

# Entrepreneurial motivations and intentions: investigating the role of education major

Entrepreneurial  
motivations  
and intentions

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## Abstract

**Purpose** – The purpose of this study is to explore the difference in entrepreneurial intentions, perceived entrepreneurial motivation, and cognitive profiles (attitudes towards entrepreneurship, perceived behaviour control, and subjective norms) between individuals who have participated in enterprise education programmes in the universities and those who have not. The paper also investigates the mediating role of attitudes towards entrepreneurship, perceived behaviour control, and subjective norms related to entrepreneurial motivation and the forming of entrepreneurial intentions.

**Design/methodology/approach** – Survey information from 321 students from three universities in the Ukraine was hand collected. Hierarchical multiple regressions were used to test hypotheses.

**Findings** – Individuals who participate in enterprise programmes tend to have higher entrepreneurial motivation and are more likely to become entrepreneurs. Empirical evidence shows that attitudes, subjective norms and perceived behaviour control mediate the relationship between perceived entrepreneurial motivation and entrepreneurial intentions.

**Research limitations/implications** – The study is based on data collected from three universities in one city. The implications for education managers related to the inclusion of enterprise courses into the study plans of engineering students are also discussed here.

**Practical implications** – The findings have implications for the stimulation of student enterprise in transitional economies where attitudinal and resource (i.e. skill, competence and knowledge) deficiencies can retard enterprise. Entrepreneurial motivation is an important link between an intention and action. Enterprise education programs which stimulate entrepreneurial motivation should be offered to engineering students since many of them start ventures later. Engagement into enterprise development programs of engineering students might evoke earlier interest in self-employment career path among young people.

**Originality/value** – The article contributes to the field of entrepreneurial motivation and intentions. The study extends insights from the theory of planned behaviour (TPB) (i.e. subjective norms, attitudes toward this behaviour, and perceived behavioural control) by also considering the perceived entrepreneurial motivation profiles of students.

**Keywords** Entrepreneurial intentions, Theory of planned behavior, Entrepreneurial motivation, Ukraine, Entrepreneurialism, Education, Students

**Paper type** Research paper

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## 1. Introduction

Understanding the formation of entrepreneurial intentions underpins an informed appreciation of the behaviour of entrepreneurs (Fitzsimmons and Douglas, 2011). It is important to bear in mind that intentions can shape subsequent behaviour (Ajzen, 2001; Bagozzi *et al.*, 1989). There is no agreed theory to explain the intentions of people to become entrepreneurs (Shook *et al.*, 2003). Alternative theoretical and methodological approaches have been applied, but there is a lack of a combined integrated perspective. Carsrud and Brännback (2011) suggest that entrepreneurial motivation is not a well-researched area of entrepreneurship science. In particular, the influence of entrepreneurial motivation on goal-specific intentions needs to be explored.

Enterprise education can raise entrepreneurial intentions and can stimulate skill accumulation and knowledge, which can be leveraged to address various subjective norms and resource barriers to enterprise (Davey *et al.*, 2011; Jones *et al.*, 2011; Packham *et al.*, 2010). This study explores whether students in the Ukraine (i.e. in a former Soviet Union context) who have participated in the enterprise modules being delivered in universities can accumulate new skills that can compensate for living in a national industrial and political culture that has not traditionally supported individual enterprise. In the Ukraine, less than 5 per cent of entrepreneurs are aged between 18 and 28 years of age (Ukrainian Government, 2002). Here, entrepreneurial intentions reported by students who have participated in enterprise modules are compared with the responses made by students who have not participated in them. The links between students' subjective norms, attitudes and cognitive profiles and their intentions to become self-employed or business owners are explored. The following research questions are explored with reference to the Ukrainian context: which factors explain the variations in the intentions students have to become entrepreneurs in Ukrainian business and engineering students? and can students compensate for national business environments that do not promote enterprise by selecting types of education that can promote the honing of their entrepreneurial personality, attitudes and cognitive profiles (i.e. by taking a positive attitude towards enterprising behaviour, high-perceived behavioural control, and high-entrepreneurial motivation)?

Information relating to the profiles and intentions of young people to become entrepreneurs was gathered from students located in three universities in the city of Nikolaev, which has a population of 500,000 people. This city used to be a centre for shipbuilding in the former Soviet Union. However, the former industrial and political culture did not promote individual enterprise. After the collapse of the Soviet Union, the role of shipbuilding in the city declined dramatically. The government is now seeking to encourage local people to establish their own new ventures in the city. It has supported enterprise education in three universities in the city in order to encourage more students to become entrepreneurs. Entrepreneurship and small business courses have been provided to second year economics and business administration undergraduate students. This study explores the links between the profiles of 321 students and their intentions to become entrepreneurs or not to do so. The evidence suggests that entrepreneurial intentions of business and engineering students vary considerably in different national contexts. Some studies report that science and engineering students are more likely to report their intention to become entrepreneurs than business students (Kuckertz and Wagner, 2010). Others report the higher levels of entrepreneurial intentions of business students in comparison to engineering students (Ertuna and Gurel, 2011; Karhunen and Ledyeva, 2010). Therefore, this study seeks to test the difference in motivation and entrepreneurial intentions of business vs

engineering students. Consequently, information was gathered from a control group of students, some of whom had participated in enterprise courses, and some of whom had not.

I am seeking to make several conceptual and empirical contributions in this work. First, I hope to make an important contribution by integrating themes from the theory of planned behaviour (TPB) and entrepreneurial motivations theory (Carsrud and Olm, 1986). Second, I would like to help fill the research gap related to the impact of context on entrepreneurial motivation (Carsrud and Brännback, 2011). This study focuses on the emerging economy of the Ukraine. Many previous studies have gathered information solely from respondents in developed economies associated with a culture of encouraging local enterprise. Several government and international agencies are now seeking to address attitudinal, resource, regulatory and institutional barriers to enterprise in transitional economies (i.e. former communist regimes) by supporting the provision of educational initiatives that address barriers to enterprise (Parsyak and Zhuravlyova, 2001). However, these initiatives are often limited to economy and business students. In the same time, in developed economies engineering students are an important focus group for enterprise development programmes. This study attempts to cover this important gap. The novel contribution of this study is exploration of the differences in entrepreneurial motivation between business and engineering students. Third, fresh insights are provided with regard to a hand-collected data set involving 321 engineering and business students drawn from three universities in the context of the Ukraine transitional economy. The findings have implications for the stimulation of student enterprise in transitional economies where attitudinal and resource (i.e. skill, competence and knowledge) deficiencies can potentially impede enterprise (Jones *et al.*, 2011; Solesvik, 2012). Further, Thomson (2002, p. 21) asserts that many entrepreneurs in the Ukraine “do not have the knowledge and business management skills that are needed to control their assets, take risks, and improve and grow their businesses. Ukrainian education involves advanced learning of all subjects and as it appears to be students learn a lot of theories and feel the lack of practical knowledge”. Recent empirical research conducted in the Ukraine and Russia revealed that the level of entrepreneurial knowledge and competencies of those businessmen who have not enterprise education is still low (Iakovleva *et al.*, 2013). The provision of governmental educational programmes for entrepreneurs is marginal. However, many entrepreneurs with engineering and other non-business background seek to obtain an additional enterprise education in the universities (Solesvik, 2012). It is worth to note that local universities have a good and inexpensive provision of enterprise courses.

The paper is structured as follows. In the next section, insights from the TPB and entrepreneurial motivations research are summarized. Several hypotheses are put forward. The data and methods used to test these hypotheses are then summarized. In the following section, the results of the hierarchical multiple regressions analysis are reported. The key findings are presented and the implications are then discussed.

## 2. Theoretical insights and derivation of hypotheses

### 2.1 TPB

The TPB was formulated in order to predict and explain human behaviour in specific contexts. TPB asserts that broad attitudes and personality traits can only have an indirect impact on specific forms of behaviour by influencing factors closer to the action in question (Ajzen, 1991). Individuals' general attitudes, values and beliefs are considered to be further from the action. Therefore, developing an adequate explanation of specific behaviour, such

as the decision to become an entrepreneur, requires concepts which are closer to the behaviour in question. The TPB hypothesizes that behavioural intentions are determined by three key antecedents: attitudes towards the behaviour, subjective norms and perceived behavioural control.

Various theories on attitudes have been presented to explain the intentions and actions (or behaviour) of individuals (Shaver, 2003). Ajzen (2002, p. 5) defined attitude towards specific forms of behaviour as “[...] the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question”. Furthermore, Ajzen (1991, p. 181) asserts that, “Intentions are assumed to capture the motivational factors that influence a behaviour; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behaviour”. Ajzen’s (1991) TPB suggests that an individual’s subjective norms, attitudes towards the behaviour, and perceived behavioural control shape intentions and subsequent human actions (i.e. the action of becoming an entrepreneur) (Zampetakis *et al.*, 2009).

Subjective norms are related to the perceived social pressure to perform or not perform the action being monitored. The opinions of important others (i.e. family members, close friends and other influential people such as teachers, successful entrepreneurs, enterprise advisors, etc.) are believed to shape the formation of many entrepreneurial intentions (Kolvereid, 1996). People in the former Soviet Union countries tend to have specific subjective norms (Welter, 2006). Perceived behavioural control relates to individuals’ control beliefs relating to the action being monitored. This factor relates to the perceived relative ease (or difficulty) of performing the monitored action (i.e. the individuals’ ability to address attitudinal and resource barriers to business formation). The perceived behavioural control factor is similar in several respects to the perceived self-efficacy factor.

The TPB needs to be applied to explore human intentions and behaviour in several contexts. Both Kolvereid (1996) and Tkachev and Kolvereid (1999) found that favourable subjective norms, attitudes towards specific forms of behaviour, and perceived behavioural control significantly increased the likelihood of students reporting the formation of entrepreneurial intentions. Perceived behavioural control, however, was found in both studies to explain more of the variations in intention than attitudes towards the behaviour and subjective norms. Krueger *et al.* (2000) noted that attitudes towards behaviour and perceived feasibility both significantly increased the likelihood of respondents reporting the formation of entrepreneurial intentions. Students reporting higher subjective norms were, however, not significantly more likely to report the formation of entrepreneurial intentions. With reference to a sample of university students in 12 countries, Engle *et al.* (2010) detected that subjective norms, attitudes towards specific forms of behaviour and perceived behavioural control significantly increased the likelihood of students reporting the formation of entrepreneurial intentions. The level of explanation provided by these three factors varied from 9 per cent (i.e. Egypt) to 42 per cent (i.e. Spain and the USA). This evidence may suggest that the TPB may have more limited applicability outside developed North American and European contexts. The TPB has been found to generate good predictive accuracy with regard to entrepreneurial intentions reported by students in established market economies (Kolvereid, 1996), and in the former communist countries of Eastern Europe (Tkachev and Kolvereid, 1999). Previous research also found that individuals in transitional economies are more likely to pursue self-employment career path than their counterparts in developed countries (Davey *et al.*, 2011; Griffiths *et al.*, 2009). This can be explained by limited possibilities for well-paid employment in transitional economies. The three widely respected subjective norms, attitude towards the behaviour, and perceived behavioural control factors highlighted in the TPB model are summarized in the research model (Figure 1).

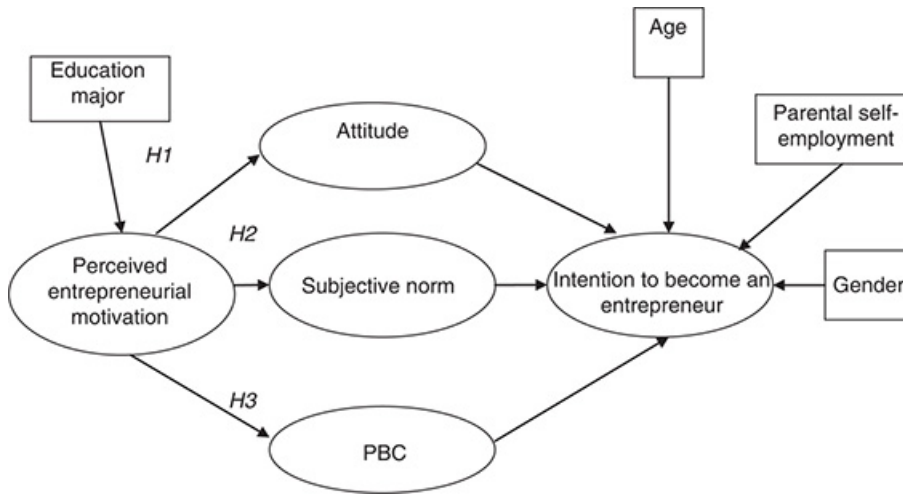


Figure 1. Research model

### 2.2 Entrepreneurial motivations

Entrepreneurial motivations refer to the desire or tendency to organize, manipulate and master organizations, human beings or ideas as quickly and independently as possible (Johnson, 1990). Individuals with high-entrepreneurial motivation are to be more likely to become entrepreneurs (Shane *et al.*, 2003). A meta-analysis of 41 articles (Collins *et al.*, 2004) discovered that entrepreneurial motivations are significantly and positively related to the choice of entrepreneurial career paths.

Different models were used to explore entrepreneurial motivations and how they can be used to predict intentions and behaviour. Cognitive models suggest that “Motivation is conceptualized as the product of expectancy, instrumentality, and valency” (Segal *et al.*, 2005, p. 44). Process models consider the influence of higher levels of expected rewards from the entrepreneurial activity in comparison to wages as employees as a main motive of selecting entrepreneurial career paths (Praag and Cramer, 2001). Economic-based models advocate the role of risk in forming entrepreneurial motivations. People with higher levels of risk tolerance are more motivated to be self-employed (Douglas and Shepherd, 1999). Entrepreneurial motivations are multifaceted and consist of general motivations (need for achievement, locus of control, vision, desire for independence, passion, and drive) and task-specific motivations (e.g. goal setting and self-efficacy) (Shane *et al.*, 2003). Carsrud and Brännback (2011) suggest that entrepreneurial motivation is country specific. Hessels *et al.* (2008), referring to evidence from 36 countries, suggest that entrepreneurial drive, which is a part of entrepreneurial motivation, is different in different countries.

The topic of entrepreneurial motivation is very wide and all aspects of this phenomenon cannot be explored in a single study. In this paper, I would like to focus on the perceived entrepreneurial motivation within this specific country. A person’s perceived entrepreneurial motivation refers their beliefs related about how attractive the idea of selecting an entrepreneurial career path in a specific country can be. The level of attractiveness may be related to the economic benefits accrued from entrepreneurial activity, and the possibilities of achieving independence, reaching

specific goals and becoming wealthy. This issue has not been covered in any significant way in the existing entrepreneurial research into career choice. [Lent et al. \(2000\)](#) suggest that career choice research should concentrate not only on cognitive-person variables alone, but needs to be considered together with environmental variables (e.g. social, cultural, and economic variables) which influence cognitive-person variables. Moreover, individuals estimate the environmental effects of the selection of their career path in different ways. In this study, I would like to address this gap in the existing literature and to explore the influence of environmental factors on the attractiveness of selecting an entrepreneurial career path through the lens of perceived entrepreneurial motivation in the country.

Beliefs shape attitudes towards entrepreneurship, subjective norms and perceived behaviour control ([Ajzen, 1991](#)). Beliefs related to perceived high-entrepreneurial motivation on a country-wide level may promote individuals' attitude towards entrepreneurship. Beliefs related to the role of formal and informal institutional environments ([Veciana et al., 2005](#)) and cognitive and normative dimensions ([Busenitz et al., 2000](#)), may influence individuals' attitudes towards entrepreneurship. If a person believes that the outcome of his/her entrepreneurship activity in a given environment will be desirable, they are likely to have a positive attitude towards entrepreneurship ([Lent et al., 2000](#)). If a person perceives doing business in a country as being difficult, unattractive, risky, or bringing low benefits, his/her attitude towards entrepreneurship might be negative. Insights from the Global Entrepreneurship Monitor (GEM) suggest that favourable perceptions of a business environment are positively related to the level of the entrepreneurial activity ([Bullvåg et al., 2010](#)). The results gathered by GEM imply that self-estimates of a person's competence to carry out business vary significantly between different countries. For example, only 22.7 per cent of Russian participants considered themselves competent to start and manage own venture. This indicator reaches on average of 55.9 per cent in developed economies ([Verkhovskaya and Dorokhina, 2010](#)) [1].

Entrepreneurs are embedded in their social environment ([Stephan and Uhlaner, 2010](#)). Individuals are likely to follow the norms accepted in their reference groups by repeating behaviour, either consciously or unconsciously ([Cialdini and Trost, 1998](#); [Fischer, 2006](#); [Shteynberg et al., 2009](#)). If a person perceives that his/her relatives, friends, or neighbours achieve success in doing business, prefer self-employment, and accumulate wealth by doing business in a specific country, the individual will have a higher incentive to follow entrepreneurial behaviour.

Taken together, this research suggests that most individuals are embedded in the context of their own social, cultural, and economic environment and that those who perceive the environment as providing motivation have higher levels of perceived behaviour control. This is also consistent with other research suggesting that PBC is positively associated with a supportive environment ([Stephan and Uhlaner, 2010](#)).

Several studies have integrated a major education variable into research models in order to explore entrepreneurial intentions ([Karhunen and Ledyeva, 2010](#); [Kuckertz and Wagner, 2010](#); [Liñan and Chen, 2009](#); [Tkachev and Kolvereid, 1999](#)). Having majored in business education was often a significant variable explaining entrepreneurial intentions. However, the findings have been quite mixed. In some studies, students who had majored in business and economics reported a higher level of entrepreneurial intentions ([Karhunen and Ledyeva, 2010](#); [Tkachev and Kolvereid, 1999](#)). However, other studies suggest that students who had majored in engineering reported a higher level of entrepreneurial intentions ([Kuckertz and Wagner, 2010](#)). One of the possible explanations of such difference in intentions is related to engineering

education in the developed and developing economies. Karhunen and Ledyeva (2010) and Tkachev and Kolvereid (1999) explored the entrepreneurial intentions of Russian students, while Kuckertz and Wagner (2010) focused on German students. In Russia (and in the Ukraine), enterprise programmes are proposed to encourage students to pursue business and economics education. Universities in developed economies widely encourage engineering students to select a self-employment career option. For example, enterprise courses are proposed to engineering students. Masters degrees in engineering students in entrepreneurship and innovation are steadily becoming more popular in various different countries (e.g. the USA, Germany, and Norway). In terms of the enterprise educational system, the Ukraine is closer to Russia. To summarise:

- H1. Students who participate in an enterprise education programme are significantly more likely than students who do not participate in such a programme to have high levels of entrepreneurial motivation that promotes a positive attitude towards enterprise.
- H2. Students who participate in an enterprise education programme are significantly more likely than students who do not participate in such a programme to report high-perceived entrepreneurial motivation that promotes subjective norms towards enterprise.
- H3. Students who participate in an enterprise education programme are significantly more likely than students who do not participate in such a programme to report high-perceived entrepreneurial motivation that promotes perceived behaviour control related to enterprise.
- H4. In the emerging economy context of the Ukraine, entrepreneurial intentions differ between students who participate in an enterprise education programme and those who do not participate in such a programme.
- H5. Perceived entrepreneurial motivation is positively and significantly associated with an attitude towards enterprise; and an attitude towards enterprise will be positively and significantly associated with entrepreneurial intentions.
- H6. Perceived entrepreneurial motivation is positively and significantly associated with holding subjective norms towards enterprise; and subjective norm towards enterprise will be positively and significantly associated with entrepreneurial intentions.
- H7. Perceived entrepreneurial motivation will be positively and significantly associated with perceived behaviour control related to enterprise; and perceived behaviour control related to enterprise will be positively and significantly associated with entrepreneurial intentions.

### 3. Data collected and research methodology

#### 3.1 Sample and data collection

Many undergraduate economics and business administration students are located in three universities (i.e. the European University, the National University of Shipbuilding, and the Petro Mohyla Humanitarian University) in Nikolaev in the Ukraine participated in entrepreneurship and small business courses during their second year at university. The entrepreneurship and small business courses which are taught in the Ukraine have a

rather traditional nature, i.e., mostly “learning about” entrepreneurship courses. The exception was a ‘how to do’ enterprise course offered at the National University of Shipbuilding where students were encouraged to start and register their own ventures. Other enterprise-related modules proposed in the universities are management, marketing, finance, accounting and economic courses approved by the Ministry of Higher Education of the Ukraine. Engineering students had not participated in the entrepreneurship courses. In September 2010, a structured questionnaire was administered to third, fourth and fifth year economics and business administration students in these three universities and engineering students in the National University of Shipbuilding. Due to reasons of confidentiality, a postal survey could not be sent to the home addresses of all students who had participated in entrepreneurship and small business courses. In the Ukraine, as in some other post-USSR countries, postal and telephone surveys are still uncommon, and they “[...] are not well received” (Bruton and Rubanik, 2002, p. 561). The author’s contacts directly distributed the structured questionnaire to the students. These students may be considered potential entrepreneurs (Fitzsimmons and Douglas, 2011) because they are approaching a career tipping-point relating to the decision to return to employment or enter into employment, further education or a career in entrepreneurship. Students were not forced to complete the structured questionnaire. To increase the response rate, students were not asked to provide their names on the questionnaires. The questionnaire was translated from English to Russian. Though Ukrainian is the official language in the Ukraine, people in the city of Nikolaev consider Russian to be their mother tongue. Prior to the main survey, the questionnaire in Russian was piloted on ten native Russian speaking students studying at the Bodø Graduate School of Business in Norway. No problems were detected. The questionnaire was then administered in the Ukraine to 350 students. In total, 329 questionnaires were returned. With regard to missing data, the eight questionnaires returned were excluded from further analysis. Questionnaires from 243 business students and 78 questionnaires from engineering students were used. The average age of the respondents was 20-25 years of age, and 65 per cent of the respondents were women. University databases provided age and gender information relating to students who participated in enterprise classes.  $\chi^2$ -tests suggested no significant differences between respondents and non-respondents with regard to gender and age.

### 3.2 Measures

*3.2.1 Dependent variables.* Students were presented with six statements relating to their intentions to become entrepreneurs (Liñan and Chen, 2009). With reference to each statement, a seven-point scoring system was employed, whereby a score of 1 suggested “absolutely disagree”, 4 suggested “neither agree or disagree”, and a score of 7 suggested “absolutely agree” (I1 to I6 in Table 1). All six statements were loaded on a single component with reference to a principal component analysis (PCA). This measure had a Cronbach’s  $\alpha$  of 0.91. Component scores relating this component were used as the dependent variable in the following analysis.

#### 3.2.2 Independent variables

*3.2.2.1 Subjective norms.* Students were presented with the following three statements (Kolvereid, 1996): “my closest family members think that I should pursue a career as an entrepreneur”, “my closest friends think that I should pursue a career as an entrepreneur”, and “people who are important to me think that I should pursue a career as an entrepreneur”. With reference to each statement, a seven-point scoring system was employed, wherein a score of 1 suggested “absolutely disagree”, whilst a score of 7



Code	Statements	Mean	SD	Range	Entrepreneurial motivations and intentions
I1	I am ready to do anything to be an entrepreneur	4.95	1.41	1-7	261
I2	My professional goal is to become an entrepreneur	5.02	1.62	1-7	
I3	I am determined to create a business venture in the future	5.59	1.49	1-7	
I4	I have very seriously thought about starting a firm	5.20	1.60	1-7	
I5	I have got the intention to start a firm one day	5.40	1.64	1-7	
I6	I intend to start a firm within five years of graduation	4.45	1.81	1-7	
SN1	My closest family members think that I should pursue a career as an entrepreneur	0.66	1.83	-3-3	
SN2	My closest friends think that I should pursue a career as an entrepreneur	0.61	1.78	-3-3	
SN3	People that are important to me think that I should pursue a career as an entrepreneur	0.88	1.74	-3-3	
SN4	To what extent do you care about what your closest family members think as you decide on whether or not to pursue a career as self-employed?	5.01	1.78	1-7	
SN5	To what extent do you care about what your closest friends think as you decide on whether or not to pursue a career as self-employed?	3.99	1.69	1-7	
SN6	To what extent do you care about what people important to you think as you decide on whether or not to pursue a career as self-employed?	4.51	1.77	1-7	
ATTB1	Being an entrepreneur implies more advantages than disadvantages to me	5.56	1.25	1-7	
ATTB2	A career as an entrepreneur is attractive for me	5.82	1.24	1-7	
ATTB3	If I had the opportunity and resources, I would love to start a business	6.31	1.24	1-7	
ATTB4	Being an entrepreneur would give me great satisfaction	5.72	1.28	1-7	
ATTB5	Among various options, I would rather be an entrepreneur	5.53	1.46	1-7	
PBC1	If I wanted to, I could easily become an entrepreneur	4.92	1.63	1-7	
PBC2	As an entrepreneur I would have sufficient control over my business			1-7	
PBC3	There are very few circumstances outside my control that may prevent me from becoming an entrepreneur (excluded)	4.29	1.67	1-7	
PBC4	It is entirely up to me whether or not I become an entrepreneur	5.17	1.84	1-7	
EM1	Most people consider investing in their own small or medium-sized enterprise and its management a desirable career choice	4.87	1.43	1-7	
EM2	Most people start their own business, because they want to be free and independent	5.38	1.46	1-7	
EM3	Most people start their own business, because they have good ideas and want to realize them	5.09	1.49	1-7	
EM4	Most people start their own business to be better off financially	5.75	1.29	1-7	
EM5	Most people start their own business, because they want to be successful	5.63	1.30	1-7	

**Notes:** *n* = 321. I, intention to become an entrepreneur; SN, subjective norm; ATTB, attitude toward the behaviour; PBC, perceived behavioural control; RT, risk taking; SE, self-efficacy

**Table 1.** Descriptive statistics for statements presented to students

suggested “absolutely agree”. These belief statements were recoded to a bipolar scale (1 = -3; 2 = -2; 3 = -1; 4 = 0; 5 = 1; 6 = 2; 7 = 3). Respondents were then asked to indicate on a seven-point scale (ranging from 1=“do not care” to 7=“care very much”) how they cared about “closest family members”; “closest friends”, and “people important to you”. These statements were related to motivation to comply with specific measures (Kolvereid and Isaksen, 2006). Three subjective norm statements were computed, relating to “my closest family members think that I should pursue a career as an entrepreneur”, “my closest friends think that I should pursue a career as an entrepreneur”, and “people that are important to me think that I should pursue a career as an entrepreneur”. Each subjective norm statement was obtained by multiplying the belief statement by the respective motivation to comply statement (SN1-SN6 in Table 1). The three statements were loaded on a single component with reference to a PCA. This measure has a Cronbach’s  $\alpha$  of 0.87. Component scores relating this component were used as the subjective norm variables.

3.2.2.2 Attitude towards the behaviour. Students were presented with five statements relating to attitudes towards the behaviour (Gundry and Welch, 2001; Kolvereid and Isaksen, 2006). With reference to each statement, a seven-point scoring system was employed, whereby a score of 1 suggested “absolutely disagree”, 4 suggested “neither agree or disagree”, and a score of 7 suggested “absolutely agree” (ATTB1-ATTB5 in Table 1). All the statements were loaded on a single component with reference to a PCA. This measure had a Cronbach’s  $\alpha$  of 0.87. Component scores relating this component were used as measurements of attitudes towards the behaviour variables.

3.2.2.3 Perceived behavioural control. Students were presented with four statements relating to perceived behavioural control (Ajzen, 2002). With reference to each statement, a seven-point scoring system was employed, whereby a score of 1 suggested “absolutely disagree”, 4 suggested “neither agree nor disagree”, and a score of 7 suggested “absolutely agree” (PBC1-PBC4 in Table I). The four statements were loaded on a single component with reference to a PCA. This component had a Cronbach’s  $\alpha$  score of less than the recommended 0.6 level (Hair *et al.*, 2006). To improve the reliability of the measure, it was decided to remove statement PBC3 from the PCA. The subsequent measure had a Cronbach’s  $\alpha$  of 0.73. Component scores relating this component were used as the perceived behavioural control variables.

3.2.2.4 Perceived entrepreneurial motivation. Students were presented with five statements relating to entrepreneurial motivation. With reference to each statement, a seven-point scoring system was employed, whereby a score of 1 suggested ‘completely false, 4 suggested “neither true nor false”, and a score of 7 suggested “completely true” (EM1-EM5 in Table 1). All five statements were loaded on a single component with reference to a PCA. This measure had a Cronbach’s  $\alpha$  of 0.82. Component scores relating this component were used as perceived entrepreneurial motivation variables.

3.2.3 Control variables. Because individual-level characteristics have been found to be associated with the propensity of people to become self-employed (Bates, 1995), I included four control variables. Women face attitudinal and resource barriers to enterprise, and studies generally suggest women are less likely to report entrepreneurial intentions than men (Lee *et al.*, 2011; Liñan and Chen, 2009; Zhao *et al.*, 2005; for a dissenting view relating to the Ukrainian context see Aidis *et al.*, 2007). Female students were allocated a value of “0”, while male students were allocated a value of “1”. More mature individuals may have more diverse skills and experience (Kalantaridis and Labrianidis, 2004). The age of students was operationalized with regard to years of age. Curran *et al.* (1991) detected individuals whose parents were owners of small firms tended to follow their parents’ footsteps and became business owners. Pruett *et al.* (2009) have also identified that entrepreneurial intentions are

positively and strongly influenced by the presence of entrepreneurial parents. Students who did not have entrepreneurial parents (i.e. not self-employed or business owners) were allocated a value of “0”, while students with one or more entrepreneurial parents were allocated a value of “1”. Tkachev and Kolvereid (1999) have identified that entrepreneurial intentions are positively and strongly influenced by major in business studies. Students who had majored in business studies were allocated a value of “1”, while students with engineering background were allocated a value of “0”.

### 3.3 Validity and reliability

The intention to become an entrepreneur, perceived motivation, attitudes towards the behaviour, perceived behavioural control and subjective norm factors had Cronbach’s  $\alpha$  reliabilities of above 0.7, which is considered to be good (Hair et al., 2006).

Table 2 provides means, standard deviations and VIF scores for all the variables. VIF scores are within two specific guidelines (Hair et al., 2006). The magnitude of the correlations (Table 2) suggested that multicollinearity was not a problem, and all of them were below the 0.9 guideline (Hair et al., 2006).

## 4. Results

Multiple hierarchical regressions were conducted to examine the effects of independent and control variables on intentions to become an entrepreneur and to check the direct and mediation effects of educational majors, perceived entrepreneurial motivations, attitudes, PBC and subjective norms (Table 3). For the purposes of statistical analysis, I have divided the research model of this study (Figure 1) into three models. Model 1 in Table 3 is a baseline model which only includes the control variables and the dependent variable. In Model 1 ( $R^2 = 0.027, p < 0.01$ ), majoring in business studies ( $\beta = 0.16, p < 0.01$ ) and parental self-employment ( $\beta = 0.12, p < 0.05$ ) had a significant positive effect on intentions to become an entrepreneur. Model 2 includes the control variables, entrepreneurial motivation independent variable and the dependent variable. Model 3 is a full research model which includes all control, independent and the dependent variables.

Variable	Mean	SD	1	2	3	4	5	6	7	8	VIF
Age	20.25	1.60	1.00								1.035
Gender	0.35	0.48	0.027	1.00							1.116
Parental self-employment	0.40	0.49	-0.013	-0.066	1.00						1.030
Education major	0.76	0.43	-0.045	-0.306**	0.087	1.000					1.166
Subjective norm	0.00	1.00	0.023	-0.046	0.119**	0.071	1.00				1.601
Attitude toward the behaviour	0.00	1.00	-0.004	-0.109	-0.070	0.221**	0.582**	1.00			1.661
Perceived behavioural control	0.00	1.00	0.042	-0.008	0.119*	0.116*	0.369**	0.396**	1.00		1.246
Entrepreneurial motivation			0.166**	-0.099	0.030	0.100	0.271**	0.287**	0.189**	1.00	1.155

Notes:  $n = 321$ . VIF, variance inflation factor. \* $p < 0.05$  (two-tailed); \*\* $p < 0.01$  (two-tailed)

Table 2.  
Correlation matrix

**Table 3.**  
Hierarchical  
regression models  
relating to the  
propensity of  
students to report the  
intention to become  
an entrepreneur

	Model 1 <sup>a</sup>	Model 2 <sup>a</sup>	Model 3 <sup>a</sup>
<i>Control variables</i>			
Age	0.13	0.08	0.01
Gender	0.01	0.04	0.04
Parental self-employment	0.12*	0.12*	0.05
Education major	0.16**	0.14**	0.01
<i>Independent variables</i>			
Entrepreneurial motivation		0.20**	-0.04
Subjective norm			0.17***
Attitude toward the behaviour			0.56***
Perceived behavioural control			0.17***
$R^2$	0.039	0.074	0.583
Adjusted $R^2$	0.027	0.060	0.572
$\Delta R^2$	0.027	0.033	0.512
$F$ value	3.202	5.067	54.415

**Notes:** <sup>a</sup>Standardized  $\beta$  regression coefficients. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

*H1-H3* are concerned with the relationship between perceived entrepreneurial motivation reported by business vs engineering students, subjective norms, attitudes towards entrepreneurship, and perceived behaviour control. Perceived entrepreneurial motivation ( $\beta = 0.27, p < 0.001$ ) had a significant and positive impact on subjective norms ( $R^2 = 0.073, p < 0.001$ ). Perceived entrepreneurial motivation ( $\beta = 0.27, p < 0.001$ ) and major in business studies ( $\beta = 0.19, p < 0.001$ ) had significant and positive impact on attitudes. The adjusted  $R^2$  for this model was 0.11,  $p < 0.001$ . Perceived entrepreneurial motivation ( $\beta = 0.18, p < 0.01$ ), majoring in business studies ( $\beta = 0.11, p < 0.01$ ), and parental self-employment ( $\beta = 0.11, p < 0.01$ ) had significant and positive impacts on PBC. The adjusted  $R^2$  for this model was  $R^2 = 0.044, p < 0.01$ . I compared subjective norms, attitudes towards entrepreneurship and perceived behaviour control of business and engineering students by using a  $t$ -test. This indicated no significant difference with respect to subjective norms between business and engineering students ( $t = 1.231; p = 0.221$ ). The  $t$ -test indicated a significant difference related to attitudes ( $t = 3.568; p = 0.001$ ). Business students reported more positive attitudes towards entrepreneurship. There were also significant differences in PBC between business and engineering students ( $t=2.034; p=0.05$ ). Business students reported a higher level of PBC. *H1* and *H3* were thus supported. *H2* was not supported, i.e., participation in enterprise course was not seen to promote subjective norms. A  $t$ -test was performed to test *H4*. The entrepreneurial intentions of business students were higher than the entrepreneurial intentions of engineering students in the Ukraine ( $t = 2.592; p = 0.05$ ). Thus, *H4* was supported.

The next step was to check the possible mediation effect of three variables of the TPB between perceived entrepreneurial motivation and entrepreneurial intentions (*H5-H7*). These hypotheses were tested in three steps, following a procedure suggested by [Baron and Kenny \(1986\)](#) using multiple hierarchical regressions (Models 2-3 in [Table 3](#)). I checked the first condition that states that the independent variable must affect the mediator. In Model 2 ([Table 3](#)) I tested the effect of perceived entrepreneurial motivations on intentions, and the adjusted  $R^2$  had increased to 0.06 ( $\Delta R^2 = 0.03, p < 0.001$ ). Perceived entrepreneurial motivations ( $\beta = 0.19, p < 0.001$ ), majoring in business studies ( $\beta = 0.14, p < 0.01$ ), and parental self-

employment ( $\beta = 0.11, p < 0.05$ ) were positively related to intentions to become an entrepreneur. Condition two that the independent variable must affect the dependent variable was satisfied. In Model 3, I tested the third condition (Baron and Kenny, 1986), suggesting that the mediator (PBC, SN, and ATT) must affect the dependent variable. In Model 3, the adjusted  $R^2$  increased to 0.572 ( $\Delta R^2 = 0.512, p < 0.001$ ). In Model 3, all three mediation variables were significant. Subjective norms were positively related to entrepreneurial intentions ( $\beta = 0.17, p < 0.001$ ). Attitudes are positively related to entrepreneurial intentions ( $\beta = 0.56, p < 0.001$ ). PBC was positively related to entrepreneurial intentions ( $\beta = 0.17, p < 0.001$ ). Perfect mediation takes place if an independent variable has no effect on the dependent variable. In Model 3, entrepreneurial motivation has no effect on entrepreneurial intentions. A mediation effect between perceived entrepreneurial motivations and entrepreneurial intentions was thus confirmed and  $H5, H6$ , and  $H7$  were supported.

## 5. Conclusions and implications

Practitioners seek to increase the supply of entrepreneurs in local economies associated with declining traditional industries. They try to encourage more students to become entrepreneurs after leaving university in order to create new businesses that can generate positive local externalities (i.e. wealth creation, job generation and increased social cohesion in depressed communities). Many students face attitudinal and resource barriers to enterprise. Practitioners and university administrators need an evidence base to guide their resource allocation decisions to promote enterprise. Initiatives that encourage student enterprise need to be monitored. This study monitored students located in three universities in the city of Nikolaev, which used to be the centre for shipbuilding in the former Soviet Union. This former industrial and political culture did not promote individual enterprise. The evidence from this study is, therefore, applicable to similar contexts of transitional economies. Information relating to the intention to become an entrepreneur was gathered from 321 third, fourth and fifth year undergraduate engineering and economics and business administration students. Many business students had participated in enterprise modules during their second year. Most engineering students, however, had not participated in any enterprise courses. A novel contribution of this study is to test the effect of perceived entrepreneurial motivation to “explain” the formation of entrepreneurial intentions in the same study. Multivariate data analysis was used to explore the causal links between factors discussed in the TPB as well as perceived entrepreneurial motivation and the formation of entrepreneurial intentions. Entrepreneurial motivation is a somewhat ignored line of research. The direct and indirect effects of factors related to the intention to become an entrepreneur were considered. The direct and significant effect of attitudes, subjective norms, and perceived behavioural control on the intention to become an entrepreneur confirmed the earlier research related to testing TPB in the context of entrepreneurial intentions (Engle *et al.*, 2010; Iakovleva and Kolvereid, 2009). Our results indicate that individuals who participated in an enterprise education programme had higher perceived entrepreneurial motivation that promote attitudes towards enterprise and PBC related to enterprise than students who did not participate in an enterprise programme. This is a novel contribution of this study. The effect of perceived entrepreneurial motivation on entrepreneurial intentions was fully mediated by students’ attitudes, subjective norms, and perceived levels of behavioural control.

The findings of this study have important implications for the Ukrainian emerging economy and other transitional post-communist economies. Debate surrounds whether students can be taught how to become entrepreneurs. Teaching entrepreneurship is difficult because the entrepreneurial process involves both an “art” and a “science” (Jack and

Anderson, 2001). Understanding the formation of entrepreneurial intentions underpins an informed appreciation of the behaviour of entrepreneurs (Fitzsimmons and Douglas, 2011). Prior research found out that entrepreneurial intentions are higher in the countries with the low levels of GDP per capita (Griffiths *et al.*, 2009). Further, intentions can shape subsequent behaviour (Ajzen, 2001; Bagozzi *et al.*, 1989). However, unfavourable external environment and a lack of resources, entrepreneurial knowledge and skills might prevent the transformation of intentions into subsequent behaviour. Furthermore, the findings indicate that higher education institutions (HEIs) in the Ukraine do not consider engineers as potential entrepreneurs. In the same time, engineering education is traditionally very strong in the Ukraine, Russia and other post-Soviet countries. Thus, companies started by engineers have a significant potential to become successful firms and create working places in the transitional economies. In fact, some local engineering businesses have become global. For example, Template Monster ([www.templatemonster.com](http://www.templatemonster.com)), a firm started and based in Nikolaev (the city where survey was administered), is ranked as number 1 in the world in the market of web site template services (Website Template Service Review, 2012). GeeksForLess, another IT company started by Nikolaev-born entrepreneur, employs about 1,200 engineers in Nikolaev and provides various software development and web hosting services for clients in the North America. The Ukraine and other transitional economies (Jones *et al.*, 2011) suffer from brain drain problems, i.e., large scale emigration of highly educated people possessing technical skills and knowledge who cannot find decent jobs in their home countries and move abroad. Engagement into enterprise development programmes of engineering students might evoke earlier interest in self-employment career path among young people. Recent research has also shown that Ukrainian entrepreneurs having engineering and other non-business education seek to obtain an additional enterprise education prior or after they started own ventures (Solesvik, 2012). The reason for this is a lack of knowledge and skills in marketing, management, and finance. Thus, wider involvement of engineering students into enterprise education programmes in the transitional economies might open new avenues for entrepreneurship development and prevent human capital flight in these countries.

Our findings showed that people who had been participated in enterprise programmes had higher motivation to start their own ventures. This finding is in line with recent research conducted in Poland (Jones *et al.*, 2011). Carsrud and Brännback (2011) argued that entrepreneurial motivation is a link between an intention and action. Thus, influencing on individual's motivation through educational programmes might transform a latent intention into real action. This study made a step forward in exploration of entrepreneurial motivations in a transitional economy. The impact of contexts on entrepreneurial motivation is an interesting topic for the further research. Such a study could be conducted across several developing and developed economies.

To evaluate the benefits of specific enterprise modules, I gathered information from a control group of students who participated and those who did not participate in any enterprise modules. Like Tkachev and Kolvereid (1999) and Karhunen and Ledyeva (2010), with reference to a sample of Russian students, I found that Ukrainian business students were more likely to select an entrepreneurial career path. In contrast, in Germany engineering and science students are more likely to become entrepreneurs than business students (Franke and Lüthje, 2004). The HEIs in the Ukraine propose mainly conventional enterprise modules where students learn about entrepreneurship. Such courses are offered solely to students who have majored in business and economics. The lecturers in the universities in the Ukraine are encouraged to introduce more practically oriented courses where students can learn how to start and manage

new ventures. Such courses should be open not only for business students, but also for engineering students. Significant experience in carrying out such “how to” courses has been accumulated in some developed countries (e.g. the USA, Germany, Norway). For example, students start and officially register enterprises at the beginning of the school year, carry out business operations during the year, and close the ventures by the end of the course. Successful entrepreneurs are involved in such courses as mentors. Practitioners from the Ukrainian HEIs who might wish to introduce such courses are encouraged to visit foreign HEIs in order to exchange experience in organizing such courses in the western HEIs. Moreover, Ukrainian entrepreneurship scholars are encouraged to join the research project GEM in order to estimate the level of entrepreneurship development in the Ukraine compared to other countries, to check the influence of different factors on the development of entrepreneurship in the country, and to discover instruments which would help politicians to improve the level of entrepreneurship.

The evidence presented suggests that enterprise modules have a role in reducing attitudinal barriers to enterprise, increasing entrepreneurial motivation and in the accumulation of skills required for careers in entrepreneurship. Enterprise modules delivered in universities (and other contexts) should raise awareness of techniques and tools that can be used to identify problems and solutions, as well as the generation and evaluation of ideas during the idea generation phase of the entrepreneurial process, as well as the feasibility of plans for pursuing particular businesses. The formation of entrepreneurial intentions in more students could be increased if enterprise teaching seeks to nurture higher levels of attitudes towards the behaviour (i.e. enterprise), and higher levels of perceived behavioural control. This study has focused upon issues relating to increasing the “supply” of entrepreneurs. Studies that explore the links between type of participant in enterprise education and the subsequent actual entry or not into self-employment or business ownership and the performance of the ventures they establish are needed to guide practitioner resource allocation decisions. Assuming an interventionist stance, this evidence base could guide support to enterprise education to hone the factors that are more likely to increase the supply of entrepreneurs, and more importantly the supply of entrepreneurs with significant job generation and wealth creation potential. The identification of the types of people participating in enterprise modules may enable practitioners to provide customized support to help each type of participant promote a higher conversion of latent entrepreneurship into actual student entrepreneurship, which is a goal of many practitioners.

#### Note

1. The Ukraine does not participate in GEM. However, there are many similarities in entrepreneurship development between Russia and the Ukraine, along with many other other economic aspects.

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Entrepreneurial  
motivations  
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**Further reading**

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