A LOGISTIC REGRESSION ANALYSIS OF FACTORS AFFECTING ENROLLMENT DECISIONS OF PROSPECTIVE STUDENTS OF DISTANCE EDUCATION PROGRAMS IN ANADOLU UNIVERSITY

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ABSTRACT

Some prospective students placed by the Assessment, Selection and Placement Center (OSYM) to associate and undergraduate programs in the Faculty of Open Education of Anadolu University enroll in these programs, while others do not. A decision to enroll may be affected by the following variables: the prospective student's gender, educational status, plans for retaking the university entrance exam, the number of times they took the entrance exam, marital status, employment status, household income, parents' level of education, and age. The aim of this study is to use the above-mentioned variables to develop a model that will help classify prospective students placed on the distance education programs of Anadolu University into two groups, i.e. students who are more likely to enroll and those who are not; and to discuss the potential benefits of the model in the administrative processes. Students assigned by OSYM in the 2015-2016 academic year to the distance education programs of Anadolu University comprise the population of this study, which is a finite population consisting of 178.229 people. Data were collected via an online survey. The survey included items on demographics, enrollment status, and the above-mentioned variables. A total of 1.829 students completed the survey, of which 1.117 enrolled and 712 did not. Data were analyzed using the SPSS 22.0 software package. Binary logistic regression analysis was used to develop a model to classify the students as enrollees and non-enrollees. Education status, marital status, plans to retake the university entrance exam, the number of times the entrance exam was taken, employment status, and age were found to affect the prospective students' decision to enroll.

Keywords: Distance education, decision to enrollment, enrollment in distance education programs, logistic regression, binary logistic regression.

INTRODUCTION

Distance education is a learning system in which the students are able to participate educational activities by making use of printed materials as well as a rich variety of communicational technologies without a limitation in the time and space, and they have access to the synchronous and asynchronous educational sources and contents (Acik ve Uzaktan Ogrenme Sozlugu, 2018). Technology is a crucial element of distance education (Bates, 2008).

Distance education is a common practice in Turkey like many others in the world to meet the higher education demand and to achieve equality of opportunity in education. In Turkish higher education system, distance education methods have been used since 1970s. The first phases of distance education in Turkey were "Correspondence Education" and "Common Higher Education İnstitution" (Abbr. YAYKUR), which

were initial higher education practices far from reaching the masses. Although these programs were highly demanded, they could not be sustained. İn 1981, 420 thousand students were willing to continue their education in higher education institutions, while only 54 thousand of them could be accepted to universities. The universities were able to meet 13 percent of the demand (Acikogretim Sistemi, 2017). On the other hand, the advance in educational technologies made the idea of distance learning system an urgent obligation. The idea of high-standard higher education with the principle of equal opportunity was embodied in the Open Education Faculty of Anadolu University in 1982-1983 semester for the first time in Turkey. 29500 students enrolled in the Economics and Business Management Program in the very first year, and this revealed the necessity and demand of higher education (Acikogretim Sistemi, 2017).

The educational process, which started with the "Business Management and Economics program in Open Education Faculty in 1982 in Anadolu University, continued with the establishment of Faculty of Economics and Administrative Sciences in 1993. Students who want to enroll in Open and Distance Education system in Anadolu University have to take Assessment Selection and Placement Center's (OSYM) examination. Foreign students and the students who want to have a second university degree, a vertical transfer or an undergraduate transfer have to take ANADOLUYOS examination (Sahin, 2017). The graduates of high schools and their equivalents can apply OSYM for the departments and programs of Open Education, Economics and Administration Faculties, be placed to them with or without an exam, and apply and enroll the related programs in the dates the related faculties determine (Anadolu Universitesi, 2017).

İn 2016, Gumus and Firat made a research on the motives of students of Anadolu University Open Education System to prefer open and distance education. İn the scope of this research they collected data from 4247 open education students, and found out that their motives in order of priorities were as follows: Flexibility of time, flexibility of space, and new career opportunities. Aksarayli and Pala's 2017 research with the title "Cluster Analysis of the Correlation between Motives in Preferring Distance Education and Success" was based on the questionnaires conducted with distance education students of Dokuz Eylul University. The questions focused on their educational success and motives to prefer distance education. 285 students answered the questionnaire, and their motives were as follows: "Distance education's contribution to the student's career", "the opportunity to work and study at the same time", "expectation of high academic benefit", and "ease of access".

By the 2015-2016 school year, the Faculty of Open Education and the Faculty of Economics and Administrative Sciences in Anadolu University had 51 programs (17 undergraduate programs and 34 associate degree programs), to which 2905666 (1435754 active and 1469912 passive) students were enrolled. Every year, a part of the candidates placed to the programs by OSYM prefer not to enroll. İn 2015-2016, for example, 31588 of 178229 candidates (17,72%) preferred not to enroll to the programs they were accepted. The Statistical Data Acquisition and Evaluation Unit of the Open Education Faculty in Anadolu University conducts various surveys on the study methods, student satisfaction in office services, call center, textbooks, demographic data, tests, e-book application, -e-learning portal, video-lectures, training questions, grading system, audiobook application and instructional programs on TV. Students' opinions are gathered, analyzed, and the results are published.

These surveys can access various detailed information on the students who enrolled in the programs, however, the data on the motives of preference in terms of enrolling or not enrolling to the programs are still lacking. This study aims at determining the motives of the students for enrolling or not enrolling the programs they are placed, and at categorizing the students according to these variables. Logistic regression is the appropriate method to analyze the case, since the dependent variable consists of two levels of evaluation, i.e. enrolling or not enrolling.

Categorical variables with nominal and ordinal scales are frequently used in many fields, particularly in social sciences, educational sciences and medical sciences. İn a multivariate statistical analysis of causal relationships using categorical data, logistic regression analysis is preferred for the following reasons:

> Examining causal relationships between variables is an important scientific goal, applicable in daily life. İn this respect, the type of the relationship between the variables, and the mathematical equation that could be used to express this relationship are important areas of study.

> When the dependent variable studied is categorical, logistic regression analysis is preferred, as the goal is to predict the value of the dependent variable, in other words, to classify units into categories and investigate the relationship between the dependent variable and the independent variable(s).

> When the dependent variable is measured using a nominal scale, independent variables can be discrete or continuous (Tabachnick and Fidell, 2001). Therefore, logistic regression analysis is superior to multiway frequency analysis.

> Assumptions concerning the distribution and linearity of the data or the equality of variances are not required in logistic regression analysis. Therefore, compared to simple and multiple regression analysis or discriminant analysis, logistic regression analysis provides the researcher with significant flexibility (Albayrak, 2009).

> Logistic regression analysis provides a flexible model, and it is easy to interpret. These features increase the popularity of the method (Tatlidil, 1996).

> Various software packages are available for conducting logistic regression analysis.

> Logistic regression analysis does not produce negative probabilities. All probability values are positive and range from 0 to 1 (Cokluk, 2010).

METHOD

Population and Sample

The population of the study was a finite population comprising 178.229 students placed in 2015-2016 academic year by OSYM in associate and undergraduate programs of Anadolu University's Open Education, Economics, and Business Administration Faculties. Of the prospective students placed, 146.641 enrolled in their programs, whereas 31.588 did not. However, 111 students were removed from the population, as they could not be contacted because their contact information was missing or incorrect. Thus, the number of students who did not enroll was revised to 31.477 and the population to 178.118. The smallest sample size that can be selected based on the 4% error rate at the 99% confidence level of the population, where approximately 180,000 people are involved, was identified as 1.035.

Data Collection and Analysis

An online questionnaire was developed to collect data on the variables that could be used in a model to predict the decision to enroll among students who were placed in distance education programs of Anadolu University. The questionnaire contained demographic items, as well as items on the variables reported in Appendix 1. The link for accessing the online questionnaire was sent via SMS to the cell phones of 10.330 students randomly selected from among the 31.477 prospective students who did not enroll. For students who enrolled (146.641 students), a link to the online questionnaire was provided via their university accounts, which they could access using their student IDs and passwords. A total of 712 enrollees and 1.117 non-enrollees completed the questionnaire. Thus, a response rate close to the target sample size of 1.142 was obtained. The data gathered by the questionnaires conducted were processed by SPSS 22.0 software. Binary logistic regression analysis was used to classify the students placed into two groups (enrolled and unenrolled) and to determine the relationship between dependent and independent variables (Cokluk, Sekercioglu ve Buyukozturk, 2014). Binary logistic regression analysis is a method which is used in the cases where

dependent variables entails two possible answers, and which reveals the relation between one or more explanatory variables and binary answer variables (Ozdamar, 2015).

Logistic regression analysis does not necessitate to respond to any hypothesis on the distribution of independent variables. However, there are some crucial requirements in its use. One of these requirements is the number of subjects analyzed in variables. İn the cases that the number of subjects were not sufficient in categorical variables such as educational background, marital status, educational background of parents and employment status, proper assessment levels were combined. Another requirement is about the extreme values of predictor variable. İn order to meet this requirement, standard errors were examined and found out to be in the required range. Stable findings can be achieved with fifty subjects per each independent variable in logistic regression analysis. This is why the study focused on a large sample. Finally, the findings of the logistic regression model were evaluated with the assumption that there are no linear correlations among independent variables (Cokluk, 2010). The phases of the analysis process are presented in detail below.

FINDINGS

As was mentioned previously, this study uses logistic regression analysis to identify the factors that affect enrollment decisions of prospective students placed by OSYM to the distance education programs of Anadolu University, and uses these variables to classify prospective students into enrollees and non-enrollees. Binary logistic regression was used because the dependent variable of enrollment has two categories: enrollment and non-enrollment. Frequency distributions of the variables identified in Appendix 1 are reported in Appendix 2. The frequency table in Appendix 2 shows that 54.2% of the respondents were male, and 61.3% were high school seniors or graduates. In terms of marital status, 57.6% were not married, and 39.5% were married. 25.4% of the prospective students who completed the survey had two children in their families, 27.4% had three children in their families, and 39.6% had four or more children in their families. İn terms of the parents' education, 73.7% of mothers and 53.5% of fathers were elementary school graduates or did not receive any formal education. 65.0% of the respondents claimed that they were planning to retake the university entrance exam. Of the respondents, 29.1% took the entrance exam three times or more, 26.4% took the exam twice and 26.1% took the exam once, excluding the current year. In 2015, 18.4% took the entrance exam for the first time, while 69.6% of the respondents were reported as employed and 36.9% employed for five years or less. As far as the respondents are concerned, 15.1% had a household income below the minimum wage, while 44.0% had a household income between 1,000 and 2,000 Turkish liras. A majority of the respondents, 30.6%, lived in the Marmara region. The average age of the respondents was 27.67.

Identifying the Variables to be Included in the Model

A chi-square test (for the age variable, a t-test) was conducted to see if the dependent variable of enrollment was related to each of the variables reported in Appendix 1. Test results are reported in Table 1. Variables that meet the criterion of p<0.05 based on these results, marked with a circle, are statistically significant. These variables will be included in the binary logistic regression model to classify prospective students as enrollees and non-enrollees.

Table 1. Test Results for the Relationship between Enrollment and Independent Variables

Variable	Pearson's Chi-Square	p
Gender	2.024	0.155
Education status	40.363	0.000
Marital status	13.894	0.001

Number of children in the family (including the respondent)	3.523	0.474
Mother's education level	6.131	0.294
Father's education level	11.86	0.037
Plans to retake the exam	116.055	0.000
How many times the exam was taken (excluding the current year)	12.243	0.007
Employment status	26.82	0.000
Years employed	44.898	0.000
Monthly household income	13.301	0.004
Place of Residence	8.379	0.212
Age	t value (=-5.709)	0.000

Estimating the Initial Model

As was explained above, the model was developed using likelihood ratios and backward elimination (Backward: LR).The initial model contains only the constant term. This model is estimated so that its results can be compared with the results of the binary logistic regression model to be estimated in the next step. If the value of the -2LL statistic for the binary logistic regression model estimated is significantly different from the -2LL value of the initial model, it indicates that independent variables in the binary logistic regression model can explain the dependent variable. The minimum value of the -2LL statistic is 0. Estimated values of the initial model are reported in Table 2. -2LL values in the table are very large in all three iterations.

Table 2. Initial Model (Block 0)

İteration		-2 Log Likelihood (-2LL)	Coefficients Constant
	1	2445.129	.443
Step 0	2	2445.105	.450
	3	2445.105	.450

Classification table of the initial model, which contained only the constant term, is reported in Table 3. As the table shows, the rate of correct classification is 61.1%. Because the number of enrollees are more than that of non-enrollees, this model classifies all prospective students as enrollees.

Table 3. Classification Table of the Initial Model

Observed			Estimated Enrollment Status		Percentage of Correct Classification
			Non-enrollee	Enrollee	
Step 0	Enrollment Status	Non-enrollee	0	712	0.0
		Enrollee	0	1117	100.0
	Total Percentage				61.1

Table 4 reports the constant term, standard error of the constant term; the value of the Wald statistic to test the significance of the variable; degrees of freedom, significance level, and exponential logistic regression

coefficient (odds) for the initial model. The constant term can be said to be significant, as the significance level of the initial model is smaller than 0.05.

Table 4. Variables in the Initial Model

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0:	Constant	.450	.048	88.180	1	.000	1.569

Table 5 reports the independent variables that were not included in the initial model. The first category of each categorical variable in the model was defined as the reference category. Independent variables with significance levels smaller than 0.05, marked with an *, are the independent variables that will be included in the model.

Table 5. Variables Not Included in the Initial Model

	Variables	Score	sd	p
Step 0:	EdStatus	40.363	5	0.000*
	EdStatus(1)	23.549	1	0.000*
	EdStatus(2)	1.004	1	0.316
	EdStatus(3)	17.509	1	0.000*
	EdStatus(4)	9.538	1	0.002*
	EdStatus(5)	2.248	1	0.134
	MarStatus	13.894	2	0.001*
	MarStatus(1)	2.93	1	0.087
	MarStatus(2)	9.239	1	0.002*
	FatherEd	11.86	5	0.037*
	FatherEd(1)	5.815	1	0.016*
	FatherEd(2)	4.525	1	0.033*
	FatherEd(3)	1.362	1	0.243
	FatherEd(4)	1.959	1	0.162
	FatherEd(5)	1.334	1	0.248
	PlanRetake(1)	116.055	1	0*
	TimesTaken	12.243	3	0.007*
	TimesTaken(1)	0.086	1	0.769
	TimesTaken(2)	0.082	1	0.774
	TimesTaken(3)	8.43	1	0.004*
	EmpStatus	26.82	3	0*
	EmpStatus(1)	1.892	1	0.169
	EmpStatus(2)	13.792	1	0*
	EmpStatus(3)	0.108	1	0.743
	EmpYears	44.898	4	0*
	EmpYears(1)	1.826	1	0.177
	EmpYears(2)	6.731	1	0.009*
	EmpYears(3)	24.521	1	0*

EmpYears(4)	20.235	1	0*
MonthIncome	13.301	3	0.004*
MonthIncome(1)	3.74	1	0.053
MonthIncome(2)	8.206	1	0.004*
MonthIncome(3)	2.394	1	0.122
age	32.06	1	0*

Estimating the Binary Logistic Regression Model

Using the backward elimination method, the binary logistic regression was created in three steps. Results of the Omnibus test concerning model coefficients are reported in Table 6. The table shows that results of the chi-square tests for models created at each step were significant (p<0.05), indicating that these models were better than the initial model that contained only the constant term. In other words, the hypothesis of similarity between the initial model and the binary logistic regression model is rejected.

Table 6. Omnibus Test for Model Coefficients

		Chi-square	sd	p
	Step	241.373	26	.000
Step 1:	Block	241.373	26	.000
	Model	241.373	26	.000
	Step	3.862	3	.277
Step 2:	Block	237.511	23	.000
	Model	237.511	25	.000
	Step	-4.471	3	.215
Step 3:	Block	233.039	20	.000
	Model	233.039	22	.000

Values reported in Table 7 indicate how much of the variance in dependent variable is explained by independent variables included in the model. The binary logistic regression model obtained in the 3rd step explains 16.2% of the variance in the dependent variable of enrollment.

Table 7. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	2203.732[a]	.124	.168
2	2207.594[a]	.122	.165
3	2212.065[a]	.120	.162

Model-data fit is examined using the Hosmer and Lemeshow chi-square test for goodness of fit, which evaluates the fit of the logistic regression model as a whole. İf the result of this test is insignificant, it indicates that model-data fit is good. Table 8 shows that the p value of the logistic regression model obtained in step 3 is 0.921, which is insignificant because it is larger than 0.05, indicating good model-data fit.

Table 8. Hosmer and Lemeshow Test

Step	Chi-square	sd	p
1	11.127	8	.195
2	7.768	8	.456
3	3.202	8	.921

The classification table reported in Table 9 shows that the binary logistic regression model created using the backward elimination method has correctly classified 310 of the 712 students who did not enroll, and incorrectly classified 402, with a correct classification rate of 43.5%. The model incorrectly classified 217 of 1,117 students who enrolled, and correctly classified 900, with a correct classification rate of 80.6%. Overall, 66.2% of students were correctly classified.

Table 9. Classification Table Generated by the Logistic Regression Model

Observed			Estimated Enrollment Status		Percentage of Correct Classification
			Non-enrollee	Enrollee	
Step 1	Enrollment Status	Non-enrollee	328	384	46.1
		Enrollee	218	899	80.5
	Total Percentage				67,1
Step 2	Enrollment Status	Non-enrollee	326	386	45.8
		Enrollee	222	895	80.1
	Total Percentage				66.8
Step 3	Enrollment Status	Non-enrollee	310	402	43,5
		Enrollee	217	900	80,6
	Total Percentage				66.2

Table 10 reports the coefficients of the variables included in the logistic regression model developed, standard errors for these coefficients, Wald statistics, degrees of freedom, p values, and exponential coefficient $Exp(\beta)$ values. In the logistic regression model, $Exp(\beta)$ values are used to interpret the coefficients. $Exp(\beta)$ values indicate change in likelihood as a result of one unit change in the relevant variable (Hair et. al., 2010; Field, 2013). $Exp(\beta)$ values were interpreted for variables that are statistically significant at 0.05 level of significance, marked with dark background in the following table.

		β	Standard Error	Wald	sd	p	Exp(β)	95% confidence interval for Exp(β)	
								Lower	Upper
Step 3:	EdStatus			28.987	5	.000			
	EdStatus(1)	.087	.155	.317	1	.573	1.091	.805	1.480
	EdStatus(2)	-.371	.279	1.763	1	.184	.690	.399	1.193
	EdStatus(3)	-.524	.187	7.805	1	.005	.592	.410	.855
	EdStatus(4)	-.773	.227	11.551	1	.001	.462	.296	.721
	EdStatus(5)	-.068	.245	.077	1	.782	.934	.578	1.510
	MarStatus			9.984	2	.007			
	MarStatus(1)	-.342	.144	5.647	1	.017	.711	.536	.942
	MarStatus(2)	.541	.387	1.950	1	.163	1.717	.804	3.668
	FatherEd			18.208	5	.003			
	FatherEd(1)	.467	.389	1.440	1	.230	1.596	.744	3.424
	FatherEd(2)	-.150	.340	.194	1	.659	.861	.442	1.677
	FatherEd(3)	-.064	.355	.033	1	.856	.938	.468	1.878
	FatherEd(4)	.322	.350	.842	1	.359	1.379	.694	2.741
	FatherEd(5)	.227	.378	.359	1	.549	1.254	.598	2.632
	PlanRetake(1)	1.216	.117	108.542	1	.000	3.375	2.685	4.243
	TimesTaken			8.085	3	.044			
	TimesTaken(1)	-.244	.161	2.306	1	.129	.784	.572	1.073
	TimesTaken(2)	-.174	.174	1.002	1	.317	.840	.597	1.182
	TimesTaken(3)	-.470	.180	6.846	1	.009	.625	.439	.889
	EmpStatus			14.091	3	.003			
	EmpStatus(1)	.376	.189	3.972	1	.046	1.457	1.006	2.108
	EmpStatus(2)	.581	.161	12.968	1	.000	1.788	1.303	2.453
	EmpStatus(3)	.265	.124	4.519	1	.034	1.303	1.021	1.663
	Age	.036	.010	13.188	1	.000	1.037	1.017	1.057
	Constant	-.686	.424	2.615	1	.106	.503		

➢ With regards to the education status variable, prospective students already enrolled in other higher education programs are 1.69 times (1/0.592) more likely not to enroll compared to high school seniors.

➢ Prospective students who have completed other higher education programs are 2.17 times (1/0.462) more likely not to enroll compared to high school seniors.

➢ In terms of marital status, married prospective students are 1.41 times (1/0.711) more likely not to enroll compared to those who have never married.

➢ Prospective students who do not plan to retake the university entrance exam are 3.375 times more likely to enroll compared to those who plan to retake the exam.

➢ Prospective students who have previously taken the entrance exam three times or more, excepting the current year, in other words, those who have taken the exam for at least four

times, are 1.6 times (1/0.625) more likely not to enroll compared to those who have taken the exam for the first time.
  ➤ Self-employed prospective students are 1.457 times more likely to enroll compared to unemployed or retired prospective students.
  ➤ Prospective students employed in the public sector are 1.788 times more likely to enroll compared to unemployed or retired prospective students.
  ➤ Prospective students employed in the private sector are 1.303 times more likely to enroll compared to unemployed or retired prospective students.
  ➤ In terms of age, an increase of one year in the age variable increases the probability of enrollment by a factor of 1.037.

DISCUSSION AND CONCLUSION

Distance education is a learning system in which the students are able to participate educational activities by making use of printed materials as well as a rich variety of communicational technologies without a limitation in the time and space, and they have access to the synchronous and asynchronous educational sources and contents (Acik ve Uzaktan Ogrenme Sozlugu, 2018). Its various advantages make it a very important opportunity for the ones who want to have higher education. Gumus and Firat's (2016) study shows that the motives of students who prefer distance are as follows: Flexibility of time, flexibility of space, and new career opportunities.

Aksarayli and Pala (2017) claim that their motives are as follows: "Distance education's contribution to the student's career", "the opportunity to work and study at the same time", "expectation of high academic benefit", and "ease of access".

University candidates who want to study at distance education can register to the system in various ways. The graduates of high schools and their equivalents who want to enroll in departments and programs of Anadolu University Open Education, Economics and Business Administration Faculties are applying to OSYM and participating in the exams (Anadolu University, 2017).

Every year, a part of the students placed to the programs by OSYM prefer not to enroll due to various reasons. In 2015-2016, for example, 31588 of 178229 students (17,72%) placed to Anadolu University Open Education System preferred not to enroll to the programs they were accepted. Determining the reasons why students prefer to enroll and not to enroll to the programs, and categorizing the students according to their preferences are so crucial to improve the registration system, and to contribute to decision making processes in the administration of the system.

Since the dependent variable of the present study consists of a binary assessment level, i.e. enrolling and not enrolling, binary logistic regression analysis was used. The analysis showed that the registration rate is higher in the group of last-year secondary education students than in the group of secondary education graduates and the ones who already enrolled in or completed higher education. Students enrolled in or completed higher education have the opportunity to enroll the departments and programs of open education system in the Second University context. The findings of the present study showed that 17,3% of the students placed by OSYM are already enrolled to another higher education program, and 9,2% of them have completed a higher education program. This group (26, 5%) do not have to take OSYM exams to be placed in one of the open education programs. Provided that this group of students are informed that they do not have to take the exam, many others who cannot be placed due to capacity issues may well find the opportunity to be enrolled. This sort of registration without examination should be introduced and promoted more efficiently, so that the students who never enrolled or completed any higher education programs may be

placed and enrolled in the programs. It can be suggested that during OSYM preference process the students must be informed about the secondary university registration conditions.

➢ Marital status also has an influence on the registration decision. Married students are more unlikely to enroll than single students. İt can be presumed that their familial responsibilities result in this decision.
➢ Students who do not consider taking the university exam for another time are more likely to enroll than the ones who want to do it. Similarly, the students who take the exam for the first time are more willing to enroll compared to ones who had the exam for four times minimum. This may be because the students who take the exam for the first time are more clear about the program they would enroll.
➢ Working students (either as freelancers, as public sector employees or private sector employees) are more likely to enroll compared to ones who do not work, and the ones who are retired. It can be presumed that the financial status of working students are more convenient than the others, in terms of investing in education. Public sector employees are motivated by the promotion opportunities as a result of the education.
➢ Older students are more willing to enroll.

The findings demonstrate that the following may be suggested to increase registration figures and to overcome the difficulties students' experience:

➢ Second University is one of the options to enter the Open University system. This option should be promoted in collaboration with OSYM during the preference period, so that applicants who cannot be placed due to program capacities may well find the opportunity to have university education.
➢ A guidance and counselling service should be established to lead students throughout their educational career, and support them in the preferences. If this system can be accessed by the students before their university education, more students would register on the years they are placed to a program.
➢ Registration numbers would increase provided that university administration provide some conveniences in payments for the students who are retired, or who do not have a job.
➢ The regression model may be used to determine the group of students who are more probable not to register, and they might be encouraged by messages during the registration period, and this may increase the number of registered students.
➢ The logistic regression model could categorize 43,5% of non-enrolled, and 80,6% of enrolled students correctly, and the mean correct categorization rate was 66,2%.
➢ The logistic regression model produced at the end of the analysis was able to explain 16,2% of the variant in the dependent variable of registration decision. It is clear that the enrollment decision is determined by various other variables besides the ones analyzed in the scope of the present study. Further studies may explore what these variables and their significance levels are.

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APPENDICES

Appendix 1: Independent Variables Used in the Study and Their Levels of Measurement

Var. Name	Explanation	Var. Name	Explanation
X_1	Gender • Male • Female	X_8	How many times have you taken the university entrance exam, excepting the current year • None • 1 time • 2 times • 3 times or more
X_2	Education status • High school senior • High school graduate, not placed in a higher education program before • Placed in a higher education program by OSYM (including admissions without entrance exam) but did not enroll • Enrolled in a higher education program • Completed a higher education program • Dropped out of a higher education program	X_9	Employment status • Unemployed / Retired • Self-employed • Employed in the public sector • Employed in the private sector
X_3	Marital Status • Never married • Married • Divorced / Widowed	X_{10}	Years employed • 5 years or less • 6-10 years • 11-15 years • 16 years or more • Unemployed / Retired
X_4	Number of children in the family including the respondent • 1 • 2 • 3 • 4 • 5 or more	X_{11}	Monthly household income • Less than 1,000 Turkish liras • 1,000-2,000 Turkish liras • 2,001-5,000 Turkish liras • More than 5000 Turkish liras
X_5	Mother's education level • İlliterate • Literate but no school • Elementary School • Middle School • High School • At least some college	X_{12}	Age

Father's education level
- İlliterate
- Literate but no school

X_6
- Elementary School
- Middle School
- High School
- At least some college

Do you plan to retake the university entrance exam

X_7
- Yes
- No

Place of Residence
- Marmara Region
- Black Sea Region
- Aegean Region

X_{13}
- Central Anatolia Region
- Eastern Anatolia Region
- Mediterranean Region
- Southeastern Anatolia Region

Appendix 2. Frequency Table of Independent Variables

Variable	Explanation	Frequency	Percentage
Gender	Male	991	54.2
	Female	838	45.8
Education status	High school senior	390	21.3
	High school graduate, not placed in a higher education program before	731	40.0
	Placed in a higher education program by OSYM (including admissions without entrance exam) but did not enroll	79	4.3
	Enrolled in a higher education program	316	17.3
	Completed a higher education program	168	9.2
	Dropped out of a higher education program	145	7.9
Marital status	Never married	1053	57.6
	Married	723	39.5
	Divorced / Widowed	53	2.9
Number of children in the family (including the respondent)	1	137	7.5
	2	465	25.4
	3	502	27.4
	4	315	17.2
	5 or more	410	22.4
Mother's education level	İlliterate	291	15.9
	Literate but no school	201	11.0
	Elementary School	856	46.8
	Middle School	228	12.5
	High School	199	10.9
	At least some college	54	3.0
Father's education level	İlliterate	45	2.5
	Literate but no school	128	7.0
	Elementary School	804	44.0
	Middle School	303	16.6
	High School	393	21.5
	At least some college	156	8.5
Plans to retake the exam	Yes	1189	65.0
	No	640	35.0
	Never	337	18.4

How many times the exam was taken (excluding the current year)	1 time	477	26.1
	2 times	482	26.4
	3 times or more	533	29.1
Employment status	Unemployed / Retired	557	30.5
	Self-employed	184	10.1
	Employed in the public sector	373	20.4
	Employed in the private sector	715	39.1
Years employed	5 years or less	674	36.9
	6-10 years	259	14.2
	11-15 years	160	8.7
	16 years or more	179	9.8
	Unemployed / Retired	557	30.5
Monthly household income	Less than 1,000 Turkish liras	276	15.1
	1,000-2,000 Turkish liras	804	44.0
	2,001-5,000 Turkish liras	662	36.2
	More than 5000 Turkish liras	87	4.8
Place of Residence	Marmara Region	559	30.6
	Black Sea Region	177	9.7
	Aegean Region	221	12.1
	Central Anatolia Region	369	20.2
	Eastern Anatolia Region	125	6.8
	Mediterranean Region	226	12.4
	Southeastern Anatolia Region	152	8.3
Age		Descriptive Statistics	
	Minimum value	18	
	Maximum value	62	
	Median	25	
	Mode	21	
	Mean	27.67	
	Standard deviation	8.04	