

The Influence of Demographic Factors on Entrepreneurial Intention among Undergraduate Students as a Career Choice: The Case of a Turkish University

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Abstract

This paper aims to determine the impact of demographic factors on entrepreneurial intention among undergraduate students as a career choice. For this purpose, a written-questionnaire was administered to 638 undergraduate students at a Turkish university. The data being obtained were analyzed using logistic regression model. The analysis results revealed that the current faculty, type of high school and the household income of their family were significant factors influencing the entrepreneurial intention among respondents. The relationship among the significant factors was also examined using the relevant chi-square test.

Keywords: Entrepreneurial Intention, Demographic Factor, Student, Career Choice, University, Turkey.

1. Introduction

Over the last decade, the study of entrepreneurship has widely taken its respectable place worthy of scholarly pursuit in research and education, particularly at the college and university level (Rushing, 1990). Nowadays, higher education plays an important role on producing an increasing number of graduates in many countries that seeks to promote self or small business employment as a realistic career option (Nabi and Holden, 2008). Moreover, educators intend to better prepare their students for a changing market by extending entrepreneurship education beyond the business school (Shinnar, Pruett and Toney, 2009). *The Global Entrepreneurship Monitor Turkey 2010 Report* (2011) suggests that people who have attained higher levels of education tend to be opportunity-driven entrepreneurs, and to have wider choices for employment. This survey also highlights that necessity-entrepreneurial activity is non-existent for people who have a high level of education. Although entrepreneurship education has been adopted as one of the key instruments to increase the entrepreneurial attitudes of potential entrepreneurs, the influential factors that determine the individual's decision to start up a venture are not explicit enough. However, the explaining capacity of personal traits or demographic characteristics is still reasonable (Liñán, Rodríguez-Cohard and Rueda-Cantuche, 2011).

This paper proposes to examine the key influential demographic factors affecting the entrepreneurial intention among undergraduate students as a career choice at a 4-year public university in Turkey. The rest of this paper proceeds as follows. The next section presents a comprehensive literature review addressing the entrepreneurial intention of undergraduate and/or graduate students in a variety of countries. The consecutive sections introduce the sample of the present study, the methodology and the estimation results. This study concludes with the discussion of the analysis results and recommendation about policy making.

2. Literature Review

There is a rapidly growing literature which investigates the entrepreneurial intention among undergraduate and/or graduate students. Autio et al. (2001) demonstrated the robustness of the intent approach in different cultural environments involving the Scandinavian countries and the US. They indicated that only weak influence of subjective norm, as reflected in the perceived general acceptability of entrepreneurship as career choice, on entrepreneurial intention. Lüthje and Franke (2003) concentrated on the entrepreneurial intention among engineering students at MIT and personality traits, entrepreneurial attitude, perceived barriers support factors were the prominent determinants. Similarly, in Gurel, Altinay and Daniele (2010)'s survey, emphasis was placed on tourism students' entrepreneurship intention in the UK and Turkey. Their results demonstrated a statistical relationship between innovation, propensity to take risks, entrepreneurial family and entrepreneurial intention.

Wang and Wong (2004) examined the entrepreneurial interest in Singapore and they determined the inadequate knowledge and perceived risk as significant indicators. Bhandari (2006) found that luck and to lead other people were significant variables for entrepreneurial intention among Indian university students. Gürol and Atsan (2006) investigated the entrepreneurial characteristics among fourth year students only from two Turkish universities and their analysis results exhibited that students who had higher risk taking propensity, internal locus of control, higher need for achievement and innovativeness were higher entrepreneurially inclined students. Lee et al. (2006) suggested that customized approaches based on unique cultural context were needed for effective entrepreneurship education. Wilson, Kickul and Marlino (2007) put forward the role of gender on entrepreneurial self-efficacy and career intentions. Their results indicated that the effects of entrepreneurship education in MBA programs on entrepreneurial self-efficacy proved stronger for women than for men.

Gerry, Marques and Nogueira (2008) used multivariate statistical techniques to analyze entrepreneurial potential of graduates at a Portuguese university and they underlined the impact of gender, risk factors and academic training. Wu and Wu (2008) suggested that diversity of educational background offered plausible explanations on the difference of entrepreneurial intentions Of Chinese university students. A number of studies (Shariff and Saud, 2009; Zain, Akram and Ghani, 2010; Sandhu, Sidique and Riaz, 2011; Keat, Selvarajah and Meyer, 2011) focused on the entrepreneurial intention among Malaysian university students and they found various education-based, demographic and business background variables as statistically significant. Boissin et al. (2009) found that the intention to start up a business was stronger in the US than in France, and showed significant differences in beliefs. In their survey among Austrian university students, Schwarz et al. (2009) showed that all paths regarding general and specific attitudes were significant expect for the attitude towards competitiveness. Turker and SonmezSelcuk (2009) indicated that educational and structural support factors affected the entrepreneurial intention of students at a Turkish university. Specifically, Zampetakis et al. (2009) addressed the emotional intelligence on entrepreneurial attitudes and intentions of Greek students. Their results provided powerful support for the proposition that students' creativity and proactivity moderate the positive impact of emotional intelligence on attitudes towards entrepreneurship.

Engle et al. (2010) carried out a comprehensive survey among business students comprising twelve countries and they suggested that social norms were a significant predictor of entrepreneurial intent in each country. Nabi, Holden and Walmsley (2010) used a fairly large data set comprising over 8000 students in the UK to investigate entrepreneurial intention. Their results criticize the reliability of Entrepreneurial Intentions Survey on addressing critical questions around the impact of higher education on entrepreneurship. Shook and Bratianu (2010) found that self-efficacy and the desirability associated with creating a venture were positively related to entrepreneurial intent among Romanian students.

Dawey, Plewa and Struwig (2011) indicated that students from developing/merging economies were more likely to envisage future careers as entrepreneurs and were more positive towards entrepreneurship than their industrialized European counterparts. Giacomini et al. (2011) examined whether differences exist among American, Asian and European students in terms of entrepreneurial intentions and dispositions. Their findings indicated that the entrepreneurial disposition and intentions differ by country, nevertheless that students across countries were motivated and/or discouraged by similar variables. Iakovleva, Kolvereid and Stephan (2011) investigated entrepreneurial intentions in developing and developed countries and they exhibited that the students from developing countries had stronger entrepreneurial intentions than those from developed countries.

Liñán, Urbano and Guerrero (2011) investigated the regional variations in start-up intentions of Spanish university students. Their survey results confirmed that social valuation of the entrepreneur was higher in the more developed region, positively affecting perceived subjective norms and behavioral control. Weng, Lu and Millington (2011) affirmed the impacts of propensity to act, perceived desirability and perceived feasibility on entrepreneurial intention of college students in China and the US. Zellweger, Sieger and Halter (2011) performed a multinomial logistic regression analysis using a dataset obtained from the International Survey on College Entrepreneurship at 87 universities in eight countries and they found that the transitive likelihood career intent depended on degree of entrepreneurial self-efficacy as well as independence and innovation motives.

3. The Data

In order to obtain the relevant data a questionnaire was conducted among undergraduate students in 17 different faculties at Atatürk University, Erzurum. During the data collection period, the total number of undergraduate students at the underlying university was 30,762. The sample size of the questionnaire was calculated with respect to the following formula

$$n = \frac{NPQZ^2}{(N-1)d^2 + PQZ^2} \quad (1)$$

where n denotes the sample size; N denotes the population size (herein the number of people over the age of 18; P is the probability of the occurrence for a given event; Q equals to $1 - P$; Z denotes the test statistic under the $(1 - \alpha)\%$ significance level; and finally d denotes the tolerance. In this respect, the minimum representative sample size of the survey can be calculated as follows (Özer, 2004):

$$n = \frac{30762(0,5)(0,5)(1,96)^2}{(30762-1)0.05^2 + (0,5)(0,5)(1,96)^2} \cong 384 \quad (2)$$

638 usable questionnaires were transformed and coded to a convenient computer-ready form, which exceeds the number of objective minimum sample size. Additionally, the number of representative questionnaires were determined based on the number of the students at the corresponding faculties using simple random sampling approach. The data being obtained were analyzed using binary logistic regression model. Table 1 introduces the dependent and independent variables used in the model. The dependent variable comprises the responses of yes-no question such as “I have chosen this faculty to start up a venture in the future”. Therefore, a binary logistic regression model was performed to analyze the underlying data. As shown in Table 1, due to have a better observation on the relevant categories, all independent variables were coded as dummy variables.

Table 1: Description of variables used in the model

Variable	Description	Mean	S.D.
Entrepreneurial intention	Dependent variable (Yes = 1; No = 0)	0.456	0.498
(1) Gender	Male = 1; Female = 0	0.458	0.517
(2) Age group	18 – 19 = 1; Otherwise = 0	0.082	0.274
	20 – 21 = 1; Otherwise = 0	0.418	0.494
	22 – 23 = 1; Otherwise = 0	0.348	0.477
	24 and older = 1; Otherwise = 0	0.152	0.359
(3) Faculty	Social sciences = 1; Otherwise = 0	0.367	0.482
	Health sciences = 1; Otherwise = 0	0.282	0.450
	Educational sciences = 1; Otherwise = 0	0.058	0.234
	Applied sciences = 1; Otherwise = 0	0.293	0.456
(4) Occupation of household head	Private sector = 1; Otherwise = 0	0.080	0.271
	Public sector = 1; Otherwise = 0	0.312	0.464
	Self-employment = 1; Otherwise = 0	0.230	0.421
	Unemployed = 1; Otherwise = 0	0.088	0.283
	Retired = 1; Otherwise = 0	0.290	0.454
(5) Monthly income of household head	Under 1000 TL = 1; Otherwise = 0	0.282	0.450
	1001-2000 TL = 1; Otherwise = 0	0.425	0.495
	2001-3000 = 1; Otherwise = 0	0.201	0.401
	3001 TL and higher = 1; Otherwise = 0	0.091	0.288
(6) Type of high school	Vocational high school = 1; Otherwise = 0	0.124	0.330
	General high school = 1; Otherwise = 0	0.458	0.499
	Foreign language-based high school = 1; Otherwise = 0	0.293	0.456
	Science high school = 1; Otherwise = 0	0.042	0.201
(7) Area of study in high school	Other high school = 1; Otherwise = 0	0.152	0.359
	Quantitative-based = 1; Otherwise = 0	0.582	0.494
	Verbal-based = 1; Otherwise = 0	0.234	0.423
	Equally-weighted = 1; Otherwise = 0	0.183	0.387

TL = Turkish Lira

Table 2 presents the frequencies of independent variables used in the model being fitted. As Table 2 depicts, more than half of the respondents (54.7%) were men; 77% of them were aged between 20 and 23; 66% of them were studying social and applied sciences. Nearly 60% of their household head (60.2%) were working in the public sector or retired; while nearly 70% of (70.7%) their monthly income was under 1000 Turkish liras (TL) or between 1001 TL and 2000 TL. Before their undergraduate education, nearly 75% (75.1%) of students were educated at vocational or foreign language-based high schools; while more than 80% (81.6%) of their areas of study in high school were quantitative- or verbal-based.

Table 2: Frequencies of independent variables used in the model

Independent variables	f	%	Variables	f	%
GENDER			MONTHLY INCOME		
Male	289	54.7	Under 1000 TL	180	28.2
Female	349	45.3	1001 – 2000 TL	271	42.5
AGE GROUP			2001 – 3000 TL	128	20.1
18 – 19	52	8.2	3001 TL and higher	58	9.2
20 – 21	267	42.0	TYPE OF HIGH SCHOOL		
22 – 23	222	35.0	Vocational high school	79	12.4
24 and elder	97	14.8	General high school	292	45.8
FACULTY			Foreign language-based high school	187	29.3
Social sciences	234	36.7	Science high school	27	4.5
Health sciences	180	28.2	Other high school	51	8.0
Educational sciences	37	5.8	AREA OF STUDY IN HIGH SCHOOL		
Applied sciences	187	29.3	Quantitative-based	371	58.2
OCCUPATION OF HOUSEHOLD HEAD			Verbal-based	149	23.4
Private sector	51	8.0	Equally-weighted	117	18.4
Public sector	199	31.2			
Self-employed	147	23.0			
Unemployed	56	8.8			
Retired	185	29.0			

4. Methods

4.1. Logistic Regression Model

It appears to be intrinsically interesting whether the classification of cases into one or the other of the categories of the dependent variable can be predicted by the independent variable. In this manner, instead of trying to predict the arbitrary value related to a category, it may be more plausible to evaluate the problem as an attempt to predict the probability that a case will be classified into one relative to the other of the two categories of the dependent variable (Menard, 2002). Similarly, in the social sciences some of the response variables are binary, with possible responses of ‘yes’ and ‘no’. Furthermore, many continuous variables were more precisely measured by binary variables (DeMaris, 2004). For a binary response taking the values of 0 and 1, the expected value is denoted by the probability, *p*, that the variable takes the one value. One of the more convenient approach to model this probability is the logit transformation of *p*. In terms of *p*, the logistic regression model can be defined as

$$p = \frac{\exp(\beta_0 + \beta_1x_1 + \dots + \beta_qx_q)}{1 + \exp(\beta_0 + \beta_1x_1 + \dots + \beta_qx_q)}$$

where $q = 1 - p$. The parameters in the logistic regression model can be estimated using the maximum likelihood. The estimated regression coefficients in a logistic regression model represents the estimated change in the log-odds corresponding to a unit change in the corresponding explanatory variable conditional on the other explanatory variables remaining constant (Landau and Everitt, 2004). Suppose a sample of *n* independent observations of the pair (x_i, y_i) , $i = 1, 2, \dots, n$, where x_i denotes the value of the independent variable for the *i*th subject and y_i denotes the value of a binary outcome variable. Since the observations are assumed to be independent, the likelihood function can be obtained as

$$l(\beta) = \prod_{i=1}^n p(x_i)^{y_i} [1 - p(x_i)]^{1-y_i}$$

In that way, the log-likelihood function can be defined as

$$L(\beta) = \ln[l(\beta)] = \sum_{i=1}^n \{y_i \ln[p(x_i)] + (1 - y_i) \ln[1 - p(x_i)]\}$$

This expression is differentiated with respect to β_0 and β_1 and set the resulting formulas equal to zero to find the value of β that maximizes $L(\beta)$ (Hosmer and Lemeshow, 2000).

5. Results

Table 3 indicates the logistic regression analysis to examine the entrepreneurial intention among undergraduate students. The model being fitted was interpreted through odds ratio values. Before interpretation, several post-estimation tests were performed.

Table 3: Logistic regression analysis of entrepreneurial intention among undergraduate students

Independent variable	OR	Std. Error	z	p > z	[95% CI]
(1) Gender					
Male	1.20	0.410	1.08	0.281	0.86 – 1.67
(2) Age group (base 20 – 21)					
18 – 19	1.31	0.422	0.85	0.394	0.70 – 2.47
21 – 22	0.94	0.189	-0.32	0.750	0.63 – 1.39
23 – 24	0.96	0.262	-0.14	0.889	0.57 – 1.64
(3) Faculty (base Health sciences)					
Social sciences	0.45	0.213	-1.69	0.091	0.17 – 1.14
Educational sciences	0.14	0.088	-3.12	0.002*	0.04 – 0.48
Applied sciences	0.53	0.136	-2.47	0.014**	0.32 – 0.88
(4) Occupation of household head (base Private sector)					
Public sector	0.82	0.269	-0.61	0.540	0.43 – 1.56
Self-employment	1.20	0.410	0.54	0.590	0.62 – 2.35
Unemployed	0.80	0.335	-0.53	0.597	0.35 – 1.82
Retired	0.99	0.327	-0.02	0.984	0.52 – 1.90
(5) Monthly income of household head (base Under 1000 TL)					
1001 – 2000 TL	0.63	0.138	-2.11	0.035**	0.41 – 0.97
2001 – 3000 TL	0.77	0.206	-0.99	0.322	0.45 – 1.30
3001 TL and higher	1.07	0.368	0.19	0.846	0.54 – 2.10
(6) Type of high school (base Science high school)					
Vocational high school	1.90	0.981	1.24	0.215	0.69 – 5.23
General high school	2.71	1.226	2.21	0.027**	1.12 – 6.58
Foreign language-based high school	2.01	0.880	1.60	0.109	0.86 – 4.74
Other high school	2.23	1.145	1.56	0.118	0.82 – 6.10
(7) Area of study in high school (base Equally-weighted)					
Quantitative-based	0.45	0.202	-1.78	0.075	0.19 – 1.08
Verbal-based	0.75	0.218	-0.99	0.324	0.42 – 1.33

Number of observations = 638

LR $\chi^2(20) = 35.79$

$P > \chi^2 = 0.0163$

Pseudo $R^2 = 0.047$

* $p < 0.01$ ** $p < 0.05$

The multicollinearity test was performed to the logistic model being fitted, by evaluating the variance inflation factor (VIF) values of independent variables. Practically, variables which have VIF values more than 10 are considered as they lead to multicollinearity problem and biased results. As shown in Table 4, none of the independent variables had VIF values more than 10 and it could be suggested no serious multicollinearity problem was found.

Table 4: Multicollinearity test

Independent variable	VIF	1/VIF
(1) Gender		
Male	1.14	0.876
(2) Age group		
18 – 19	1.18	0.850
21 – 22	1.37	0.732
23 – 24	1.43	0.671
(3) Faculty		
Social sciences	7.82	0.128
Educational sciences	2.92	0.343
Applied sciences	2.02	0.495
(4) Occupation of household head		
Public sector	3.50	0.286
Self-employment	3.15	0.318
Unemployed	2.11	0.473
Retired	3.40	0.295
(5) Monthly income of household head		
1001 – 2000 TL	1.78	0.562
2001 – 3000 TL	1.75	0.571
3001 TL and higher	1.49	0.671
(6) Type of high school		
Vocational high school	4.15	0.241
General high school	7.18	0.139
Foreign language-based high school	5.63	0.178
Other high school	2.81	0.356
(7) Area of study in high school		
Quantitative-based	7.13	0.140
Verbal-based	2.29	0.438
Mean VIF	3.21	

Additionally, as shown in Table 5, the model being fitted had very small and very negative Akaike and Bayesian Information Criteria, respectively, which implies that the model has acceptable measures of fit.

Table 5: Measures of fit test

Measures of fit criteria	Value
Log-likelihood intercept only	-460.588
Log-likelihood full model	-421.872
LR(20)	35.684
$P > LR$	0.017
Akaike information criterion	1.454
Bayesian information criterion	-3099.303

The estimation results revealed that students' present faculty affect their entrepreneurial intention in the future. For instance, students who were studying educational sciences were 86% less likely (OR = 0.14, $p < 0.01$, 95% CI = 0.04 – 0.48) to have entrepreneurial intention in the future. Similarly, students who were studying applied sciences were 47% less likely (OR = 0.53, $p < 0.05$, 95% CI = 0.32 – 0.88) to have entrepreneurial intention in the future. The second significant determinant of entrepreneurial intention among undergraduate students were the monthly income of the household head. The estimation results showed that since the monthly income of the household head was relatively lower, their entrepreneurial intentions after graduation decrease. Empirically, students were 37% less likely (OR = 0.63, $p < 0.05$, 95% CI = 0.41 – 0.97) to have entrepreneurial intention in the future, when the monthly income of the household head were between 1001 and 2000 TL. However, students who studied at general high schools were 2.71 times more likely (OR = 2.71, $p < 0.05$, 95% CI = 1.12 – 6.58) to have entrepreneurial intention in the future relative to other high schools.

The chi-square test was also performed between significant independent variables and the dependent variable as a control group. Table 6 indicates the chi-square output between entrepreneurial intention and students' faculty. There were also a significant relationship ($\chi^2(638) = 202.217$; $p < 0.01$) between entrepreneurial intention and students' faculty. This relationship supports the evidence of logistic regression analysis.

Table 6: Chi-square test between entrepreneurial intention and students' faculty

	Value	d.f.	Asymp. Sig. (2-sided)
Pearson Chi-square	202.217	64	0.000*
Likelihood ratio	201.975	64	0.000*
Linear-by-linear association	2.549	1	0.110
N of valid cases	638		

* $p < 0.01$ ** $p < 0.05$

Table 7 indicates the chi-square test between entrepreneurial intention and monthly income of household head, where a significant relationship ($\chi^2(637) = 24.018$; $p < 0.05$) was also observed supporting the logistic regression analysis.

Table 7: Chi-square test between entrepreneurial intention and monthly income of household head

	Value	d.f.	Asymp. Sig. (2-sided)
Pearson Chi-square	24.018	12	0.020**
Likelihood ratio	22.652	16	0.012**
Linear-by-linear association	1.783	1	0.182
N of valid cases	637		

* $p < 0.01$ ** $p < 0.05$

Finally, Table 8 indicates that a significant relationship was not found between entrepreneurial intention and type of high school before undergraduate education.

Table 8: Chi-square test between entrepreneurial intention and type of high school

	Value	d.f.	Asymp. Sig. (2-sided)
Pearson Chi-square	22.759	16	0.120
Likelihood ratio	22.652	16	0.123
Linear-by-linear association	0.574	1	0.449
N of valid cases	636		

6. Conclusion and Discussion

This paper examines the significant impact of demographic variables on entrepreneurial intention among undergraduate students at a Turkish university using logistic regression analysis. A questionnaire-based study was conducted among 638 undergraduate students from 17 different faculties. The results of the study showed that students' faculty, monthly income of the household head, and type of high school before undergraduate education were statistically significant indicators. Students' faculty had generally a negative impact on entrepreneurial intentions. Particularly, students who were studying educational and applied sciences had less entrepreneurial intentions. This result may be attributed to the relative high wages of public sector for educational and applied sciences graduates relative to public sector and self-employment. In addition, students were generally aware of the importance of capital before starting a venture, where relatively low household head income led to less likely to have entrepreneurial intentions for undergraduate students. Finally, general high school graduates were more likely to have entrepreneurial intention than other high school categories. The chi-square test generally supported the logistic regression analysis results. More effective entrepreneurship education programs may provide a more appropriate assistance to undergraduate students to have better insights after graduation. Furthermore, potential monthly income standards of private sector and self-employment may be relatively increased. Otherwise, they generally tend to see public sector as a more guaranteed job opportunity in the future.

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