Understanding entrepreneurial intentions of students in agriculture and related sciences

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Abstract

There is a growing body of literature arguing that individuals who have taken entrepreneurship courses generally intend to start a business. The purpose of this study is to investigate the impact of relevant courses on the entrepreneurial intentions of students in agriculture, using Ajzen's (1991) the theory of planned behavior (TPB). The results show that the entrepreneurship education program has affected the student's perceived behavior control and anticipated positive and negative effect.

Keywords: Agricultural University, Entrepreneurship Education, Entrepreneurial Intentions, Theory of Planned Behavior

1. Introduction

In recent years, entrepreneurship and entrepreneurial culture are receiving an increased amount of attention in both academic research and practice. Entrepreneurship education and training is growing rapidly in universities and colleges throughout the world (Katz, 2003; Kuratko, 2005) and governments are supporting it directly and indirectly through funding major investments to would-be entrepreneurs and existing small businesses (Martin et al., 2013). There is no doubt that this tendency is due to recognition that entrepreneurship can play an important role in economic growth and employment (Kuratko, 2005). Policy makers in Europe and United States believe that increased levels of entrepreneurship can be reached through education and especially entrepreneurship education. So, such education is promoted and implemented into universities and school in many of the European countries and the United States (Kuratko, 2005).

However, the role of entrepreneurship and innovation has not been given much emphasis in the field of university agricultural education (Knudson et al., 2004). Agricultural education has to shape the future generation of leaders, researchers, professionals, technicians and last but not least, innovative farmers, who collectively can meet the challenges of global food security. Although emphasis is placed in the continuous education of farmers, agricultural university students, in comparison to individuals without university education, are more likely to pursue self-employment and start business in the agrifood sector that has significant impact on economic growth (Robinson & Sexton, 1994). Agricultural universities can work as facilitator factors towards students business start up through the introduction of entrepreneurship research and education programs.

Thus, the purpose of this study is to examine the impact of entrepreneurship education program on intention of senior students at the Agricultural University of Athens, Greece, applying empirically the theory of planned behavior (TPB). Although the advantages of entrepreneurship education have been much commented by many researchers the impact of entrepreneurship programs on intention of student in agriculture remains relatively untested.

2. Methodology

In order to test the impact of entrepreneurship education programme on intention of student in agriculture we used the theory of planned behavior (TPB). Theory of planned behavior is one of the most influential theory driven models for intentions that have been proposed in the literature is Ajzen's (1991). According to the TPB, there are three key factors that influence an individual's intention (INT) to perform a

given behavior, these being (i) the attitude towards the act (ATT), (ii) subjective norms (SN), and (iii) perceived behavioral control (PBC). ATT refer to a person's overall assessment of the advantages and disadvantages of performing a given behavior. SN investigate people's perceptions of approval or disapproval from significant others (i.e. normative expectations) for performing the behavior (i.e. starting a business in our case). The final component of the TPB is perceived behavioral control (PBC) which refers to people's beliefs that they are capable of performing a given behavior (Ajzen, 1991).

Although the TPB is considered a parsimonious model with a good predictive ability several researchers have proposed that broadening and deepening the model with new variables would increase its predictive value such as anticipated affect. Generally, anticipated affect can be distinguished as positive and negative. Previous research addressing anticipated emotion in the context of the TPB has focused primarily on negative anticipated emotion, such as anticipated regret because people place greater weight on avoiding losses, risks, and negative consequences than approaching gains and positive consequences. In the present research we focus on both positive and negative anticipated affect.

3. Case study and data description

We adopted a pretest-post test control group to measure the change of attitudes and intentions over a period of approximately 4 months (October 2012 – January 2013). The groups who participated in the program attend entrepreneurship lesson as an elective module in the Fall semester. We used a cross-sectional survey design and applied a structured questionnaire to collect data. Survey data were collected from students of the Agricultural University of Athens (AUA). Since 2004, the AUA has been engaged to encourage entrepreneurship that is creativity and knowledge in theoretical and practical issues regarding the creation of a new business.

The questionnaire contained constructs (i.e. variables) that were assessed with self-report measures based on multi-item scales. Specifically, we assessed students' entrepreneurial intent (INT) using the scale originally developed by Thompson (2009). Attitudes towards entrepreneurship (ATT), subjective Norm (SN) and perceived behavioural control (PBC) were assessed using the five, three and five item scales respectively from Linan and Chen (2009). Anticipated Positive (PA) and Negative Affect (NA) were assessed using 20 items (ten positive and ten negative) from the Positive Affect and Negative Affect Schedule (PANAS) (Watson et al., 1988). Finally, we used the Gradual Threshold Model (GTM) of ambivalence and the GTM formula suggested by Priester and Petty (1996), to assess anticipated affective ambivalence (AMB). Responses to the ATT, INT and PBC items were made on 7-point Likert-type scales (1 = strongly disagree, 7 = strongly agree). For SN, PA and NA items responses were made on 5- point Likert-type scales.

Time 1 (t1) questionnaire measured the INT, ATT, SN, PA, NA and AMB at the time of entering the programme, while time 2 (t2) questionnaire measured at the end of the programme.

The sample (N=65) consisted of 29 male students (44.6%), the mean sample age was 24.11 years (*SD* = 2.61 years). Fifty nine participants (90.8%) were undergraduate students. It is noteworthy that various disciplines of agricultural related sciences are represented in the participants, namely Crop Science (12 students), Biotechnology (9), Food Science (9), Agricultural Economics and Rural Development (31) and Animal Science (4).

4. Results and discussion

Results (table 1) suggest that agricultural students' entrepreneurial intent (INT) is strongly and positively related to attitudes towards entrepreneurship (ATT) (t1: r = 0.70, p < 0.01, two tailed. t2: r = 0.68, p < 0.01, two tailed) and perceived behavioral control (PBC) (t1: r = 0.74, p < 0.01, two tailed. t2: r = 0.70, p < 0.01, two tailed). Subjective Norm (SN) correlated significantly with PA (both t1 & t2) and with ATT only in t2. Furthermore, anticipating positive affect from nascent entrepreneurship (PA) correlates positively with all the TPB model variables in t1 but with SN only in t2, while anticipating negative affect relates negatively with PBC (both t1 & t2) and with PA only in t2. This suggests that anticipating negative affect relates to students' beliefs that they not are capable of performing a given behaviour (i.e. start a business in our case).

Table 1: Descriptive statistics and inter-correlations (N=65)

	TIME	MEAN	St.d	ATT	SN	PBC	INT	PA	NA	AMB
ATT	t1	4.83	1.48	(0.93)						
	t2	4.76	1.35	(0.94)						
SN	t1	3.80	0.67	0.22	(0.61)					
	t2	3.88	0.71	0.41*	(0.73)					
PBC	t1	3.05	1.20	0.49**	0.17	(0.88)				
	t2	3.70	1.33	0.58**	0.26	(0.89)				
INT	t1	3.46	1.59	0.70**	0.03	0.74**	(0.92)			
	t2	3.92	1.44	0.68**	0.17	0.70**	(0.91)			
PA	t1	3.81	0.63	0.54**	0.25**	0.54**	0.55**	(0.88)		
	t2	4.15	0.63	0.2	0.45**	0.27	0.26	(0.85)		
NA	t1	1.83	0.56	0.09	-0.09	-0.24*	-0.07	-0.12	(0.81)	
	t2	2.05	0.68	-0.40*	-0.34*	-0.43*	-0.29	-0.45**	(0.82)	
AMB	t1	3.64	1.07	0.11	-0.11	-0.25*	0.07	-0.06	0.98**	-
	t2	4.49	1.02	-0.33*	-0.32*	-0.26	-0.06	-0.31	0.92**	-

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Reliabilities are in parentheses

In table 2, we present the regression models for whole sample, with INT as the dependent variable. Examining the findings, for the whole sample postulated that ATT and PBC have statistically significant direct effects on INT for both t1 and t2 (ATT=0.48 (t1) & 0.50(t2), p<0.001, two tailed and PBC=0.53(t1) & 0.46(t2), p<0.001, two tailed). The standardized direct effect of SN on INT was found to be negative in both t1 & t2 but statistically significant only in t1. In summary, the proportion of variance in INT that was explained by the collective set of predictors was 72 percent (t1) and 60 percent (t2), which is highly satisfactory compared to previous research that used the TPB to explain student entrepreneurial intentions.

Table 2: Regression models

TIME	t1		t2	
	Standardized Coefficients	**Sig.**	**Standardized Coefficients**	**Sig.**
ATT	0.48	0.000	0.50	0.003
SN	-0.17	0.000	-0.15	0.273
PBC	0.53	0.000	0.46	0.003
Adjusted R^2	0.72		0.60	

Dependent Variable: INT

In order to test the impact of entrepreneurship education programme on intention of agricultural student we used a t-test (Paired Samples test) to compare the means before and after the programme (t1 & t2). These results are detailed in table 3.

As show in table 3, there has been a significant enough impact of entrepreneurship education programme on intention of agricultural students. In accordance with results, PBC, this refers to people's beliefs that they are capable of performing a business, has increased (3.05 to 3.70, table 1) and is statistically significant. So, entrepreneurship education programme increase their beliefs that they are capable of performing a business. In addition, PA and NA increased too and are statistically significant. That means that at the end of entrepreneurship education programme the student feel more positive and negative anticipated affect as they gain new knowledge. Finally, the entrepreneurial intention of student in agriculture is increased from t1 to t2 and is statistically significant (in 10%).

Table 3: Paired Samples Test

	Paired Differences							
				95% Confidence Interval of the Difference				
Pairs	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
ATT1 - ATT2	-.07222	1.30419	.21737	-.51350	.36905	-.332	35	.742
INT1 - INT2	-.40991	1.30147	.21396	-.84384	.02402	-1.916	36	.063
SN1 - SN2	-.14530	.77533	.12415	-.39663	.10603	-1.170	38	.249
PBC1 - PBC2	-.62703	1.00682	.16552	-.96272	-.29134	-3.788	36	.001
PA1 - PA2	-.30278	.69426	.11571	-.53768	-.06788	-2.617	35	.013
NA1 - NA2	-.21538	.58738	.09406	-.40579	-.02498	-2.290	38	.028
AMB1 - AMB2	.30709	1.49613	.19817	-.08988	.70407	1.550	56	.127

Considering our results, it seems that for the whole sample, the entrepreneurship education program has affected the student's perceived behavior control and anticipated positive and negative affect. There is evidence that students feel more capable to start a business that after the entrepreneurial courses. Although previous research shows primacy of the negative anticipated emotion, in the present exercise we observed an increased value on both positive and negative anticipated affect.

Possibly, this finding is related to the fact that students have obtained more realistic overview after entrepreneurial courses. Moreover, the results show that the program does not affect the attitudes towards entrepreneurship (ATT) because the students participate voluntarily to it and probably had already a positive attitude towards entrepreneurship. Finally, subjective norms do not significantly influence intention of students in agriculture.

Future research might repeat the survey to validate our findings. Also, it is important to using a control group (students not chose to attend entrepreneurship courses) and compare our results. We also intend to separately analyze intention of student that comes from the agricultural economics department versus all other senior students from science oriented departments (crop, animal, food science and biotechnology).

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