MODELING THE CONTRIBUTION OF DISTANCE EDUCATION TO STUDENTS' PREPARATION FOR THE PROFESSIONS

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ABSTRACT

There is an increasing interest in predicting the contribution level of open and distance learning to students' career, in order to perceive the pathway for higher quality standards. For this purpose, Anadolu University Faculty of Open Education, which can be considered a leader in its field, to learners' professions and their career goals, organized a research project in which a questionnaire was conducted involving approximately 17,000 associate and undergraduate students to build a database of responses. The data was used to determine the contribution level of the open education programs. The five ordered-level contributions were recorded to a response variable. Demographical, educational and economic variables were successfully used in mapping the categorical responses using the ordinal logistic regression analysis method (OLR). The results, unlike other studies, indicate that there is a positive relationship between family size and the contribution level of distance education on students' preparation for the professions. In a novel way, the socioeconomic level of the students is considered in the OLR model as an economic factor. As a consequence, the students with moderate and higher socioeconomic levels demonstrated superior levels of contribution.

Keywords: Distance education, life goals, profession, ordinal logistic regression.

INTRODUCTION

In the field of economics of education, much of the literature points out that the education system of a country is directly related to its labor market. The quality and scope of the education are of great importance considering the demand in a labor market and the structural adjustment capability. In addition, education provides people with the ability to improve themselves and their ability to enjoy equal opportunities. All these achievements increase the possibility of acquiring a profession and forging ahead in a profession (Allmendiger, 1989; Boccanfuso, Larouche, & Trandafir, 2015).

Educational institutions, especially for higher education, are of the greatest importance when it comes to social, economic, technological, scientific and cultural change. Organizations for higher education help to improve the quality of personal and social life by their valuable contributions and services. These organizations also provide people with both technical and professional knowledge, so that they are able to break into the upper levels of society and, thereby, dynamize the society (Scott, 2002).

Increasing and accelerating technological developments with globalization have brought many changes in social, economic and environmental areas. These changes; while sometimes causing people to face some difficulties; also brought new opportunities for humanity to progress. However, education is perhaps the only way to evaluate and use opportunities (OECD, 2018). Today's children who are new to education, are going to become young people after ten years and adults after fifty years. In this context, schools prepare children for working life; which consists of continuous changes that is expected to take place. Thus, education should also be continuous and it should continue after a student completes the formal school period. Therefore, the demand for a better and more inclusive open and distance education system is expected to increase.

Different student profiles, rapid changes in education technologies and a contemporary understanding of professional developments entail individuals planning to enter the labor market or to stay there to update their knowledge, abilities, and competence. Therefore, distance education is an important opportunity, especially for individuals with limited access to conventional education.

In this context, education delivered only within educational institutions has remained incapable of determining quality and, therefore, learner satisfaction, attitudes, needs, and experience have become more important. This situation is known as 'educational satisfaction' in the related literature. This transformation has caused universities to investigate how to fulfil the expectations and satisfaction of students and, ultimately, all of society (Sahin & Shelley, 2008).

The motivation for preferences when choosing college programs differ among students. The main incentives for choosing programs include a fear of not being enrolled on any program, of acquiring a profession, and of securing a future. In this context, many students at some point have to choose programs that may not attract them, and instead choose less enticing ones. In other words, nowadays, the main concerns of a typical student may be seen as enrolling on a college program and graduating from that program with a successful degree. A third important goal may be to realize life expectations. Graduating from a suitable college program may easily be translated into a satisfied society (Sahin & Shelley, 2008).

Jacobs and Newstead studied 336 psychology students studying at universities in Southern England in 2000. The results of the study show that the knowledge and skills gained by university education have a significant place in the students' motivation to study. In the acquisition of these knowledge and skills, the self-discipline that the university education brings to students plays an effective role (Jacobs & Newstead, 2000).

The binary logistic regression model is used when possible answers after examining an outcome variable may be either 'yes' or 'no'. However, we are frequently confronted with questions that cannot be answered with a simple yes or'no; a range of possible responses may apply, such as 'unhappy', 'somewhat happy' or 'very happy'. In such cases, the ordinal logistic regression model is used to identify the effect on the level of contribution. Maheswari & Sudeep Kumar (2010) investigated the contribution of open and distance learning programs on the job performance of veterinary practitioners. They analyzed the ordinal outcome as a contribution of the program through descriptive statistics. However, there have been numerous studies in distance education research to model the effects on a variable. Sahin & Shelley (2008) used Structural

Equation Analysis to test the relationships among computer knowledge, flexibility of distance education, usefulness of distance education, and distance education satisfaction. Kuo, Walker, Belland, & Schroder (2013) intended to investigate the degree of student satisfaction in on-line learning settings using the multiple regression model. Ozturk (2018) used Logistic Regression models to investigate factors affecting enrollment decisions of prospective students of distance education programs. Trehan & Joshi (2018) built Logistic Regression models to explain choices when adopting on-line open courses in India.

This study concerns a survey that has been conducted in order to model the contribution of distance education to students' preparation for the professions. Firstly, the ordinal logistic regression model is reviewed, after which the participants are introduced. Next, the demographic structure of the students, the OLR models for the data set and the interpretations of the models are given. Finally, the results are discussed in the final section.

ORDINAL LOGISTIC REGRESSION MODEL

Ordinal logistic regression analysis is an extension of the generalized linear model for ordinal categorical data. In many studies, the variables of interest are ordinal-scaled where the ordering of the categories of the variable is important. For example, happiness can be graded from strongly unhappy to strongly happy. Similarly, diseases can be scaled from least severe to most severe. In this study, the levels of contribution of distance education for the preparation for the professions are graded from 'strongly disagree (1)', 'disagree (2)', 'undecided (3)', 'agree (4)', and 'strongly agree (5)'.

Generally, when the dependent variable is nominal, researchers prefer the logistic regression method to fit the data. However, when the order of the categories of the dependent variable cannot be ignored, then the ordinal logistic regression analysis is usually preferred.

In ordinal logistic regression, the category of interest observes a particular score or less, given in Eq. (1). The odds are of the form:

$$Q_i = prob(score \leq i) / prob(score > i) \quad (1)$$

or equally $Q_i = prob(score \leq i) / (1-prob(score \leq i))$ from complementary property.

The ordinal logic is a linear function of k independent variables given in Eq. (2)

$$\log(Q_i) = \alpha_i - (\beta_1 X_1 + \ldots + \beta_j X_j) \quad (2)$$

where i,j=1: number of categories-1. Each logit has its intercept and the same coefficient which are used to calculate predicted values. This indicates that the independent variables have the same influence on each logit function.

The probabilities for the individual scores can be calculated by subtraction, using the formula:

$$prob(score = i) = prob(score \leq i) - prob(score < i) \quad (3)$$

To calculate the cumulative probabilities from the logistic model for each score, Eq. (4) is used:

$$P_i = prob(score\ i) = 1/(1 + e^{-(\alpha_i + \beta_j X_j)}) \quad (4)$$

This probability gives the value for the i^{th} subject of X_i' s.

Participants

The population is defined as students of the Faculty of Open Education, Faculty of Economics and Faculty of Business Administration at Anadolu University in Turkey. 45% of the students in the study were male and 55% were female. The demographic structure of the students is summarized in Table 1.

Table 1. Demographic structure of the students

Variables	%	Variables	%
Gender		Faculty	
Male	45.4	Open Education	81.9
Female	54.6	Economics	8.8
Marital Status		Business Administration	9.3
Single	62.4	Class	
Married	37.6	1	24.2
Working Status		2	29.7
Working	58.8	3	17.2
Not working	41.2	4	28.9
Income		Second University Status	
1-1500 TL	15.9	Yes	21.3
501-1000 TL	8.8	No	78.7
1001-1500 TL	19.5	Mother's Education Level	
1501-2000 TL	18.5	Non-literate	24.6
2001 TL and more	37.3	Compulsory degree	67.4
Family Income		High degree	8
1000 TL and less	21.0	Father's Education Level	
1001-2000 TL	34.4	Non-literate	10.5
2001-3000 TL	23.3	Compulsory degree	74.8
3001-4000 TL	11.2	High degree	14.7
4001 TL and more	10.1	Department	
Settlement		Jurisprudence	9.9
Village	8.7	Labor Ec. and Ind. Rel.	2.7
Town	31.3	Theology	7.3
Province	60.0	Economics	3.2
Socioeconomic Level		Business Administration	19.0
Very bad	9.0	Public Administration	13.1
Bad	19.4	Public Finance	3.8
Moderate	51.0	Social Services	5.0
Good	15.4	Sociology	6.2
Very good	5.2	Turk. Lang. and Lit.	2.3
		International Relations	5.0
		Others (46)	22.5

The percentage of the students studying a second university education was 21%. Only 8.7% of the respondents lived in a village, while the others lived in a town or province.

Data Collection and Analysis

Data was obtained through an on-line questionnaire conducted over approximately one year, between February 2016 to April 2017. The questionnaire was completed by around 17,000 students of the Faculty of Open Education, Faculty of Economics and Faculty of Business Administration at Anadolu University, in order to determine the contribution level of distance education toward students' life goals. In this study, OLR analysis was used, since the dependent variable has five ordered categories; 'strongly disagree', 'disagree', 'undecided', 'agree', 'strongly agree'. The predictor variables are grouped as demographical, educational and economic in the models; hence, three OLR models are considered. MASS package in R is used to construct the OLR model.

FINDINGS

The opinions of the students regarding the contribution level of Open Education on preparation for the professions is modeled by OLR. In this section, three OLR models are considered for demographic, educational and economic factors, respectively. Settlement, gender, marital status and number of households of the students are demographic factors which are considered as independent variables, whereas the contribution to the students' preparation for the professions as independent variable (ordered as strongly disagree, disagree, undecided, agree, and strongly agree) in the OLR model. The outputs of the model are shown in Table 2.

The results indicate that four independent variables for all of the categories were statistically significant. Interpretations of the intercepts are not of much interest and are used to predict values. Firstly, the intercept in Eq. (5) is -0.5952. Secondly, the reference category for the gender variable is female, which has coefficient of 0.24. One way to interpret the coefficients for the independent variable is using an odds ratio. The odds ratio in Table 2 for gender is exp(0.2481)=1.2816. In other words, female students who supported the contribution of distance education toward students' professions were 1.28 times greater in number than male students. Similarly, the students who lived in a province supported the contribution of distance education toward students' professions 1.47 times more than the students who lived in a village. The students living with more than five in a household supported the contribution of distance education toward students' professions 2.47 times more than the students living in households of two to four. The interpretation of the odds ratios for the remaining independent variables is straightforward.

Table 2. Outputs of the OLR model for demographic factors

Variables	$\hat{\beta}$	std. error	t value	odds ratio	p-value
Dependent					
1|2	-0.5952	0.0572	-1.0413	0.5515	0*
2|3	0.5972	0.0571	1.0451	1.8171	0*
3|4	1.3482	0.0581	2.3202	3.8505	0*
4|5	3.3725	0.0677	4.9780	2.9152	0*
Independent					
Gender(female)	0.2481	0.0321	7.7344	1.2816	0*
Settlement(town)	0.3355	0.0617	5.4400	1.3987	0*
Settlement(province)	0.3863	0.0585	6.6017	1.4715	0*
Marital status(married)	0.1816	0.0331	5.4789	1.1991	0*
Households(2-4)	0.6996	0.1594	4.3879	2.0129	0*
Households(5+)	0.8235	0.3776	2.1807	2.2785	0.0292*

Note. *$p<.05$

OLR models for outcomes of the contribution levels are given in Eqs. (5, 6, 7, 8), respectively.

$$\log(Q_1) = -0.5952 + (0.2481) * Gender_{female} + (0.3355) * Site_{town} + (0.3863) * Site_{province} + (0.1816) * Marital\ status_{married} + (0.6996) * Households_{2-4} + (0.8235) * Households_{5+} \quad (5)$$

$$\log(Q_2) = 0.5972 + (0.2481) * Gender_{female} + (0.3355) * Site_{town} + (0.3863) * Site_{province} + (0.1816) * Marital\ status_{married} + (0.6996) * Households_{2-4} + (0.8235) * Households_{5+} \quad (6)$$

$$\log(Q_3) = 1.3482 + (0.2481) * Gender_{female} + (0.3355) * Site_{town} + (0.3863) * Site_{province} + (0.1816) * Marital\ status_{married} + (0.6996) * Households_{2-4} + (0.8235) * Households_{5+} \quad (7)$$

$$\log(Q_4) = 3.3725 + (0.2481) * Gender_{female} + (0.3355) * Site_{town} + (0.3863) * Site_{province} + (0.1816) * Marital\ status_{married} + (0.6996) * Households_{2-4} + (0.8235) * Households_{5+} \quad (8)$$

As can be seen in these equations, the left side of the equation is called logit. This is the logarithm of the odds of a category occuring. The coefficients in each logistic regression model indicate the amount of logit changes on the values of the predictors. Each logit model has its own intercept. For instance, the coefficient (-0.5952) is the intercept (or threshold) of Eq. (5). On the other hand, the remainder of the coefficients, except the intercept term in each equation (0.5973, 1.3482, 3.3725, respectively), means that the effect of the predictor variable is the same for different logit functions and, hence, the model is called proportional odds model.

The calculated predicted probabilities of the model for demographic factors are shown in Table 3.

Table 3. Predicted probabilities of the OLR model for demographic factors

				Contribution Level				
Gender	Marital Status	Settlement	Households	1	2	3	4	5
Male	Single	Village	1	.355	.290	.148	.174	.033
			2-4	.215	.259	.181	.280	.065
			5+	.195	.249	.184	.300	.073
		Town	1	.283	.282	.168	.222	.046
			2-4	.164	.228	.184	.335	.088
			5+	.148	.216	.183	.355	.099
		Province	1	.273	.280	.170	.229	.048
			2-4	.157	.223	.184	.344	.092
			5+	.141	.210	.182	.363	.103
	Married	Village	1-2	.294	.284	.165	.213	.043
			3-4	.171	.234	.185	.326	.084
			5+	.155	.221	.184	.347	.094
		Town	1-2	.229	.266	.179	.266	.060
			3-4	.129	.199	.179	.380	.113
			5+	.116	.185	.175	.398	.127
		Province	1-2	.221	.262	.180	.274	.063
			3-4	.123	.193	.178	.387	.119
			5+	.110	.180	.173	.404	.132
Female	Single	Village	1	.315	.287	.159	.199	.040
			2-4	.186	.244	.184	.310	.077
			5+	.168	.231	.184	.330	.086
		Town	1	.247	.273	.176	.250	.054
			2-4	.140	.209	.182	.364	.104
			5+	.126	.196	.179	.383	.116
		Province	1	.238	.269	.177	.258	.057
			2-4	.134	.204	.181	.372	.109
			5+	.121	.191	.177	.391	.121
	Married	Village	1-2	.258	.276	.173	.241	.052
			3-4	.147	.215	.183	.356	.099
			5+	.132	.202	.180	.375	.110
		Town	1-2	.199	.251	.183	.296	.071
			3-4	.110	.179	.173	.405	.133
			5+	.098	.166	.167	.421	.148
		Province	1-2	.191	.246	.184	.304	.074
			3-4	.105	.174	.170	.412	.139
			5+	.094	.161	.164	.427	.155

Note. Contribution levels 1: strongly disagree, 2: disagree, 3: undecided, 4: agree, 5: strongly agree

The predicted probabilities shown in Table 3 are calculated using Eqs. (5, 6, 7, 8). For example, a single male student living in a village strongly disagrees with the probability of 33.5% on the contribution of distance education toward preparation for the professions. According to predicted probabilities, the contribution of distance education to the preparation for a profession is higher than that of female students. Students living

in a province stated that their contribution level was higher than for those living in districts and villages, respectively. Single students thought that the level of contribution was higher than for married students. An increase in the numbers per household also increases the contribution for students in preparation for a profession. As a result, students who stated that the contribution level was highest were married women living in provinces. The lowest were single male students living in villages.

The status of the second university, faculty, class, and parental educational levels of the students are educational factors which are considered in the OLR model. The output of the model are shown in Table 4.

Table 4. Outputs of the OLR model for educational factors

Variables	$\hat{\beta}$	std. error	t value	odds ratio	p-value
Dependent					
1|2	-1.2213	0.0893	-1.3682	0.2948	0*
2|3	-0.0566	0.0880	-0.6435	0.9449	0.5199
3|4	0.7248	0.0883	8.2059	2.0642	0*
4|5	2.7847	0.0983	2.8342	1.6194	0*
Independents					
Class(2)	-0.2218	0.0589	-3.7655	0.8011	0.0002*
Class(3)	-0.3643	0.0678	-5.3729	0.6947	0*
Class(4)	-0.3090	0.0598	-5.1702	0.7342	0*
Father edu. (c.e.)	0.2467	0.0811	3.0413	1.2798	0.0024*
Father edu. (h.e.)	0.4554	0.0936	4.8640	1.5769	0*

*Note. *p<.05, c.e.: compulsory educated, h.e.: high educated*

Class and fathers' educational levels are statistically significant variables in this model. However, the status of the second university, faculty, and mothers' educational levels of the students are not significant. Therefore, the OLR model is constructed using only significant variables. Similarly, the OLR models for educational factors can be constructed as in Eq. (5-8). The odds ratio in Table 4 for the level of fathers' education (h.e.) is exp(0.4554)=1.5769. In other words, students whose fathers' educational levels were of a higher degree supported the contribution of distance education on students' professions 1.57 times more than students whose fathers' educational levels were compulsory degrees.

The predicted probabilities of the model for educational factors are shown in Table 5 to interpret the model.

Table 5. Predicted probabilities of the OLR model for educational factors

		Contribution Level				
Father's education level	Class	1	2	3	4	5
Non-literate	1	.228	.258	.188	.268	.058
	2	.269	.272	.179	.232	.047
	3	.298	.278	.172	.211	.041
	4	.287	.276	.175	.219	.043
Compulsory degree	1	.187	.238	.193	.309	.073
	2	.223	.256	.189	.272	.060
	3	.249	.266	.184	.249	.052
	4	.239	.263	.186	.258	.055
Higher degree	1	.158	.217	.192	.344	.089
	2	.189	.239	.192	.307	.072
	3	.212	.251	.190	.283	.063
	4	.203	.246	.191	.293	.067

Note. Contribution levels 1: strongly disagree, 2: disagree, 3: undecided, 4: agree, 5: strongly agree

According to the probabilities given in Table 5, the contribution of distance education to preparation for the professions increases with an increase in the level of the father's education. In addition, the idea that this contribution decreases in upper classes increases.

Working status, income and socio-economic levels of the students are economic factors which are considered as an OLR model for economic factors which can be easily constructed using the coefficients in Table 6. All of the variables given in the table are found to be statistically significant.

Table 6. Outputs of the OLR model of economic factors

Variables	$\hat{\beta}$	std. error	t value	odds ratio	p-value
Dependent					
1|2	-0.2214	0.0630	-3.5169	0.8014	0.0004*
2|3	0.9893	0.0637	1.5535	2.6895	0*
3|4	1.7528	0.0648	2.7052	5.7709	0*
4|5	3.7995	0.0739	5.1428	4.4681	0*
Independents					
Income(501-1000 TL)	0.1592	0.0557	2.8571	1.1725	0.0043*
Income(1001- 1500 TL)	0.1806	0.0553	3.2645	1.1980	0.0011*
Income(1501- 2000 TL)	0.2931	0.0608	4.8195	1.3405	0*
Income(2001 TL and more)	0.3206	0.0571	5.6130	1.3779	0*
Socioeconomic level(bad)	0.6618	0.0683	9.6884	1.9382	0*
Socioeconomic level(moderate)	0.9173	0.0637	1.4408	2.5025	0*
Socioeconomic level(good)	1.0734	0.0737	1.4564	2.9253	0*
Socioeconomic level(very good)	0.7395	0.0972	7.6074	2.0949	0*
Working status(yes)	-0.1470	0.0373	-3.9447	0.8633	0.0001*

Note. *$p<.05$

Here, the students with good economic conditions stated that the contribution of distance education on students' professions was 2.92 times more than for other students.

The predicted probabilities of the model for economic factors are shown in Table 7 to interpret the model.

Table 7. Predicted probabilities of the OLR model for economic factors

			Contribution Level				
Working status	Income	Socioeconomic level	1	2	3	4	5
Yes	1-500 TL	Very bad	.445	.284	.123	.126	.022
		Bad	.293	.289	.167	.210	.042
		Moderate	.243	.275	.180	.249	.053
		Good	.215	.264	.185	.275	.061
		Very good	.277	.285	.172	.222	.045
	501-1000 TL	Very bad	.382	.293	.142	.155	.028
		Bad	.242	.275	.180	.250	.053
		Moderate	.198	.255	.187	.292	.068
		Good	.174	.240	.189	.318	.078
		Very good	.228	.270	.182	.263	.057
	1001-1500 TL	Very bad	.401	.291	.136	.146	.026
		Bad	.257	.280	.176	.238	.049
		Moderate	.211	.262	.185	.279	.063
		Good	.186	.248	.188	.305	.073
		Very good	.242	.275	.180	.250	.053

	1501-2000 TL	Very bad	.374	.293	.144	.159	.029
		Bad	.236	.273	.181	.256	.055
		Moderate	.193	.252	.187	.298	.070
		Good	.170	.237	.189	.324	.081
		Very good	.222	.267	.183	.268	.059
	2001 TL and more	Very bad	.368	.293	.146	.163	.030
		Bad	.231	.271	.182	.260	.056
		Moderate	.189	.250	.188	.302	.072
		Good	.166	.234	.189	.328	.083
		Very good	.217	.265	.184	.273	.061
No	1000 TL and less	Very bad	.481	.276	.113	.111	.019
		Bad	.324	.293	.159	.189	.036
		Moderate	.271	.284	.173	.226	.046
		Good	.241	.275	.180	.251	.053
		Very good	.307	.291	.163	.200	.039
	1001-2000 TL	Very bad	.417	.289	.131	.138	.024
		Bad	.270	.284	.173	.227	.046
		Moderate	.223	.267	.183	.268	.059
		Good	.197	.254	.187	.294	.068
		Very good	.255	.280	.177	.239	.050
	2001-3000 TL	Very bad	.437	.286	.126	.129	.023
		Bad	.286	.287	.169	.215	.043
		Moderate	.236	.273	.181	.255	.055
		Good	.209	.261	.185	.281	.063
		Very good	.270	.284	.173	.227	.046
	3001-4000 TL	Very bad	.409	.290	.134	.142	.025
		Bad	.263	.282	.175	.232	.048
		Moderate	.217	.265	.184	.273	.061
		Good	.191	.251	.188	.299	.070
		Very good	.248	.277	.178	.244	.051
	4001 TL and more	Very bad	.403	.291	.136	.145	.026
		Bad	.258	.280	.176	.236	.049
		Moderate	.212	.263	.185	.278	.062
		Good	.187	.249	.188	.304	.072
		Very good	.243	.276	.179	.249	.053

Note. Contribution levels 1: strongly disagree, 2: disagree, 3: undecided, 4: agree, 5: strongly agree

According to the results shown in Table 7, the contribution of distance education in preparation for the professions is higher than for students who do not work in any job. An increase in income level and socio-economic level also positively affects the thoughts of students. As a result, the students who stated that the contribution level was highest were students who did not work in any job and who had high income and socio-economic levels. Those who stated that the contribution was lowest were workers on low incomes from poor socio-economic levels.

DISCUSSIONS AND CONCLUSION

A questionnaire was conducted on a sample of approximately 17,000 students of the Faculty of Open Education, Faculty of Economics and Faculty of Business Administration at Anadolu University. The contribution level of distance education to preparation for the professions was modelled by three ordinal logistic regression tests using demographic, educational and economic factors. Predicted probabilities of each model were interpreted to show the effect of these factors. In addition, the results were compared with previous studies from the literature.

Certain studies investigated the relationship between family size and/or family structure and educational attainment. For instance, Maralani (2008) suggests that for Indonesia, no consistent positive or negative relationship exists between family size and children's educational attainment. According to the results, despite the fact that the relationship between two variables had not reached a significant level in rural areas for the considered time period, the same relationship appeared to have changed from positive to negative for urban areas during the same period. A number of studies suggest either no relationship or an inconsistent relationship, such as those conducted by Dayioglu et al. (2009), Fitzsimons and Malde (2014), and Sandberg and Rafail (2014). A few researchers found a negative relationship between family size and educational attainment. These include Baez (2008), Rosenzweig and Zhang (2009), Bagger et al. (2013), Dumas and Lefranc (2013), Bougma et al. (2015) and Kugler and Kumar (2015). Blaabæk et al. (2017) adopted a different approach and argue that from a causality centered point of view, previous research studies that had found a negative relationship between family size and educational attainment were invalid. In addition to these studies, our results show that there is a positive relationship between family size and the contribution level of distance education to prepare students for the professions. A student, living in a more crowded family, thinks more positively than others about the contribution of distance education, as shown in Table 3.

Dumas and Lambert (2005) found that the education levels of fathers rather than mothers had an effect on the educational demands of individuals. Handa et al. (2004) show that the education of the father in a household is one of the main determinants of the education demands of an individual. In this study, it was concluded that the education level of the father had an effect on the education demands of other family members. The study examines the effect of parents' educational levels, wealth, gender, rural region, and numbers in households on education demand. Tansel (1997) suggests that maternal and paternal education are both effective on individuals' education, especially for individuals older than 15 years, using data from Ghana and the Ivory Coast. Another study suggesting that the educational level of the father is decisive with regard to demand for education is the work of Haan and Plug (2006). The results in our study show that the educational level of the father has a significant effect, while the educational level of the mother is not found to be significant in the OLR model. In addition, the contribution of distance education regarding preparation for the professions increases with the level of the father's education.

Holmes (1999) investigated the demand for education in terms of income, rather than the education of parents, using the Pakistan Integrated Household Surveys. Gurler et al. (2007) concludes that there is a direct relationship between the position of individuals and their household incomes. Accordingly, individuals with household incomes of individuals living in urban areas with a high demand for education in Turkey are higher than others.

The novelty of our study is that the socio-economic level of students is considered to be an explanatory variable. As a consequence, students whose socio-economic levels are moderate and good state that the contribution level of distance education is higher than for other students.

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