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Fall 2019

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Selection Criteria for the Honors Program in Azerbaijan

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Abstract: Designing effective selection procedures for honors programs is always a challenging task. In Azerbaijan, selection is based on three main criteria: (i) student performance in the centralized university admission test; (ii) student performance in the first year of studies; and (iii) student performance in the honors program selection test. This research identifies criteria most crucial in predicting student success in honors programs. An analysis was first conducted for all honors students. Results indicate that all three criteria used in the selection process are highly significant predictors of student success in the program. This same analysis was then applied separately for each degree program, demonstrating that not all criteria are significant for some programs. These results suggest that creating differentiated selection procedures for different degree programs might be more efficient.

Keywords: higher education—Azerbaijan; educational program admissions; multiple regression analysis

INTRODUCTION

In 2014, the Ministry of Education (MoE) of the Republic of Azerbaijan launched honors programs, called Sabah Groups, in several universities. As this initiative was new, the groups were launched only for specific degree programs in selected state universities. The purpose of the honors programs is to educate high-performing students in each program in a more advanced manner, and so most of the major core courses offered in the honors program

are more challenging than the regular program of study. Therefore, identification and selection of high-performing students for the honors programs is a crucial step.

Before going into the selection process for honors programs, let us give a brief overview of higher education in Azerbaijan. The school pupils who are graduating after an eleven-year program of study take a centralized state admission test to get into the university and degree program of their choice. Once students achieve the minimum eligible score on the test, they submit an ordered list of their university and program preferences (e.g., 1. Baku State University, History; 2. Baku State University, International Relations; 3. Western University, International Relations; and so on.), and are allocated based on their acquired scores, high scorers first.

In Azerbaijan, students are separated into four different groups based on their intended program of study, and four different types of exams (one for each group) are administered, where each type of exam focuses on the subjects that are essential to the major programs within the group. Those who want to major in engineering and science are in Group I and are mainly tested for math and science subjects; those who want to go into business, economics, and international relations are in Group II and are tested in math and some humanities subjects; those who want to go for law, education, and public administration are in Group III and are mainly tested in humanities subjects; and those who want to study medicine are in Group IV and are mainly tested in biology and other science subjects. The maximum attainable score is 700 while the minimum eligibility score for admission is 200.

Initially, the state admission test was conducted once a year, but since 2017, students may take the test twice, once in May and once in June. There are twenty-nine state and nine private universities in Azerbaijan. Admission to both private and state universities is through the centralized state admission test. After getting admitted to a program (whether it was the top choice or not), the students start their freshman year in the same major where they will study until graduation. The major choice is made once and is usually very difficult to change, requiring extensive administrative paperwork.

Since honors programs were a new initiative, they were launched in only eleven universities and only in specific degree programs, so currently there are no honors programs in areas such as medicine and public administration. Selection for an honors program is conducted at the end of the first year of studies, after students have been graded in some introductory major courses. Students can then apply to be part of an honors program unless their first-year

GPA is below a certain level. Not all students who satisfy the GPA requirement apply to an honors program; some students may believe that honors will be too challenging for them and prefer to stay in the regular program with the possibility of having a higher GPA. Usually, however, the demand for honors programs exceeds the number of available seats.

Students who apply for an honors program must take the honors admission test, which consists of twenty-five questions in English (in the English language) and twenty-five questions on logic in Azerbaijani. The English language questions test the student's English grammar skills, comprehension, and vocabulary since all the subjects, except for foreign languages, are taught in English. Logic questions test the candidate's analytical thinking. The students have only one chance to take this exam.

Once the honors admission test is conducted, selections are made based on the performance of the students in (i) their first-year GPA; (ii) their performance on the centralized state admission test; (iii) their performance on the honors admission test; and (iv) their performance in face-to-face interviews. The overall score of a student is calculated based on the normalized weighted average of the first three items with weight of 30% each and of the interview results with a weight of 10%. The top-scoring students are selected for the honors programs. Face-to-face interviews are conducted to identify the reasons that candidates are switching to honors, to assess their English-speaking skills, and to learn their future goals. Unfortunately, the data on the results of the face-to-face interviews are not available. Therefore, we will exclude this variable from our analysis.

The predictive success of criteria in the selection process is crucial, and when some of these criteria turn out not to be good predictors, either they should be removed from the list or their importance in overall assessment should be lowered. In this paper, we analyze and identify which of the criteria are good predictors.

The question of how to identify the predictors of success in honors programs has been widely studied in the literature, and there is a wide range of opinions on this question. Commonly accepted criteria for selection to honors program are standardized test scores and high school GPAs (Long & Lange, 2002). Some researchers showed that the high school GPA is a good predictor of first-year success in an honors program (Wolfe & Johnson, 1995) while others showed that standardized tests can be also a good predictor of university performance (e.g., Hezlett et al., 2001). On the other hand, some studies found that standardized tests are not good in predicting student

success in honors programs (Sternberg, 1982; Khé, 2007; McKay, 2009), and some of these studies found that high school class ranking is a better predictor of student success (Green & Kimbrough, 2008; McKay, 2009). Moreover, a survey was conducted among graduates and current students to understand their views; the majority of the students thought that high school performance was a more important predictor than standardized tests (Roszkowski & Nigro, 2015).

Although some of the earlier works in the literature suggest that high school ranking is an important predictor of student success, no data are available on school rankings of the students in Azerbaijan. Moreover, the level of students in one school might be higher than others, invalidating a comparison of school rankings. Therefore, despite its importance, we cannot take high school ranking as a criterion in selection for the honors program.

For our analysis, we consider all graduates (so far there are two years of graduates from our honors program) and use the secondary data provided by MoE. For all the graduates, we have collected (i) their first-year GPA, (ii) their state admission exam score, (iii) their honors admission test score, and (iv) their graduation GPA. Note that the first three variables are used in the selection for the honors program, but we take the fourth variable, namely, graduation GPA, as the key indicator of success in the honors program. We agree that there are more variables that can be taken as indicators of success. A more in-depth study could add variables like future employment (position, salary, etc.) and/or admission to graduate programs (location, GPA in graduate school, etc.) as other indicators of success in the honors program (Mould & DeLoach, 2017). Due to the small number of graduating classes in the honors program so far and the unavailability of post-graduation information for these graduates, we leave this analysis for future studies, when we will have started recording the future progress of honors graduates. On the other hand, some may argue that graduation itself can be an indicator of success, but given the low rate of failure in the honors program (only 7 out of 823), we could not analyze the reasons these students failed. Once again, we leave this variable for future studies when we may have more student failures.

In our analysis, we first identify which of the above-mentioned three variables are crucial in predicting the success of students in the honors program. Next, we know that different majors require different sets of skills in order to succeed, so we conduct our analysis of each program of study separately. We divide the students into five groups based on their degree programs (Business and Economics, Engineering, Education, Arts, and International Relations

and Law) and identify the variables that are crucial in predicting the success of the students in each group. Note that this group division is unrelated to the group division made during the state admission test, but we picked them because they cover most of the major degree programs that have honors programs.

METHODOLOGY

For our analysis, we use secondary data provided by MoE. For all the graduates, we have collected (i) their first year GPA; (ii) their state admission test score; (iii) their honors admission test score; and (iv) their graduation GPA. The data on interview results are not available and are thus not a factor in our analysis. The data we require is available for only one year of graduates, and the data we collected on them includes slightly more than 800 graduates. We take the graduation GPA as the key indicator of performance in the honors program. The maximum score on the state admission test is 700 with a minimum of 200. The GPA of students in Azerbaijani universities ranges from 0 to 100, with a passing score for each course of 50. The maximum score on the honors admission test is also 100 points.

We ran multiple linear regression analyses where the first-year GPA, state admission test score, and honors admission test score were independent variables and the graduation GPA was the dependent variable. We tried to understand how those three variables perform in predicting the success of the students. Moreover, we considered five major degree programs that have an honors program (Business and Economics, Engineering, Education, Arts, and International Relations and Law) and separated students according to these programs. We ran the multiple linear regression analyses within each group. Note that only 735 out of 816 students in our sample fell into these five groups, but since the number of the students in the remaining degree programs was too small for analysis, we did not include those degree programs in this study.

RESULTS

Before describing our regression models, we present simple summary statistics of the collected data for all the students and then separately for the five groups based on the program of study in Table 1. Although we presented the mean and standard deviation in Table 1, given the different ranges of the test scores and GPAs we additionally presented the coefficients of variation,

which shows the standard deviation as a percentage of the mean (Coefficient of Variation = [Standard Deviation/Mean] x 100%), as our measure of variability. If we analyze the summary statistics for all the students, we see that average first-year GPA was around 80 with a coefficient of variation of almost 12% while the graduation GPA rose to 86 with a slightly smaller coefficient of variation of 10.7%. Also, the state admission test score (SSAT) score has an average of almost 467 with a coefficient of variation of 28.3% while HAT scores have an average of 55 with a coefficient of variation of 26.5%. Note that average scores and GPAs for the different degree programs are very close to the general average of the students except for the test results in the Arts program. The reason is that only a small number of talented students apply to Arts programs as there is a second stage of ability test for these programs.

TABLE 1. SUMMARY OF THE BASIC DESCRIPTIVE STATISTICS FOR HONORS GRADUATES

		Graduation GPA (0–100)	First-Year GPA (0–100)	State Admission Test Score (0–700)	Honors Admission Test Score (0–100)
All Students (816 students)	Mean	86.07	79.43	466.86	55.05
	Standard Dev	10.27	8.55	132.20	14.58
	Coef of Var	11.9%	10.76%	28.32%	26.48%
Business and Economics (256 students)	Mean	89.00	83.70	518.88	63.34
	Standard Dev	5.57	6.25	82.58	9.17
	Coef of Var	6.26%	7.47%	15.92%	14.48%
Engineering (227 students)	Mean	84.31	76.97	448.46	51.11
	Standard Dev	7.32	8.63	124.62	12.90
	Coef of Var	8.68%	11.21%	27.79%	25.24%
Education (173 students)	Mean	83.00	73.46	447.57	49.94
	Standard Dev	16.82	7.23	114.66	13.22
	Coef of Var	20.26%	9.8%	25.62%	26.47%
Arts (42 students)	Mean	85.42	84.52	230.64	29.05
	Standard Dev	6.16	8.21	117.90	15.25
	Coef of Var	7.21%	9.71%	51.12%	52.5%
International Relations and Law (37 students)	Mean	85.40	78.84	561.14	61.62
	Standard Dev	15.11	9.25	106.31	9.99
	Coef of Var	17.69%	11.73%	18.94%	16.21%

Due to the low demand for Arts programs, the admission entry scores for these programs is usually very low compared to other programs like Business and Engineering.

The goal of our study was to identify the criteria that are good predictors of student success in honors programs. We ran multiple linear regression analyses where student graduation GPA is our dependent variable with first-year GPA, state admission test results, and honors admission test results as our independent variable. We ran the regression for all the students, and the results are in Table 2. As we see from this table, all three variables that are used in the selection procedure are highly significant. Although our regression model is significant, our (adjusted) R^2 is around 0.26, which means that our model only predicts or explains one fourth of the variability in the success rate.

Next, we considered five large groups of students separated based on their degree programs and re-did the analysis we made above for each of the specific groups.

Business and Economics

We first ran the same analysis for Business and Economics students. This group constitutes a large proportion of the students in honors programs (256 out of 816). Our results are summarized in Table 3. Although the first-year GPA and honors admission test score are highly significant predictors of students' success, the state admission test score is not significant. Moreover, our regression model for students in Business and Economics programs is not only significant (even at 1% level of significance) but also has a very high (adjusted) R^2 of approximately 0.63; this means that our model predicts/explains a significantly large proportion of the variability in the success rate of the students in the honors programs.

TABLE 2. RESULTS OF MULTIPLE LINEAR REGRESSION FOR ALL THE STUDENTS

Variables	Test Statistics (Significance)
First-year GPA	t = 12.35 (0.0000***)
State admission test score	t = 2.686 (0.00737**)
Honors admission test score	t = 3.017 (0.00263***)
Regression	F = 95.6 (0.0000***)
R^2 = 0.26 and Adjusted R^2 = 0.25	

Note: * p<0.05, ** p<0.01, *** p<0.005

Engineering

We next ran the analysis for Engineering students. This group constitutes another large proportion of the students in honors programs (227 out of 816). Our results are summarized in Table 4. Unlike for Business and Economics students, for Engineering students the first-year GPA and state admission test score are highly significant predictors of students' success while the honors admission test score, while significant, is less so than the other two variables at only a 5% level of significance. Similar to the models for Business and Economics students, our regression model for Engineering students is not only significant (even at a 1% level of significance) but also has very high (adjusted) R^2 of approximately 58–59%, so our model predicts/explains a significant proportion of the variability in the success rate of the students in the honors program.

Education

Next, we analyzed students in the Education programs, the third largest group in the honors programs (173 out of 816). Our results are summarized

TABLE 3. RESULTS OF MULTIPLE LINEAR REGRESSION FOR BUSINESS AND ECONOMICS STUDENTS

Variables	Test Statistics (Significance)
First-year GPA	t = 19.76 (0.00001***)
State admission test score	t = -1.715 (0.087)
Honors admission test score	t = 2.632 (0.009**)
Regression	F = 147.8 (0.00001***)
R^2 = 0.64 and Adjusted R^2 = 0.63	

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.005$

TABLE 4. RESULTS OF MULTIPLE LINEAR REGRESSION FOR ENGINEERING STUDENTS

Variables	Test Statistics (Significance)
First-year GPA	t = 11.43 (0.00001***)
State admission test score	t = 4.365 (0.00001***)
Honors admission test score	t = 2.297 (0.0225*)
Regression	F = 105.9 (0.00001***)
R^2 = 0.59 and Adjusted R^2 = 0.58	

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.005$

in Table 5. Unlike for Business and Economics and for Engineering students, for Education students the first-year GPA and honors admission test score are slightly significant (only at a 10% level of significance) predictors of students' success while the state admission test score is not significant at all even at a 10% level of significance. Moreover, although our regression model for Education students is significant, it has a very low (adjusted) R^2 of approximately 0.06–0.07; this means that our model performs poorly in predicting the variability in the success rate of the education majors in the honors program.

In order to understand how our model would benefit without insignificant variables, we modified our regression model by dropping state admission test scores from the list of independent variables since it was not a significant predictor. Our analysis shows that the significance of the model increases while the (adjusted) R^2 remains almost unchanged. Results of the modified regression model without the admission exam scores are summarized in Table 6.

Arts

Next is a very special group of Arts programs. Unlike other programs, admission exam scores for these programs is low, and there is an additional and more important stage of ability test. Moreover, the number of honors students

TABLE 5. RESULTS OF MULTIPLE LINEAR REGRESSION FOR EDUCATION STUDENTS

Variables	Test Statistics (Significance)
First-year GPA	$t = 1.655$ (0.0996)
State admission test score	$t = 0.336$ (0.7368)
Honors admission test score	$t = 1.706$ (0.0898)
Regression	$F = 4.66$ (0.0037^{***})
$R^2 = 0.07$ and Adjusted $R^2 = 0.06$	

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.005$

TABLE 6. RESULTS OF MULTIPLE LINEAR REGRESSION FOR EDUCATION STUDENTS WITHOUT ADMISSION TEST SCORES

Variables	Test Statistics (Significance)
First-year GPA	$t = 2.06$ (0.0409^{*})
Honors admission test score	$t = 2.01$ (0.0458^{*})
Regression	$F = 6.97$ (0.0012^{***})
$R^2 = 0.075$ and Adjusted $R^2 = 0.065$	

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.005$

in these programs is very small (only 42 out of 814). Our results are summarized in Table 7. Like the Engineering students, the Arts students' first-year GPA is a highly significant predictor of success while the honors admission test score is slightly significant (at a 5% level of significance). Our regression model for Arts students is not only significant but has a very high (adjusted) R^2 of approximately 0.75–0.77; this means that our model predicts/explains a significant proportion of the variability in the success of Art majors in honors program. Moreover, if we drop the honors admission test score from our model, both R^2 and adjusted R^2 decrease, which implies the importance of having this variable in our model.

International Relations and Law

Finally, we analyzed International Relations and Law students, the minority among the students in the honors programs (only 37 out of 816). Our results are summarized in Table 8. All of the variables are not significant in the predicting success rate of these students in the honors program, and, in fact, our regression model itself fails to be significant as well. Moreover, our

TABLE 7. RESULTS OF MULTIPLE LINEAR REGRESSION FOR ARTS STUDENTS

Variables	Test Statistics (Significance)
First-year GPA	t = 6.768 (0.00001***)
State admission test score	t = 1.834 (0.073)
Honors admission test score	t = 2.029 (0.0494*)
Regression	F = 43.2 (0.00001***)
R^2 = 0.77 and Adjusted R^2 = 0.75	

Note: * p<0.05, ** p<0.01, *** p<0.005

TABLE 8. RESULTS OF MULTIPLE LINEAR REGRESSION FOR INTERNATIONAL RELATIONS AND LAW STUDENTS

Variables	Test Statistics (Significance)
First-year GPA	t = 0.04 (0.968)
State admission test score	t = 0.526 (0.602)
Honors admission test score	t = 0.685 (0.497)
Regression	F = 0.8465 (0.478)
R^2 = 0.07 and Adjusted R^2 = -0.01	

Note: * p<0.05, ** p<0.01, *** p<0.005

R^2 is around 0.07, which is very low, while our adjusted R^2 is even negative, which shows that our explanatory variables are insignificant, and our model performs poorly in predicting student success. The results might be different if the sample size were larger; however, currently we do not have a large enough pool of students to choose from. Additionally, if we drop two highly insignificant variables and leave only honors admission test score results, our adjusted R^2 does not grow beyond 0.03.

LIMITATIONS

To our knowledge, this study is the first that provides insights into the selection procedures for honors programs in Azerbaijan. However, our study is not without limitations. First, our population (set of graduate students) is not large: only two cohorts. Moreover, the data that we need was only available for one graduating cohort. Second, unavailability of the interview results during the selection process was missing information in our analysis. A third limitation of the paper is our inability to compare successfully graduated students with the ones who failed as the latter set is very small right now. Finally, there is a high correlation between first-year GPA and graduation GPA because the former comprises 25% of the latter. Unfortunately, we do not possess data for the GPAs of the students from the second through the fourth year. We suggest future research take these limitations into account while running their analysis.

CONCLUSION

We consider criteria that are used in the selection procedure for the honors programs and try to identify which one(s) of these criteria are more crucial in predicting student success in honors. Our first results show that all three criteria used in the selection process are highly significant predictors of student success. However, when we consider specific fields, we see that in Business and Economics, Engineering, and Arts, all three variables are significant at some level whereas in Education the state admission test score is not significant, and in International Relations and Law none of the variables are significant predictors. We should therefore be able to exclude certain variables in some fields during selection since they do not help to predict student success. Moreover, for majors like International Relations and Law, we may need to introduce a new set of criteria for selection as none of the variables is a significant predictor of success. As we see in our results for different degree programs, we should not apply a unified selection process for all the programs.

ACKNOWLEDGMENT

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