

Hanieh Alipour Bazkiaei; Low Hock Heng; Noor Ullah Khan; Saufi, Roselina Ahmad;
Raja Suzana Raja Kasim

Article

Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students?

Cogent Business & Management

Provided in Cooperation with:

Taylor & Francis Group

Suggested Citation: Hanieh Alipour Bazkiaei; Low Hock Heng; Noor Ullah Khan; Saufi, Roselina Ahmad; Raja Suzana Raja Kasim (2020) : Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students?, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 7, Iss. 1, pp. 1-18, <https://doi.org/10.1080/23311975.2020.1801217>

This Version is available at:

<https://hdl.handle.net/10419/244913>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students?

Hanieh Alipour Bazkiaei, Low Hock Heng, Noor Ullah Khan, Roselina Binti Ahmad Saufi & Raja Suzana Raja Kasim |

To cite this article: Hanieh Alipour Bazkiaei, Low Hock Heng, Noor Ullah Khan, Roselina Binti Ahmad Saufi & Raja Suzana Raja Kasim | (2020) Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students?, Cogent Business & Management, 7:1, 1801217, DOI: [10.1080/23311975.2020.1801217](https://doi.org/10.1080/23311975.2020.1801217)

To link to this article: <https://doi.org/10.1080/23311975.2020.1801217>



© 2020 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.



Published online: 10 Aug 2020.



Submit your article to this journal [↗](#)



Article views: 2351



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 8 View citing articles [↗](#)



Received: 16 January 2020
Accepted: 10 July 2020

*Corresponding author: Hanieh Alipour Bazkiaei, Azman Hashim International Business School (AHIBS), Universiti Teknologi Malaysia, Malaysia
E-mail: louie.utm.20@gmail.com

Reviewing editor:
Pantea Foroudi, MBT, Middlesex University, London, UK

Additional information is available at the end of the article

MANAGEMENT | RESEARCH ARTICLE

Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students?

Hanieh Alipour Bazkiaei^{1*}, Low Hock Heng¹, Noor Ullah Khan², Roselina Binti Ahmad Saufi³ and Raja Suzana Raja Kasim³

Abstract: This study investigated the relationship between entrepreneurial education and big-five personality traits with entrepreneurial intention. Besides, it assessed how the attitude toward entrepreneurship mediates these relationships. Employing a quantitative approach to address the research objectives, data of 165 respondents were collected through questionnaires. Structural equation modeling (SEM) and path analysis were conducted using AMOS 24 software. Study findings revealed that attitude toward entrepreneurship mediates the relationship of entrepreneurial education and big-five personality traits with entrepreneurial intention. Entrepreneurial education and big-five personality traits cause attitude which in turn affects entrepreneurial intention. These findings suggest that if the appropriate educational supports applied, it could help to develop students' entrepreneurial attitudes and improve matching their skill expectations with their skill achievement. Universities can play a considerable role to promote entrepreneurship

ABOUT THE AUTHORS

Dr. Low Hock Heng is a Senior Lecturer at the Azman Hashim International Business school, Universiti Teknologi Malaysia. His interest is in operations management and commercialization of university R&D product. Currently, he is working as a General Manager at Centre for Executive Programme, UTM SPACE.

Dr. Noor Ullah Khan is currently working as Assistant Professor at the Department of Human Resource Management, NUST Business School (NBS). He has published research articles in reputed international journals and participated at several international conferences.

Professor Dr. Roselina Binti Ahmad Saufi is a Professor in Business and Management and the Dean for Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan. Roselina's works focus on capacity building, human resource development.

Professor Dr. Raja Suzana Raja Kasim is a professor of entrepreneurship at Universiti Malaysia Kelantan. Her research and consulting focus is in the areas of social innovation, entrepreneurship education, and strategic management.

PUBLIC INTEREST STATEMENT

Entrepreneurial activities are considered as the backbone of any economy and play a significant role in helping to create jobs and grow the economy. Similarly, in Malaysia, entrepreneurship is an essential consideration for government and educational institutions to support economic growth and create better opportunities for individuals. Based on research studies, various factors impact entrepreneurial intentions. This study focuses on two key factors, i.e., entrepreneurial education and big-five personality traits in predicting entrepreneurial intention. Education plays a significant role in developing students' knowledge and skills and the possibility of their employment. Many universities tried to prepare students to promote entrepreneurial convictions by encouraging them to take entrepreneurship education. Among the individual differences, personality traits play an integral role in shaping entrepreneurial intention among students. The preliminary findings revealed that entrepreneurial education and big-five personality traits are positively contributing to entrepreneurial intention.

view by more focus on increasing entrepreneurial thinking and offering different types of vocational training workshops.

Subjects: Business, Management and Accounting; Entrepreneurship and Small Business Management; Human Resource Management

Keywords: entrepreneurial education; big-five personality traits; entrepreneurial intention; attitude toward entrepreneurship

1. Introduction

Entrepreneurial activities are considered the backbone of any economy and play a significant role in helping to create jobs and grow the economy (Valliere & Peterson, 2009), which are broadly predictable across the world (Kritikos, 2014). Numerous researchers have emphasized to increase students' interest in entrepreneurship as a career choice (Ashour, 2016; Maalu, 2012). Similarly, in Malaysia entrepreneurship is an important consideration for government and education institutions to support economic growth and create better opportunities for individuals (Koe et al., 2012; Zainuddin, 2012). It is extensively recognized that in the future, graduates are the vital sources of being nascent entrepreneurs. Therefore, developing countries like Malaysia encourage more students to consider entrepreneurship as a career choice (Ambad et al., 2016).

The Malaysian government had set policies to encourage the society, especially the young population to take up the steps of being an entrepreneur. Malaysian students can stimulate the competitiveness and economic growth of the country after graduation by their involvement in entrepreneurship activities (Martínez-González et al., 2019). Therefore, the higher educational institutions in Malaysia offered entrepreneurial education as one of the subjects of management courses for students as compulsory one, especially in public universities (Rahim et al., 2015; Yusoff et al., 2015) that helps in incorporating entrepreneurial thinking to this level of education in Malaysia (Sipon et al., 2015). Despite these efforts, as the previous researches have revealed, local students at Malaysian universities have less tendency to develop their entrepreneurial intentions; so, being an entrepreneur is not the major career choice among Malaysian graduates (Monitor, Global Entrepreneurship, 2016). There are multiple factors that can lead to this phenomenon. This research emphasized on combining different aspects that are most important to influence students in Malaysia.

Education plays a significant role to develop students' knowledge and skills and the possibility of their employment. Many universities tried to prepare students to promote entrepreneurial convictions through encouraging them for taking entrepreneurship education; so that, it would nurture them with increasing abilities and skills required for sustaining a more productive and innovative economy in the years ahead. Hence, it sounds for more research works to emphasize the evaluation of entrepreneurial education and its impact on entrepreneurship (Martin et al., 2013; Walter et al., 2013).

Based on meta-analytic reviews, psychological traits are associated with business creation and success (Frese & Gielnik, 2014); these traits influence people to participate in entrepreneurial activity (Shane & Nicolaou, 2013). Although some entrepreneurship researches initially assumed that psychological personality investigations did not offer anything useful (Brandstätter, 2011), this assumption changed with the advent of meta-analytic studies in entrepreneurship and big-Five personality traits related to entrepreneurial intentions (Zhao et al., 2010). Similarly, psychologists suggested that attitude as the base of a person's opinion and justification of behavior, mostly influences individuals' intentions (Ferreira et al., 2012); therefore, it is important to investigate this relationship (Fai et al., 2017). Previous studies revealed that attitude is an important variable in the idea of starting a business or enterprise among university students (Guerrero et al., 2016; Walter & Dohse, 2009; Urbano et al., 2017).

Among the individual differences, personality traits have been frequently discussed; nevertheless, rare studies have empirically examined how these traits especially along with the mediating role of attitude affect the entrepreneurial intention among students (Hu, 2008). To fill this research gap, considering the role of entrepreneurial education (Ismail et al., 2010), this paper conducted to investigate the relationship between big-five personality traits (John & Srivastava, 1999) and entrepreneurial education (Turker & Selcuk, 2009) with students' entrepreneurial intention (Liñán & Chen, 2009) and how the attitude toward entrepreneurship (Liñán & Chen, 2009) mediate these relationships. Therefore, this research tried to fill the current gap among studies which worked on entrepreneurial education and personality trait with entrepreneurial intention.

2. Literature review

Entrepreneurial intentions lead individuals to become entrepreneurs which is the source of self-employment (Kolvereid & Isaksen, 2006). However, many important antecedents of entrepreneurial intentions have been investigated in previous studies, most of them typically identified pre-existing entrepreneurs and established business, (Grine et al., 2015) while neglecting a large section of potential entrepreneurs, i.e., students, who can be considered as the primary resource of future entrepreneurs and it will be an advantage for them to make entrepreneurship as a full-time career after graduation (Gallant et al., 2010). In this regard, the assessment of entrepreneurial intention among them is a necessity (Teixeira & Davey, 2010), especially in the Malaysian public universities, which still needs to be considered (Ismail et al., 2012; Yusoff et al., 2015). Since youth empowerment is the vital agenda in the Malaysian government policy, as stated in the new educational policy (2015–2025) (Blueprint, 2015).

This research study would cause substantial contribution by trying to expand the understanding of the deep conventions sustaining intentions and evaluating the significance of psychological and cognitive factors that impact to form entrepreneurial intentions. By considering these aspects in an individual mind, this research has conducted at the personal level to contribute for making better attention in the process of entrepreneurial decision-making. Psychological traits provide an insight into the psyche of individuals as effective variables related to entrepreneurship (Lin et al., 2015; Touzani et al., 2015). In this sense, the Big-Five Personality trait or also known as the Five-Factor Model (FFM) is one of the most comprehensive models and highly regarded trait theories of personality. In this model, personality traits include openness to experience, conscientiousness, extraversion, neutralism, and agreeableness (Liang et al., 2013; Liang & Lin, 2015). Meanwhile, this study investigated how entrepreneurial education enhances entrepreneurial intentions among students. Given the importance of new business to the economy and society, this topic needs attention. Thus, to fill the current gap in the literature, it is noteworthy to investigate the impact of both psychological and educational factors collectively into a conceptual model to comprehensively predict entrepreneurial intentions among university students. On the other hand, the importance of attitude as a mediator in the studies of intention is considerable (Dwivedi et al., 2019) hence, it is necessary to study the mediating role of attitude on the relationship between psychological and educational factors (Aboelmaged, 2010).

Several models of entrepreneurial intention have been developed, with various variables and some focus on pre-entrepreneurial experience using attitude and behavior theory (Kautonen et al., 2013). Among them Theory of Planned Behavior (TPB) (Ajzen, 1991) is the most highly structured (Krueger et al., 2000) and well approved in the Malaysia context (Ali et al., 2018), TPB can explain the intention towards entrepreneurial activities (Lin et al., 2015; Touzani et al., 2015; Ali et al., 2018). In this research study revised version of this model used by including attitude as a mediator and adding big-five personality traits with entrepreneurial education.

2.1. Entrepreneurial intention

Intention as an antecedent of behavior is not achieved thoughtlessly, but it follows constant and rational behavior-relevant information which can be strengthened by rewards (Barringer, 2015). Entrepreneurial intention (EI) can be defined as individuals' inclination for accomplishment

entrepreneurial behavior, to found new business or to be self-employed (Dohse & Walter, 2010). Accordingly, individuals may be potential to become entrepreneurs; but it does not lead them to entrepreneurial behavior without having such intention (Kautonen et al., 2013). Since entrepreneurial intention helps to explain the reason why some individuals select to start a business; therefore, it is considered as an important factor in explaining entrepreneurship and generating new business (Krueger et al., 2000).

2.2. Big-five personality traits

Previous researchers have examined several personality traits (Major et al., 2006). Big-Five personality factors as one of the most comprehensive personality taxonomies refer to the degree in which an individual has expressive constancy (Singh & DeNoble, 2003). Individuals with high neuroticism traits tend to experience negative emotions such as anger, sadness, and anxiety (Rothmann & Coetzer, 2003). Extraversion shows the extent to which individuals are emphatic, energetic, active, and excited (Costa & McCrae, 1992). Individuals who are scoring high on extraversion incline to be happy; they desire to be with groups and pursue enthusiasm (Ariani, 2013). Entrepreneurs need to cooperate with a variety of residents including venture investors, employees, associates, and customers; Agreeableness evaluates individuals' inclination to be sympathetic and cooperative instead of being doubtful towards others (Zhao & Seibert, 2006). Individuals with agreeableness trait can facilitate to figure business interactions that are necessary for a new venture, with the preference of positive interpersonal relationships (Liang & Lin, 2015). Conscientiousness is one indicator of individuals' degree toward persistence, society, and motivation in the search for goal achievement; so, this construct indicates inclination or the capability to work hard (Barrick et al., 2001). Individuals with a conscientious personality might be more probable to plan and manage the details related to run a business and interact with internal and external investors (Liang et al., 2013).

2.3. Entrepreneurial education

Entrepreneurial education refers to the sum of training and motivating activities in an educational system that offers students with entrepreneurial skills, inspiration, and knowledge to pursue entrepreneurial business (Ekpoh & Edet, 2011). As it has been mentioned, entrepreneurial education is capable to make and increase awareness which can build an entrepreneurial idea among individuals and also encourage them to become self-employed; thus, it would improve their career intention towards entrepreneurship (Fayolle et al., 2006). The study of Ismail et al. (2010) indicated there is a high probability that students who take entrepreneurial courses be inspired to become an entrepreneur. In this regard, entrepreneurial education considered an effective tool in educational institutes to nurture entrepreneurial intentions among students (Liñán, 2004).

In Malaysia, among other employment choices, entrepreneurship is required to be realized and considered as an achievable career option. With the innovative method, university would effectively prepare enough to match students' ability prospects with their capability attainment (Ahmad et al., 2014; Ismail et al., 2010); as, suitable entrepreneurship education experience will influence them to become entrepreneurs (Kadir et al., 2012). Integrating entrepreneurship into educational systems found as one of the ways to develop a culture of entrepreneurial thinking. Because the strength of motivation in choosing entrepreneurship as a career option among students is related to entrepreneurial intention; so, creating an opportunity for practice of key entrepreneurial behaviors by education is seen as a crucial way to cultivate entrepreneurial behaviors in Malaysia.

2.4. Attitude towards entrepreneurship

Attitude is defined as individuals' positive and negative feelings to do the target behavior (Armitage & Conner, 2001). According to the theory of planned behavior, attitudes affect behavior through intention (Schwarz et al., 2009). Research by Li et al. (2008) indicated that attitude reflects individuals' opinions and beliefs about the behavior. In entrepreneurial and behavioral studies, entrepreneurial attitude as a construct refers to overall feeling or evaluation about being an entrepreneur based on the valuation of business (Liñán & Santos, 2007). The roles of attitudes

toward entrepreneurship in entrepreneurial intention were supported by many types of researches (Guerrero et al., 2008; Shook & Bratianu, 2010). In Malaysia context attitude approved as the main important factor which is related to entrepreneurial intention among young adults (Moi et al., 2011).

2.5. Big-five personality traits and entrepreneurial intention

According to some studies entrepreneurs are different from managers in terms of personality (Shane et al., 2003). To develop an understanding of personality in the entrepreneurial mindsets, meta-analyses evaluated the relationship between personality and entrepreneurial intentions. In consequence, certain personality traits can make individuals find entrepreneurship actions as more satisfying behavior and therefore they possibly will persist to establish the new business and become entrepreneurs (Major et al., 2006; Stewart & Roth, 2007; Zhao et al., 2010).

The significance of big-five personality trait over behavior in Malaysia context were proved in some previous studies (Ismail et al., 2010; Israr & Saleem, 2018; Yusuf & Kamil, 2015). According to Simon et al. (2000), the five personality traits model influences individuals' mindsets to become an entrepreneur. Entrepreneurs characteristically interact with varied external situations (Zhao & Seibert, 2006). Besides, it is expected that entrepreneurs interpersonally spend most of their time in direct interaction with their partners and employees because of the structure of a new business and the undeveloped human resource. In this regard, extraversion is a consistent predictor of such a relationship as interpersonal interaction (Rothmann & Coetzer, 2003). Previous studies revealed that openness is associated with exploring new ideas that are required for problem-solving, adjusting to successful change, and applying new approaches to develop business strategies, products, and services (Yap et al., 2012). According to some researchers, entrepreneurs with high self-confidence have beliefs about their ability to control the outcomes of their environment (Zhao & Seibert, 2006). Previous studies' results showed that entrepreneurs are very motivated to accomplish their aims; consequently, they reveal high levels of conscientiousness (Saeed et al., 2013; Singer & Millage, 2013). Some other studies have also resulted that openness and extraversion have a relationship with entrepreneurial intentions among university students (Ismail et al., 2010). Thus, based on previous literature this study proposed the first hypothesis.

H₁: Big-five personality traits have an impact on entrepreneurial intention.

2.6. Big-five personality trait and attitude toward entrepreneurship

In this study, an attitude refers to individual persistent targets toward entrepreneurship; the target can have positive or negative status and be affected by the surrounding which cognitive behavioral intention can measure it. Drawing the findings of Hu (2008), a positive relationship exists between Big-Five personality traits e.g., (agreeableness, extraversion, conscientiousness, and openness to experience) and entrepreneurial attitude, while neuroticism negatively affects this attitude. Previous studies concluded that attitude toward entrepreneurship as one of the most significant determining factors of entrepreneurial intention (Autio et al., 2001; Schwarz et al., 2009), can be influenced by personality traits (Lüthje & Franke, 2003). Based on the literature, in this study the second hypothesis is as below.

H₂: Big five personality traits have an impact on attitude toward entrepreneurship.

2.7. Attitude toward entrepreneurship and entrepreneurial intention

As intention has been theorized one function of beliefs, therefore it can be noted that people arrange attitudes toward doing a given behavior based on beliefs that performing the behavior will lead to certain consequences. Thus, intention comes from the attitudes that are based on behavioral beliefs. Following Fishbein and Ajzen (1977), testing individuals' intention to do one specific behavior is the most effective way to know individuals are going to perform that behavior; therefore, attitude should be specifically related with intentions to behavior (Eagly & Chaiken, 1993).

Subsequently, besides Liñán (2004) other researchers have also suggested and showed the significant role of attitudes to understanding (future) entrepreneurs' intention (Fini et al., 2012; Geissler et al., 2012). Especially, Do Paço et al. (2011) found that among other factors, attitude in fact, plays a major role to explain entrepreneurial intention (Kautonen et al., 2013). Additionally, according to a study done by Schwarz et al. (2009), it investigated the effects of attitude on students' entrepreneurial intentions and results showed that attitude towards entrepreneurship is certainly a good predictor of entrepreneurial intention. Therefore, according to previous literature the next hypothesis is as follow:

H₃: Attitudes toward entrepreneurship have a positive impact on entrepreneurial intention.

2.8. Entrepreneurial education and entrepreneurial intention

The significant role of entrepreneurial education to generate an effective entrepreneurship view studied by many researchers (Kadir et al., 2012; Wang et al., 2011). According to Nasiru et al. (2015), participation in entrepreneurial programs made students have the intention to start their own business, which led to encourage them to think about their business plan. The study of Volery and Mueller (2006) revealed that entrepreneurial education programs influence individuals' decision to become an entrepreneur. Accordingly, by creating an entrepreneurial culture across universities, students can be trained to increase their skills, knowledge which is applicable in their future career endeavors (Nurmi & Paasio, 2007). These educational efforts with considerable influential factors would influence students' intention to create a business (Fayolle et al., 2006). Entrepreneurship educational programs can encourage students' intention to become an entrepreneur by enhancing their skills in entrepreneurship. The results of such a program finally will lead to form new businesses and new job opportunities as well (Fayolle et al., 2006; Izedonmi, 2010). Hence this study proposed hypothesis four as below.

H₄: Entrepreneurial education has a positive impact on entrepreneurial intention.

2.9. Entrepreneurial education and attitude towards entrepreneurship

Education can help individuals not only to enquire knowledge and grow abilities but also to access more prospects to progress their future careers (Anumnu, 2013). Individuals who are undergoing educational processes in universities can be more potential to become an entrepreneur (Gelard & Saleh, 2011). According to some scholars, entrepreneurship educational programs can make individuals have a favorable attitude toward entrepreneurship; therefore, it should be encompassed in entrepreneurial intention models (Walter & Dohse, 2009). Progress plans among students are important to enable the required knowledge and skill, foster their interests and abilities which can lead to positive attitudes towards entrepreneurship. Attitude can be changed by the impact of environment or education, and accordingly can nurture the entrepreneurial intention (Florin et al., 2007). Educational programs positively affect students' attitudes toward entrepreneurship during entrepreneurial education (McStay, 2008). Other studies concluded that the attitude towards entrepreneurship of students who did not take part in educational programs, was negative; therefore, it did not increase their intention towards entrepreneurship (Zain et al., 2010). Therefore, this study proposed hypothesis five as follow.

H₅: Entrepreneurial education has a positive impact on attitude toward entrepreneurship.

2.10. The mediation effect of attitude toward entrepreneurship on the relationship between big-five personality trait and entrepreneurial education with entrepreneurial intention

According to the model of current research, it proposed that attitude towards entrepreneurship mediates the relationship between big-five personality traits and entrepreneurial education with entrepreneurial intentions among students. Educational programs and training can adjust individual attitudes through practical knowledge related to business (Walter & Dohse, 2009), and this behavioral attitude is positively related to entrepreneurial intentions (Do Paço et al., 2011). Hence when individuals educated about entrepreneurship, they would assess the outcomes of this behavior.

According to the study of Jing and Sung (2012) the more people be dominant and energetic, the more they will have a positive attitude toward entrepreneurship, and this attitude positively will affect their entrepreneurial intention. Regarding individuals' personality traits, people who can accept more risk, prefer to create their own business. As well as people who are more interested to be in the group, are more attracted to entrepreneurship. On the other hand, the more people desire to do hard work and be persistence, the more will be their interest in entrepreneurship (Rothmann & Coetzer, 2003). In this sense, as personality traits alone are not capable to make entrepreneurial intention (Hu, 2008), individuals need to evaluate the consequences of entrepreneurship; therefore, the present research study proposed the next hypotheses as below.

H₆: Attitude toward entrepreneurship mediates the relationship between big-five personality traits and entrepreneurial intention.

H₇: Attitude toward entrepreneurship mediates the relationship between entrepreneurial education and entrepreneurial intention.

3. Research methodology

The objective of this research was to examine the relationship between big-five personality traits, entrepreneurial education with entrepreneurial intention. In addition, this study also used attitudes toward entrepreneurship as mediator in the relationship between big-five personality traits, entrepreneurial education, and entrepreneurial intention among university students (as depicted in Figure 1). This research conducted model using the Theory of Planned Behavior (TPB) (Ajzen, 1991) as underpinning theory, which is the most highly structured and well approved in the Malaysia context (Ali et al., 2018) and explains the intention towards entrepreneurial activities (Lin et al., 2015; Touzani et al., 2015). To test the hypothesized relationships in this research, a quantitative method was used through deductive approach based on positivist philosophy. The population of this study consisted of Malaysian final year management students at three public research-intensive universities in three different states in Malaysia. For this reason, proportionate random sampling was applied; the formula $n_h = (N_h/N)$ was used to calculate the sample which accomplished by applying Morgan table (1970). The participants of the current study were students who attended entrepreneurship course. The standard questionnaires were personally administered and distributed among 165 students as shown in Table 1.

The current study used standard questionnaires to measure the variables such as entrepreneurial intentions, big-five personality traits, attitude towards entrepreneurship, and entrepreneurial education. To measure entrepreneurial intention this study used scale developed by Liñán and Chen (2009), designed on a 5-point Likert type rating scale, with the range from 1 (strongly disagree) to 5 (strongly agree). Attitude towards entrepreneurship was measured using the

Figure 1. Theoretical model of the study.

Source: Author own conception

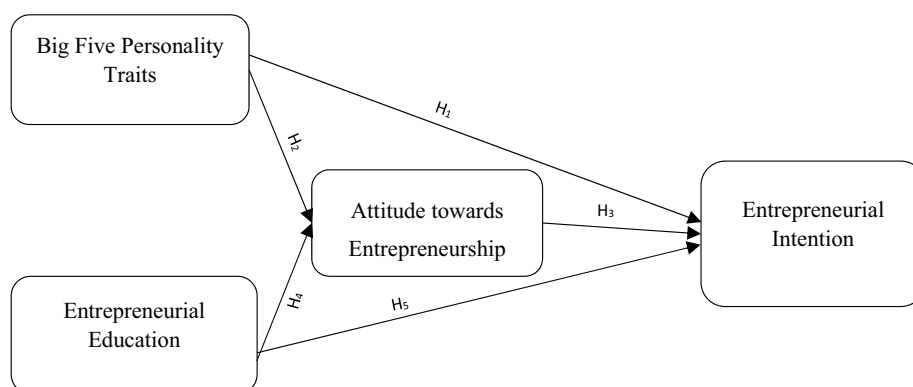


Table 1. Sample of the study

University	Population	Population proportion	Sample size
Universiti Malaya (UM)	167	20 %	33
Universiti Teknologi Malaysia (UTM)	166	21 %	36
Universiti Sains Malaysia (USM)	433	58 %	96
Total	766	100 %	165

Source: Author own calculation

reduced version of EIQ from Liñán and Chen (2009) study on a 5-point Likert type rating scale, with the range from 1 (strongly disagree) to 5 (strongly agree). Big-five personality traits in this study were measured based on the classification of five main dimensions such as agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience developed by John and Srivastava (1999). The current study used items representing all these components and measured Big-five construct based on a 5-point Likert type rating scale, with the range from 1 (strongly disagree) to 5 (strongly agree). Entrepreneurial education was measured by a scale developed by Turker and Selçuk (2009), on a 5-point Likert type rating scale, ranging from 1 (strongly disagree) to 5 (strongly agree). See details items in Appendix 1.

4. Data analysis

This section presents the results of testing the proposed hypotheses of the study. Initially, data was entered in Statistical Package for Social Science (SPSS) and later data imported into Analysis of Moment Structures (AMOS 24). To perform Structural Equation Modelling (SEM), at first data was checked for SEM assumptions such as missing responses, outliers, normality, linearity, homoscedasticity, and multicollinearity assumptions (Hair et al., 2010). Then, this study used SEM for validation of the measurement model and the structural model. And specifically, to validate the measurement model, the convergent and discriminant validity were checked. Finally, a structural model was performed to test the hypothesized relationships.

As Table 2 shows, this study was conducted among final year Malaysian students studying management major at three research-intensive public universities in Malaysia. The based-gender category distribution mentions that 69.7% female and 30.3% male students participated in the current study. It was found that students were divided into four age groups and their percentage as follows: 21 years and under 1 %, 22–24 years 92%, 25–27 years 5% and 28 years and elder were 2 % respectively. Most students at the time of the survey were single i.e. 91% and only 9% married. The ethnicity represents three groups mainly Malay 63%, Chinese 23%, Indians 12%, and other 2% only. Finally, most of the students who participated in the study were from USM 58% followed by UM 20%, UTM 21%, respectively.

Table 2. Demographic characteristics of participants

Demographic Variables	Categories	Percent
Gender	Female-Male	69.7%/30.3%
Age	21 and under/22-24/25-27/28 and elder	1%-92%- 5%- 2%
Marital status	Married -Unmarried	9%-91%
Ethnicity	Malay/Chinese/Indian/other	63%-23%-12%-2%
University affiliation	UM/USM/UTM	20 %-58 %- 21 %

Source: Author own conception

Table 3. Direct effects

S. No	Hypothesis	S.E.	C.R	p-value	Results
H1	BF → EI	.495	5.446	***	Accepted
H2	BF→ATE	.683	5.907	***	Accepted
H3	ATE→ EI	.236	5.069	***	Accepted
H4	EDU → EI	.359	6.441	***	Accepted
H5	EDU → ATE	.266	3.597	***	Accepted

Source: Author own calculation

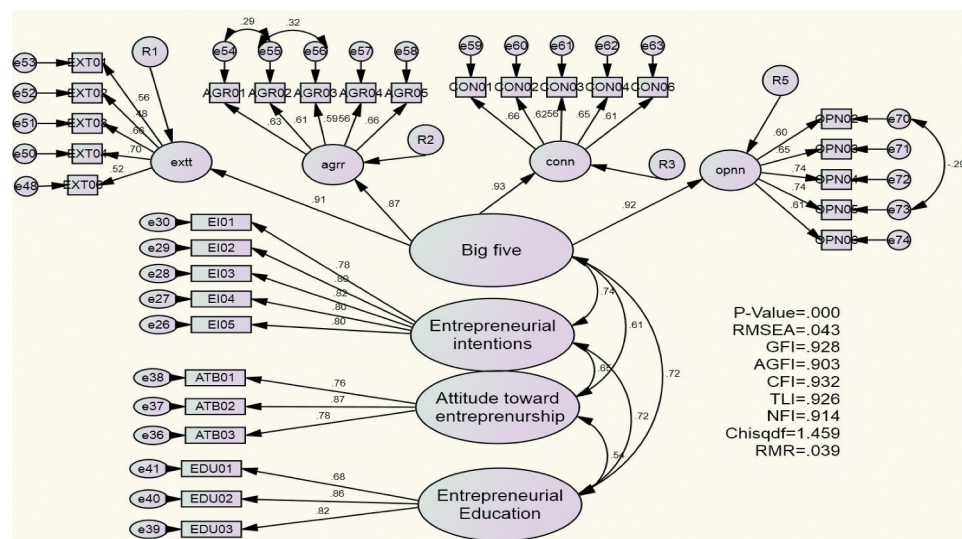
4.1. Measurement model

Assessing the validity of each construct with respective dimensions was subjected to confirmatory factor analysis (CFA); second-order CFA was first carried out. Standardized factor loadings less than 0.50 (Hair et al., 2010) were already removed (see Figure 2). The last step to achieve model fitness was to correlate error terms for the items which have modification indices above 40. Error terms e54 and e55, e55 and e56, e70 and e73, were correlated as they have relatively highest modification indices value. After all adjustments in the measurement model, the final values for the CMIN/DF = 1.459, GFI = 0.928, AGFI = 0.903, CFI = 0.932, TLI = 0.926, NFI = 0.914, RMSEA = 0.043 and RMR = 0.039 with Value .000 which show a good model fit (Arbuckle, 2013). Figure 2 shows the final measurement model.

Based on the factor loadings of all observed variables, the evidence for convergent validity was confirmed. All standardized factor loading estimations were more than .50, construct reliability (CR) more than 0.70, and average variance extracted (AVE) greater than 0.50. CFA analysis confirmed convergent validity (Hair et al., 2010). Additionally, according to construct reliabilities, the internal consistency of measures was also evidenced. Discriminant validity measured the extent to which a construct is truly distinct from other constructs. To assess discriminant validity, the Micro statistic excel tool was used by incorporating standard regression weights and correlation of all constructs. The values of discriminant validity were generated, and it confirmed that no validity concern exists.

Figure 2. Measurement model.

Source: Author own calculation



5. Result and discussion

To test direct effects, a structural model analysis was performed between exogenous and endogenous variables through AMOS 24. The results of the structural model confirmed a direct relationship between BF and EI with coefficient value 0.495, critical ratio (CR) 5.446, and p-value 0.000. Thus, BF positively influences EI and the proposed hypothesis H_1 is accepted. Similarly, in the analysis of hypothesis H_2 which proposed a direct relationship between BF and ATE the value of the path coefficient is 0.683; CR is 5.907 with p-value 0.00. Thus, BF positively influences ATE and, the proposed hypothesis H_2 is also accepted. In the analysis of hypothesis H_3 to test the direct relationship between ATE and EI, the value of the path coefficient is 0.236; CR is 5.069 with p-value 0.000. Thus, ATE positively influences EI and the proposed hypothesis H_3 is accepted. In the analysis of the direct relationship between EDU and EI, path coefficient value is 0.359; CR is 6.441 with a p-value 0.000. Thus, EDU positively influences EI and, the proposed hypothesis H_4 is accepted too. Finally, in the analysis of the direct relationship between EDU and ATE path coefficient value is 0.266; CR is 3.597 with p-value 0.000. Thus, EDU positively influences EI and, the proposed hypothesis H_5 is accepted see Table 3.

The mediating effect of attitude on the relationship between big five personality traits and entrepreneurial intentions is 0.10. The results of the mediation test for path 1, confirmed hypothesis H_6 stating ATE mediates the relationship between BF and EI; which to test that, current research study calculated the indirect effects of path BF→ATE→EI. As Table 4 shows before entering the attitude toward entrepreneurship in the model, the direct effect was 0.62 with CR 5.446 and p-value 0.000, which is an indication for the significant direct effect of BF on EI. For the next step ATE as mediating variable was entered in the model, then the direct effect of BF→EI was tested. The result showed reducing of path coefficient to 0.31 while the p-value was less than 0.00 (Table 4); but the direct effect of big-five personality traits on entrepreneurial intention was still significant. Calculating the indirect effect of the path BF→ATE→EI was the next stage to analysis mediation; as Table 4 shows, the indirect effect of BF on EI through ATE is 0.10. Additionally, to test the significance of path, the researcher tested p-values; for this reason, bootstrapping was used with 1000 iteration. The P-value of the indirect path became 0.001; as this value is less than 0.05, hypothesis H_6 is accepted. Thus, attitude toward entrepreneurship mediates the relationship between Big-five personality traits and entrepreneurial intention. Since the direct effects of big-five personality traits on entrepreneurial intention are significant as well when calculated with a mediator, therefore the mediation is partial as suggested by Baron and Kenny (1986).

The mediating effect of attitude on the relationship between entrepreneurial education and entrepreneurial intention is 0.06. The results of the mediation test for path II, confirmed hypothesis H_6 stating ATE mediates the relationship between EDU and EI; which to test that, the current study calculated the indirect effects of path EDU→ATE→EI. Table 4 indicates that before entering the attitude toward entrepreneurship in the model direct effect was 0.420 with critical value 5.441 and p-value 0.000. This indicates the significant direct effect of EDU on EI. At the next step ATE as a mediating variable was entered in the model and direct effect of EDU→EI was tested. The Path coefficient was reduced to 0.35 with a p-value of less than 0.002 (Table 4); but the direct effect of EDU on entrepreneurial intention was still significant. The next stage is to calculate the indirect effect of the path EDU→ATE→EI. To check the level of significance bootstrapping was performed at 1000 outcomes with a 95% p-value. It depicts that ATE mediates the relationship between EDU and EI with indirect effects 0.06 and with p-value .003. Hence, hypothesis H_7 also accepted stating attitude toward entrepreneurship mediates the relationship between entrepreneurial education and entrepreneurial intention. Since the direct effects of entrepreneurial education on entrepreneurial intention is still significant when calculated with a mediator, therefore the mediation is partial as suggested by Baron and Kenny (1986).

6. Conclusion

This study investigated the impact of big-five personality traits and entrepreneurial education on entrepreneurial intention through mediating the role of attitude towards entrepreneurship. The results have revealed that big-five personality traits, entrepreneurial education, and attitude toward entrepreneurship positively predicted entrepreneurial intention among students. Furthermore, attitude towards entrepreneurship mediated the relationship between big-five personality traits and entrepreneurial education with

Table 4. Mediation analysis

Hypothesis	Direct Beta w/o Med	CR & Sig	Direct Beta w/ Med	Sig	Indirect Beta	P-value (bootstrap)	Mediation type observed
BF→ATE→EI	0.620	5.446 (0.000)	0.310	5.446 (0.006)	0.10	0.001	Partial mediation
EDU→ATE→EI	0.420	6.441 (0.000)	0.350	6.441 (0.002)	0.06	0.003	Partial mediation

Source: Author own calculation

the entrepreneurial intention among students studying within three research-intensive Malaysian public universities. According to this, big-five personality traits (openness to experience, extraversion, conscientiousness, agreeableness, and neuroticism) which influence individuals to become an entrepreneur, in high level can be related to entrepreneurial intention (Zhao et al., 2010), especially among university students (Saeed et al., 2013); the traits which influence attitude towards entrepreneurship and consequently entrepreneurial intention (Geissler et al., 2012).

This study also approved the significant role of educational factors to generate an effective entrepreneurship view (Tam & Hansen, 2009). This is because entrepreneurial education can change a person's attitude towards entrepreneurship (Walter & Dohse, 2009). The attitude which positively increased by attending entrepreneurship educational programs. On the other hand, some other studies in Malaysia concluded that not attending an educational program would lead to make a negative attitude which could accordingly decrease entrepreneurial intention (Zain et al., 2010). This study contributes to the effectiveness of entrepreneurship education measured by the degree of entrepreneurship intention in Malaysia. Appropriate educational supports as a useful way for the effectiveness of entrepreneurship education in Malaysia can help to develop students' entrepreneurial attitudes and mindset and improve matching their skill expectations with their skill achievement. Universities can play a considerable role to promote entrepreneurship view by more focus on increasing entrepreneurial thinking, offering a different kind of vocational training workshops, giving opportunities to strategize business plan; so that, students will get chance to get some hands-on experience of the job and can respond to an ambiguous environment in the future career. Entrepreneurship education should be also able to provide students with an understanding of a business purpose, structure, and how the business interrelates with society and the economy. Keeping in focus Malaysia 2020 vision, entrepreneurial plans by creating more entrepreneurs are key elements for increasing business opportunities and developing country economy.

The findings of the current study suggest that entrepreneurial intention can be enhanced by working on students' attitude toward entrepreneurship, keeping their personality traits in contact, and fostering them via education to adopt an attitude towards entrepreneurship. The current study also recommended universities to focus on entrepreneurial education to improve students thinking towards entrepreneurship. If students' personalities and attitudes are aligned together, it can create a positive impact on entrepreneurial intention which in turn can improve entrepreneurship climate in the country and can benefit the economy. This study was conducted in the context of three major Malaysian research-intensive public-sector universities. The results of this study can be generalized to Malaysian universities only. Future research should replicate the study to other contexts with a larger sample size, so that will make results more generalizable.

Funding

The authors received no direct funding for this research.

Author details

Hanieh Alipour Bazkiaei¹
E-mail: louie.utm.20@gmail.com
Low Hock Heng¹
E-mail: h2low@utm.my
Noor Ullah Khan²
E-mail: noorullah.khan@nbs.nust.edu.pk
ORCID ID: <http://orcid.org/0000-0002-8766-7531>
Roselina Binti Ahmad Saufi³
E-mail: roselina@umk.edu.my
ORCID ID: <http://orcid.org/0000-0002-0433-1347>
Raja Suzana Raja Kasim³
E-mail: rajasuzana@umk.edu.my
ORCID ID: <http://orcid.org/0000-0002-1795-5562>
¹ Azman Hashim International Business School (AHIBS), University Technology Malaysia (UTM), Johor Bahru, Johor, 81310, Malaysia.
² Department of Human Resource Management NUST Business School National University of Sciences & Technology, Islamabad, Pakistan.

³ Universiti Malaysia Kelantan (UMK), Taman Bendahara, Kelantan, Malaysia.

Citation information

Cite this article as: Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students?, Hanieh Alipour Bazkiaei, Low Hock Heng, Noor Ullah Khan, Roselina Binti Ahmad Saufi & Raja Suzana Raja Kasim, *Cogent Business & Management* (2020), 7: 1801217.

References

- Aboelmaged, M. G. (2010). Predicting e-procurement adoption in a developing country: An empirical integration of technology acceptance model and theory of planned behaviour. *Industrial Management & Data Systems*, 110(3), 392–414. <https://doi.org/10.1108/02635571011030042>
- Ahmad, S., Ismail, M., & Buchanan, F. (2014). Examining the entrepreneurship curriculum in Malaysian polytechnics. *The International Journal of Management Education*, 12(3), 397–406. <https://doi.org/10.1016/j.ijme.2014.06.004>

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ali, M. H., Ismail, A., Alam, S. S., Makhbul, Z. M., & Omar, N. A. (2018). Exploring the theory of planned behaviour (TPB) in relation to a halal food scandal: The Malaysia Cadbury chocolate case. *International Food Research Journal*, 25(1), S79–S86. [http://www.ifrj.upm.edu.my/25%20\(07\)%202018%20supplementary%201%20-%20IFRJ18013.R1%20Edited.pdf](http://www.ifrj.upm.edu.my/25%20(07)%202018%20supplementary%201%20-%20IFRJ18013.R1%20Edited.pdf)
- Ambad, S., Azwa, N., & Damit, D. H. D. A. (2016). Determinants of entrepreneurial intention among undergraduate students in malaysia. *Procedia Economics and Finance*, 37, 108–114. [https://doi.org/10.1016/S2212-5671\(16\)30100-9](https://doi.org/10.1016/S2212-5671(16)30100-9)
- Anumnu, S. I. (2013, January). Knowledge management and development of entrepreneurial skills among students in vocational technical institutions in Nigeria. In *Proceedings of the 10th International Conference on Intellectual Capital, knowledge Management and Organisational Learning: ICICKM 2013* (pp. 37). Academic Conferences Limited.
- Arbuckle, J. L. (2013). *IBM AMOS 24 user's guide*. Amos Development Corporation.
- Ariani, D. W. (2013). Personality and learning motivation. *European Journal of Business and Management*, 5(10), 26–38. <https://iiste.org/Journals/index.php/EJBM/article/view/5142>
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40(4), 471–499. <https://doi.org/10.1348/014466601164939>
- Ashour, S. (2016). Social and business entrepreneurship as career options for university students in the United Arab Emirates: The drive–preparedness gap. *Cogent Education*, 3(1), 1234425. <https://doi.org/10.1080/2331186X.2016.1234425>
- Autio, E., Keeley, R., Klofsten, M., GC Parker, G., & Hay, M. (2001). Entrepreneurial intent among students in Scandinavia and in the USA. *Enterprise and Innovation Management Studies*, 2(2), 145–160. <https://doi.org/10.1080/14632440110094632>
- Baron, R. M., & Kenny, D. A. 1986. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations.. *Journal of personality and social psychology*, 51(6),1173–1182. doi:doi.10.1037/0022-3514.51.6.1173
- Barrick, M. R., Mount, M. K., & Judge, T. A. (2001). Personality and performance at the beginning of the new millennium: What do we know and where do we go next? *International Journal of Selection and Assessment*, 9(1–2), 9–30. <https://doi.org/10.1111/1468-2389.00160>
- Barringer, B. R. (2015). *Entrepreneurship: Successfully launching new ventures*. Pearson Education India.
- Blueprint, M. E. (2015). *Blueprint 2015–2025 (Higher Education)*. Ministry of Education.
- Brandstätter, H. (2011). Personality aspects of entrepreneurship: A look at five meta-analyses. *Personality and Individual Differences*, 51(3), 222–230. <https://doi.org/10.1016/j.paid.2010.07.007>
- Costa, P. T., Jr, & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and Individual Differences*, 13(6), 653–665. [https://doi.org/10.1016/0191-8869\(92\)90236-I](https://doi.org/10.1016/0191-8869(92)90236-I)
- Do Paço, A. M. F., Ferreira, J. M., Raposo, M., Rodrigues, R. G., & Dinis, A. (2011). Behaviours and entrepreneurial intention: Empirical findings about secondary students. *Journal of International Entrepreneurship*, 9(1), 20–38. <https://doi.org/10.1007/s10843-010-0071-9>
- Dohse, D., & Walter, S. G. (2010). *The role of entrepreneurship education and regional context in forming entrepreneurial intentions* (No. 2010, 18). Document de treball de l'IEB.
- Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the unified theory of acceptance and use of technology (UTAUT): Towards a revised theoretical model. *Information Systems Frontiers*, 21(3), 719–734. <https://doi.org/10.1007/s10796-017-9774-y>
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers.
- Ekpoh, U. I., & Edet, A. O. (2011). Entrepreneurship education and career intentions of tertiary education students in Akwa Ibom and Cross River States, Nigeria. *International Education Studies*, 4(1), 172–178. <https://doi.org/10.5539/ies.v4n1p172>
- Fai, E. K., Anderson, C., & Ferreros, V. (2017). Role of attitudes and intentions in predicting adherence to oral diabetes medications. *Endocrine Connections*, 6(2), 63–70. <https://doi.org/10.1530/EC-16-0093>
- Fayolle, A., Gailly, B., & Lassas-Clerc, N. (2006). Effect and counter-effect of entrepreneurship education and social context on student's intentions. *Estudios de economía aplicada*, 24(2), 509–524. <https://dialnet.unirioja.es/descarga/articulo/2103744.pdf>
- Ferreira, J. J., Raposo, M. L., Rodrigues, R. G., Dinis, A., & Do Paço, A. (2012). A model of entrepreneurial intention: An application of the psychological and behavioral approaches. *Journal of Small Business and Enterprise Development*, 19(3), 424–440. <https://doi.org/10.1108/14626001211250144>
- Fini, R., Grimaldi, R., Marzocchi, G. L., & Sobrero, M. (2012). The determinants of corporate entrepreneurial intention within small and newly established firms. *Entrepreneurship Theory and Practice*, 36(2), 387–414. <https://doi.org/10.1111/j.1540-6520.2010.00411.x>
- Fishbein, M., & Ajzen, I. (1977). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, Mass: Addison-Wesley Publishing Company.
- Florin, J., Karri, R., & Rossiter, N. (2007). Fostering entrepreneurial drive in business education: An attitudinal approach. *Journal of Management Education*, 31(1), 17–42. <https://doi.org/10.1177/1052562905282023>
- Frese, M., & Gielnik, M. M. (2014). The psychology of entrepreneurship. *Annual Review of Organizational Psychology and Organizational Behavior*, 1(1), 413–438. <https://doi.org/10.1146/annurev-orgpsych-031413-091326>
- Gallant, M., Majumdar, S., & Varadarajan, D. (2010). *Outlook of female students towards entrepreneurship*. Education, Business and Society: Contemporary Middle Eastern Issues.
- Geissler, M., Schacht, M., & Zanger, C. (2012). the concept of university entrepreneurial climate and its impact on students' view on business creation. In *ICSB World Conference Proceedings* (Vol. 2, No. 1, p. 1). International Council for Small Business (ICSB).
- Gelard, P., & Saleh, K. E. (2011). Impact of some contextual factors on entrepreneurial intention of university students. *African Journal of Business Management*, 5(26), 10707. <https://academicjournals.org/journal/AJBM/article-abstract/8EC301015857>
- Grine, F., Fares, D., & Meguellati, A. (2015). Islamic spirituality and entrepreneurship: A case study of women entrepreneurs in Malaysia. *The Journal of Happiness & Well-Being*, 3(1), 41–56. <http://www.journalofhappiness.net/article/islamic-spirituality-and-entrepreneur>

- ship-a-case-study-of-women-entrepreneurs-in-malaysia
- Guerrero, M., Rialp, J., & Urbano, D. (2008). The impact of desirability and feasibility on entrepreneurial intentions: A structural equation model. *International Entrepreneurship and Management Journal*, 4(1), 35–50. <https://doi.org/10.1007/s11365-006-0032-x>
- Guerrero, M., Urbano, D., & Fayolle, A. (2016). Entrepreneurial activity and regional competitiveness: Evidence from European entrepreneurial universities. *The Journal of Technology Transfer*, 41(1), 105–131. <https://doi.org/10.1007/s10961-014-9377-4>
- Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). *Multivariate data analysis: A global perspective* (Vol. 7). Upper Saddle River, N.J.; London: Pearson Education.
- Hu, M. L. (2008). A study of the personality traits, environment and entrepreneurial attitude of technical institute's hospitality management students. *J. Hosp. Home Econ*, 5(4), 349–375.
- Ismail, A., Abdullah, A. G. K., & Othman, A. T. (2010). Acceptance of entrepreneurship culture module at the Malaysian institutes of higher learning: A gender perspective. *Research Journal of International Studies*, 15, 46–54.
- Ismail, H. C., Shamsudin, F. M., & Chowdhury, M. S. (2012). An exploratory study of motivational factors on women entrepreneurship venturing in Malaysia. *Business and Economic Research*, 2(1), 1–13. doi:doi.10.5296/ber.v2i1.1434
- Israr, M., & Saleem, M. (2018). Entrepreneurial intentions among university students in Italy. *Journal of Global Entrepreneurship Research*, 8(1), 20. doi:doi.10.1186/s40497-018-0107-5
- Izedonmi, P. F. (2010). The effect of entrepreneurship education on students' entrepreneurial intentions. *Global Journal of Management and Business Research*, 10(6), 49–60. <https://journalofbusiness.org/index.php/GJMBR/article/view/217>
- Jing, L. L., & Sung, M. (2012). University students personality traits & entrepreneurial intention: Using entrepreneurship & entrepreneurial attitude as mediating variable. *International Journal of Economic Research*, 3(3), 76–82. [https://www.ijeronline.com/documents/volumes/Vol%203%20issue%203/08%20-%2076%20-%2082%20ijer%20v3i3%20mj%202012%20chen%20&%20Sung..2012.5.23%20\(june%209th\).pdf](https://www.ijeronline.com/documents/volumes/Vol%203%20issue%203/08%20-%2076%20-%2082%20ijer%20v3i3%20mj%202012%20chen%20&%20Sung..2012.5.23%20(june%209th).pdf)
- John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: history, measurement, and theoretical perspectives. *Handbook of Personality: Theory and Research*, 2(1999), 102–138. <https://psycnet.apa.org/record/1999-04371-004>
- Kadir, M. B. A., Salim, M., & Kamarudin, H. (2012). The relationship between educational support and entrepreneurial intentions in Malaysian higher learning institution. *Procedia-Social and Behavioral Sciences*, 69, 2164–2173. <https://doi.org/10.1016/j.sbspro.2012.12.182>
- Kautonen, T., Van Gelderen, M., & Tornikoski, E. T. (2013). Predicting entrepreneurial behaviour: A test of the theory of planned behaviour. *Applied Economics*, 45(6), 697–707. <https://doi.org/10.1080/00036846.2011.610750>
- Koe, W.-L., Rizal Sa'ari, J., Abdul Majid, I., & Ismail, K. (2012). Determinants of entrepreneurial intention among millennial generation. *Procedia-Social and Behavioral Sciences*, 40, 197–208. <https://doi.org/10.1016/j.sbspro.2012.03.181>
- Kolvereid, L., & Isaksen, E. (2006). New business start-up and subsequent entry into self-employment. *Journal of Business Venturing*, 21(6), 866–885. <https://doi.org/10.1016/j.jbusvent.2005.06.008>
- Kritikos, A. S. (2014). *Entrepreneurs and their impact on jobs and economic growth*. IZA World of Labor.
- Krueger, N. F., Jr, Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5–6), 411–432. [https://doi.org/10.1016/S0883-9026\(98\)00033-0](https://doi.org/10.1016/S0883-9026(98)00033-0)
- Li, J., Wu, S., & Wu, L. (2008). The impact of higher education on entrepreneurial intentions of university students in China. *Journal of Small Business and Enterprise Development*, 15(4), 752–774. <https://doi.org/10.1108/14626000810917843>
- Liang, C., Chang, C. C., & Hsu, Y. (2013). Personality and psychological factors predict imagination: Evidence from Taiwan. *Learning and Individual Differences*, 27(2), 67–74. <https://doi.org/10.1016/j.lindif.2013.06.010>
- Liang, C., & Lin, W. S. (2015). The interplay of creativity. *Imagination, Personality Traits, and Academic Performance*. *Imagination, Cognition and Personality*, 34(3), 270–290. <https://doi.org/10.1177/0276236614568638>
- Lin, J.-S., Liang, C.-T., Chang, W.-S., & Liang, C. (2015). Relation between personality traits and imaginative capability of engineering students. *Internafional Journal of Engineering Educafion*, 31(1), 23–36. <https://dialnet.unirioja.es/servlet/articulo?codigo=6921673>
- Liñán, F. (2004). Intention-based models of entrepreneurship education. *Piccola Impresa/Small Business*, 3(1), 11–35. <https://www.researchgate.net/publication/235937886>
- Liñán, F., & Chen, Y. W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 33(3), 593–617. <https://doi.org/10.1111/j.1540-6520.2009.00318.x>
- Liñán, F., & Santos, F. J. (2007). Does social capital affect entrepreneurial intentions? *International Advances in Economic Research*. 13(4), 443–453. <https://doi.org/10.1007/s11294-007-9109-8>
- Luthje, C., & Franke, N. (2003). the 'making' of an entrepreneur: testing a model of entrepreneurial intent among engineering students at MIT. *R&d Management*, 33(1), 135–147. <https://doi.org/10.1111/1467-9310.00288> 2 doi:10.1111/radm.2003.33.issue-2
- Maalu, E. W. K. J. K. (2012). Perception of entrepreneurship as a career by students from selected public secondary schools in Nairobi. *Perception*, 2(3), 101–120. <http://erepository.uonbi.ac.ke:8080/xmlui/handle/123456789/9772>
- Major, D. A., Turner, J. E., & Fletcher, T. D. (2006). Linking proactive personality and the Big Five to motivation to learn and development activity. *Journal of Applied Psychology*, 91(4), 927. <https://doi.org/10.1037/0021-9010.91.4.927>
- Martin, B. C., McNally, J. J., & Kay, M. J. (2013). Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, 28(2), 211–224. <https://doi.org/10.1016/j.jbusvent.2012.03.002>
- Martínez-González, J. A., Kobylinska, U., García-Rodríguez, F. J., & Nazarko, L. (2019). Antecedents of entrepreneurial intention among young people: Model and regional evidence. *Sustainability*, 11(24), 6993. <https://doi.org/10.3390/su11246993>
- McStay, D., 2008. *An investigation of undergraduate student self-employment intention and the impact of entrepreneurship education and previous entrepreneurial experience* (Doctoral dissertation, Bond University).

- Moi, T., Adeline, Y. L., & Dyana, M. L. (2011). Young adult responses to entrepreneurial intent. *Researchers World*, 2(3), 37. <http://www.researchersworld.com/index.php/rworld/article/view/481>
- Monitor, Global Entrepreneurship. (2016). GEM 2015.
- Nasiru, A., Keat, O. Y., & Bhatti, M. A. (2015). Influence of perceived university support perceived effective entrepreneurship education, perceived creativity disposition, entrepreneurial passion for inventing and founding on entrepreneurial intention. *Mediterranean Journal of Social Sciences*, 6(3), 88. DOI: 10.5901/mjss.2015.v6n3p88
- Nurmi, P., & Paasio, K. (2007). Entrepreneurship in Finnish universities. *Education+ Training*, 49(1), 56–65. <https://doi.org/10.1108/00400910710729884>
- Rahim, H. L., Abdul Kadir, M. A. B., Zainal Abidin, Z., Junid, J., Kamaruddin, L. M., Mohd Lajin, N. F., Buyong, S. Z., & Bakri, A. A. (2015). Entrepreneurship education in Malaysia: A critical review. *Journal of Technology Management and Business*, 2(2), 1–11. <https://publisher.uthm.edu.my/ojs/index.php/jtmb/article/view/1162>
- Rothmann, S., & Coetzer, E. P. (2003). The big five personality dimensions and job performance. *SA Journal of Industrial Psychology*, 29(1), 68–74. <https://doi.org/10.4102/sajip.v29i1.88>
- Saeed, R., Nayyab, H. H., Rashied, H., Lodhi, R. N., Musawar, S., & Iqbal, A. (2013). Who is the most potential entrepreneur? A case of Pakistan. *Middle-East Journal of Scientific Research*, 17(9), 1307–1315. [https://www.idosi.org/mejsr/mejsr17\(9\)13/16.pdf](https://www.idosi.org/mejsr/mejsr17(9)13/16.pdf)
- Schwarz, E. J., Wdowiak, M. A., Almer-Jarz, D. A., & Breitenacker, R. J. (2009). The effects of attitudes and perceived environment conditions on students' entrepreneurial intent. *Education+ Training*.
- Shane, S., Locke, E. A., & Collins, C. J. (2003). Entrepreneurial motivation. *Human Resource Management Review*, 13(2), 257–279. [https://doi.org/10.1016/S1053-4822\(03\)00017-2](https://doi.org/10.1016/S1053-4822(03)00017-2)
- Shane, S., & Nicolaou, N. (2013). The genetics of entrepreneurial performance. *International Small Business Journal*, 31(5), 473–495. <https://doi.org/10.1177/0266242613485767>
- Shook, C. L., & Bratianu, C. (2010). Entrepreneurial intent in a transitional economy: An application of the theory of planned behavior to Romanian students. *International Entrepreneurship and Management Journal*, 6(3), 231–247. <https://doi.org/10.1007/s11365-008-0091-2>
- Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, 15(2), 113–134. [https://doi.org/10.1016/S0883-9026\(98\)00003-2](https://doi.org/10.1016/S0883-9026(98)00003-2)
- Singer, L., & Millage, P. (2013). The interaction of leadership and personality among Chinese and American nascent entrepreneurs. *Journal of Technology Management in China*, 8(1), 44–54. <https://doi.org/10.1108/JTMC-04-2013-0020>
- Singh, G., & DeNoble, A. (2003). Views on self-employment and personality: An exploratory study. *Journal of Developmental Entrepreneurship*, 8(3), 265. <https://search.proquest.com/openview/ad14f323f94be5991e847e6a30d922e9/1?pq-origsite=gscholar&cbl=32118>
- Sipon, M., Phie, Z. A. L., Rahman, F. A., & Manaf, U. K. A. (2015). Teacher's entrepreneurial pedagogical content knowledge roles in human resource development. *International Journal of Management and Applied Research*, 2(1), 35–44. <https://doi.org/10.18646/2056.21.15-003>
- Stewart, W. H., & Roth, P. L. (2007). A meta-analysis of achievement motivation differences between entrepreneurs and managers. *Journal of Small Business Management*, 45(4), 401–421. <https://doi.org/10.1111/j.1540-627X.2007.00220.x>
- Tam, H., & Hansen, G. (2009). Does entrepreneurship education make students more entrepreneurial? An empirical pilot studies. In *United States Association for Small Business and Entrepreneurship. Conference Proceedings* (pp. 483). United States Association for Small Business and Entrepreneurship.
- Teixeira, Aurora A.C., & Davey, T. (2010). Attitudes of higher education students to new venture creation: The relevance of competencies and contextual factors. *Industry and Higher Education*, 24(5), 323–341. doi:doi.10.5367/ih.2010.0005
- Touzani, M., Fatma, S., & Meriem, L. M. (2015). Country-of-origin and emerging countries: Revisiting a complex relationship. *Qualitative Market Research: An International Journal*, 18(1), 48–68. <https://doi.org/10.1108/QMR-04-2012-0019>
- Turker, D., & Selcuk, S. S. (2009). Which factors affect entrepreneurial intention of university students? *Journal of European Industrial Training*, 33(2), 142–159. <https://doi.org/10.1108/03090590910939049>
- Urbano, D., Aparicio, S., Guerrero, M., Noguera, M., & Torrent-Sellens, J. (2017). Institutional determinants of student employer entrepreneurs at Catalan universities. *Technological Forecasting and Social Change*, 123(10), 271–282. <https://doi.org/10.1016/j.techfore.2016.06.021>
- Valliere, D., & Peterson, R. (2009). Entrepreneurship and economic growth: Evidence from emerging and developed countries. *Entrepreneurship & Regional Development*, 21(5–6), 459–480. <https://doi.org/10.1080/0898562080232723>
- Volery, T., & Mueller, S. (2006). A conceptual framework for testing the effectiveness of entrepreneurship education programs towards entrepreneurial intention. In Fueglistaller, Urs (ed.): *Understanding the Regulatory Climate for Entrepreneurship and SMEs: Papers presented to the Rencontres de St-Gall*, 18–21. <https://www.alexandria.unisg.ch/publications/35076>
- Walter, S. G., & Dohse, D. (2009). The interplay between entrepreneurship education and regional knowledge potential in forming entrepreneurial intentions (No. 1549). Kiel working paper.
- Walter, S. G., Praveen Parboteeah, K., & Walter, A. (2013). University departments and self-employment intentions of business students: A cross-level analysis. *Entrepreneurship Theory and Practice*, 37(2), 175–200. <https://doi.org/10.1111/j.1540-6520.2011.00460.x>
- Wang, W., Lu, W., & Millington, J. K. (2011). Determinants of entrepreneurial intention among college students in China and USA. *Journal of Global Entrepreneurship Research*, 1(1), 35–44. <https://pdfs.semanticscholar.org/9800/5ce764bed15d419ef07edc6f589068237ad9.pdf>
- Yap, S. C., Anusic, I., & Lucas, R. E. (2012). Does personality moderate reaction and adaptation to major life events? Evidence from the British household panel survey. *Journal of Research in Personality*, 46(5), 477–488. <https://doi.org/10.1016/j.jrp.2012.05.005>
- Yusoff, B., Hakimim, M. N., Zainol, F. A., & Bin Ibrahim, M. D. (2015). Entrepreneurship education in Malaysia's public institutions of higher learning—A review of the current practices. *International Education Studies*, 8(1), 17–28. <http://www.ccsenet.org/journal/index.php/ies/article/view/40380>
- Yusuf, B. N. M., & Kamil, S. (2015). Relationships of Big Five Personality Traits and Locus of Control on Entrepreneurship Intentions among Students in Higher Learning Institutions. *Global Journal of Research in Social Sciences*, 2(1), 65–73. http://gpcpublishing.org/index.php/gjr/article/view/198/pdf_9

- Zain, Z. M., Akram, A. M., & Ghani, E. K. (2010). Entrepreneurship intention among Malaysian business students. *Canadian Social Science*, 6(3), 34–44. <http://www.cscanada.net/index.php/css/article/view/j.css.1923669720100603.003>
- Zainuddin, M. N. (2012). University's entrepreneurship education: Creating meaningful impression for New Generation. Edited by Thierry Burger-Helmchen:175.
- Zhao, H., & Seibert, S. E. (2006). The big five personality dimensions and entrepreneurial status: A meta-analytical review. *Journal of Applied Psychology*, 91(2), 259. <https://doi.org/10.1037/0021-9010.91.2.259>
- Zhao, H., Seibert, S. E., & Lumpkin, G. T. (2010). The relationship of personality to entrepreneurial intentions and performance: A meta-analytic review. *Journal of Management*, 36(2), 381–404. <https://doi.org/10.1177/0149206309335187>

Appendix I

Table A1. Survey measures

Items	Source
Entrepreneurial Intentions	
I am ready to do anything to be an entrepreneur My professional goal is to become an entrepreneur I will make every effort to start and run my own firm I am determined to create a firm in the future I have very seriously thought of starting a business. I have the firm intention to start a firm some day	Liñán and Chen (2009)
Attitude toward Entrepreneurship	
Being an entrepreneur implies more advantages than disadvantages to me A career as entrepreneur is attractive for me If I had the opportunity and resources, I'd like to start a business Being an entrepreneur would entail great satisfactions for me Among various options, I would rather be an entrepreneur	Liñán and Chen (2009)
Big-Five Personality Trait	
I see myself as someone who is talkative is not reserved generates a lot of enthusiasm has an assertive personality is not shy, inhibited is helpful and unselfish with others is generally trusting is considerate and kind to almost everyone does a thorough job does not tend to be disorganized does things efficiently makes plans and follows through with them is not relaxed, handles stress well. Worries a lot Can be moody is original, comes up with new ideas is curious about many different things is ingenious, a deep thinker has an active imagination likes to reflect, play with ideas has a lot of artistic interests is sophisticated in art, music, or literature	John and Srivastava (1999)
Entrepreneurial Education	
The education in university encourages me to develop creative ideas for being an entrepreneur My university provides the necessary knowledge bout entrepreneurship My university develops my entrepreneurial skills and abilities	Turker and Selcuk (2009)



© 2020 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

You are free to:

Share — copy and redistribute the material in any medium or format.

Adapt — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.

Under the following terms:

Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made.

You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

No additional restrictions

You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.



***Cogent Business & Management* (ISSN:) is published by Cogent OA, part of Taylor & Francis Group.**

Publishing with Cogent OA ensures:

- Immediate, universal access to your article on publication
- High visibility and discoverability via the Cogent OA website as well as Taylor & Francis Online
- Download and citation statistics for your article
- Rapid online publication
- Input from, and dialog with, expert editors and editorial boards
- Retention of full copyright of your article
- Guaranteed legacy preservation of your article
- Discounts and waivers for authors in developing regions

Submit your manuscript to a Cogent OA journal at www.CogentOA.com

