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Procedia - Social and Behavioral Sciences 110 (2014) 658 – 668

Procedia Social and Behavioral Sciences

Contemporary Issues in Business, Management and Education 2013

Entrepreneurship education at university level and students' entrepreneurial intentions

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Abstract

There is a growing interest in entrepreneurship education expressed by politicians, higher education institutions and students. Entrepreneurship education has been shown to contribute to the development of students' entrepreneurial intentions, although the findings are not entirely conclusive. The theoretical foundation of the current paper was the theory of planned behavior, TPB (Ajzen, 1991, 2005). The aim of the study was to identify the content of university entrepreneurship education and its impact for students' entrepreneurial intentions. The study design used was cross-sectional study and the sample consisted of the students from 17 European countries that have been grouped for the purpose of analysis by the level of economic development into two country groups: efficiency-driven and innovation-driven economies (Porter *et al.*, 2002). Frequencies and binary logistic regression was used to analyze the impact of different factors, including participation in entrepreneurship education, for entrepreneurial intentions. Results indicate that what is offered is not necessarily the most demanded in entrepreneurship education as lectures and seminars are provided more, but networking and coaching activities are expected more by the students. Participation in entrepreneurship education was found to exert positive impact on entrepreneurial intentions.

Keywords: entrepreneurship education; theory of planned behaviour; entrepreneurial intentions; efficiency-driven and innovation-driven economies.

1. Introduction

The importance of entrepreneurship education has increased due to the need to prepare students for coping in the contemporary work and living environment. In addition to entrepreneurship courses taught for business students,

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doi:10.1016/j.sbspro.2013.12.910

sense of initiative and entrepreneurship have become more widely viewed as key competences necessary for all students (and society at-large) regardless of their speciality (OJ L 394, 30.12.2006).

Entrepreneurship education has been defined in narrower and broader terms. It can be seen as "opportunity recognition, marshalling of resources in the presence of risk, and building a business venture" (Kourilsky, 1995) and as "a collection of formalised teachings that informs, trains, and educates anyone interested in business creation, or small business development" (Bechard & Toulouse, 1998) (ref from Jones & English, 2004). At a broader level entrepreneurship education can be placed in a wider context than business preparing not only "an entrepreneurial person" who may become self-employed and an owner of an enterprise, but also a person who is able to pursue entrepreneurship and innovation as an employee and/or be a person who exhibits "enterprising behaviour" (Gibb, 2002). In this sense entrepreneurship is of relevance for modern career concepts such as the protean career, the boundary-less career, the post-corporate career, and employability (Gelderen *et al.*, 2008) that emphasise flexibility and different possibilities to cope in the modern labour market.

Also the content of entrepreneurship education has to respond to the growing interest and demand. Currently the programs seem to focus on new venture creation backed up by options on growing business, financing entrepreneurial businesses, law, networks, family business and social enterprise with business plan playing a central role (Gibb, 2002). It has been proposed that a mix of action-oriented teaching that encourages experiential learning, problem solving, project-based learning, creativity, and is supportive of peer evaluation is best to provide enterprising skills and behaviours (Jones & English, 2004).

In terms of entrepreneurial intentions it has been argued that there is no clear and consistent definition of the term. Entrepreneurial intentions have been used in previous studies as a reference to owning a business or becoming self-employed (either by setting up an own firm or taking over an existing one), as a set of broader personal orientations, dispositions, desires, or interests that might lead to venture creation, and also as nascent entrepreneurship including those who have only thought about establishing an own business and those who have taken more specific steps towards that (Thompson, 2009).

Studies have shown that entrepreneurship education programs contribute to the development of entrepreneurial intentions (Izquierdo & Buelens, 2008, Lüthje & Franke, 2003, Peterman and Kennedy, 2003, Kolvereid & Moens, 1997, Souitaris *et al.*, 2007, Fayolle *et al.*, 2006). Since the content and context of entrepreneurship education programs in different institutions, regions and countries could be very different, then e. g. Fayolle *et al.* (2006) have proposed a common framework based on the TPB (Ajzen, 1991) that goes beyond the number of businesses created to assessing changes in students' attitudes and mind-set.

While acknowledging that entrepreneurship education can be defined in a broad sense, it is used in the current study in a more narrow meaning as it refers to the students' intentions of becoming a founder of an enterprise. The next sections provide an overview of the theoretical framework that connects entrepreneurship education with entrepreneurial intentions, also of the research method and results. The article concludes with discussing implications for entrepreneurship education.

2. Theoretical framework

Human behaviour has been attempted to be explained from different aspects – psychological, sociological, and economic, etc. Also entrepreneurship has been subject to different research approaches including historically economic (Knight, 1916/1921, Schumpeter, 1912/1926/1934, 1942, Kirzner, 1973), social science (Jenks, 1944, 1949, Cochran, 1950, 1960, Chandler, 1962, McClelland, 1961) and management studies (Birch, 1979) and more recently a "trait" approach (Chell *et al.*, 1991, Cooper & Gimeno-Gascon, 1992), a "process" approach (Gartner *et al.*, 2004) and a "cognitive" approach (Kyrö, 2011) (ref from Landström *et al.*, 2011, Landström & Lohrke, 2010, Rauch & Frese, 2007).

In entrepreneurship studies there has been a shift in the interest from studying the characteristics of existing entrepreneurs in ex-post situations to studying factors leading to a decision to found a company to be able to better explain the entrepreneurial behaviour (Autio *et al.*, 2001). Researchers have proposed and elaborated on several intention models, e.g. model combing personal and contextual factors and self-efficacy (Bird, 1988, Boyd & Vozikis, 1994), model of the entrepreneurial event (Shapero & Sokol, 1982, Krueger, 1993), TPB (Ajzen, 1988, 1991), view that entrepreneurial intentions can be influenced by conviction that is related to personal variables

(Davidson, 1995, Autio *et al.*, 1997), understanding that attitudes toward entrepreneurial acts mediate the relationship between entrepreneurial self-efficacy and intentions towards new venture creation (Judge *et al.*, 1998) (Karali, 2013, Izquierdo & Buelens, 2008). Two approaches have received more attention by subsequent research: Ajzen's TPB and Shapero's model of the entrepreneurial event (Karali, 2013).

The TPB is based on the idea that human beings are rather rational in their choices and individual's intentions may lead or may not lead to certain behaviour. There are three conceptual determinants of intentions according to the theory (Figure 1). First, the attitude towards behaviour shows the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question. Second, the subjective norm means the perceived social pressure to perform or not to perform the behaviour. Third, the perceived behavioural control refers to the perceived ease or difficulty of performing the behaviour and it is assumed to reflect past experiences as well as expected obstacles. (Ajzen, 1991, 2005).

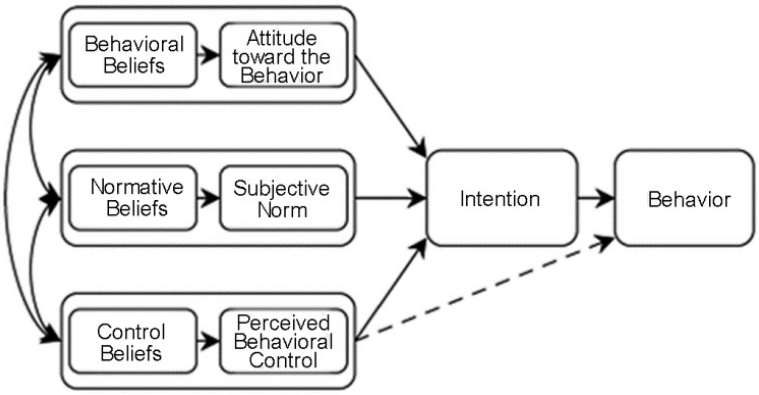


Fig. 1. Theory of planned behaviour (Ajzen, 2005)

The TPB can be used to study and predict different kinds of human intentions to behave in a certain way including e.g. health-related behaviour like dieting, physical exercise, use of condoms, stopping smoking, environmental awareness like choosing between different means of transport, recycling waste, educational choices like enrolling in natural science subjects, attending school, political and social behaviour like voting, acting as a volunteer, participating in collective action, ethical choices like donating blood or organs, etc. (Armitage & Conner, 2001). The theory has been also applied in entrepreneurial settings to study e.g. comparing Ajzen's and Shapero's intentions models (Krueger *et al.*, 2000), factors influencing entrepreneurial intentions in TPB (Autio *et al.*, 2001, Gird & Bagraim, 2008), gender effects on entrepreneurial intentions (Leroy *et al.*, 2009), the entrepreneurial decision to transfer a firm or terminate it (Leroy *et al.*, 2008), to predict nascent entrepreneurship (Nishimura & Tristán, 2011).

The relationship between entrepreneurial education programs and students' entrepreneurial intentions using TPB has not been so widely studied, although this line of research is gaining momentum (Izquierdo & Buelens, 2008, Lüthje & Franke, 2003, Kolvereid & Moens, 1997, Souitaris *et al.*, 2007, Fayolle *et al.*, 2006). There are studies that have confirmed the positive effect of entrepreneurship education for entrepreneurial intentions, but there are also studies that have reported a reverse outcome (cf. Lorz, 2011). In the context of entrepreneurship education research the TPB has been complemented to include entrepreneurial intentions that are influenced by the attitude toward entrepreneurship, the subjective norms and the perceived behavioural control. These are influenced by characteristics like personal background, motives, family background. When the influence of entrepreneurship education on entrepreneurial intentions is studied then the educational context (e.g. university) is also important. (Sieger *et al.*, 2011).

The current study aims to provide an overview of the entrepreneurship education offerings of European universities in efficiency- and innovation-driven countries and analyse the connections between entrepreneurship education and entrepreneurial intentions.

3. Method

The study design used in this research was cross-sectional study. For data-gathering on-line questionnaires were used that students in higher education institutions were asked to fulfil in the framework of the Global University Entrepreneurial Spirit Students' Survey, Guesss. The data was gathered in 2011 individually in each participant country of the survey with a standardized instrument that was translated into the local language and the authors of the current paper were responsible for organising the survey in Estonia. Data analysis was conducted with SPSS 20.0 using frequencies and binary logistic regression. Linear regression was not chosen as it does not allow including into analysis dependent variables that are dichotomous and categorical as is the case with many variables in economics and business (Burns, Burns, 2008; Harell, 2001).

The sample of the study consisted of 55 781 students from 17 European countries. 43.8% were men and 56.2 women. The average age was 24.7 years. 69.1% of students studied at bachelor level and 30.9% at master or doctoral level or were post-docs. 30.2% studied business and economics, 30.5% natural sciences, 17.3% social sciences and 22% studied other specialities.

European countries have been grouped for the purpose of analysis by the level of economic development into two groups – efficiency-driven and innovation-driven economies (Porter *et al.*, 2002, Xavier *et al.*, 2013). There are 11 282 students (20.2%) in efficiency-driven economies and 44 499 students (79.8%) in innovation-driven countries that took part in the study. Overview of the variables is provided in Appendix A.

The following section on results is divided into two, first, university offerings in entrepreneurship education are discussed in terms of efficiency-driven and innovation-driven countries. Second, entrepreneurship education is related to entrepreneurial intentions including into the model also attitude towards entrepreneurship, social norm, perceived behavioural control and demographic characteristics of students.

4. Results

4.1. Overview of students' assessments of university offerings

Higher education institutions are offering three basic types of resources related entrepreneurship education: lectures and seminars about different topics, networking and coaching opportunities and resources for founders and entrepreneurs. There seems to be no definite pattern of how lectures and seminars are offered differently in efficiency- and innovation-driven countries (Figure 2). However, networking and coaching opportunities in general are provided much more in innovation-driven economies. Resources for founders and entrepreneurs, on the other hand, are more available in efficiency-driven countries.

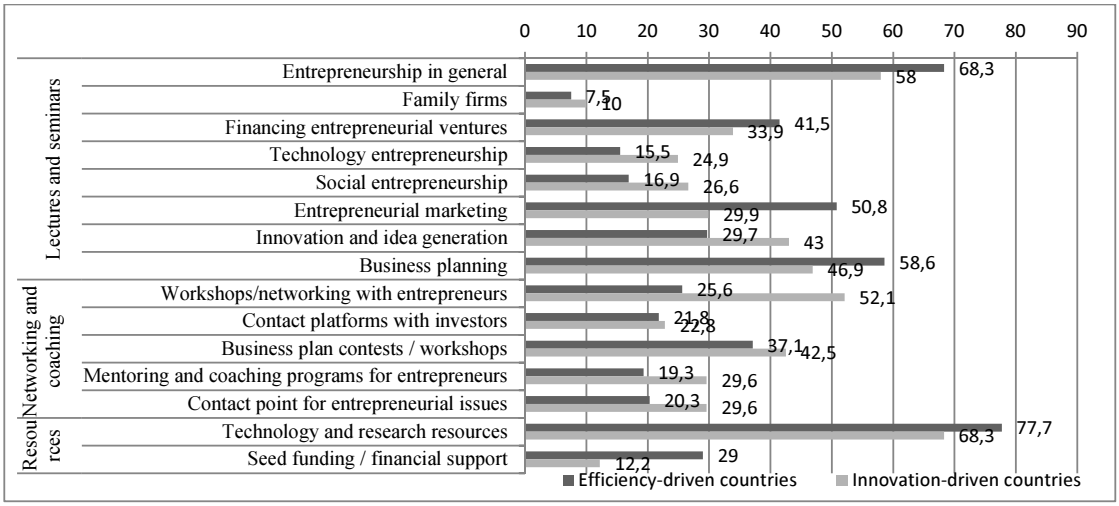


Fig. 2. University offerings, % of "yes, there is such an offering" answers

Considering each item separately, the demand for entrepreneurship courses and other resources is much higher in efficiency-driven countries according to the opinion of students (Figure 3). This is the case also with all three items on average that the students were asked to evaluate. The biggest demand is in both efficiency- and innovation driven economies in terms of networking and coaching offerings and resources for founders and entrepreneurs.

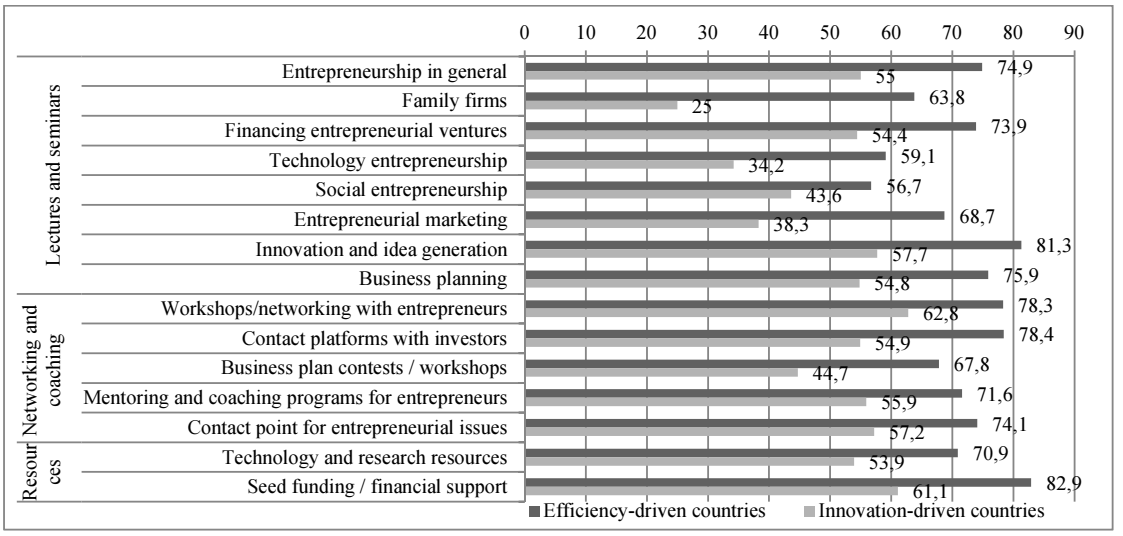


Fig. 3. Students' demand of university offerings, % of "yes, I would like it" answers

Students in efficiency-driven countries have participated slightly more in the three types of entrepreneurship education offerings (lectures and seminars, networking and coaching, resources) on average (Figure 4). In both efficiency- and innovation driven countries the participation rate is highest in terms of resources for founders and entrepreneurs, then come lectures and seminars, and students have participated the least in networking and coaching opportunities. These are also provided the least, so students seem to participate in what they are offered.

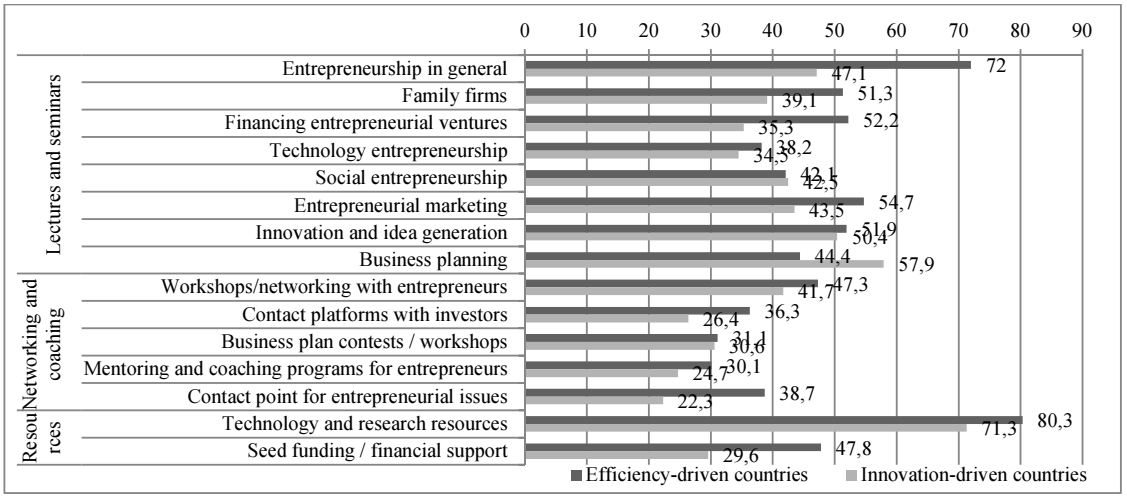
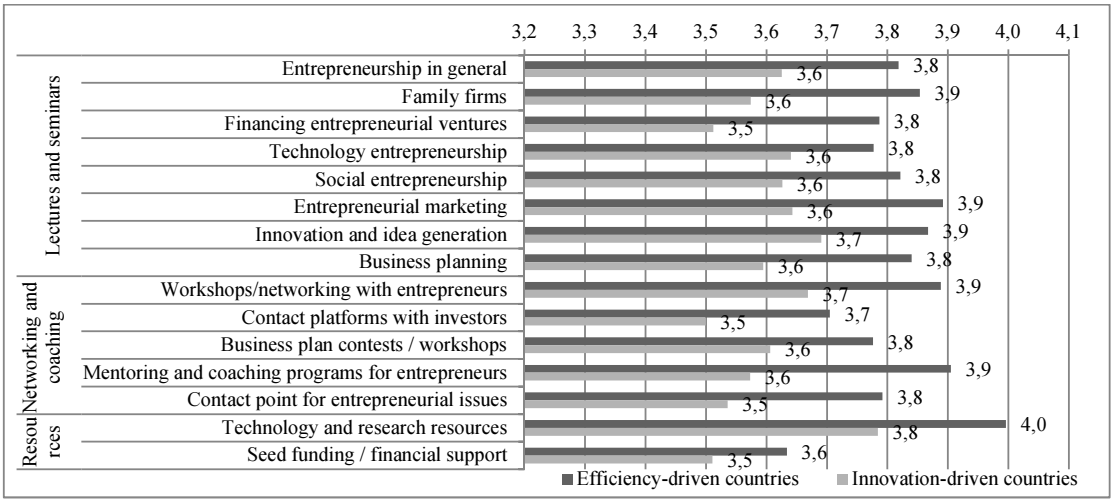


Fig. 4. Students' participation in university offerings, % of "yes, I have attended" answers

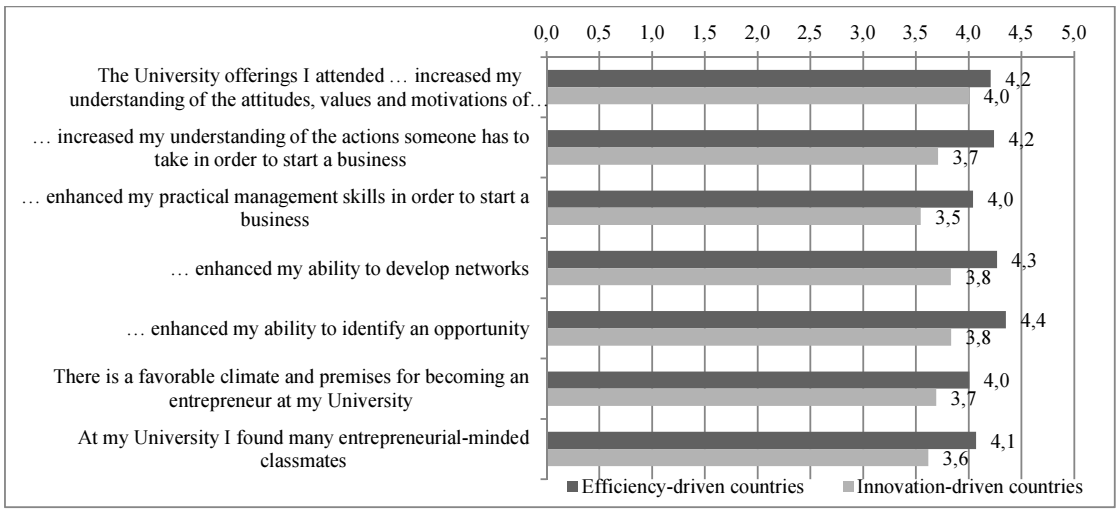
Students in efficiency-driven countries are somewhat more satisfied with the entrepreneurship education offerings that they have attended than the students in innovation-driven countries, although on a scale 1-5 these differences are quite small (Figure 5). Students in both types of economies are most satisfied with resources for founders and entrepreneurs, followed by lectures and seminars on different aspects of entrepreneurship, and they are the least satisfied with networking and coaching opportunities on average. Still, the differences here are small.



Note: assessed on the scale 1=not at all, 5=very much

Fig. 5. Students' satisfaction with university offerings, average

Students in efficiency-driven countries are also somewhat more satisfied with the university's entrepreneurship education climate in general (Figure 6). The aspects of university's climate that the students are most satisfied with are different in the country groups – students in efficiency-driven countries have rated that the university offerings enhanced their ability to identify an opportunity the highest, while students in innovation-driven countries value the most that the university increased their understanding of the attitudes, values and motivations of entrepreneurs.



Note: assessed on the scale 1=strongly disagree, 7=strongly agree

Fig. 6. Students' satisfaction with the general entrepreneurial environment at their HEIs, average

4.2. Impact of entrepreneurship education on entrepreneurial intentions

The impact of entrepreneurship education for entrepreneurial intentions is studied in two time periods as the students were asked about their future career choices right after studies and five years after it. In the questionnaire the students could choose between becoming a founder, an employee, a successor and other. In the present analysis only those who marked founder or employee have been included.

Binary logistic regression allows analysis of students' entrepreneurial intentions and the factors influencing it (including participation in entrepreneurship education courses). Such variables have been included in the model as participation in entrepreneurship education courses, attitude towards entrepreneurship, social norm, perceived behavioural control, country's level of development, age, gender, study field, study level and family business background of students. The method used in regression analysis was 'enter', as using 'forward stepwise' did not improve the strength of the model.

Right after studies there was a likely positive effect (> 0.3) on entrepreneurial intentions in terms of participation in entrepreneurship education, age and attitude towards behaviour in relation with other variables in the model (Table 1). It follows that participation in entrepreneurship education is likely to strengthen entrepreneurial intentions. As to age, older students are likely to have stronger intentions. Also more favourable attitude towards entrepreneurship is likely to increase intentions to become a founder. Likely negative effect (>-0.3) for entrepreneurial intentions was found when students originated from an innovation-driven country, studied business and economics and were master or doctoral level students. It indicates that students in efficiency-driven countries are likely to have stronger entrepreneurial intentions. Also right after studies students in other fields than business and economics are likely to be more interested in becoming a founder. And bachelor students are likely to be more interested in entrepreneurship than higher level students.

Table 1. Results of binary logistic regression right after studies

	B	S.E.	Wald	Sig.	Exp(B)
Participation in entrepreneurship education	**.318**	**.047**	**45.847**	**.000**	**1.374**
Innovation-driven country	**-.438**	**.040**	**121.331**	**.000**	**.645**
Attitude towards entrepreneurship	**.442**	**.015**	**851.432**	**.000**	**1.556**
Social norm	-.167	.014	145.171	.000	.847
Perceived behavioral control	.220	.025	77.205	.000	1.247
Age	**.358**	**.025**	**199.413**	**.000**	**1.431**
Female	-.205	.035	34.398	.000	.815
Business and economics	**-.368**	**.037**	**98.507**	**.000**	**.692**
Master/doctor	**-.307**	**.040**	**59.005**	**.000**	**.736**
Family business background	.277	.034	65.199	.000	1.319
Constant	-4.584	.226	412.524	.000	.010

Note1: Variable(s) entered on step 1: Participation in entrepreneurship education, Innovation-driven country, Attitude towards entrepreneurship, Social norm, Perceived behavioral control, Age, Gender, Business and economics, Master, Family business background.
Note2: method – enter, α=0.05

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	24139.827	.057	.117

Based on the regression table the exact effects of different values of variables can be calculated by using the formula:

Entrepreneurial intentions=
.318(*participation in entrepreneurship education*)+
.442(*attitude towards entrepreneurship*) – .167(*social norm*)+ .220(*perceived behavioural control*) +
.358(*age*)– .205(*gender*) – .368(*study field*) – .307(*study level*)+ .277(*family business background*) –
.438(*country's level of development*)

Five years after studies there is a likely positive effect on entrepreneurial intentions again in terms of participation in entrepreneurship education and attitude towards entrepreneurship (Table 2). Likely negative effect for entrepreneurial intentions is exhibited yet again by coming from an innovation-driven country and studying at master or doctoral level. Still, five years after studies studying business and economics is not any more notably negatively connected with entrepreneurial intentions.

Table 2. Results of binary logistic regression five years after studies

	B	S.E.	Wald	Sig.	Exp(B)
Participation in entrepreneurship education	**.321**	**.030**	**113.502**	**.000**	**1.378**
Innovation-driven country	**-.458**	**.030**	**227.168**	**.000**	**.632**
Attitude towards entrepreneurship	**.726**	**.010**	**4907.189**	**.000**	**2.067**
Social norm	-.098	.011	80.028	.000	.906
Perceived behavioural control	.059	.016	13.671	.000	1.061
Age	.133	.020	45.861	.000	1.143
Female	.101	.024	17.050	.000	1.106
Business and economics	-.078	.026	9.231	.002	.925
Master/doctor	**-.311**	**.028**	**125.924**	**.000**	**.733**
Family business background	.289	.024	140.837	.000	1.336
Constant	-3.977	.153	671.499	.000	.019

Note1: Variable(s) entered on step 1: Participation in entrepreneurship education, Innovation-driven country, Attitude towards entrepreneurship, Social norm, Perceived behavioral control, Age, Gender, Business and economics, Master, Family business background.
Note2: method – enter, α=0.05

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	41559.706	.220	.296

Based on the regression table the exact effects of different values of variables can be calculated by using the formula:

Entrepreneurial intentions=
.321(*participation in entrepreneurship education*)+
.726(*attitude towards entrepreneurship*) – .098(*social norm*)+ .059(*perceived behavioural control*)+
.133(*age*)+ .101(*gender*) – .078(*study field*) + .311(*study level*)+
.289(*family business background*) –.458(*country's level of development*

To summarise, participation in entrepreneurship education offerings has a likely positive impact on entrepreneurial intentions both right after studies and five years after it considering also for other indicators in the model. On the whole the regression model characterising the situation right after studies explains variation in entrepreneurial intentions to the extent of 12% (Nagelkerke R Square), which is rather weak. The model constructed for the situation five years after studies explains already 30% of the variation in entrepreneurial intentions, which is stronger explaining capacity.

5. Discussion and conclusions

The content of offerings in entrepreneurship education in European higher education institutions includes much the same items as listed by Gibb (2002), namely general courses in entrepreneurship, financing entrepreneurial ventures, family firms, social entrepreneurship, business planning and networking opportunities. There were some differences in efficiency-driven and innovation-driven countries as more traditional courses like entrepreneurship in general, financing entrepreneurial ventures, entrepreneurial marketing and business planning were offered more in the country group with lower level of development and more specialised subjects like family firms, technology entrepreneurship, social entrepreneurship, innovation and idea generation and networking and coaching were provided more in countries with higher level of development. Interestingly, seed funding and financial support was provided more in efficiency-driven countries, were one would expect more limited resources.

Teaching methods were not explicitly studied with this questionnaire, but networking and coaching offerings formed a separate section of entrepreneurship education that can be assumed to embody less traditional teaching methods and a mix of action-oriented teaching as emphasised by Jones and English (2004). These were offered less than lectures and seminars, but the students' demand for networking and coaching possibilities was higher. In the two country groups, networking and coaching opportunities were offered more in innovation-driven countries, but they were demanded more in efficiency-driven countries and there the satisfaction with networking offerings was also higher.

The participation rates in university offerings were higher in efficiency-driven countries, except for the courses on business planning and social entrepreneurship. But this could have been also due to the compulsory or voluntary nature of the courses. As to satisfaction with entrepreneurship education offerings and the entrepreneurship education environment in general at universities, on both occasions students in efficiency-driven countries were somewhat more positive in their assessments. Studies have shown that in efficiency-driven countries there are more potential entrepreneurs than in innovation-driven countries (Arro *et al.*, 2013), which could account also for higher participation in and satisfaction with entrepreneurship education offerings.

The results of binary logistic regression indicate that variables in the model influence entrepreneurial intentions relatively evenly. Similarly to the findings of other studies attitude towards entrepreneurship and perceived behavioural control are likely to be positively connected with entrepreneurial intentions, but social norm has no notable effect (Almobaireek & Manolova, 2012). In the present study participation in entrepreneurship education courses is likely to be positively related to entrepreneurial intentions while taking into account also other variables in the model. One of the strongest relationships with entrepreneurial intentions is with the level of development of the country where the student comes from as students from efficiency-driven countries are likely to have higher self-employment intentions. The influence of gender on entrepreneurial intentions is rather weak, but interestingly women see themselves as entrepreneurs more five years after studies than right after graduation. Having or having had self-employed parents has a relatively weak, but positive effect on entrepreneurial intentions both right after and five years after studies, indicating the importance of family business background. The main differences between right after and five years after studies is that positive attitude towards entrepreneurship and studying business and economics is more important for having stronger entrepreneurial intentions, whereas perceived control over carrying out different tasks and older age are less important five years after graduation.

Several implications for entrepreneurship education can be drawn from the research. First, students in both country groups are more interested in the provision of financial and other resources for founders and in the networking and coaching opportunities than lectures and seminars on entrepreneurship. This manifests the need for open innovation in entrepreneurship education including various stakeholders into teaching and coaching activities and seeing it as a process of knowledge exchange. Second, the objective of entrepreneurship education should be wider than education for founding an own business. Understanding entrepreneurship creates the potential for becoming an entrepreneur, but also for being innovative as an employee or volunteer.

6. Limitations and areas of further research

Since in the current study the students were asked to assess themselves, their intentions and actions and university's offerings, the answers might be influenced by subjectivity in terms of how the students perceive their situations. In further research it would be interesting to differentiate between compulsory and voluntary courses in entrepreneurship education to see whether students with entrepreneurial intentions differ in their choice of voluntary courses from students without those intentions. Second, teaching methods used in entrepreneurship education and students' views on that would be an insightful means of developing the area further. Third, the duration of entrepreneurship training program can vary a lot in programs and have different impact for attitudes and intentions towards entrepreneurship.

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Appendix A. Variables used in the study

Variable	Measurement
Innovation-driven countries	2 – innovation-driven countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Netherland, Portugal, United Kingdom, Luxembourg, Switzerland, Liechtenstein) 1 – efficiency-driven countries (Estonia, Hungary, Romania, Russia)
Provision of university offerings	"Yes" answers to "Is there such an offering at your university?"
Demand of university offerings	"Yes" answers to "No/do not know that there is such an offering, but I would like it"
Participation in university offerings	"Yes" answers to "If offered, have you attended?"
Satisfaction with university offerings	"If attended, how satisfied were you?", average, 1 – not at all, 5 – very much
Satisfaction with university environment in general	"Please indicate your level of agreement with the following statements about the university environment", average, 1 – strongly disagree, 7 – strongly agree
Entrepreneurship intentions right after studies	2 – respondents intend to become founders 1 – respondents intend to become employees
Entrepreneurship intentions 5 years after studies	2 – respondents intend to become founders 1 – respondents intend to become employees
Participation in entrepreneurship education	2 – respondents have participated in at least 1 item out of all 3 groups of university offerings (lectures and seminars, networking and coaching, resources) 1 – respondents have participated in less than 1 item out of all 3 groups of university offerings
Attitude towards entrepreneurship, ATE (Cronbach's a=.93)	Please indicate your level of agreement with the following statements (1=strongly disagree, 7=strongly agree) (0) Being an entrepreneur implies more advantages than disadvantages to me (1) A career as entrepreneur is attractive for me (2) If I had the opportunity and resources, I would become an entrepreneur (3) Being an entrepreneur would entail great satisfactions for me
Subjective norm, SN (Cronbach's a=.73)	Please indicate how much you care about the opinion of the following persons (1=not at all, 7=very much) (0) Parents / other family members (1) Friends / fellow students (2) People important to me in general
Perceived behavioural control, PBC (Cronbach's a=.89)	Please indicate your degree of certainty in performing the following roles / tasks (1=completely unsure, 7=completely sure) (0) Establish and achieve goals and objectives (1) Generate new ideas (2) Develop new products and services (3) Perform financial analysis (4) Reduce risk and uncertainty (5) Take calculated risks (6) Make decisions under uncertainty and risk (7) Manage time by setting goals (8) Take responsibility for ideas and decisions (9) Start my own firm (10) Lead my own firm to success (11) When you think of the word "entrepreneur", how closely do you fit that image (1=0%, 7=100%)?
Age	3 – 31+ years 2 – 25-30 years 1 – up to 24 years
Female	2 – female 1 – male
Business and economics	2 – respondents study business and economics 1 – respondents study other specialities
Master/doctor	2 – respondents are master or doctoral level students or post-docs 1 – respondents are bachelor level students
Family business background	2 – respondents' parents are or have been self-employed 1 – respondents' parents have never been self-employed