The survey intended to study the effectiveness of the university admission system by estimating predictive validity of the EIA tests.

General Remarks

♦ The effectiveness of the university admission system based of EIA is a numeric value expressing the extent to which academic performance at the university level is predicted by the performance on the standardized external assessment;

♦ The effectiveness of the university admission system based of EIA is the predictive validity of the EIA tests, that is, correspondence of the university admission system to its main purpose – formation of a good quality (that is, successful) cohort of the first year students;

♦ The effectiveness of the university admission system based of EIA is expressed by the correlation coefficient between the EIA scores and student's exam grades in their first year at university (the first and the second examination sessions in the first year of undergraduate study), the most weight is attributed to the correlation coefficient between the average EIA score and first year grade point average;

♦ The effectiveness of the university admission system based of standardized external assessment is recognized worldwide as:

  ▪ High if the correlation coefficient is above 0.5;
  ▪ Sufficient if the correlation coefficient is within the range of $[0.3, 0.5]$;
  ▪ Low if the correlation coefficient is below 0.3.

Research Methodology

The more data is analyzed, the higher reliability is achieved; however this also means higher cost of the research. In the area of educational measurement it is accepted that in order to achieve sufficiently high data reliability it is necessary obtain data on 10% of the overall number of respondents, with the sample being statistically representative by as many parameters as possible. The data on student's academic performance was officially presented to the KONKURS system. The data on the EIA scores and student's personal information was obtained by integrating the university performance database and the registration database of the Ukrainian Center for Educational Quality Assessment. As a result, the integrated database for the research contains: students' personal information (age, gender, secondary school graduation year, type and location of secondary school (in which a student completed his/her secondary education), place of residence) (anonymous); academic performance at university (winter an summer exam session grades); performance of the EIA (grades on the EIA tests); information on universities (type, authority under which the institution functions, type of ownership, specialization).

Data Preparation

For the purpose of the research, 70 institutions were selected out of 400 Ukrainian higher educational establishments; the chosen institutions were asked (by the official letter of the relevant Ministry) to provide the following data using the KONKURS system technology on their first year students who gained university admission on the basis of their EIA scores in 2008: name; grades on the winter exam session of 2009; grades on the summer exam session of 2009; secondary school grade point average.

After processing the obtained data (entering the data to the database and performing standard verification procedures), the database contained the name of the higher educational institution, the number of students, percentage, the percentage of verified works and the cumulative percentage.

The analysis of the data has shown:

- ♦ High correlation coefficient of the Average EIA Score and First Year GPA;
- ♦ Slightly lower correlation coefficient of the Average EIA Score in comparison with the Secondary School GPA and First Year GPA;
- ♦ Considering both factors (Weighted[3] Mean Value of Secondary School GPA and Average EIA Score) enables to significantly increase the predictive validity of university admission which also means enhancing the effectiveness of the university admission system).

PREDICTIVE VALIDITY OF THE EIA TESTS OF 2008

Correlation coefficient between:
- the mean value of exam grades for the first year at university, and
- various university admission criteria

were studied in a framework of a project.

Prediction Factor	Correlation
Secondary School GPA	0.537
Average EIA Score	0.522
Weighted Mean Value of Secondary School GPA and Average EIA Score	0.580
Number of participants	11,207

The Study of Differential Validity

Differential validity exists if the magnitude of the predictive validity varies by test-takers' subgroup and by different university specialization category.

Predictive Validity of Factors for Candidates Entitled to Privileges (which have bonus due to results on Olympiads, Competitions etc.)

Prediction Factor	Correlation Coefficient			
	Candidates Entitled to Privileges	Candidates without Privileges	Candidates Seeking Admission to Medical Undergraduate Programs	Candidates Seeking Admission to Pedagogical Undergraduate Programs
Secondary School GPA	0.512 (1602*)	0.509 (9899*)	0.406 (1271*)	0.432 (398*)
Average EIA Score	0.541 (2455*)	0.478 (19357*)	0.540 (1275*)	0.451 (400*)
Weighted Mean Value of School GPA and average EIA Score	0.572 (1599*)	0.556 (9883*)	0.515 (1269*)	0.500 (398*)

Predictive Validity of Factors for Candidates Seeking Admission to Social Undergraduate Programs

Prediction Factor	Correlation
EIA in Ukrainian Language	0.643 (979*)
EIA in Ukrainian History	0.615 (351*)
EIA in Mathematics	0.596 (531*)
EIA in Economics	0.528 (25*)
EIA in Civics	0.557 (77*)
Secondary School Grade Point Average	0.542 (465*)
Average EIA Score	0.657 (979*)

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[3] Weighted means linear rescaling school 12 –ball GPA into 100-200 scale used for scaling EST results.

*) Number in breaks means the size of subpopulation.

Weighted Mean Value of Secondary School Grade Point Average and Average EIA Score	0.601 (463*)

2. FAIRNESS OF THE UNIVERSITY ADMISSION SYSTEM BASED ON THE STANDARDIZED EXTERNAL ASSESSMENT

General Remarks
- ♦ Fairness of the university admission system is the value which numerically expresses the measure of equity for different socially significant population subgroups to gain access to higher education.
- ♦ Fairness of the university admission system expresses the measure of successful university enrollment by different socially significant population subgroups (by gender, place of residence, secondary school graduation year, parents' social background, etc.).
- ♦ Fairness of the university admission system is estimated as a percent of maximum modulo deviation of successful university enrollment of socially significant population subgroups in relation to the probability of enrollment nationwide.
- ♦ Fairness of the university admission system reflects the level of democracy and fairness of the society; democratic countries and civil society takes continuous efforts to enhance fairness of its university admission system, which means striving to achieve zero inequality of chances for socially significant population subgroups to secure successful university enrollment.
- ♦ One of the main roles of the ETS in university admission in developed and especially in developing countries is growing the fairness of the university admission system.

The research gave opportunity to obtain data on such categories:
- ♦ Successful enrollment (for a certain population subgroup) which is a proportion expressing the number of those who secured university admission in relation to those seeking university admissions (for the population subgroup in question).
- ♦ Successful Enrollment Deviation (for a certain population subgroup) which expresses the difference between a measure of successful enrollment for the population subgroup in question and that for successful enrollment nationwide estimated for all Ukrainian citizens seeking university admission.
- ♦ Relative Successful Enrollment Deviation (for a certain population subgroup) which expresses a proportion of enrollment probability deviation for the population subgroup in question and that for successful enrollment nationwide estimated for all Ukrainian citizens seeking university admission.

Results

The analysis of the obtained data has shown that:

1.The measure of fairness of the university admission system based on the EIA of 2009 made up 20%. This means that successful university enrollment for socially significant population subgroups differed from the average value of enrollment throughout Ukraine by no more than 20%. Therefore, the overall fairness of the EIA-based university admission system nationwide is sufficiently high and parallels the admission system fairness level in Scandinavian countries.

2.The subgroup raising concern is made up of secondary school graduates of the preceding years, whose successful enrollment is 34% lower than the average value throughout Ukraine.

3.In order to eliminate the influence of such factor as secondary school graduation year during university admission process, the Ukrainian Center for Educational Quality Assessment is carrying out a pedagogical experiment in implementing the General Learning Competence Test (GLCT) in the EIA framework.

3. PUBLIC ACCEPTANCE OF THE UNIVERSITY ADMISSION SYSTEM BASED ON THE STANDARDIZED EXTERNAL ASSESSMENT

General Remarks

Public acceptance of an assessment-based university admission system expresses the level of awareness and trust exhibited by various population subgroups to the admission system as determined by surveys and relevant reSEArch. One of the major focus groups is educators (first of all secondary school teachers and university faculty), university applicants, secondary school graduates (those who are going to take the research for the purpose of seeking university admission), university students (enrolled by their assessment scores).

The reSEArch has been carried out within such a sample population:
- ♦ *secondary school educators – 718 persons;*
- ♦ *university educators – 396 persons;*
- ♦ *secondary school students – 1487 persons;*
- ♦ *university 1 year students – 1373 persons.*

Results

Distribution of Responses to the Question:
"What is your attitude to the EIA as a university admission factor? ", %

Interviewee	Approve	Most likely approve	Somewhat approve	Most likely do not approve	Do not approve at all	Hard to tell
Secondary school educators	29	23	38	6	2	2
University students	21	22	39	10	8	0
University educators	15	17	39	16	11	2
Secondary school graduates	7	15	49	12	17	0

Distribution of Responses to the Question: "Rate on a five-point scale the quality of testing materials", %

Interviewee	High		Most likely High		Average		Most likely low		Low		Hard to tell	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Secondary school educators	26	17	46	43	14	32	1	4	1	1	13	3
University educators	4	5	22	20	38	39	8	10	12	6	16	20

Distribution of Responses to the Question: "Rate on a five-point scale the objectivity of assessing the level of graduates' academic achievements by using tests", %

Interviewee	High		Most likely High		Average		Most likely low		Low		Hard to tell	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Secondary school educators	20	19	43	37	19	32	2	6	2	2	14	4
University educators	6	5	12	22	35	33	12	14	22	13	13	13

Distribution of Responses to the Question:
"Rate on a five-point scale the influence of the standardized external assessment on ensuring transparent procedures of forming university students cohorts" 2009, %

Interviewee	High	Most likely High	Average	Most likely low	Low	Hard to tell
Secondary school educators	21	34	31	6	4	4
University educators	20	33	25	7	7	8

Distribution of Responses to the Question:
"Rate on a five-point scale the influence of the standardized external assessment on ensuring objectivity of procedures for forming university students cohorts", %

Interviewee	High		Most likely High		Average		Most likely low		Low		Hard to tell	
	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Secondary school educators	19	15	39	35	21	33	3	9	2	4	16	4
University educators	6	13	16	29	27	29	14	12	25	8	12	9

Distribution of Responses to the Question:
"Rate on a five-point scale the influence of the standardized external assessment on ensuring quality of forming university students cohorts", %

Interviewee	High	Most likely High	Average	Most likely low	Low	Hard to tell

	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009	2007	2009
Secondary school educators	17	16	39	25	22	40	4	9	2	4	16	6
University educators	5	6	14	18	29	38	12	15	28	15	12	8

Distribution of Responses to the Question:"In your opinion, do standardized external assessment procedures contribute to the objectivity of the university admission process", 2009 %

Interviewee	Contribute	Most likely contribute	Partially contribute, partially not	Most likely do not contribute	Do not contribute at all	Hard to tell
Secondary school educators	26	27	38	4	2	3
University educators	16	26	36	10	8	4

Distribution of Responses to the Question: "Do you trust the EIA results?"

Interviewee	Trust	Somewhat trust, somewhat not	Distrust	Hard to tell
Secondary school teachers	56	36	7	1
Secondary school administration	71	22	6	1
University faculty	34	44	17	5
University Administrators	45	32	22	1
Secondary school educators participated in EIA administration	64	28	6	2
Secondary school educators did not participate in EIA administration	49	41	8	2
University educators participated in EIA administration	42	33	21	4
University educators did not participate in EIA administration	34	44	17	5

Proponents of the EIA and Entrance Examinations among those involved in the educational process, %

Interviewee	Entrance examinations	EIA
Secondary school educators	17	63
University students	24	54
University educators	38	34
School students	34	44

Conclusions

The completed research on the quality of the assessment-based university admission system in Ukraine gives the opportunity to draw general conclusions about the perception of this innovative university enrollment procedure by interested parties and to evaluate the effectiveness of its implementation with regard to its objectivity, fairness and ensuring equal access to higher education.

1. The society gradually establishes positive perception of the , builds trust to assessment results and forms the belief that the assessment-based selection of students has become more transparent and unbiased. The survey findings show that more than half of secondary school and university students, together with secondary school educators trust the EIA. This proportion for university educators is somewhat lower (35%), though 42% of university professors have trust to some elements of the assessment while distrusting others; only 7% of interviewed in this subgroup expressed distrust to the EIA, which in comparison with the situation found in 2007 confirms the tendency towards more positive perception of EIA by university professors (the level of trust has grown by 24% while the level of distrust has decreased by 46%). What is also inspiring is the fact that the level of positive perception of the assessment has risen in the category of those who are in charge of running secondary and higher education institutions.

2. Among secondary school educators, about two thirds of the interviewed persons believe that external assessment is a more efficient university admission tool in comparison with entrance examinations. This opinion is shared by more than half of the interviewed university students and almost half (44%) of the interviewed secondary school students. However, only a third of university faculty consider external assessment a more efficient admission instrument than entrance examinations. Generally, it is important

to note that each interviewed subgroup has shown certain proportion of those who favor traditional exams, however only in the university faculty subgroup this proportion is higher than the proportion of those who support standardized external assessment.

3. Interesting findings were obtained in relation to educators' opinion about the use of other criteria in university admission process. About two thirds (67%) of secondary school educators believe that candidates' high school grade point average should be considered in making university enrollment decisions. University educators also emphasize the importance of this criterion (42%), though they note more often the importance of other factors like participation in various competitions and Olympiads, having graduated a specialized institution, and performance on the special academic ability test.

4. Two thirds of university students indicated the test-based assessment to be fair, and only 10% believe that the obtained score inadequately expresses their ability; further 20% believe the assessment to be 'somewhat fair'. However, only a third of university students who took entrance tests indicated that the tests fully corresponded to the scope and level of their subject competence; almost half of the interviewed students believed the tests to be difficult.

5. To sum up, the survey of educators, secondary school students and university students as to their perception of EIA on the whole revealed a positive attitude to using EIA testing as a university admission procedure, confirmed the effectiveness of the proposed external assessment model, and showed a steady tendency for the growth of trust to EIA results and their acceptance as fair.

6. The statistical analysis of the assessment-based university admission system fairness (equal access to higher education for different social subgroups of applicants) has revealed that the assessment-based university admission system on the whole ensures the equality of different subgroups in gaining higher education. At the same time, it is important to note that the existing system requires improvements in the treatment of candidates who graduated secondary schools in years preceding the external assessment implementation since their enrollment rate does not meet the fairness criterion. With this purpose, it is proposed to implement, along with subject tests, the assessment of candidates' ability to study at the university level, or the so-called Test of General Learning Competence (TGLC).

7. The estimation of predictive validity has shown that the correlation coefficient gives sufficiently high prediction of students' first year academic performance by their EIA scores (r = 0.52) and secondary school grade point average (r = 0.54), especially if an integrated factor is considered in university enrollment decision (r = 0.58). Therefore, considering the composite value of both factors (weighted mean of secondary school grade point average and average EIA score) significantly increases predictive validity of university admission factors, which also means increasing the effectiveness of the university admission system[4].

8. The developed methodology and techniques for estimating the effectiveness of a university admission system allows for similar studies to be carried out on the regional level and even on the level of an individual institution making estimates for various university programs, thus enabling to come up with individual 'formula' for effective selection of 'institution's own candidates and students' in order to educate 'institution's own specialists'. By playing with the developed model of estimating the effectiveness of university admission system universities may find the optimal weight of different admission criteria (as an example, for grades by EIA certificates and grade point average) and thus find the "formula" of own candidate and student.

9. It is important and appropriate to continue the study of the assessment-based university admission system quality in the coming years in order to learn about tendencies and acquire relevant information for sensible decision-taking concerning improvements of the existing system and preparing proposals for setting up the national system for monitoring the quality of the assessment-based university admission system.

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[4] It should be taken in account that the model of admission system 2008 was radically changed in 2010 (in 2008 GPA was not a criteria for university admission therefore had no high stakes and as a consequence was not biased). The attempt to use GPA as admission criteria in 2010 reasoned a great pressure on school administration and teachers from some authorities, parents etc. So the results of GPA 2010 can't be considered as objective. From the provided research there can be derived one significant conclusion: "GPA is an important characteristic of candidate", but it is a great problem to assess it properly and how to use it in admission process. One of the effective ways to do that is to conduct mature exams as a national standardized test as it is in a lot of countries worldwide.