Journal of Infrastructure, Policy and Development 2024, 8(10), 4974.
https://doi.org/10.24294/jipd.v8i10.4974

Article

Examining the mediating role of the theory of planned behaviour in the links between personality, education, opportunities and entrepreneurial intentions

Hee Song Ng[1,*], T. Ramayah[2], Daisy Mui Hung Kee[2], Mohammad Jamal Khan[3], Rizwan Ullah Khan[4]

[1] School of Business, UOW Malaysia KDU Penang University College, Penang 10400, Malaysia
[2] School of Management, Universiti Sains Malaysia (USM), Penang 11800, Malaysia
[3] College of Health Sciences, Saudi Electronic University, Riyadh 11673, Saudi Arabia
[4] Effat College of Business, Effat University, Jeddah 34689, Saudi Arabia
*** Corresponding author:** Hee Song Ng, ngheesongphd@gmail.com

CITATION

Ng HS, Ramayah T, Kee DMH, et al. (2024). Examining mediating role of theory of planned behaviour in the links between personality, education, opportunities and entrepreneurial intentions. Journal of Infrastructure, Policy and Development. 8(10): 4974.
https://doi.org/10.24294/jipd.v8i10.4974

ARTICLE INFO

Received: 4 March 2024
Accepted: 16 May 2024
Available online: 26 September 2024

Abstract: Entrepreneurial intentions, considered to be the best predictor of entrepreneurial behaviour, have attracted extensive attention among academics, practitioners, and policymakers. This study examines the mediating role of the theory of planned behaviour between university students' proactive personality, entrepreneurship education, entrepreneurial opportunities, and entrepreneurial intentions. The results of this study showed that both attitudes toward entrepreneurship and perceived behavioural control mediated these relationships, except that perceived behavioural control did not mediate the effect of entrepreneurship education on entrepreneurial intentions, and subject norm did not mediate any relationship. Lastly, this study guides universities, policymakers and practitioners to fully focus on developing attitude entrepreneurship and perceived behaviour control through education and training among graduates and employees. Suppose there is a presence of good entrepreneurial opportunities. In that case, they will form stronger intentions to start new businesses and expand their businesses to drive socio-economic growth, innovation and job creation among graduates.

Keywords: theory of planned behaviour; proactive personality; entrepreneurship education; entrepreneurial opportunities; entrepreneurial intentions

1. Introduction

As the number of jobs is dwindling and unemployed graduates are increasing by the day, more efforts are geared toward entrepreneurship as well as small and medium-sized enterprises (SMEs) to drive economic development and urgently address the issue of unemployment among the youth (Balder et al., 2020; Sanyang and Huang, 2010). Indeed, entrepreneurship has emerged as the economic engine and social development worldwide, where entrepreneurial activities breed innovation, inject competitive pressures and develop domestic economic development in terms of Gross Domestic Product throughout the world (Lopes et al., 2023; Montañés-Del-Río and Medina-Garrido 2020; Teixeira et al., 2017). As developing countries transition from an industrial society to an innovation-driven economy, it becomes clear that they need an army of well-informed and highly-skilled educated graduate entrepreneurs to handle seemingly insurmountable complex, technical challenges of entrepreneurship effectively.

Meanwhile, developing countries have heavily leveraged foreign direct investments for economic growth and sustainability (Fagbemi and Osinubi, 2020;

Srivastava et al., 2023). However, the United Nations Conference on Trade and Development (UNCTAD) (2021) asserted that although global investment is set to recover some lost ground, uncertainty on foreign direct investment flow remains, stressing that foreign direct investment flows plunged globally by 35% in 2020 and unfavourable environment condition on entrepreneurial ventures due to the COVID-19 pandemic crisis (Krishnan et al., 2022). More specifically, the Economic and Social Commission for Asia and the Pacific (ESCAP) (2020) acknowledged that the Asia-Pacific region had suffered a decline in foreign direct investment inflows from 45 per cent to 35 per cent and that these trends will likely continue throughout 2021. The ongoing upheaval of Global Trade Wars between the USA and China and Russia - Ukraine Wars are causing worldwide disruptions to trade and investment, affecting global automakers, hoteliers, and food and fuel consumers (Lopes et al., 2023; Ruta, 2022; Welsh et al., 2021). This adverse environment has lessened self-employment intentions among students (Hermadex-Sanchez et al., 2020).

1.1. Government role

Due to the undulating nature of the world economies, the government has urgently placed entrepreneurship and innovation as a national priority to increase youth interest in entrepreneurship. This is to stimulate business opportunities in a variety of different industries so that more graduate entrepreneurs who have entrepreneurial intentions to join entrepreneurship can start their businesses (Bazkiaei et al., 2021; Ni et al., 2012; Stel et al., 2005; Vial, 2017).

Despite massive investment in entrepreneurship development initiatives, Malaysia, as a developing country, still ranks 58th on the Global Entrepreneurship Development Index (Ács et al., 2018; Ramos-Rodríguez et al., 2015). There is a disconnect between entrepreneurial entry and success in managing scalable start-ups and SMEs. In other words, the disparity in the rates of graduate entrepreneurs remains wide. Hence, policymakers continue to conduct in-depth research and scout for a fresh breed of graduates with good attitudes toward entrepreneurship, perceived behavioural control, and entrepreneurial intentions to become entrepreneurs.

1.2. Entrepreneurship and graduate entrepreneurship

Vamvaka et al. (2020) stressed that the basic argument underlying intention-based models is that entrepreneurship is a planned, volitionally controlled behaviour in which individuals (graduates and budding entrepreneurs) develop entrepreneurial intentions over time before initiating actions to create, sustain, and transform organisations. Indeed, graduate entrepreneurs play an important role in understanding and solving technical problems in high-tech products and services. In fact, graduate entrepreneurship is a way to solve the issue of graduate unemployment and poverty eradication. Therefore, strong entrepreneurial intentions are necessary to promote entrepreneurship and venture creation (Martín-Navarro et al., 2023; Yoopetch, 2021).

The extant literature reviewed that there is a paucity of attention paid to the mediating roles of attitude toward entrepreneurship, subject norm and perceived behavioural control on the relationships between the three core independent variables and entrepreneurial intentions among students. Although the interpretation and

conceptualisation of entrepreneurial intentions are well developed, the mediating role of the attitude toward entrepreneurship, subjective norm, and perceived behavioural control is relatively unknown and under-theorised (Memon et al., 2018; Shoaib et al., 2021; Srivastava et al., 2023). Furthermore, literature on the mediation effect and key antecedents of entrepreneurial intentions remain inconclusive and fragmented in the diverse fields of economics, entrepreneurship, and psychology (Ferreira et al., 2012; Ramos-Rodríguez et al., 2015).

1.3. The objectives

Hence, this study aims to investigate the mediating role of attitude toward entrepreneurship, subjective norm and perceived behavioural control on the effects of proactive personality, entrepreneurship education, and entrepreneurial opportunities on entrepreneurial intentions among university students. The rationale for choosing these three variables is based on the extant literature that highlighted their significant roles in forming strong entrepreneurial intentions (Chandler and Jansen, 1992; Crant, 1996; Karimi et al., 2016; Ng et al., 2021).

2. Literature review

2.1. Theory of planned behaviour

The theory of planned behaviour (TPB) is an extension of the theory of reasoned action (Sampene et al., 2023; Staats, 2004; Tatarko and Schmidt, 2016). The theory of planned behaviour consisting of attitude toward entrepreneurship, subjective norm and perceived behavioural control is widely used to explain and predict entrepreneurial intentions to engage in entrepreneurial behaviour (Krueger, 2009; Lopes et al., 2023). Although there are some controversies about its contributions, the theory of planned behaviour remains the most widely established predictor theory of entrepreneurial activities (Srivastava et al., 2023; Tornikoski and Maalaoui, 2019).

2.2. Attitude toward entrepreneurship

Attitude is a psychological parameter built on one's experiences. It is arguably a socially constructed phenomenon in universities (Fayolle and Liñán, 2014). Attitude toward entrepreneurship refers to the degree to which an individual has a favourable or unfavourable appraisal of entrepreneurial behaviour under scrutiny (Rippa et al., 2020). In entrepreneurship, if an individual has a positive attitude toward entrepreneurship and self-employment, then the individual has a stronger desire to become an entrepreneur (Liñán and Chen, 2009). Undeniably, attitude toward entrepreneurship is one of the important factors shaping a person's desire to start an entrepreneurial career to own a business (Kautonen et al., 2015; Souitaris et al., 2007).

2.3. Subjective norm

Subjective norm refers to the belief and perception about whether peers and people important to individuals approve or disapprove of engaging in entrepreneurial activity (Martín-Navarro et al., 2023; Utami, 2017). Generally, people can exercise social pressure to influence individuals who care what others think of them and their

motivation to comply with the opinions of others, even if they are not inclined toward the intention and its behavioural consequences (Hardin-Fanning and Ricks, 2017). It can be divided into descriptive and injunctive norms, which have an independent predictive function on individual behaviour intention (Xu et al., 2022). Subjective norm plays a relatively more important role in forming entrepreneurial intentions for individuals who are highly concerned with others' approval than for individuals who are not particularly concerned with social approval (Latimer and Ginis, 2005). However, Walker et al. (2013) asserted that subjective norms had a limited relationship with intentions.

2.4. Perceived behavioural control

Perceived behavioural control refers to the perception of the ease or difficulty of enacting a behaviour. It is similar to self-efficacy or individual confidence (Barlett 2019). Trafimow et al. (2002) asserted that Ajzen's concept of perceived behavioural control is an amalgamation of two variables, a) perceived control and b) perceived difficulty. Yzer (2012) asserted that perceived behavioural control is a function of individuals' beliefs about the presence or absence of requisite resources and opportunities. Perceived behavioural control reflects beliefs about self-efficacy to become an entrepreneur and individuals who can overcome setbacks in implementing their entrepreneurial intentions (Ajzen, 2002; Srivastava et al., 2023). It is important to note that most studies have used perceived behavioural control and self-efficacy interchangeably as predictors of entrepreneurial intentions as both of them reflect the personal judgment of an individual about their ability to perform a behaviour (Manstead, 2012; Parkinson et al., 2017).

2.5. Proactive personality

Proactive personality refers to the eminent trait of proactively taking action to control personal and situational factors and achieve goals. It is a unique dispositional characteristic defined as an entrepreneurial behavioural tendency toward taking personal initiatives in creating a favourable environment (Awang et al., 2016; Bateman and Crant, 1993; Lopes et al., 2023). Paul and Shrivastava (2016) asserted that proactive personality could be used as a predictive variable to predict entrepreneurial intentions, stressing that people who have never been entrepreneurs, with proactive behaviour have better prospects of success as entrepreneurs (Altinay et al., 2019; Martín-Navarro et al., 2023). A proactive personality is widely seen as the crucial antecedent of entrepreneurial intentions because it is an active attempt made by people to effect changes in entrepreneurial dynamics and the external environment (Hu et al., 2018; Martín-Navarro et al., 2023). The dynamic nature of the business environment calls for graduates with a proactive personality to seize entrepreneurial opportunities and work toward building entrepreneurial intentions by developing and launching technology-based start-ups (Hmieleski and Corbett, 2006).

2.6. Entrepreneurship education

Since the early 1980s, entrepreneurship has become one of the most popular and active fields of research within the more general field of business administration or

management (Ramos-Rodríguez et al., 2015). Entrepreneurship education refers to a collection of formalised teachings and training in theory and practices that educate students interested in participating in socio-economic development through entrepreneurial initiatives (Adelaja, 2021; Awang et al., 2016; Nguyen et al., 2019; Rippa et al., 2020; UNESCO, 2021). Entrepreneurship education enhances awareness and mindsets of the importance of entrepreneurship in job creation (Arshad et al., 2018; Ayodele et al., 2021; Martín-Navarro et al., 2023). Indeed, universities focus on final-year undergraduates and goad them to take up entrepreneurship as a career choice and become job creators rather than job seekers (Bazan et al., 2019; Chandler and Jansen, 1992; Sidratulmunthah et al., 2018). Entrepreneurship education plays a crucial role in shaping entrepreneurial mindsets (Arshad et al., 2018; Liao et al., 2022; Maheshwari et al., 2023; Sampene et al., 2023). In this context, it is further argued that entrepreneurship can be taught and trained to enhance the capacity to generate entrepreneurial skills valuable to modern enterprises (Karimi et al., 2016; Silveyra et al., 2020).

2.7. Entrepreneurial opportunities

Entrepreneurial opportunities refer to situations where the process of entrepreneurial opportunity recognition has been viewed as a black box (Wang et al., 2013). Thus, entrepreneurial opportunities offer a business situation where entrepreneurs build a thriving business and scale it to generate more profits and market share (GEDI, 2021). Graduate entrepreneurs, who exhibit both general and specific competencies in accessing knowledge from a range of sources, are more capable of identifying and recognising entrepreneurial opportunities (Chandler and Jansen, 1992; Karimi et al., 2016). Graduate entrepreneurs can more promptly respond to external factors and a perceived market opportunity from intriguing market niches and emerging economic conditions (Ramos-Rodríguez et al., 2015).

2.7.1. Proactive personality, attitude toward entrepreneurship, and entrepreneurial intentions

Consistent with the personality theory of entrepreneurship, a proactive personality is positively and significantly related to entrepreneurial intentions (Bateman and Crant, 1993; Delle and Amadu, 2015; Ng et al., 2021). Kumar and Shukla (2019) and Munir et al. (2019) found that in cross-country studies, attitude toward entrepreneurship mediated the effect of proactive personality on entrepreneurial intentions based on the sample data from China rather than Pakistan. Attitude toward entrepreneurship mediates the effects of a proactive personality on entrepreneurial intentions (Lestari et al., 2021). In another study, Bazkiaei et al. (2020) found that attitude toward entrepreneurship mediates the relationship between big-five personality traits and entrepreneurial intentions. Karimi et al. (2017) asserted that all three personality factors (need for achievement, risk-taking, and locus of control) are directly related to entrepreneurial intentions via attitude toward entrepreneurship. Ahmed et al. (2021) asserted that attitude toward entrepreneurship mediates the effect of personality traits (innovativeness, need for autonomy, locus of control, the propensity to take a risk, and stress tolerance) on entrepreneurial intentions (Altinay et al., 2019). However, Awang et al. (2016) and Yasa et al. (2018) also hypothesised

the mediation effect. However, they found that attitude toward entrepreneurship did not mediate the effect of proactive personality (innovativeness, need for autonomy, locus of control, the propensity to take a risk, and stress tolerance) on entrepreneurial intentions. Hence, it is hypothesised:

H1: Attitude toward entrepreneurship mediates the effect of a proactive personality on entrepreneurial intentions.

2.7.2. Entrepreneurship education, attitude toward entrepreneurship, and entrepreneurial intentions

Entrepreneurship education, whether theoretically or practically oriented, can act as an exogenous variable influencing attitude toward entrepreneurship, leading to entrepreneurial intentions (Balder et al., 2020; Sampene et al., 2023). There is a voluminous amount of literature on this mediated relationship (Kumilachew Aga and Singh, 2022). Bazkiaei et al. (2021), Mahendra et al. (2017), Moreno and Wach (2014), and Soria-Barreto et al. (2017) stressed there is a positive relationship between entrepreneurship education and entrepreneurial intentions through attitude toward entrepreneurship. In another study, Prianto (2017) and Nguyen et al. (2019) also conceptualised a model which depicts a relationship between entrepreneurship education and entrepreneurial intentions through attitude toward entrepreneurship. Mamun et al. (2017) and Yousaf et al. (2020) asserted that attitude toward entrepreneurship mediates the effect of entrepreneurship education service quality on entrepreneurial intentions among university students in Malaysia. Bazkiaei et al. (2020) found that attitude toward entrepreneurship mediates entrepreneurship education's relationship with entrepreneurial intentions. However, in contrast to the previous findings. Yasa et al. (2018) found that attitude toward entrepreneurship did not mediate the effect of entrepreneurship education on entrepreneurial intentions, but rather, attitude toward entrepreneurship mediated the effect of psychological characteristics on entrepreneurial intentions. Hence, it is hypothesised:

H2: Attitude toward entrepreneurship mediates the effect of entrepreneurship education on entrepreneurial intentions.

2.7.3. Entrepreneurial opportunities, attitude toward entrepreneurship, and entrepreneurial intentions

Entrepreneurs are good at scanning environments for the emergence of entrepreneurial opportunities which leads to entrepreneurial intentions to set up their businesses (Geissler and Zanger, 2003). Mai and Nguyen (2016) and Vamvaka et al. (2020) stressed that attitude toward entrepreneurship, representing how entrepreneurs think, act, grow and succeed in business, acts as a mediation factor to test the correlation between external factors like entrepreneurial opportunities and entrepreneurial intentions. Parente and Feola (2013) asserted that economic opportunity has a central role in theories of entrepreneurship and that opportunity recognition is the first step in shaping entrepreneurial intentions. Chang et al. (2014) also posited that opportunity, motivation, and ability affect entrepreneurial intentions through attitude toward entrepreneurship (Bhatta et al., 2024). Indeed, the ability to explore and act upon credible entrepreneurial opportunities and potentials is crucial for forming entrepreneurial intentions (Esfandiar et al., 2019). Jarvis (2016) and Shane and Venkataraman (2007) also highlighted that entrepreneurial opportunity is closely

linked to entrepreneurial intentions. This link is much stronger with the mediation effect of attitude toward entrepreneurship. In a related study, Ji and Goo (2021) indicated that entrepreneur's perception of the technology regime (opportunity, accessibility, and cumulativeness) influences entrepreneurial intentions via personal attitude. In a role reversal signalling the importance of opportunity recognition in forming entrepreneurial intentions, Dahalan et al. (2015) pointed out that opportunity recognition mediates attitudes toward start-ups and entrepreneurial intentions. Hence, it is hypothesised:

H3: Attitude toward entrepreneurship mediates the effect of entrepreneurial opportunities on entrepreneurial intentions.

2.7.4. Proactive personality, subjective norm, and entrepreneurial intentions

Subjective norm, one of the three antecedents of TPB, plays the intervening or mediating roles in entrepreneurial intentions research. Subjective norm is the perceived social environment with family and peers' expectations of one in starting or not starting a venture. Lestari et al. (2021) and Munir et al. (2019) highlighted that subjective norm mediates the relationship between proactive personality and entrepreneurial intentions among graduates. In another study, Awang et al. (2016) also asserted that subjective norms proved as a significant mediator between proactive personality and entrepreneurial intentions. Hence, in order to test the mediating effects of subjective norm, it is hypothesised:

H4: Subjective norm mediates the effect of proactive personality on entrepreneurial intentions.

2.7.5. Entrepreneurship education, subjective norm, and entrepreneurial intentions

Drawing from the theory of planned behaviour, subjective norm plays a key role in understanding entrepreneurial intentions. Asghar et al. (2019) and Karimi et al. (2016) indicated that subjective norm mediated the effect of entrepreneurship education on entrepreneurial intentions among graduates. Karimi et al. *(*2016) stressed that the theory of planned behavior could provide a useful framework to analyse how entrepreneurial education programmes influence students' entrepreneurial intentions. Dinc and Budic (2016) illustrated the link between the level of education to entrepreneurial intentions through subjective norm. Hence, in order to test the mediating effects of subjective norm, it is hypothesised:

H5: Subjective norm mediates the effect of entrepreneurship education on entrepreneurial intentions.

2.7.6. Entrepreneurial opportunities, subjective norm and entrepreneurial intentions

Entrepreneurial opportunities are positively linked to entrepreneurial intentions (Esfandiar et al., 2019). Entrepreneurs can recognise and exploit entrepreneurial opportunities, which can lead to new and innovative businesses or the rebuilding of pre-existing firms (Geissler and Zanger, 2003; Jarvis, 2016; Monllor and Altay, 2016). Bouarir et al. (2023) highlighted a framework that depicts that business opportunity recognition is directly related to entrepreneurial intentions, however subjective norm is analysed as an independent variable or not analysed at all in their studies (Geissler

and Zanger, 2003; Karimi et al., 2016). To fulfil the gap in the empirical evidence, this study posits that subjective norm plays a mediating role in the relationship between entrepreneurial opportunity and entrepreneurial intentions. Hence, it is hypothesised:

H6: Subjective norm mediates the effect of entrepreneurial opportunities on entrepreneurial intentions.

2.7.7. Proactive personality, perceived behavioural control, and entrepreneurial intentions

There are considerable studies on the mediation effects of perceived behavioural control on the relationship between proactive personality and entrepreneurial intentions. Awang et al. (2016) asserted that perceived behavioural control mediated the effect of proactive personality on entrepreneurial intentions. In another study, Lestari et al. (2021) and Munir et al. (2019) found that perceived behavioural control mediated the effect of proactive personality on entrepreneurial intentions, based on the sample data from China rather than Pakistan. Meanwhile, Karimi et al. (2017) asserted that perceived behavioural control mediates the relationship between the three personality factors (need for achievement, risk-taking, and locus of control) with entrepreneurial intentions. Likewise, Ahmed et al. (2021) asserted that perceived behavioural control mediates the effect of personality traits on entrepreneurial intentions. In related studies, Droms and Cracium (2014) and Parkinson et al. (2017) stressed that perceived behavioural control and self-efficacy are conceptually the same and used interchangeably in business research. Using entrepreneurial self-efficacy, Li et al. (2018) and Sidratulmunthah et al. (2018) stressed that entrepreneurial self-efficacy positively mediated the effect of proactive personality on entrepreneurial intentions. In similar studies, Nsengiyunva (2019) and Prabhu et al. (2012) stated that entrepreneurial self-efficacy not only mediated the effect of proactive personality on entrepreneurial intentions. In another study, Kumar and Shukla (2019) argued that entrepreneurial self-efficacy partially mediated the effect of proactive personality on entrepreneurial intentions. Hence, it is hypothesised:

H7: Perceived behavioural control mediates the effect of proactive personality on entrepreneurial intentions.

2.7.8. Entrepreneurship education, perceived behavioural control, and entrepreneurial intentions

There are considerable studies on the mediation effects of perceived behavioural control on the relationship between entrepreneurship education and entrepreneurial intentions. Moreno and Wach (2014) and Soria-Barreto et al. (2017) stressed a positive relationship between entrepreneurship education and entrepreneurial intentions through perceived behavioural control. Nguyen et al. (2019) also conceptualised a model which depicts a relationship between entrepreneurship education and entrepreneurial intentions through perceived behavioural control. Karimi et al. (2016) and Adu et al. (2020) stressed that perceived behavioural control mediates the relationship between entrepreneurship education programmes and entrepreneurial intentions. In related studies, Simatupang et al. (2020) reported that perceived behavioural control mediates the effect of entrepreneurial knowledge on entrepreneurial intentions. Altawallbeh et al. (2015) asserted that perceived behavioural control mediates the relationship between university support (technical

experts, provision of adequate computer and internet facilities, and training). However, Awang et al. (2016), Rauch and Hulsink (2012), and Tu et al. (2021) found that perceived behavioural control did not mediate the effect of entrepreneurship education on entrepreneurial intentions. Hence, it is hypothesised:

H8: Perceived behavioural control mediates the effect of entrepreneurship education on entrepreneurial intentions.

2.7.9. Entrepreneurial opportunities, perceived behavioural control, and entrepreneurial intentions

Farsi et al. (2012), Jarvis (2016), Peralta (2021), and Shane and Venkataraman (2007) stressed that entrepreneurial opportunities is related to entrepreneurial intentions. Yego and Jeon (2017) asserted that entrepreneurial intentions are influenced by Perceived Opportunity (PO), and such a relationship is depicted in Shapero's Model of the Entrepreneurial Event (SEE), where the propensity to act upon opportunities leads to entrepreneurial intentions. Karimi et al. (2016) highlighted that opportunity identification perception positively relates to entrepreneurial intentions. Chang et al. (2014) and Fini et al. (2009) asserted that perceived behavioural control mediates the relationship between entrepreneurial opportunities (also known as industry opportunity in a perceived environmental dynamism) and entrepreneurial intentions. Meanwhile, Lin et al. (2021) underlined that organisations should strive to establish individual perceived behavioural control by creating opportunities to absorb successful experiences. Ji and Goo (2021) indicated that entrepreneur perceptions of the technology regime (opportunity, accessibility, and cumulativeness) influence entrepreneurial intentions via perceived behavioural control. In related studies, Lim et al. (2017) confirmed the mediating role of perceived behavioural control on the effect of alertness to opportunity identification on entrepreneurial intentions. Samo and Hashim (2016) asserted that entrepreneurial alertness to the emergence of opportunity has a positive and significant effect on perceived behavioural control and entrepreneurial intentions. This study further postulates that such a relationship will be stronger if it is mediated by perceived behavioural control. Hence, it is hypothesised:

H9: Perceived behavioural control mediates the effect of entrepreneurial opportunities on entrepreneurial intentions.

3. Research model

This study developed an integrated entrepreneurial intentions model of interrelationships among independent variables (proactive personality, entrepreneurship education, and entrepreneurial opportunities), mediators (attitude toward entrepreneurship, subjective norm, and perceived behavioural control), and dependent variable (entrepreneurial intentions). **Figure 1** depicts the research model, which posits three core independent variables relate to entrepreneurial intentions through attitude toward entrepreneurship, subjective norm and perceived behavioural control. This model provides the prism for explaining and predicting entrepreneurial intentions.

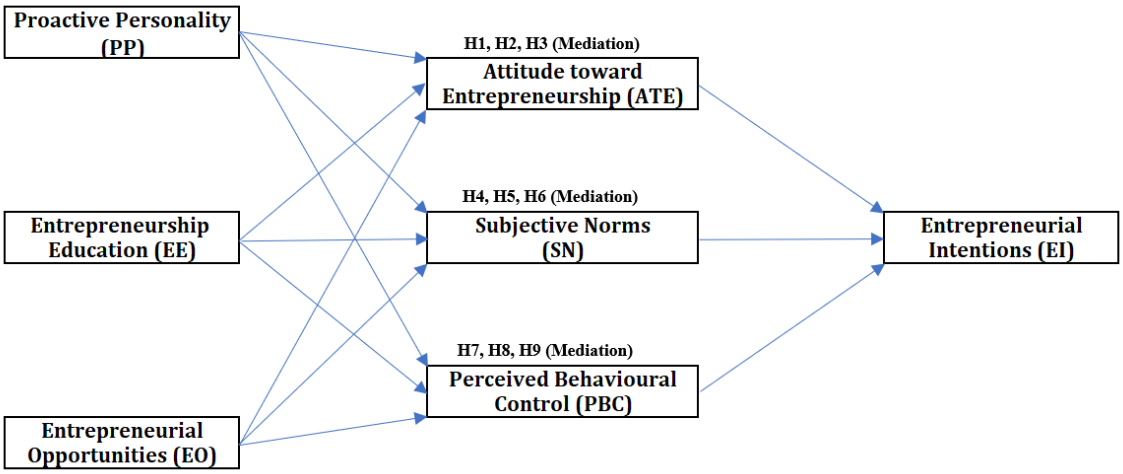

Figure 1. Research model.

4. Methodology

4.1. Sample and data collection

This quantitative study deployed a questionnaire survey, as shown in Appendix, to gather statistical information about the perception of a structured set of questions. The surveys were distributed to four universities in the Northern region of Malaysia using the drop-off/pick-up (DOPU) method to enhance the response rate and, at the same time, reduce nonresponse bias. The target respondents are students who enrolled in business-related undergraduate programmes at universities. This study used convenience sampling where data are collected from a conveniently available pool of respondents. Judgemental sampling technique was used and the filtering criteria imposed are a) university students and b) business-related degree programmes. Adopting a cross-sectional design, this study delivered the 250 questionnaire forms to the lecturers at the universities and subsequently collected 220 completed survey forms from them. After checking, 209 fully completed survey forms were collected for this statistical analysis. However, 11 incomplete survey forms which contain missing demographics and/or matrix data were discarded. Hence, this contributes to an 84% response rate.

In terms of sample size, many authors suggested various sample sizes to reach larger audiences for PLS-SEM analysis. Reinartz et al. (2009) suggested that a sample size of 100 was adequate. Chin (2010) asserted using the 'ten times rule' rule of thumb for PLS-SEM analysis. Meanwhile, statistical power is another way to estimate a minimum sample size for PLS-SEM analysis (Hair et al., 2014). This study employed G*Power software to calculate the minimum sample size as Hair et al. (2021) recommended. To calculate the minimum sample size, the software set variables like a maximum of three predictors pointing at one endogenous variable, medium effect size, 0.8 power of the model, and significance level of 0.05. From the G*Power calculation, a sample of 119 is sufficient to provide enough power to the research framework of this study. There is no issue with sample size since this study successfully collected a sample of 209 respondents to represent the population parameters.

4.2. Measurements

This study uses a 5-point Likert scale that allows respondents to express the degree of agreement, with 1 being "strongly disagree" and 5 being "strongly agree". The instruments were adopted from established scholars to ensure good validity and reliability. Proactive personality consists of only 5 abbreviated items adopted from Claes et al. (2005), entrepreneurship education, 6 items from Diaz-Casero, Hernandez-Mogollon, and Roldan (2012), entrepreneurial opportunities, 6 items from both Bateman and Crant (1993) and Chandler and Jansen (1992), attitude toward entrepreneurship, 4 items from Liñán and Chen (2009), subjective norm, 3 items from Liñán and Chen (2009), Perceived behavioural control, 6 items from Liñán and Chen (2009), and entrepreneurial intentions, 6 items from Liñán and Chen (2009). This study conducted a pre-test using the debriefing method of personal interviews, as suggested by Hunt et al. (1982), to evaluate the reliability and validity of the survey instruments. Prior to the final large-scale distribution of the survey, a pilot test of 30 samples was carried out to test a proposed research study and allow modification of the main study. This survey gathered the socio-demographic characteristics like gender, ethnicity, education level, age, type of courses undertaken, running a business before and during this study, entrepreneurial parents, family business, and business type.

All hypothesised relationships were investigated using SmartPLS. This study also performed Harman's single-factor test to check for common method variance with Statistical Package for the Social Sciences (SPSS) (Aguirre-Urreta and Hu, 2019). And the test revealed that the first factor only accounted for 33.65% of the variance. This is less than the threshold level of 50% of the total variance recommended by Podsakoff et al. (2003). It is important to stress that since data was collected using a single source, this study first tested the issue of Common Method Bias by following the suggestions of Kock and Lynn (2012) by testing the full collinearity. In this method, all the variables will be regressed against a common variable and if the VIF ≤ 3.3, there is no bias from the single source data. The analysis yielded VIF less than 3.3 as depicted in **Table 1**. Thus, single-source bias is not a serious issue with the data.

Table 1. Full collinearity testing.

Variable	ATE	EE	EI	EO	PBC	PP	SN
VIF	2.102	1.559	2.420	1.818	2.166	1.452	1.437

5. Findings

The socio-demographics cover gender, race, age, study courses, father and mother's occupation, running businesses while studying, and parents' or family members' businesses. The sample was equally distributed in terms of gender, with the proportion of males being 48.8% and females at 51.2%. This respondent profile also indicated that 81.8% of the respondents belonged to Malaysian Chinese. 67.9% were between 20–23 years old, and 67.5% did business studies and accountancy programmes. Interestingly, 16.3% of students were running businesses while studying. 58.9% of their parents are involved in running private enterprises, and 50.7% of family members own businesses. **Table 2** depicts the details.

Table 2. Socio-demographic profile of respondents ($N = 209$).

Variables	Category	Frequency	Percentage
Gender	Male	102	48.8
	Female	107	51.2
Race	Malay	2	1.0
	Chinese	171	81.8
	India	26	12.4
	Other	10	4.8
Age	Under 20 years	49	23.4
	20–23 years	142	67.9
	24–26 years	13	6.2
	27–29 years	3	1.4
	30 years and above	2	1.0
Course Taken	Business studies and accountancy	141	67.5
	Engineering	3	1.4
	Entrepreneurship and small business	16	7.7
	Computer sciences	8	3.8
	Hotel and hospitality	18	8.6
	Other	23	11.0
Father's Occupation	Unemployed	25	12.0
	Self-employed	77	36.8
	Private business	75	35.9
	Public employment	32	15.3
Mother's Occupation	Unemployed	105	50.2
	Self-employed	31	14.8
	Private business	48	23.0
	Public employment	25	12.0
Run Business During Study	Yes	34	16.3
	No	175	83.7
Parents Run Business	Yes	106	50.7
	No	103	49.3
Family members own business	Yes	106	50.7
	No	103	49.3

5.1. Assessment of measurement model

In this study, composite reliability was used and calculated in conjunction with structural equation modelling analysis. From the analysis, all item loadings for all items have exceeded the threshold of ideally 0.70, recommended set by Hair et al (2021), except for four items, namely, PP1, PP5, ATE4, and SN1. Nevertheless, these items were not deleted in the final analysis because both Hair et al. (2014) and Bagozzi and Yi (1988) nevertheless also stated that the min loading could be 0.50 or more, and the average variance extracted (AVE) of these items was larger than the acceptable value of 0.50. In terms of construct reliability, composite reliability for all constructs

ranged from 0.823 to 0.946, which exceeds the cut-off value of 0.70, as set by Hair et al. (2014). **Table 3** depicts the items and constructs' mean, standard deviation, factor loadings, composite reliability (CR), and AVE.

Table 3. Measurement model.

Variables	Items	Factor Loading	CR	AVE
Attitude Toward Entrepreneurship (ATE)	ATE1	0.777	0.860	0.612
	ATE2	0.884		
	ATE3	0.865		
	ATE4	0.561		
Entrepreneurship Education (EE)	EE1	0.785	0.908	0.622
	EE2	0.747		
	EE3	0.793		
	EE4	0.789		
	EE5	0.847		
	EE6	0.769		
Entrepreneurial Intentions (EI)	EI1	0.851	0.946	0.746
	EI2	0.845		
	EI3	0.883		
	EI4	0.866		
	EI5	0.898		
	EI6	0.837		
Entrepreneurial Opportunities (EO)	EO1	0.806	0.899	0.64
	EO2	0.801		
	EO3	0.743		
	EO4	0.821		
	EO5	0.825		
Perceived Behavioural Control (PBC)	PBC1	0.738	0.913	0.639
	PBC2	0.841		
	PBC3	0.868		
	PBC4	0.787		
	PBC5	0.844		
	PBC6	0.704		
Proactive Personality (PP)	PP1	0.658	0.841	0.516
	PP2	0.794		
	PP3	0.735		
	PP4	0.713		
	PP5	0.683		
Subjective Norms (SN)	SN1	0.617	0.823	0.613
	SN2	0.886		
	SN3	0.821		

Note: Item EO6 was deleted due to low factor loading.

For a clear comparison, this study analysed Cronbach's alpha for all variables. as depicted in **Table 4**. There is no issue with the internal reliability consistency as all figures are more than 0.7 thresholds (Cortina, 1994). It is worth noting that composite reliability is preferable to Cronbach's alpha as the estimator of the reliability of tests and scales because Cronbach's alpha is being criticised for its lower bound value, which underestimates the true reliability. Furthermore, although the composite reliability value is slightly higher than Cronbach's alpha, the difference is relatively inconsequential for practical applications (Peterson and Kim, 2013).

Table 4. Reliability analysis.

Variables	No of Items	Cronbach's Alpha	Source
Attitude Toward Entrepreneurship (ATE)	4	0.833	Liñán and Chen (2009)
Entrepreneurship Education (EE)	6	0.798	Diaz-Casero et al. (2012)
Entrepreneurial Intentions (EI)	6	0.854	Liñán and Chen (2009)
Entrepreneurial Opportunities (EO)	6	0.788	Bateman and Crant (1993); Chandler and Jansen (1992)
Perceived Behavioural Control (PBC)	6	0.876	Liñán and Chen (2009)
Proactive Personality (PP)	5	0.747	Claes et al. (2005)
Subjective Norms (SN)	3	0.851	Liñán and Chen (2009)

Meanwhile, Heterotrait-Monotrait (HTMT) ratio is used to test and verify the discriminant validity of this model. Henseler et al. (2015) recommended a threshold value of 0.85, namely HTMT.85. There is no discriminant validity issue as the HTMT.85 criterion was below the critical value of 0.85. **Table 5** also depicts the results.

Table 5. Discriminant validity—Heterotrait-monotrait ratio.

Variable	Mean	SD	ATE	EE	EI	EO	PBC	PP	SN
Attitude Toward Entrepreneurship (ATE)	3.278	0.839							
Entrepreneurship Education (EE)	3.300	0.707	0.509						
Entrepreneurial Intentions (EI)	3.379	0.904	0.768	0.402					
Entrepreneurial Opportunities (EO)	3.343	0.662	0.599	0.511	0.496				
Perceived Behavioural Control (PBC)	3.091	0.754	0.649	0.405	0.735	0.613			
Proactive Personality (PP)	3.572	0.621	0.549	0.352	0.544	0.575	0.538		
Subjective Norms (SN)	3.634	0.778	0.457	0.627	0.391	0.479	0.492	0.375	

Note: Heterotrait-Monotrait (HTMT 0.85 Criterion).

SmartPLS uses two main measures of predictive accuracy of the structural model, namely a) *R*-squared and b) the level of significance of the path coefficients to determine the goodness-of-fit of the structural model (Hair, Ringle, and Sarstedt 2011). In linear regression, Cohen (1988) categorised the *R*-squared value of less than 0.02 as very weak, between 0.02 and 0.13 as weak, between 0.13 to 0.26 as moderate, and more than 0.26 as substantial. However, Hair et al. (2011) argued that since the threshold values for an acceptable "goodness-of-fit" can hardly be derived, the acceptable *R*-squared values depend on the research context, research discipline, and the construct's role in the model. In this study, the *R*-squared values of attitude toward

entrepreneurship are 0.346, subjective norm 0.281, perceived behavioural control 0.352, and entrepreneurial intentions 0.577. All point to a high proportion of the total variance explained by respective exogenous variables. The *R*-squared values of all three endogenous variables were found to be substantial.

5.2. Assessment of structural model (direct relationships)

Twelve direct relationships of all variables, namely, proactive personality, entrepreneurship education, entrepreneurial opportunities, attitude toward entrepreneurship, subjective norm, perceived behavioural control, and entrepreneurial intentions, were analysed. The empirical findings indicated that there were positive direct relationships between a) proactive personality and attitude toward entrepreneurship; b) proactive personality and perceived behavioural control; c) entrepreneurship education and attitude toward entrepreneurship; d) entrepreneurship education and subjective norm; e) entrepreneurial opportunities and attitude toward entrepreneurship; f) entrepreneurial opportunities and subjective norm, g) entrepreneurial opportunities and perceived behavioural control; h) attitude toward entrepreneurship and entrepreneurial intentions; and i) perceived behavioural control and entrepreneurial intentions.

However, there were no significant relationships between proactive personality and subjective norm; entrepreneurship education and perceived behavioural control; and subjective norm and entrepreneurial intentions as highlighted by Ng et al. (2021). **Table 6** summarises the results.

Table 6. Assessment of structural model (direct relationship).

Hypothesis	Relationship	Std. Beta	Std. Dev	*t*-value	*p*-value	PCI LL	PCI UL	*f*2
H1a	PP → ATE	0.232	0.079	2.923	0.003	0.070	0.380	0.063
H2a	PP → SN	0.091	0.095	0.959	0.338	−0.091	0.276	0.009
H3a	PP → PBC	0.229	0.079	2.909	0.004	0.064	0.378	0.062
H4a	EE → ATE	0.197	0.084	2.330	0.020	0.030	0.358	0.046
H5a	EE → SN	0.399	0.075	5.291	$p < 0.001$	0.232	0.530	0.172
H6a	EE → PBC	0.111	0.076	1.456	0.145	−0.042	0.255	0.015
H7a	EO → ATE	0.316	0.085	3.719	$p < 0.001$	0.139	0.470	0.100
H8a	EO → SN	0.152	0.078	1.961	0.050	0.006	0.295	0.021
H9a	EO → PBC	0.386	0.070	5.495	$p < 0.001$	0.230	0.512	0.152
H10a	ATE → EI	0.431	0.053	8.137	$p < 0.001$	0.324	0.531	0.296
H11	SN → EI	0.013	0.063	0.208	0.835	−0.116	0.134	0.000
H12	PBC → EI	0.423	0.057	7.435	$p < 0.001$	0.308	0.528	0.272

Note: The *P*-values are based on one tailed test.
(PP = Proactive Personality, EE = Entrepreneurial Education, EO = Entrepreneurial Opportunities, ATE = Attitude Toward Entrepreneurship, PBC = Perceived Behavioural Control, SN = Subjective Norms, EI = Entrepreneurial Intention).

5.3. Assessment of structural model (mediated relationships)

To empirically test the mediation effects, this study uses Preacher and Hayes' (2008) testing approach with the bootstrapping confidence intervals method. This method works perfectly well in PLS-SEM analysis because there is no prerequisite for

the normality of the data. Bootstrapping results were calculated to test for significance. SmartPLS software 3.2.8 allows automatic calculation of the *t*-value of indirect effects. Therefore, there is no need for a manual calculation. In order to examine the mediation effect, the indirect effect, which is computed directly as the product of a and b, has to be significant. However, Zhao et al. (2010) argued that the mediation effect between independent and dependent variables does not necessarily have to be significant without a mediator variable.

Table 7. Assessment of structural model (mediated relationships).

Hypothesis	Relationship	Std. Beta	Std. Dev	*t*-value	*p*-value	PCI LL	PCI UL
H1	PP → ATE → EI	0.100	0.037	2.673	0.008	0.031	0.177
H2	EE → ATE → EI	0.085	0.041	2.080	0.038	0.013	0.172
H3	EO → ATE → EI	0.136	0.038	3.626	0.000	0.063	0.213
H4	PP → SN → EI	0.001	0.009	0.130	0.897	−0.011	0.028
H5	EE → SN → EI	0.005	0.026	0.204	0.839	−0.051	0.054
H6	EO → SN → EI	0.002	0.011	0.188	0.851	−0.019	0.026
H7	PP → PBC → EI	0.097	0.037	2.612	0.009	0.028	0.175
H8	EE → PBC → EI	0.047	0.032	1.443	0.149	−0.015	0.113
H9	EO → PBC → EI	0.164	0.036	4.494	0.000	0.097	0.238

Note: The *P*-values are based on a two-tailed test.
(PP = Proactive Personality, EE = Entrepreneurship Education, EO = Entrepreneurial Opportunities, ATE = Attitude Toward Entrepreneurship, PBC = Perceived Behavioural Control, SN = Subjective Norms, EI = Entrepreneurial Intentions, LL = Lower Limit, UL = Upper Limit).

The results of the bootstrapping analysis found that five hypotheses were supported. Attitude toward entrepreneurship mediates the effect of proactive personality on entrepreneurial intentions at $\beta = 0.100$ and confidence interval PCI LL 0.031 and PCI UL 0.177. Therefore, H1 was found to be supported. Attitude toward entrepreneurship mediates the effect of entrepreneurship education on entrepreneurial intentions at $\beta = 0.085$ and confidence interval PCI LL 0.013 and PCI UL 0.172. Therefore, H2 was found to be supported. Attitude toward entrepreneurship mediates the effect of entrepreneurial opportunities on entrepreneurial intentions at $\beta = 0.136$ and confidence interval PCI LL 0.063 and PCI UL 0.213. Therefore, H3 was found to be supported. Perceived behavioural control mediates the effect of proactive personality on entrepreneurial intentions at $\beta = 0.097$ and confidence intervals PCI LL 0.028 and PCI UL 0.175. Therefore, H7 was found to be supported. Perceived behavioural control mediates the effect of entrepreneurial opportunities on entrepreneurial intentions at $\beta = 0.164$ and confidence interval PCI LL 0.097 and PCI UL 0.238. Therefore, H9 was found to be supported. However, subjective norm did not mediate the effect of proactive personality on entrepreneurial intentions at $\beta = 0.001$ and confidence interval PCI LL −0.011 and PCI UL 0.028. Therefore, H4 was found not to be supported. Subjective norm did not mediate the effect of entrepreneurship education on entrepreneurial intentions at $\beta = 0.005$ and confidence interval PCI LL −0.051 and PCI UL 0.054. Therefore, H5 was found not to be supported. Subjective norm did not mediate the effect of entrepreneurial opportunities on entrepreneurial intentions at $\beta = 0.002$ and confidence interval PCI LL −0.019 and

PCI UL 0.026. Therefore, H6 was found not to be supported. Perceived behavioural control did not mediate the effect of entrepreneurship education on entrepreneurial intentions at β = 0.047 and confidence interval PCI LL −0.015 and PCI UL 0.113. Therefore, H8 was found not to be supported. **Table 7** depicts the results.

Shmueli et al. (2019) suggested that if all the item differences (PLS-LM) were lower, then there is strong predictive power. If all are higher, then predictive relevance is not confirmed while if the majority is lower, then there is moderate predictive power and if the minority then there is low predictive power. As depicted in **Table 8**, all the errors of the PLS model were lower than the LM model thus this study can conclude that the model has strong predictive power.

Table 8. PLS-Predict.

		PLS	LM	PLS-LM
MV	**Q^2 predict**	**RMSE**	**RMSE**	**RMSE**
EI1	0.235	0.858	0.897	−0.039
EI2	0.201	0.957	1.004	−0.047
EI3	0.226	0.888	0.921	−0.033
EI4	0.202	0.951	1.009	−0.058
EI5	0.202	0.977	0.995	−0.018
EI6	0.174	0.982	1.009	−0.027

6. Discussion

This study sheds new light on the complex dynamics of the intervening role of the Theory of Planned Behaviour on the effects of proactive personality, entrepreneurship education, and entrepreneurial opportunities on entrepreneurial intentions. The empirical findings unambiguously provide in-depth insights into graduates' pressing entrepreneurial issues associated with developing entrepreneurial intentions. Overall, attitude toward entrepreneurship and perceived behavioural control mediate the link between the three core independent variables and the dependent variable (H1, H2, H3, H7 and H9). Nevertheless, the subjective norm did not mediate the effect of the three core independent variables on entrepreneurial intentions (H4, H5 and H6), and perceived behavioural control did not mediate the relationship between entrepreneurship education and entrepreneurial intentions (H8). Hence, it is crucial to understand the antecedents of entrepreneurship intentions, which is the key determinant of entrepreneurial actions. Based on the data analysis, the results of partial least squares estimations supported five hypotheses. H1 is supported. This finding is consistent with the scholarly works of Ahmed et al. (2021), Bazkiaei et al. (2020), Isma et al. (2020), Karimi et al. (2017), Kumar et al. (2019), Munir et al. (2019), Sesabo (2017), and Xin et al. (2023) who also found that attitude toward entrepreneurship mediated the effect of proactive personality on entrepreneurial intentions. H2 is also supported. This finding is consistent with the work of Bazkiaei et al. (2021), Bazkiaei et al. (2020), Mahendra et al. (2017), Mamun et al. (2017), Moreno et al. (2014), Nguyen et al. (2019), Prianto (2017), Soria-Barreto et al. (2017), Yousaf et al. (2020). They argued that attitude toward entrepreneurship mediated the effect of entrepreneurship education on entrepreneurial intentions. H3 is supported.

This finding is congruent with previous studies by Chang et al. (2014), Jarvis (2016), Ji et al. (2021), Mai et al.2016), Parente and Feola (2013), Shane et al. (2007), Vamvaka et al. (2020) who also found the attitude toward entrepreneurship mediated the effect of entrepreneurial opportunities on entrepreneurial intentions.

H7 is supported. This is in line with the studies made by Ahmed et al. (2021), Awang et al. (2016), Karimi et al. (2017), and Munir et al. (2019), who found that perceived behavioural control mediated the effect of proactive personality on entrepreneurial intentions. H9 is supported. This is in line with the studies made by Chang et al. (2014) and Fini et al. (2009), Lin et al. (2021), and Ji and Goo (2021) who found that perceived behavioural control mediated the effect of entrepreneurial opportunities on entrepreneurial intentions.

However, H4 is not supported. These findings contradict the findings reported by Awang et al. (2016), Lestari et al. (2021) and Munir et al. (2019) who found that subjective norm did mediate the effect of proactive personality on entrepreneurial intentions. H5 is not supported. This is in line with the studies made by Adu et al. (2020). However, it is also in conflict with Asghar et al. (2019) and Karimi et al. (2016), who found that subjective norm mediated the effect of entrepreneurship education on entrepreneurial intentions. H6 is not supported. This is in line with the studies made by Bouarir et al. (2023), Karimi et al. (2016), and Geissler and Zanger (2003), who do not consider subjective norm as the mediating variable. Similarly, H8 is not supported. This surprising finding contradicts the previous works of Adu et al. (2020), Alkahtani et al. (2020), Karimi et al. (2016), Moreno and Wach (2014), Nguyen et al. (2019), Simatupang et al. (2020), and Soria-Barreto et al. (2017) who argued that perceived behavioural control mediated the effect of entrepreneurship education on entrepreneurial intentions. However, this insignificant finding is also considered important as it is consistent with the studies of Awang et al. (2016), Rauch et al. (2012), and Tu et al. (2021), who also found that perceived behavioural control did not mediate the effect of entrepreneurship education on entrepreneurial intentions.

7. Conclusion

Drawing from the results of this mediation study, five mediated hypotheses out of nine were supported. Attitude toward entrepreneurship mediated the effects of i) proactive personality on entrepreneurial intentions (H1), ii) entrepreneurship education on entrepreneurial intentions (H2), and iii) entrepreneurial opportunities on entrepreneurial intentions (H3). Meanwhile, perceived behavioural control mediated the effects of i) proactive personality on entrepreneurial intentions (H7) and ii) entrepreneurial opportunities on entrepreneurial intentions (H9). However, contrary to the expectations of this study, subjective norm did not mediate the effects of all three core independent variables on entrepreneurial intentions (H4, H5, H6). Perceived behavioural control also did not mediate the effect of entrepreneurship education on entrepreneurial intentions (H8).

This study results revealed that through the bootstrapping method, Ajzen's intention-based model with attitude toward entrepreneurship, subjective norm, and perceived behavioural control fits well with the dataset to predict entrepreneurial intentions among young graduates. The three core independent variables, namely,

proactive personality, entrepreneurship education, and entrepreneurial opportunities, demonstrated a strong influence on entrepreneurial intentions through attitude toward entrepreneurship and perceived behavioural control. Taken together, the findings of this study require a holistic approach to trigger entrepreneurial intentions through the combination of psychological traits, pedagogy, and social-economic context. The findings show that the formation of entrepreneurial intentions depends not only on a single driver but on the interplay of the three antecedents. It has the theoretical implications that the expanded Theory of Planned Behaviour recommended the need to focus on building the attitude toward entrepreneurship and behaviour control among graduates. In terms of practical implications which are related to what practitioners can drive socio-economic development and innovation and job creation. Future research on other mediators and independents can be carried out to expand this scope of research work.

8. Theoretical implications

The findings contributed to the theoretical literature on determinants of entrepreneurial intentions attitude toward entrepreneurship, subjective norm, and perceived behavioural control. There is a broad consensus among researchers on the importance and relevance of the theory of planned behaviour in the conceptualisation of entrepreneurial intentions, and entrepreneurship theory and practice (Tornikoski and Maalaoui, 2019). This study is useful to entrepreneurship scholars, educators, academicians, and policymakers as the integrative, multi-perspective theoretical framework, rooted in the theory of planned behaviour, explains the interaction of proactive personality, entrepreneurship education and entrepreneurial opportunities in driving entrepreneurial intention. This research model is coherent, parsimonious, highly generalisable, and robust (Tornikoski and Maalaoui, 2019). This model provides a good explanation and prediction about business venture formations among university graduates (Barba-Sánchez et al., 2022).

This model could be of diagnostic assistance to policymakers for formulating an effective entrepreneur development programme aiming at cultivating students with proactive personality, designing entrepreneurship education with industry relevance, and creating entrepreneurial opportunities with economic development (Esfandiar et al., 2019).

This study expanded the theory of planned behaviour by taking the three core independent variables as a predictor of entrepreneurial intentions through attitude toward entrepreneurship and perceived behavioural control. In other words, this study focuses exclusively on the mediating effects and without it, there is a potential missing link and the presence of potential biases if the mediating effects are not taken into consideration. Although all variables in the model have been previously studied, they are separately explored and researched. However, this study consolidated them into a single, integrated model to offer empirical insights into the mediated relationships. This has increased the interest among researchers in the development of entrepreneurial intentions which has elevated the importance of the theory of planned behaviour that predicts and explains individuals' intentions to start business ventures. Furthermore, academicians and educators can also use these findings as a reference

point for future development in the entrepreneurship community in terms of developing social and economic well-being. Indeed, it has enlarged the substantial body of knowledge that is the foundation for a competitive advantage for nations (Liao et al., 2022). The findings offer a valuable synthesis of the insights for creating new research pathways in different contexts in the rapidly evolving field of entrepreneurship. This study also made methodological contributions by deploying the SmartPLS that underpins the detailed statistical analyses of the empirical dataset.

9. Practical implications

This study has several implications. Firstly, these findings offer policymakers and practitioners the need to enact a strong sense of entrepreneurial intentions among graduates and entrepreneurs of the future, which can lead to venture creation and expansion the existing businesses. Entrepreneurial intentions are considered the first step in establishing entrepreneurial activities. Universities can implement intervention strategies like having a sustained approach towards confidence-building measures among students and institutionalising entrepreneurship policies through teaching and learning, workshops, research, innovation and commercialisation to help students form entrepreneurial intention and later on venture into entrepreneurial activities on campus (Krishnan et al., 2022; Tembe, 2023).

Policymakers can formulate long-term policies and redouble investment in entrepreneurship education and development to fast-track entrepreneurship and SMEs to survive in saturated, highly competitive global markets (Zardini et al., 2013). Government can serve as a facilitator for collaboration between the industry and university in addition to its traditional regulatory role in setting the rules of games. The government should build a start-up ecosystem to let entrepreneurs realise their goals through entrepreneurial opportunities. In this context, the government has to intensify efforts to woo more foreign direct investment from multinational companies to stimulate higher economic growth so that high-aspiration entrepreneurs can explore and develop new businesses.

Secondly, despite H4, H5 and H6 are not significant, subject norm still plays an important role in influencing an individual's belief to comply with the direction or suggestion of people around especially family members to participate in an entrepreneurial venture (Utami, 2017). Likewise, although H8 (entrepreneurship education—perceived behavioural control—entrepreneurial intentions) is not significant, it is still worthwhile to invest in entrepreneurship education so that practitioners and their workers, besides students, can be trained by universities and captains of the industry to nurture proactive personality and strengthen perceived behavioural control in order to have strong intentions to start their entrepreneurial ventures (Martín-Navarro et al., 2023). To release this, universities need to run distinctive and creative education systems with real-life case studies and hands-on exercises rather than focusing only on traditional science and art textbooks to boost their self-confidence (Yar et al., 2008). It should incorporate entrepreneurship-related skills and mindsets into the curriculums to form a positive attitude toward entrepreneurship and strong perceived behavioural control among students, graduates (Arkorful and Hilton, 2021).

Policy practitioners can implement intervention policies to support individuals with high entrepreneurial intention and provide an ecosystem and environment to build an entrepreneurship culture in their organisation (Maheshwari et al., 2023). Practitioners need to have a strategy for entrepreneur development initiatives. They need to coordinate with universities to implement strategies like an internship, start-up boot camps, pitching competitions, and business incubation so that they can allow students to experience live businesses. To overcome the challenges of entrepreneurship and barriers to entrepreneurial aspirations among graduates, universities need to equip future nascent entrepreneurs with firm perceived behavioural control to be well-prepared for the real-life practicalities of entrepreneurship (Abdulghaffar and Akkad, 2021; Alon and Shneor, 2017). They need to build strong perceived behavioural control with a can-do attitude toward entrepreneurship by learning by doing, unlearning, and relearning experiences at all stages of business development (Klein, 2008; Trivedi, 2016).

Thirdly, success stories from inspirational speakers with vivid storytelling and practical tips on entrepreneurial achievements should be narrated to arouse enthusiasm among graduates and practitioners (Tomy and Pardede, 2020). For this, entrepreneurs and existing business owners should be provided with effective start-up support structures and mentorship, as striking out young entrepreneurs with a positive attitude toward entrepreneurship and perceived behavioural control is an uphill battle. This requires much more energy, grit, passion, and ingenuity in dealing with today's fast-changing global, disrupted business environment (Arshad et al., 2018). It is also necessary for young entrepreneurs to have strong entrepreneurial mindsets and dare to think outside the box to facilitate discussion and exploration of new ideas (Liao et al., 2022).

Fourthly, drawing lessons from the findings, practitioners should have a positive attitude toward entrepreneurship and perceived behavioural control in running their businesses. They should confidently handle new and alumni ventures (Tomy and Pardede, 2020). Hence, this finding suggests the role of the Triple Helix of the university–industry–government interactions in collaboratively engaging in higher levels of training and development in entrepreneurship and in sharing and transfer of knowledge to graduates. University, industry and government can closely concentrate on students with outgoing, proactive personalities, university-wide entrepreneurship education, and credible entrepreneurial opportunities to develop an attitude toward entrepreneurship and perceived behavioural control and eventually form entrepreneurial intentions to start a business venture in the future (Barba-Sánchez et al., 2022). Meanwhile, the latest research by Bhatta et al. (2024) revealed that technological knowledge is vital for enhancing entrepreneurial. Hence, universities, policymakers and practitioners need to have policies and initiatives on how to enhance technological knowledge among students and graduates so that they are competent to handle tough technical challenges in entrepreneurial ventures.

10. Limitations and future research

This study is not without limitations. The research design relies on self-reported questionnaires and may be subject to systematic biases arising from social desirability,

cognitive processes and survey conditions that can alter respondents' responses and plague the validity and accuracy of the self-report survey measurements (Valliere, 2014). Donaldson and Grant-vallone (2002) suggested companion analytic techniques procedures and a minimum of two data sources be used to help rule out the validity threats of self-report bias in business research. Since it is a cross-sectional study, longitudinal studies can be deployed to examine the stability of entrepreneurial intentions over time. It is easier to detect any changes over an extended period of time in regard to the variables being measured (Alam et al., 2019).

As for future research, It may be worthwhile to operationalise the concept of entrepreneurial intentions by exploring more mediating factors such as social-cultural factors, family backgrounds, the heterogeneity of individuals' educational backgrounds, and entrepreneurial motivation as a composite proxy measure to better grasp the concept of entrepreneurial intentions (Esfandiar et al., 2019; Farrukh et al., 2017; Paul and Shrivatava, 2016; Sidratulmunthah et al., 2018; Teixeira and Forte, 2017). Additional constructs like innovative work behaviour, innovative orientation and intended timing (which means whether students plan to start immediately upon completion of their studies or prefer to wait) can be included (Bhatta et al., 2024; Montañés-Del-Río and Medina-Garrido, 2020; Ramos-Rodríguez et al., 2019). The filtering criteria can cover tourism-related degree programme as tourism sector makes a significant contribution to the global economy and its role as an economic driver in many countries (Martín-Navarro et al., 2023; Montañés-Del-Río and Medina-Garrido, 2020).

Future research can focus on those insignificant hypothesised arguments. As one of the three antecedents of the theory of planned behaviour, subjective norm is expected to play a significant role in linking the three core independent variables and the dependent variable (H4, H5, H6). In the absence of subjective norm as a significant mediator, it is difficult to conclude that the theory of planned behaviour fully plays the mediating role of linking proactive personality, entrepreneurship education, and entrepreneurial opportunities to entrepreneurial intentions. Similarly, perceived behaviour control is expected to mediate the link between entrepreneurship education and entrepreneurial intentions based on extant entrepreneurship literature on the correlational relationship between entrepreneurship education and entrepreneurial intentions (Kumilachew Aga and Singh, 2022). With these weak and inconclusive findings, it is worthy of further research.

Future research can also explore the translation from entrepreneurial intentions to action or behaviour of deciding to venture into business (Shirokova et al., 2015). The presence of the least studied intention–action gap is due to substantial challenges of entrepreneurship, such as creating realistic financial projections, access to finance, organising a venture team, hiring talents, and getting customers, resulting in procrastinating behaviours (Alon and Shneor, 2017; Harima et al., 2021). Hence policymakers and practitioners need to maintain a strong degree of entrepreneurial intentions toward entrepreneurial behaviour and to ensure that entrepreneurship remains one of the panaceas for youth unemployment and wealth creation (Abdulghaffar and Akkad, 2021).

Author contributions: Conceptualization, HSN and DMHK; methodology, TR, MJK and RUK; software, TR, MJK and RUK; validation, TR, MJK and RUK; formal analysis, TR, MJK and RUK; investigation, HSN and DMKH; resources, HSN; data curation, HSN; writing—original draft preparation, HSN and DMHK; writing—review and editing, HSN and DMHK; visualization, HSN; supervision, TR and DMHK; project administration, HSN; funding acquisition, HSN. All authors have read and agreed to the published version of the manuscript.

Conflict of interest: The authors declare no conflict of interest.

References

Abdulghaffar, N. A., & Akkad, G. S. (2021). Internal and external barriers to entrepreneurship in Saudi Arabia. Digest of Middle East Studies, 30(2), 116–134. https://doi.org/10.1111/dome.12231

Ács, Z. J., Szerb, L., Lafuente, E., et al. (2018). The Global Entrepreneurship Index (GEINDEX). Foundations and Trends® in Entrepreneurship, 5(5), 341–435. https://doi.org/10.1561/0300000027

Adelaja, A. A. (2021). Entrepreneurial Education Exposure: A Comparative Investigation between Technical and Nontechnical Higher Education. Journal of Small Business and Enterprise Development, 28(5), 711–23. https://doi.org/10.1108/JSBED-12-2020-0429/FULL/HTML

Adu, I. N., Boakye, K. O., Suleman, A. R., et al. (2020). Exploring the factors that mediate the relationship between entrepreneurial education and entrepreneurial intentions among undergraduate students in Ghana. Asia Pacific Journal of Innovation and Entrepreneurship, 14(2), 215–228. https://doi.org/10.1108/apjie-07-2019-0052

Aguirre-Urreta, M. I., & Hu, J. (2019). Detecting Common Method Bias. ACM SIGMIS Database: The DATABASE for Advances in Information Systems, 50(2), 45–70. https://doi.org/10.1145/3330472.3330477

Ahmed, T., Klobas, J. E., & Ramayah, T. (2021). Personality Traits, Demographic Factors and Entrepreneurial Intentions: Improved Understanding from a Moderated Mediation Study. Entrepreneurship Research Journal, 11(4). https://doi.org/10.1515/erj-2017-0062

Ajzen, I. (2002). Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior1. Journal of Applied Social Psychology, 32(4), 665–683. https://doi.org/10.1111/j.1559-1816.2002.tb00236.x

Alkahtani, A., Nordin, N., & Khan, R. U. (2020). Does the government support enhancing the relationship between networking structure and sustainable competitive performance among SMEs? Journal of Innovation and Entrepreneurship, 9, 1-16.

Alam, M. Z., Kousar, S., & Rehman, Ch. A. (2019). Role of entrepreneurial motivation on entrepreneurial intentions and behaviour: theory of planned behaviour extension on engineering students in Pakistan. Journal of Global Entrepreneurship Research, 9(1). https://doi.org/10.1186/s40497-019-0175-1

Alon, I., & Shneor, R. (2017). More than makeup: How Atsoko overcame the challenges of entrepreneurship in Tanzania. Global Business and Organizational Excellence, 36(6), 25–33. https://doi.org/10.1002/joe.21811

Altawallbeh, M., Soon, F., Thiam, W., et al. (2015). Mediating Role of Attitude, Subjective Norm and Perceived Behavioural Control in the Relationships between Their Respective Salient Beliefs and Behavioural Intention to Adopt e-Learning among Instructors in Jordanian Universities. Journal of Education and Practice, 6(11), 152–60.

Altinay, L., Kromidha, E., Nurmagambetova, A., et al. (2019). A Social Cognition Perspective on Entrepreneurial Personality Traits and Intentions to Start a Business: Does Creativity Matter? Management Decision, 60(6), 1606–25. https://doi.org/10.1108/MD-12-2020-1592/FULL/XML

Arkorful, H., & Hilton, S. K. (2021). Locus of control and entrepreneurial intention: a study in a developing economy. Journal of Economic and Administrative Sciences, 38(2), 333–344. https://doi.org/10.1108/jeas-04-2020-0051

Arshad, M., Omer, F., Sadia, A. (2018). The Role of Entrepreneurship Education in Developing a Passion for Business. Global Business and Organizational Excellence, 38(1), 15–21. https://doi.org/10.4018/978-1-6684-4503-7.ch052

Asghar, M. Z., Gul, F., Seitamaa Hakkarainen, P., et al. (2019). Validating Entrepreneurial Intentions Questionnaire to Assess the Impact of Entrepreneurship Education. TED EĞİTİM VE BİLİM. https://doi.org/10.15390/eb.2019.6105

Awang, A., Shazwani, A., Mohamad, N., et al. (2016). Individual Entrepreneurial Orientation Impact on Entrepreneurial Intention: Intervening Effect of PBC and Subjective Norm. Journal of Entrepreneurship, Business, and Economics, 4(42),

94–129.

Ayodele, T. O., Babalola, M. O., Kajimo-Shakantu, K., et al. (2021). Entrepreneurial intentions of real estate students: an ordinal analysis of the predictors. Journal of Facilities Management, 19(1), 53–79. https://doi.org/10.1108/jfm-07-2020-0048

Balder, N., Harcharanjit, S., Abu Mansor, N. N., et al. (2020). The Impact of Entrepreneurship Education on Attitude, Subjective Norm and Self-Efficacy among Undergraduates. International Journal of Advanced and Applied Sciences, 7(10), 108–16. https://doi.org/10.21833/ijaas.2020.10.012

Barba-Sánchez, V., Mitre-Aranda, M., & Brío-González, J. del. (2022). The entrepreneurial intention of university students: An environmental perspective. European Research on Management and Business Economics, 28(2), 100184. https://doi.org/10.1016/j.iedeen.2021.100184

Barlett, C. P. (2019). Social Psychology Theory Extensions. Predicting Cyberbullying, 37–47. https://doi.org/10.1016/b978-0-12-816653-6.00005-4

Bateman, T. S., & Crant, J. M. (1993). The proactive component of organizational behavior: A measure and correlates. Journal of Organizational Behavior, 14(2), 103–118. https://doi.org/10.1002/job.4030140202

Bazan, C., Datta, A., Gaultois, H., et al. (2019). Effect Of the University in The Entrepreneurial Intention of Female Students. International Journal of Entrepreneurial Knowledge, 7(2). https://doi.org/10.37335/ijek.v7i2.95

Bazkiaei, H. A., Heng, L. H., Khan, N. U., et al. (2020). Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students? Cogent Business & Management, 7(1), 1801217. https://doi.org/10.1080/23311975.2020.1801217

Bazkiaei, H. A., Khan, N. U., Irshad, A. R., et al. (2021). Pathways toward entrepreneurial intention among Malaysian universities' students. Business Process Management Journal, 27(4), 1009–1032. https://doi.org/10.1108/bpmj-01-2021-0021

Bhatta, D. D., Pi, Y., Sarfraz, M., et al. (2024). What determines the entrepreneurial intentions of employees? A moderated mediation model of entrepreneurial motivation and innovate work behavior. Heliyon, 10(2), e24678. https://doi.org/10.1016/j.heliyon.2024.e24678

Bouarir, H., Diani, A., Boubker, O., et al. (2023). Key Determinants of Women's Entrepreneurial Intention and Behavior: The Role of Business Opportunity Recognition and Need for Achievement. Administrative Sciences, 13(2), 33. https://doi.org/10.3390/admsci13020033

Chandler, G. N., Jansen, E. (1992). The Founder's Self-Assessed Competence and Venture Performance. Journal of Business Venturing, 7(3), 223–36. https://doi.org/10.1016/0883-9026(92)90028-P

Chin, W. W. (2010). How to Write Up and Report PLS Analyses. In: Handbook of Partial Least Squares. Springer Berlin Heidelberg. pp. 655–90.

Claes, R., Beheydt, C., & Lemmens, B. (2005). Unidimensionality of Abbreviated Proactive Personality Scales across Cultures. Applied Psychology, 54(4), 476–489. https://doi.org/10.1111/j.1464-0597.2005.00221.x

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences, 2nd ed. New York: Lawrence Erlbaum Associates.

Cortina, J. M. (1994). What Is Coefficient Alpha? An Examination of Theory and Applications. Journal of Applied Psychology, 78(1), 98–104. https://doi.org/10.1037/0021-9010.78.1.98

Crant, J. M. (1996). The Proactive Personality Scale as a Predictor of Entrepreneurial Intentions. Journal of Small Business Management, 34(3), 8–42. https://doi.org/10.1287/isre.13.2.205.83

Delle, E., Amadu, I. M. (2015). Proactive Personality and Entrepreneurial Intention: Employment Status and Student Level as Moderators. International Journal of Small Business and Entrepreneurship Research, 1(4), 1–13. https://doi.org/10.1017/CBO9781107415324.004.

Díaz-Casero, J. C., Hernández-Mogollón, R., & Roldán, J. L. (2012). A structural model of the antecedents to entrepreneurial capacity. International Small Business Journal: Researching Entrepreneurship, 30(8), 850–872. https://doi.org/10.1177/0266242610385263

Dinc, M. S., & Budic, S. (2016). The Impact of Personal Attitude, Subjective Norm, and Perceived Behavioural Control on Entrepreneurial Intentions of Women. Eurasian Journal of Business and Economics, 9(17), 23–35. https://doi.org/10.17015/ejbe.2016.017.02

Donaldson, S. I., & Grant-vallone, E. J. (2002). Understanding Self-Report Bias in Organisational Research. Journal of Business and Psychology, 17(2), 245–60.

Droms, C., & Cracium, G. (2014). The Impact of Attitudinal Ambivalence on Weight Loss Decisions: Consequences and Mitigating Factors. Scholarship and Professional Work-Business, 111.

Economic and Social Commission for Asia and the Pacific (ESCAP). (2020). Asia-Pacific Trade and Investment Trends 2020/2021, Foreign Direct Investment Trends and Outlook in Asia and the Pacific. ESCAP.

Esfandiar, K., Sharifi-Tehrani, M., Pratt, S., et al. (2019). Understanding entrepreneurial intentions: A developed integrated structural model approach. Journal of Business Research, 94, 172–182. https://doi.org/10.1016/j.jbusres.2017.10.045

Fagbemi, F., & Osinubi, T. T. (2020). Leveraging foreign direct investment for sustainability: An approach to sustainable human development in Nigeria. Resources, Environment and Sustainability, 2, 100005. https://doi.org/10.1016/j.resenv.2020.100005

Farrukh, M., Khan, A. A., Shahid Khan, M., et al. (2017). Entrepreneurial intentions: the role of family factors, personality traits and self-efficacy. World Journal of Entrepreneurship, Management and Sustainable Development, 13(4), 303–317. https://doi.org/10.1108/wjemsd-03-2017-0018

Farsi, J. Y., Arabiun, A., & Moradi, M. (2012). The Impact of Opportunity Recognition Skills Training on Entrepreneurial Intention of Female Nursing Students. Journal of Knowledge Management, Economics and Information Technology, 2(4), 96–113.

Fayolle, A., & Liñán, F. (2014). The future of research on entrepreneurial intentions. Journal of Business Research, 67(5), 663–666. https://doi.org/10.1016/j.jbusres.2013.11.024

Ferreira, J. J., Raposo, M. L., Gouveia Rodrigues, R., et al. (2012). A model of entrepreneurial intention. Journal of Small Business and Enterprise Development, 19(3), 424–440. https://doi.org/10.1108/14626001211250144

Fini, R., Rosa G., Gian L. M., et al. (2009). The Foundation of Entrepreneurial Intention. In: Proceedings of the Summer Conference 2009 on Copenhagen Business School. pp. 1–36.

GEDI. (2021). Entrepreneurial Opportunity: Is It an Illusion? The Global Entrepreneurship and Development Institute.

Geissler, M., Zanger, C. (2003). Factors on the Perception of Entrepreneurial Opportunities and Their Influence on Entrepreneurial Intention—an Empirical Study. In: International Council for Small Business ICSB World Conference Proceedings. International Council for Small Business (ICSB).

Hair, J. F., Hult, G. T. M., Ringle, C. M., et al. (2021). Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R. In: Classroom Companion: Business. Springer International Publishing. https://doi.org/10.1007/978-3-030-80519-7

Hair, J. F., Marko, S., Lucas, H., et al. (2014). Partial Least Squares Structural Equation Modeling (PLS-SEM): An Emerging Tool in Business Research. European Business Review, 26(2), 106–21. https://doi.org/10.1108/EBR-10-2013-0128

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. Journal of Marketing Theory and Practice, 19(2), 139–152. https://doi.org/10.2753/mtp1069-6679190202

Hardin-Fanning, F., Ricks, J. M. (2017). Attitudes, Social Norms, and Perceived Behavioral Control Factors Influencing Participation in a Cooking Skills Program in Rural Central Appalachia Frances. Glob Health Promot, 176(3), 139–48. https://doi.org/10.1053/j.gastro.2016.08.014.CagY

Harima, A., Gießelmann, J., Göttsch, V., et al. (2021). Entrepreneurship? Let us do it later: procrastination in the intention–behavior gap of student entrepreneurship. International Journal of Entrepreneurial Behavior & Research, 27(5), 1189–1213. https://doi.org/10.1108/ijebr-09-2020-0665

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Hernández-Sánchez, B. R., Cardella, G. M., & Sánchez-García, J. C. (2020). Psychological Factors that Lessen the Impact of COVID-19 on the Self-Employment Intention of Business Administration and Economics' Students from Latin America. International Journal of Environmental Research and Public Health, 17(15), 5293. https://doi.org/10.3390/ijerph17155293

Hmieleski, K. M., & Corbett, A. C. (2006). Proclivity for Improvisation as a Predictor of Entrepreneurial Intentions. Journal of Small Business Management, 44(1), 45–63. https://doi.org/10.1111/j.1540-627x.2006.00153.x

Hu, R., Wang, L., Zhang, W., et al. (2018). Creativity, Proactive Personality, and Entrepreneurial Intention: The Role of Entrepreneurial Alertness. Frontiers in Psychology, 9. https://doi.org/10.3389/fpsyg.2018.00951

Hui-Chen, C., Kuen-Hung, T., & Chen, Y. P. (2014). The entrepreneurial process: an integrated model. International Entrepreneurship and Management Journal, 10(4), 727–745. https://doi.org/10.1007/s11365-014-0305-8

Hunt, S. D., Sparkman, R. D., & Wilcox, J. B. (1982). The Pretest in Survey Research: Issues and Preliminary Findings. Journal of Marketing Research, 19(2), 269–273. https://doi.org/10.1177/00222437820190021

Jarvis, L. C. (2016). Identification, intentions and entrepreneurial opportunities: an integrative process model. International

Journal of Entrepreneurial Behavior & Research, 22(2), 182–198. https://doi.org/10.1108/ijebr-02-2015-0041

Ji, H., Goo, J. (2021). Pre-Entrepreneurs' Perception of the Technology Regime and Their Entrepreneurial Intentions in Korean Service Sectors. Journal of Open Innovation: Technology, Market, and Complexity, 7(3), 179. https://doi.org/10.3390/joitmc7030179

Karimi, S., Biemans, H. J. A., Lans, T., et al. (2016). The Impact of Entrepreneurship Education: A Study of Iranian Students' Entrepreneurial Intentions and Opportunity Identification. Journal of Small Business Management, 54(1), 187–209. https://doi.org/10.1111/jsbm.12137

Karimi, S., Harm Biekmans, J. A., Karim, N. M., et al. (2017). Testing the Relationship between Personality Characteristics, Contextual Factors and Entrepreneurial Intentions in a Developing Country. International Journal of Psychology, 52(3), 227–40. https://doi.org/10.1002/ijop

Kautonen, T., van Gelderen, M., & Fink, M. (2015). Robustness of the Theory of Planned Behavior in Predicting Entrepreneurial Intentions and Actions. Entrepreneurship Theory and Practice, 39(3), 655–674. https://doi.org/10.1111/etap.12056

Klein, E. J. (2008). Learning, Unlearning, and Relearning: Lessons from One School's Approach to Creating and Sustaining Learning Communities. Teacher Education Quarterly Winter, 200(1), 79–98.

Kock, N., & Lynn, G. (2012). Lateral Collinearity and Misleading Results in Variance-Based SEM: An Illustration and Recommendations. Journal of the Association for Information Systems, 13(7), 546–580. https://doi.org/10.17705/1jais.00302

Krishnan, C. S. N., Ganesh, L. S., & Rajendran, C. (2022). Entrepreneurial Interventions for crisis management: Lessons from the Covid-19 Pandemic's impact on entrepreneurial ventures. International Journal of Disaster Risk Reduction, 72, 102830. https://doi.org/10.1016/j.ijdrr.2022.102830

Krueger, N. F. (2009). Entrepreneurial Intentions Are Dead: Long Live Entrepreneurial Intentions. In: Understanding the Entrepreneurial Mind. Springer.

Kumar, R., & Shukla, S. (2019). Creativity, Proactive Personality and Entrepreneurial Intentions: Examining the Mediating Role of Entrepreneurial Self-efficacy. Global Business Review, 23(1), 101–118. https://doi.org/10.1177/0972150919844395

Kumilachew Aga, M., Amanpreet, S. (2022). The Role of Entrepreneurship Education on Student Entrepreneurial Intentions: Mediating Effect of Attitude, Subjective Norms, and Perceived Behavioral Control. Journal of Business and Management, 28(1), 31–65. https://doi.org/10.6347/JBM.202203

Latimer, A. E., & Martin Ginis, K. A. (2005). The importance of subjective norms for people who care what others think of them. Psychology & Health, 20(1), 53–62. https://doi.org/10.1080/08870440412331300002

Lestari, E. D., Kusuma, H. S., & Marlim, W. F. (2021). Entrepreneurial Intentions: The Effect of Proactive Personality in Perspective of Planned Behavior Theory as an integrated approach in the Indonesian Context. Conference Series, 3(2), 1–17. https://doi.org/10.34306/conferenceseries.v3i2.572

Li, S. N., Ann Dodor, S. F. A., & Akolgo. (2018). An Investigation of the Relationship between Proactive Personality and Entrepreneurial Intentions Using PLS-SEM among Potential Entrepreneurs in Pakistan. Walia Journal, 34(1), 120–31.

Liao, Y., Nguyen, V. H. A., Chi, H., et al. (2022). Unraveling the direct and indirect effects of entrepreneurial education and mindset on entrepreneurial intention: The moderating role of entrepreneurial passion. Global Business and Organizational Excellence, 41(3), 23–40. https://doi.org/10.1002/joe.22151

Lim, W. L., Mohar, Y., & Leilanie, M. N. (2017). The Impact of Entrepreneurial Alertness on Entrepreneurial Intention among University Students in Malaysia: Theory of Planned Behaviour. Journal of Engineering and Applied Sciences, 12(6), 1409–18. https://doi.org/10.3923/jeasci.2017.1409.1418

Lin, Y. C., Liu, G. Y., Chang, C. Y., et al. (2021). Perceived Behavioral Control as a Mediator between Attitudes and Intentions toward Marine Responsible Environmental Behavior. Water, 13(5), 580. https://doi.org/10.3390/w13050580

Liñán, F., & Chen, Y. (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

Lopes, J. M., Suchek, N., & Gomes, S. (2023). The antecedents of sustainability-oriented entrepreneurial intentions: An exploratory study of Angolan higher education students. Journal of Cleaner Production, 391, 136236. https://doi.org/10.1016/j.jclepro.2023.136236

Mahendra, A. M., Djatmika, E. T., & Hermawan, A. (2017). The Effect of Entrepreneurship Education on Entrepreneurial Intention Mediated by Motivation and Attitude among Management Students, State University of Malang, Indonesia. International Education Studies, 10(9), 61. https://doi.org/10.5539/ies.v10n9p61

Maheshwari, G., Kha, K. L., & Arokiasamy, A. R. A. (2023). Factors affecting students' entrepreneurial intentions: a systematic

review (2005–2022) for future directions in theory and practice. Management Review Quarterly, 73(4), 1903–1970. https://doi.org/10.1007/s11301-022-00289-2

Mai, N. K., Nguyen, H. A. (2016). The Factors Affecting Entrepreneurial Intention of the Students of Vietnam National University—A Mediation Analysis of Perception toward Entrepreneurship. Journal of Economics, Business and Management, 4(2), 104–11. https://doi.org/10.7763/joebm.2016.v4.375

Mamun, A. A., Nawi, N. B. C., Mohiuddin, M., et al. (2017). Entrepreneurial intention and startup preparation: A study among business students in Malaysia. Journal of Education for Business, 92(6), 296–314. https://doi.org/10.1080/08832323.2017.1365682

Manstead, A. S. (2012). Distinguishing between Perceived Behavioral Control and Self-Efficacy in the Domain of Academic Intentions and Behaviors. Journal of Applied Social Psychology, 28(3), 75–93.

Martín-Navarro, A., Medina-Garrido, J. A., & Velicia-Martín, F. (2021). How effectual will you be? Development and validation of a scale in higher education. The International Journal of Management Education, 19(3), 100547. https://doi.org/10.1016/j.ijme.2021.100547

Martín-Navarro, A., Velicia-Martín, F., Medina-Garrido, J. A., et al. (2023). Impact of effectual propensity on entrepreneurial intention. Journal of Business Research, 157, 113604. https://doi.org/10.1016/j.jbusres.2022.113604

Memon, M. A., Cheah, J. H., Ramayah, T., et al. (2018). Mediation Analysis Issues and Recommendations. Journal of Applied Structural Equation Modeling, 2(1), I–IX. https://doi.org/10.47263/JASEM.2(1)01

Monllor, J., & Altay, N. (2016). Discovering opportunities in necessity: the inverse creative destruction effect. Journal of Small Business and Enterprise Development, 23(1), 274–291. https://doi.org/10.1108/jsbed-10-2014-0172

Montañés-Del-Río, M. Á., & Medina-Garrido, J. A. (2020). Determinants of the Propensity for Innovation among Entrepreneurs in the Tourism Industry. Sustainability, 12(12), 5003. https://doi.org/10.3390/su12125003

Moreno, J. J., Wach, K. (2014). The Entrepreneurial Profile of Students Participating in the Academic Entrepreneurship Course: Pilot Study Results. Horyzonty Wychowania, 13(26), 121–43.

Munir, H., Jianfeng, C., & Ramzan, S. (2019). Personality traits and theory of planned behavior comparison of entrepreneurial intentions between an emerging economy and a developing country. International Journal of Entrepreneurial Behavior & Research, 25(3), 554–580. https://doi.org/10.1108/ijebr-05-2018-0336

Ng, H. S., Hung Kee, D. M., & Khan, M. J. (2021). Effects of personality, education and opportunities on entrepreneurial intentions. Education + Training, 63(7/8), 992–1014. https://doi.org/10.1108/et-02-2019-0040

Nguyen, A. T., Do, T. H. H., Vu, T. B. T., et al. (2019). Factors affecting entrepreneurial intentions among youths in Vietnam. Children and Youth Services Review, 99, 186–193. https://doi.org/10.1016/j.childyouth.2019.01.039

Ni, L. W., Lim, B. P., Lim, L. Y., et al. (2012). Entrepreneurial Intention: A Study Among Students of Higher Learning Institution. Entrepreneurial Intention, 12, 181.

Nsengiyunva, J. (2019). How Proactive Personality and Entrepreneurial Self-Efficacy Influence Entrepreneurial Intentions among University Students in Uganda [PhD thesis]. Makerere University 51.

Parente, R., Feola, R. (2013). Opportunity Recognition, Entrepreneurial Intent and Commitment of Young Researchers. International Journal of Technology Management and Sustainable Development, 12(2), 155–66. https://doi.org/10.1386/tmsd.12.2.155_1

Parkinson, J., David, P., & Rundle-Thiele, S. (2017). Self-efficacy or perceived behavioural control: Which influences consumers' physical activity and healthful eating behaviour maintenance? Journal of Consumer Behaviour, 16(5), 413–423. https://doi.org/10.1002/cb.1641

Paul, J., & Shrivatava, A. (2016). Do young managers in a developing country have stronger entrepreneurial intentions? Theory and debate. International Business Review, 25(6), 1197–1210. https://doi.org/10.1016/j.ibusrev.2016.03.003

Peralta, R. R. (2021). Factors That Lead to Entrepreneurial Intention of the Employees Association of Medical Colleges of Northern Philippines and International School of Asia and The Pacific. International Journal of Advanced Research in Management and Social Sciences, 10(9), 6–19.

Peterson, R. A., & Kim, Y. (2013). On the relationship between coefficient alpha and composite reliability. Journal of Applied Psychology, 98(1), 194–198. https://doi.org/10.1037/a0030767

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., et al. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 88(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Prabhu, V. P., McGuire, S. J., Drost, E. A., et al. (2012). Proactive personality and entrepreneurial intent. International Journal of Entrepreneurial Behavior & Research, 18(5), 559–586. https://doi.org/10.1108/13552551211253937

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behavior Research Methods, 40(3), 879–891. https://doi.org/10.3758/brm.40.3.879

Prianto, A. (2017). Various Variables to Trigger Entrepreneurial Intention for Young Entrepreneurs in East Java Indonesia. International Journal of Business and Management Invention, 6(4), 32–44.

Ramos-Rodríguez, A. R., Martínez-Fierro, S., Medina-Garrido, J. A., et al. (2015). Global entrepreneurship monitor versus panel study of entrepreneurial dynamics: comparing their intellectual structures. International Entrepreneurship and Management Journal, 11(3), 571–597. https://doi.org/10.1007/s11365-013-0292-1

Ramos-Rodríguez, A. R., Medina-Garrido, J. A., & Ruiz-Navarro, J. (2019). Why not now? Intended timing in entrepreneurial intentions. International Entrepreneurship and Management Journal, 15(4), 1221–1246. https://doi.org/10.1007/s11365-019-00586-5

Rauch, A., & Hulsink, W. (2012). Putting Entrepreneurship Education Where the Intention to Act Lies: An Investigation into the Impact of Entrepreneurship Education on Entrepreneurial Behavior. Academy of Management Learning & Education, 14(2), 187–204. https://doi.org/10.5465/amle.2012.0293

Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. International Journal of Research in Marketing, 26(4), 332–344. https://doi.org/10.1016/j.ijresmar.2009.08.001

Rippa, P., Ferruzzi, G., Holienka, M., et al. (2020). What drives university engineering students to become entrepreneurs? Finding different recipes using a configuration approach. Journal of Small Business Management, 61(2), 353–383. https://doi.org/10.1080/00472778.2020.1790291

Ruta, M. (2022). How the War in Ukraine Is Reshaping World Trade and Investment. World Bank Blogs.

Samo, A. H., Hashim, N., (2016). The Impact of Entrepreneurial Alertness on Entrepreneurial Intentions. Journal of International Business Research and Marketing, 1(6), 7–11. https://doi.org/10.18775/jibrm.1849-8558.2015.16.3001

Sampene, A. K., Li, C., Khan, A., et al. (2023). Yes! I want to be an entrepreneur: A study on university students' entrepreneurship intentions through the theory of planned behavior. Current Psychology, 42(25), 21578–21596. https://doi.org/10.1007/s12144-022-03161-4

Sanyang, S. E., & Huang, W. C. (2010). Entrepreneurship and economic development: the EMPRETEC showcase. International Entrepreneurship and Management Journal, 6(3), 317–329. https://doi.org/10.1007/s11365-008-0106-z

Shane, S., Venkataraman, S. (2007). The Promise of Entrepreneurship as a Field of Research. In: Entrepreneurship: Concepts, Theory and Perspective. Springer.

Shirokova, G., Osiyevskyy, O., & Bogatyreva, K. (2015). Exploring the intention–behavior link in student entrepreneurship: Moderating effects of individual and environmental characteristics. European Management Journal, 34(4), 386–399. https://doi.org/10.1016/j.emj.2015.12.007

Shmueli, G., Sarstedt, M., Hair, J. F., et al. (2019). Predictive model assessment in PLS-SEM: guidelines for using PLSpredict. European Journal of Marketing, 53(11), 2322–2347. https://doi.org/10.1108/ejm-02-2019-0189

Shoaib, M., Abbas, Z., Yousaf, M., et al. (2021). The role of GHRM practices towards organizational commitment: A mediation analysis of green human capital. Cogent Business & Management, 8(1). https://doi.org/10.1080/23311975.2020.1870798

Sidratulmunthah, Hussain, S., & Imran Malik, M. (2018). Towards nurturing the entrepreneurial intentions of neglected female business students of Pakistan through proactive personality, self-efficacy and university support factors. Asia Pacific Journal of Innovation and Entrepreneurship, 12(3), 363–378. https://doi.org/10.1108/apjie-03-2018-0015

Silveyra, G., Herrero, Á., & Pérez, A. (2021). Model of Teachable Entrepreneurship Competencies (M-TEC): Scale development. The International Journal of Management Education, 19(1), 100392. https://doi.org/10.1016/j.ijme.2020.100392

Simatupang, T. S., Amir Machmud, & Suwatno. (2020). Does Perceived Behavioral Control Mediate the Effect of Entrepreneurial Knowledge on Student Entrepreneurship Intentions in Indonesia? International Journal of Psychosocial Rehabilitation. 24(8), 3720–29.

Soria-Barreto, K., Honores-Marin, G., Gutiérrez-Zepeda, P., et al. (2017). Prior Exposure and Educational Environment towards Entrepreneurial Intention. Journal of Technology Management & Innovation, 12(2), 45–58. https://doi.org/10.4067/s0718-27242017000200006

Souitaris, V., Zerbinati, S., & Al-Laham, A. (2007). Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. Journal of Business Venturing, 22(4), 566–591.

https://doi.org/10.1016/j.jbusvent.2006.05.002

Srivastava, M., Shivani, S., & Dutta, S. (2023). Antecedents of sustainability-oriented entrepreneurial intentions: A comprehensive model and empirical evidence. Sustainable Development, 32(3), 1774–1791. https://doi.org/10.1002/sd.2747

Staats, H. (2004). Pro-environmental Attitudes and Behavioral Change. Encyclopedia of Applied Psychology, 127–135. https://doi.org/10.1016/b0-12-657410-3/00817-5

Stel, A. van, Carree, M., & Thurik, R. (2005). The Effect of Entrepreneurial Activity on National Economic Growth. Small Business Economics, 24(3), 311–321. https://doi.org/10.1007/s11187-005-1996-6

Tatarko, A., & Schmidt, P. (2016). Individual social capital and the implementation of entrepreneurial intentions: The case of Russia. Asian Journal of Social Psychology, 19(1), 76–85. https://doi.org/10.1111/ajsp.12113

Teixeira, A. A. C., & Forte, R. P. (2017). Prior education and entrepreneurial intentions: the differential impact of a wide range of fields of study. Review of Managerial Science, 11(2), 353–394. https://doi.org/10.1007/s11846-015-0188-2

Teixeira, S. J., Casteleiro, C. M. L., Rodrigues, R. G., et al. (2017). Entrepreneurial intentions and entrepreneurship in European countries. International Journal of Innovation Science, 10(1), 22–42. https://doi.org/10.1108/ijis-07-2017-0062

Tembe, N. (2023). Strategies for Institutionalising Entrepreneurship; Building an Entrepreneurial University. Available online: https://usaf.ac.za/strategies-for-institutionalising-entrepreneurship-building-an-entrepreneurial-university/ (accessed on 22 April 2023).

Tomy, S., & Pardede, E. (2020). An entrepreneurial intention model focussing on higher education. International Journal of Entrepreneurial Behavior & Research, 26(7), 1423–1447. https://doi.org/10.1108/ijebr-06-2019-0370

Tornikoski, E., & Maalaoui, A. (2019). Critical reflections—The Theory of Planned Behaviour: An interview with Icek Ajzen with implications for entrepreneurship research. International Small Business Journal: Researching Entrepreneurship, 37(5), 536–550. https://doi.org/10.1177/0266242619829681

Trafimow, D., Sheeran, P., Conner, M., et al. (2002). Evidence that perceived behavioural control is a multidimensional construct: Perceived control and perceived difficulty. British Journal of Social Psychology, 41(1), 101–121. https://doi.org/10.1348/014466602165081

Trivedi, R. (2016). Does University Play Significant Role in Shaping Entrepreneurial Intention? A Cross-Country Comparative Analysis. Journal of Small Business and Enterprise Development, 23(3), 790–811. https://doi.org/10.1108/02656710210415703

Tu, B., Bhowmik, R., Hasan, Md. K., et al. (2021). Graduate Students' Behavioral Intention towards Social Entrepreneurship: Role of Social Vision, Innovativeness, Social Proactiveness, and Risk Taking. Sustainability, 13(11), 6386. https://doi.org/10.3390/su13116386

UNESCO. (2021). TVETipedia Glossary. Available online: https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/filt=all/id=206 (accessed on 2 June 2023).

United Nations Conference on Trade and Development (UNCTAD). (2021). Global Foreign Direct Investment Set to Recover Some Lost Ground, Uncertainty Remains—UN Report UNCTAD. Press Release.

Utami, C. W. (2017). Attitude, Subjective Norms, Perceived Behavior, Entrepreneurship Education and Self-efficacy toward Entrepreneurial Intention University Student in Indonesia. European Research Studies Journal, 475–495. https://doi.org/10.35808/ersj/654

Valliere, D. (2014). Purifying entrepreneurial intent: proposition of a new scale. Journal of Small Business & Entrepreneurship, 27(5), 451–470. https://doi.org/10.1080/08276331.2015.1094225

Vamvaka, V., Stoforos, C., Palaskas, T., et al. (2020). Attitude toward entrepreneurship, perceived behavioral control, and entrepreneurial intention: dimensionality, structural relationships, and gender differences. Journal of Innovation and Entrepreneurship, 9(1). https://doi.org/10.1186/s13731-020-0112-0

Vial, V. (2017). The Elements of Sustainable Entrepreneurship at Wu Guan Tang Restaurant. Global Business and Organizational Excellence, 36(2), 17–24. https://doi.org/10.1002/joe.21766

Walker, J. K., Jeger, M., & Kopecki, D. (2013). The Role of Perceived Abilities, Subjective Norm and Intentions in Entrepreneurial Activity. The Journal of Entrepreneurship, 22(2), 181–202. https://doi.org/10.1177/0971355713490621

Wang, Y., Ellinger, A. D., & Jim Wu, Y. (2013). Entrepreneurial opportunity recognition: an empirical study of R&D personnel. Management Decision, 51(2), 248–266. https://doi.org/10.1108/00251741311301803

Welsh, D. H. B., Othman, D., Alserhan, B., et al. (2021). The impact of the international crisis on the entrepreneurial intentions of refugees. International Journal of Entrepreneurial Behavior & Research, 28(3), 720–740. https://doi.org/10.1108/ijebr-02-

2021-0150

Xu, Y., Du, J., Khan, M. A. S., et al. (2022). Effects of Subjective Norms and Environmental Mechanism on Green Purchase Behavior: An Extended Model of Theory of Planned Behavior. Frontiers in Environmental Science, 10. https://doi.org/10.3389/fenvs.2022.779629

Xin, Y., Khan, R. U., Dagar, V., & Qian, F. (2023). Do international resources configure SMEs' sustainable performance in the digital era? Evidence from Pakistan. Resources Policy, 80, 103169.

Yar, D. H., Wennberg, W., Henrik, B. (2008). Creativity in Entrepreneurship Education. Journal of Small Business and Enterprise Development, 15(2), 304–20. https://doi.org/10.1108/14626000810871691/FULL/HTML

Yasa, N. N. K., Rini, A., Cempaka, N. P., et al. (2018). The Role of Attitudes in Mediating Entrepreneurship Education in Higher Education and Psychological Characteristics of the Entrepreneurship Intention. South East Asia Journal of Contemporary Business, Economics and Law, 17(2), 47–55.

Yego, C., Jeon, S. (2017). Do Entrepreneurial Intentions Matter? An Empirical Investigation Through the Eyes of Global Entrepreneurship Monitor. In: Proceedings of the Conference on Business Venturing.

Yoopetch, C. (2021). Women empowerment, attitude toward risk-taking and entrepreneurial intention in the hospitality industry. International Journal of Culture, Tourism and Hospitality Research, 15(1), 59–76. https://doi.org/10.1108/ijcthr-01-2020-0016

Yousaf, U., Ali, S. A., Ahmed, M., et al. (2020). From entrepreneurial education to entrepreneurial intention: a sequential mediation of self-efficacy and entrepreneurial attitude. International Journal of Innovation Science, 13(3), 364–380. https://doi.org/10.1108/ijis-09-2020-0133

Yzer, M. (2012). Perceived Behavioral Control in Reasoned Action Theory. The ANNALS of the American Academy of Political and Social Science, 640(1), 101–117. https://doi.org/10.1177/0002716211423500

Zardini, A., Cecilia, R., Marco, S. (2013). A Network Perspective for a Borderless International Structure: The Experience of an Italian Entrepreneurial SME in Morocco. Journal of Organizational Excellence, 33(1), 6–18. https://doi.org/10.1002/joe.21520

Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. Journal of Consumer Research, 37(2), 197–206. https://doi.org/10.1086/651257

Appendix

Questionnaires

- Proactive Personality (Bateman and Crant, 1993; Claes et al., 2005).
  - PP1: If I see something I do not like, I fix it.
  - PP2: No matter what the odds, if I believe in something I will make it happen.
  - PP3: I love being a champion for my ideas, even against others' opposition.
  - PP4: I am always looking for better ways to do things.
  - PP5: If I believe in an idea, no obstacle will prevent me from making it happen.
- Entrepreneurship Education (Diaz-Casero et al., 2012).
  - EE1: Teaching in my college and university education encourages creativity, self-sufficiency and personal initiative.
  - EE2: Teaching in my college and university provides adequate instruction in market economic principles.
  - EE3: Teaching in my college and university education provides adequate attention to entrepreneurship and new firm creation.
  - EE4: My college and university education provides good and adequate preparation for starting up and developing new firms.
  - EE5: The level of business and management education provide good and adequate preparation for starting up and developing new firms.
  - EE6: The vocational, professional and continuing education systems in my college and university provide good and adequate preparation for starting up and developing new firms.
- Entrepreneurial Opportunities (Bateman and Crant, 1993; Chandler and Jansen, 1992).
  - EO1: I am able to perceive unmet consumer needs.
  - EO2: I am able to identify goods and services that consumers want.
  - EO3: I am able to look for products or services that provide real benefits to consumers.
  - EO4: I am able to seize high-quality business opportunities.
  - EO5: I excel at identifying opportunities.
  - EO6: I can spot good opportunities long before others can.
- Attitude Toward Entrepreneurship (Liñán and Chen, 2009).
  - ATW1: Being an entrepreneur implies more advantages than disadvantages to me.
  - ATW2: A career as entrepreneur is attractive for me.
  - ATW3: Being an entrepreneur would entail great satisfactions for me.
  - ATW4: Among various options, I would rather be an entrepreneur.
- Subjective Norms (Liñán and Chen, 2009).
  - SN1: My parents are positively oriented toward my future career as an entrepreneur.
  - SN2: My friends see entrepreneurship as a logical choice for me.
  - SN3: I believe that people, who are important to me, think that I should pursue a career as an entrepreneur.
- Perceived Behavioural Control (Liñán and Chen, 2009).
  - PBC1: To start a firm and keep it working would be easy for me.
  - PBC2: I am prepared to start a viable firm.
  - PBC3: I can control the creation process of a new firm.
  - PBC4: I know the necessary practical details to start a firm.
  - PBC5: I know how to develop an entrepreneurial project.
  - PBC6: If I tried to start a firm, I would have a high probability of succeeding.
- Entrepreneurial Intentions (Liñán and Chen, 2009).

- E11: I am ready to do anything to be an entrepreneur.
- EI2: My professional goal is to become an entrepreneur.
- EI3: I will make every effort to start and run my own firm.
- EI4: I am determined to create a firm in the future.
- EI5: I have a very seriously thought of starting a firm.
- EI6: I have the firm intention to start a firm some day.