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Impact of attitude towards entrepreneurship education and role models on entrepreneurial intention

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Abstract

In this paper, we investigate entrepreneurial intention by applying the Theory of Planned Behaviour (TPB) by Ajzen (1991). We specifically examine the role of gender on entrepreneurial education and role models or parental self-employment (PSE), by carrying out a multi-group analysis (MGA). We used a web-based questionnaire to collect information from 216 students at a Spanish university. Data are analysed with the help of Structural Equation Modelling (SEM)–Partial Least Square (PLS). We conducted a tripartite analysis on Complete, Male, and Female Models. Regarding the Complete and Male Models, all the primary hypotheses (5 in total) were accepted, compared with four for the Female Model. In this study, the primary hypotheses focus on the core variables of the TPB. We recommend the institutionalization of traineeship, elective courses, conference and workshops on entrepreneurship to boost the entrepreneurial spirit of students. Though this study has confirmed the applicability of the TPB model to entrepreneurial intention, we did not find a significant relationship between Males and Females about their entrepreneurial intentions for some relationships. However, this study suggests that the relationship between PSE and perceived behavioural control (PBC) is stronger for Males than Females Our results have implications for entrepreneurship education scholars, program evaluators, and policymakers.

Keywords: Theory of Planned Behaviour (TPB), Entrepreneurial intention, Students, Parental self-employment (PSE)

Introduction

Entrepreneurship is an individual's ability to turn ideas into action (European Commission, 2020). Though the transformative power of entrepreneurship has been widely documented, only 37% of Europeans aspire to be entrepreneurs, compared to 51% of people in the US and China, respectively. The European Commission's initiative promoting entrepreneurship, as summarized in the January 2013 Entrepreneurship Action Plan aims to reignite Europe's entrepreneurial spirit by educating young people about entrepreneurship, highlighting opportunities for women and other groups, easing administrative requirements and making easier to attract investors. The European Commission (2020) professes that 'young people still struggle to find jobs but remain more in

education and training'. The youth unemployment rate in Spain increased to 30.90% in February from 30.80% in January of 2020. Accordingly, a key action plan in the Spanish Strategy on Social Economy (2017–2020) revolves around the 'support for employment and entrepreneurship' (European Commission, 2020).

Over the years, researchers have established a relationship between entrepreneurship and economic growth and transformation (Audretsch et al., 2009; Stoica et al., 2020). Due to the positive outcomes associated with entrepreneurial activity, researchers and policymakers alike are motivated in the quest to acquire an in-depth knowledge of entrepreneurial intention. Entrepreneurial intention (EI) is considered to be the most critical ingredient for the future formation of entrepreneurial ventures (Nguyen et al., 2019). Previous studies have examined student entrepreneurship and the impact of entrepreneurship courses. Universities are required to play an important role in an environment that propels entrepreneurship and boosts students to pursue career alternative. Some researchers have analysed the role played by entrepreneurship education in shaping entrepreneurial intentions of students, (Peterman & Kennedy, 2003; Souitaris et al., 2007). Thus, the relationship between university culture and student's entrepreneurial intentions needs to be examined (Liñán et al. 2011b).

Entrepreneurship Education (EE) may interact with other factors to generate a more appropriate environment for entrepreneurship or it may have an influence on other factors (e.g., gender) (Entrialgo & Iglesias, 2016). According to Davidsson (1995), personal factors such as age, gender, education, vicarious experience, and experiences of change to a variety of attributes influence conviction and entrepreneurial intentions. However, the role of universities as provider and enabler of an environment conducive to nurture entrepreneurial intention, leading to new venture creation, has not been studied (Trivedi, 2016). Empirical studies exploring university support factors and entrepreneurship promotion among university students are limited (Walter et al., 2006). Turker and Selcuk (2009) posited that entrepreneurship education and university education play a major role in shaping entrepreneurial intention among students. Kraaijenbrink et. al. (2010) proposed that as universities support students in diverse means, it is necessary to understand the effect of such measures and the extent to which they could impact students' entrepreneurial careers. Previous studies have provided empirical evidence about entrepreneurial intention among students from various perspectives (Trivedi, 2016; Zhang et al., 2014). Some researchers argue that entrepreneurial motivation can be nurtured with specific entrepreneurship education (Souitaris et al., 2007), whereas others disagree, questioning whether teaching can propel entrepreneurial motivation (Colette et al., 2005).

This paper uses the theory of planned behavior (TPB) proposed by Ajzen (1991) as the basic framework to understand the entrepreneurial intention of students and then modified the same by integrating Attitude Towards Entrepreneurship Education (ATEE) and Role Models or Parental Self-Employment (PSE) as antecedents of TPB to understand their influence on intention Previous studies have used and supported the effectiveness of TPB in predicting entrepreneurial intention (Krueger et al., 2000; Moriano et al., 2012). Besides, numerous scholars (e.g., Amofah et al., 2020; Entrialgo & Iglesias, 2016; Fayolle et al., 2006; Ohanu & Shopide, 2021; Trivedi, 2016, 2017) have modified the TPB by introducing different antecedents in diverse studies.

From the foregoing, we advance some questions: What are the entrepreneurial intentions among university students? What is the relationship between PSE and Attitude Towards Entrepreneurship (ATE) and perceived behavioural control (PBC)? What is the effect of ATEE on ATE and PBC? To what extent do the relationships between Males and Females differ? Following Entrialgo and Iglesias (2017), we examine the effect of PSE and ATEE on the antecedents of the TPB and also analyse the role of gender in these relationships. Thus, the main objective of this study is to examine the role played by ATEE and PSE in fostering entrepreneurial intention among students.

To test the validity of the model, samples were drawn from students from a university in Catalonia, Spain. According to Liñán et. al. (2011b) Catalonia has a reputation for having a hard-working population, entrepreneurial spirit, and a dynamic economy.

To our best knowledge, this is a novel approach and may encourage future research in this area. A contribution of this paper is the provision of a better understanding of the role of EE and PSE and their impact on entrepreneurial intention. Moreover, the outcomes of this study could be beneficial to policymakers to understand not only the pattern of relationships among intention antecedents but also its implications for interventions and developing entrepreneurial intention. Our paper extends the studies of Trivedi (2016) by introducing Role Model or PSE and ATEE as antecedents of the TPB and the role of gender.

The remainder of the paper is structured as follows. In the next section, the literature on entrepreneurial intention in line with TPB along with the university environment and support (which we operationalize as ATEE) is outlined. This is followed by the methodology. Finally, the results of the study and their practical implications have been provided along with direction for future research and conclusion.

Theoretical framework and hypothesis development

Entrepreneurial intention and the theory of planned behaviour

Bird (1988, p. 442) defined intention as 'a state of mind directing a person's attention toward a specific object (goal) or path to achieve something (means)'. According to Bae et. al. (2014) entrepreneurial intentions are the willingness to own or venture into a business. The concept of intention and its antecedents have received immerse attention in entrepreneurship research for its importance in predicting entrepreneurial behavior.

The TPB (Ajzen, 1991, 2002) is perhaps one of the most popular models that has caught the attention of researchers in these contemporary times. Thus among the many models (e.g., Shapero & Sokol, 1982; Bird, 1988) used to explain entrepreneurial intentions, none have had as much impact as Ajzen's TPB (Ajzen, 1991; Krueger et al., 2000; Liñán & Chen, 2009). As of April 2020, the TPB (Ajzen, 2012) has been subject to empirical analysis in more than 4200 papers referenced in the Web of Science bibliographical database, making it one of the popular theories in the social and behavioral sciences (Bosnjak et al., 2020). They further revealed that the TPB has gained enormous attention in disciplines such as health sciences, environmental science, business and management, and educational research. In this study, the TPB is used as a basic framework to understand students' entrepreneurial intentions. The TPB model has often been used to study the intention to start a venture in a couple of research setting (Krueger, 1993; Trivedi, 2016) and it has proven that Ajzen's TPB was an appropriate research framework for

assessing intentions in the choice of employment (Iakovleva & Kolvereid, 2009; Kolvereid, 1996). According to the TPB, human behavior is guided by three kinds of reflections, beliefs about the likely consequences of the behavior (behavioural beliefs), beliefs about the normative expectations of others (normative beliefs), and beliefs about the presence of factors that may ease or impede performance of the behavior (control beliefs) (Bosnjak et al., 2020).

Attitude towards entrepreneurship

Ajzen (1991) conceptualized attitude as the extent to which an individual has a positive or negative evaluation of the behavior in question. In the context of this paper, this refers to how a student thinks and feels about entrepreneurship. Behavioural Attitudes may be split into Affective and Instrumental. Affective attitude refers to whether an individual perceives behavior to be enjoyable or not. Instrumental attitude on the other hand, refers to whether the behavior is beneficial or harmful. The attitude towards the behavior (entrepreneurship) is an important component concerning the perception of desirability that affects entrepreneurial intention. According to Santos et al., (2016) and Liñán et. al. (2011a), ATE has a positive impact on EI.

Subjective norm (SN)

According to Ajzen (1991), the opinion of important reference groups such as parents, spouses, friends, and relatives may also influence the behavior of a person to perform or not perform certain actions. Social norms refer to the perceived social pressure from family, friends, or significant others to perform an entrepreneurial behavior (Ajzen, 1991). Social norms tend to contribute more weakly to intention (Kolvereid & Isaksen, 2006) for individuals with a strong internal inner locus of control (Ajzen, 2002) compared to those with a strong action orientation (Bagozzi, 1992). Some studies did not establish any significant direct correlation between subjective norms (SN) and EI (Krueger et al., 2000; Liñán & Chen, 2009; Santos et al., 2016). Most studies have established that subjective norms favorably affect ATE and the PBC (Entrialgo & Iglesias, 2016; Liñán & Chen, 2009; Liñán et al. 2011a; Liñán & Santos, 2007; Trivedi, 2017). Some empirical studies (Scherer et al., 1989; Matthews & Moser, 1995; Trivedi, 2016, 2017) have asserted that SN influence attitude and PBC and thus indirectly EI.

Perceived behavioral control

The third and most important determinant identified by Ajzen (1991) is the perceived behavioural control. PBC examines the perceived feasibility of performing behaviour and its closely related to the perception of self-efficacy (Krueger et al., 2000). PBC is the perceived easiness or difficulty of becoming an entrepreneur (Ajzen, 1991). Although some researchers have considered PBC as similar to self-efficacy, Ajzen (2002) specifies that it is a wider construct, since it encompasses and perceived controllability of the behavior. According to Santos et. al. (2016) and Liñán et. al. (2011a), PBC has a positive impact on EIs. In general, the more favorable the attitude and SN, and the greater the perceived control, the stronger should be the individual's intention to perform the behavior in question (Bosnjak et al., 2020).

Entrepreneurship education and support

Entrepreneurship education refers to education for entrepreneurial attitudes and skills (Bae et al., 2014). It consists of 'any pedagogical program or process of education for entrepreneurial attitudes and skills (Fayolle et al., 2006, p. 702). The debate about whether entrepreneurship can be promoted through education or not persist because of inconsistencies in previous studies. Whilst some empirical studies have found a positive impact from EE (Block et al., 2013; Iakovleva & Kolvereid, 2009; Kolvereid & Moen, 1997; Souitaris et al., 2007; Valliere, 2016; Walter & Dohse, 2012), others reported a statistically insignificant or negative relationship (Oosterbeek et al., 2010; von Graevenitz et al., 2010). Bae et. al. (2014) in their meta-analysis suggested that EE is positively related to entrepreneurial intentions.

According to Upton et. al. (1995), 40% of those who pursued entrepreneurship courses started their own businesses. Liñán (2008) posits that EE can nurture a student's attitudes and intentions, as well as the establishment of a new firm. Previous studies suggest that certain university support policies and practices can promote entrepreneurial activities among students, in areas such as technology transfer offices and faculty consultants (Mian, 1996); university incubators and physical resources (Mian, 1997); and university venture funds (Lerner, 2005). Entrepreneurship Education program and the entrepreneurial support provided by universities are effective ways of obtaining the requisite knowledge about entrepreneurship and motivating young people to seek an entrepreneurial career (Henderson & Robertson, 1999; Lin & Si, 2014). The impact of education and university environment on the creation of prospective entrepreneurs and the relationship between university assistance and support and the set of new businesses have gained attention in the academic circles (Trivedi 2014). Trivedi (2016) established that the university environment and support positively affect PBC. Zhang et. al. (2014) found a positive correlation between EE and entrepreneurial intention among students.

Role models/parental self-employment

Entrepreneurial family background refers to those people whose parent(s) or family member(s) is (are) involved in self-employment (Bae et al., 2014). According to Stephens (2007) parents play a major role in how their children turn out. Parents are powerful role models for children and they can influence their children's entrepreneurial intentions. Zellweger et al. (2011) argued that entrepreneurship education is less probable to promote entrepreneurial intentions of students who come from an entrepreneurial family background. According to Bae et al. (2014), EE may be less effective on entrepreneurial intentions for students from an entrepreneurial family compared to students without an entrepreneurial family background. In fact, they failed to support the hypothesis that, the positive link between entrepreneurship education and entrepreneurial intentions will be weaker in people from an entrepreneurial family background than for those who do not come from one.

The role of gender

Most studies claim that gender plays a major role in measuring entrepreneurial and self-employment career choice intentions (Verheul et al., 2012). Gender differences

Table 1 Hypotheses (primary and secondary)

No.	Description
Primary hypotheses	
1	ATE positively influences entrepreneurial intention
2	PBC positively influences entrepreneurial intention
3	SN positively influences entrepreneurial intention
4	SN positively influences ATE
5	SN positively influences perceived behavioral control
Secondary hypotheses	
6	ATEE positively influences ATE
7	ATEE positively influences PBC
8	ATEE is positively related to entrepreneurial intention
9	PSE positively influences ATE
10	PSE positively influences PBC
11	PSE are positively related to entrepreneurial intentions
12	The relationship between PSE and ATE is stronger for males than for females
13	The relationship between PSE and PBC is stronger for males than for females
14	The relationship between ATEE and ATE is stronger for males than for females
15	The relationship between ATEE and PBC is stronger for males than for females

NB: the primary hypotheses were analyzed along three thematic areas: complete/combined, males and females
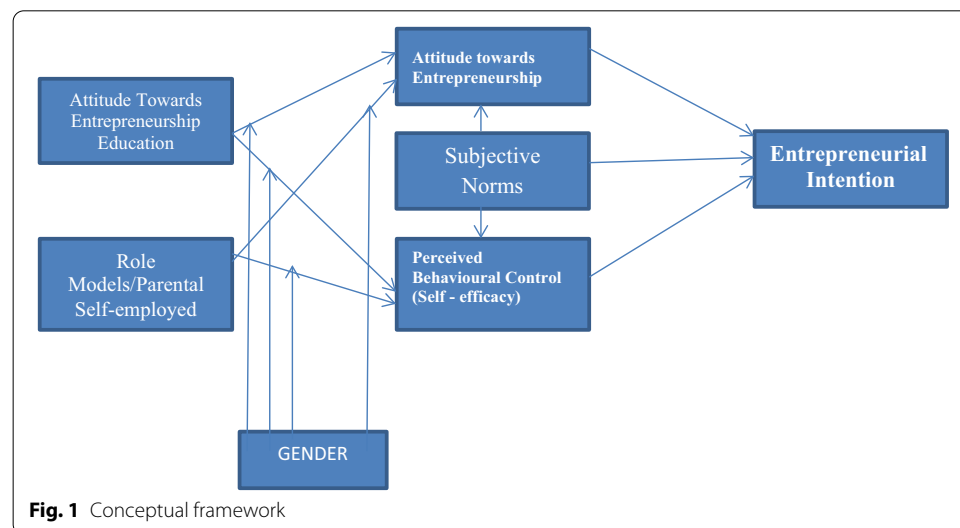

Fig. 1 Conceptual framework

in entrepreneurship are extensively reported in the literature (Gatewood et al., 2003; Reynolds et al., 2004). The presence of a gap between males and females in entrepreneurship has long been recognized, (de Bruin et al., 2007; Díaz-García & Jiménez-Moreno, 2010; Hughes et al., 2012). Males have higher entrepreneurial intentions than females (Crant, 1996; Haus et al., 2013; Hindle et al., 2009; Wilson et al., 2004; Zhao et al., 2005). Bae et. al. (2014) failed to support the hypothesis that the positive link between EE and entrepreneurial intentions will be weaker in males than females. Gupta et. al. (2009) and Kristiansen and Indarti (2004) found no significant difference between males and females respondents on entrepreneurial intentions.

From the foregoing, the following hypotheses (see Table 1) are proposed and the conceptual framework for this study is depicted in Fig. 1.

Methodology

Following Engidaw (2021), Liñán (2008) and Ndofirepi (2020), the study is developed in a single country, institution, and culture. Thus, the empirical analysis of this survey was carried out among university students in a Spanish university in the Catalonia region. We used a structured online questionnaire. Convenience sampling technique was used, because it is a popular tool in entrepreneurship research (Kolvereid, 1996; Krueger et al., 2000; Fayolle and Gailly 2015). In addition, a study by Bosma et. al. (2008) established that young graduates (25–34 years) display the highest entrepreneurial propensity. We applied the SEM–PLS technique to examine the constructs of the paper and the relationship among them.

Sample size

We used a sample size of 216, because according to Hoyle (1995), 100 to 200 respondents is usually a good starting point in conducting path modelling. In addition, Partial Least Squares (PLS) is suitable when exploratory studies are conducted and relatively small samples are used (Sánchez-Franco & Roldán, 2005).

Measurement variables

The questionnaire was divided into the following sections: demographic, independent (ATE, SN, and PBC), dependents variables (entrepreneurial intention), and Attitude Towards Entrepreneurship Education and Parental Self-employment. The study adopted the Entrepreneurial Intention Questionnaire (EIQ) proposed by Liñán and Chen (2009) to measure ATE, PBC, and SNs. Variables were tested using a five-point Likert scale from 'Strongly Agree' to Strongly Disagree. Attitude Towards Entrepreneurship Education/University environment and support scale originally developed by Kraaijenbrink et al. (2009) and revised by Trivedi (2016) was also used in this study. Eighteen items make up the ATEE Scale and are classified into two categories; General Education Support (check items 38–44 on Appendix A) and Targeted Cognitive and Non-cognitive Support (check items 27–37 on Appendix A). ATE, SN, PBC, and ATEE constructs were measured through reflective indicators. The other constructs were measured by nominal scales due to their qualitative nature: Parental Self-employed (PSE) and gender. For PSE, we asked the respondents if their mothers or fathers were entrepreneurs. It was a binary YES/NO variable. Regarding Role Models, we asked the students if, at least, one of their parents was an entrepreneur. It was a binary Yes/No variable.

Data analysis

Structural equation modeling–Partial Least Square (SEM–PLS) was used to test the proposed model which hypothesizes a relationship between entrepreneurial intention, ATE, SN, PBC, and ATEE. Hypotheses H12 to H15 were tested using multi-group analysis (MGA).

Results

Profile of respondents

The number of respondents was 216, out of which 110 (50.9%) were males and 106 (49.1%) were females. Regarding Parental Self-employment, 110 (50.9%) of the respondents' parents were business owners, whereas 106 (49.1%), whereas 110 (50.9%) reported on the contrary. About 97.4% of the respondents were undergraduate students, 88.2% of whom were not in employment. The majority of the students fall within 20−24 ages (71.8%) category.

PLS−SEM results

In this section, we present the results of the PLS−SEM analysis. According to Hair et al. (2010), a two-dimensional method can be applied for Structural Equation Modelling (SEM); first, a measurement model analysis and second, a structural model analysis. This two-step process guarantees scale validity and reliability.

Measurement model assessment

According to Roldán and Sanchez-Franco (2012), the first stage of the measurement model assessment consists of observing the indicator loading values of the model (in our case, the three models: Complete, Male-M, and the Female-F). Table 2 depicts the parameters. It can be seen that Composite reliability, Cronbach's alpha, and Average Variance Extracted (AVE) exceed 0.7, 0.7, and 0.5, respectively, hence meeting the recommended values in literature (Fornell & Larcker, 1981). Though reliability analysis may be conducted using item loadings of above 0.707, Sánchez-Franco and Roldán (2005) opined that for newly developed measures, a lower threshold of 0.6 may be accepted. In general, the measurement model of this study was investigated following four criteria's, i.e., (a) Item reliability, (b) Internal consistency, (c) Convergent validity, and (d) Discriminant validity. As shown in Table 2, almost all the values support the convergent validity of the composite scales for the Male and Female models, but fully for the Complete model. Prior to this, the analysis of the measurement model for the full sample found low loadings (check Appendix A) for some items and were removed, and the PLS algorithm was run again. Scores regarding item reliability, construct reliability and convergent, and discriminant validity is satisfactory (see Tables 2 and 3). Figures 2, 3 and 4 depict the PLS−SEM results for Complete, Female and Male, respectively.

Explanation of target endogenous variable variance   The coefficient of determination R^2 is 0.712 for the EI endogenous latent variable for the Complete model. This implies that the three latent variables (ATE, SN and PBC) explain 71.2% of the variance in EI as shown in Table 4. The coefficient of determination for Males and Females is also shown in Table 4. According to Höck and Ringle (2006) results above the cutoffs 0.67, 0.33, and 0.19 are 'substantial', 'moderate', and 'weak', respectively. Thus the results for the three models are 'substantial'. These findings are consistent with the study by Trivedi (2016) who found 69% of the variance in the explanation of entrepreneurial intention.

Table 2 Full-sample measurement model (reliability indicators)/composites and measures

Items	Loadings			Composite reliability			AVE			Cronbach's Alpha		
	Complete	M	F	Complete	M	F	Complete	M	F	Complete	M	F
ATE				0.928	0.913	0.933	0.764	0.724	0.779	0.874	0.872	0.905
ATE2	0.892	0.833	0.918									
ATE3	0.850	0.793	0.882									
ATE4	0.859	0.917	0.813									
ATE5	0.895	0.854	0.913									
EI				0.940	0.936	0.933	0.724	0.710	0.703	0.922	0.917	0.912
EI 1	0.716	0.784	0.613									
EI 2	0.871	0.847	0.878									
EI 3	0.912	0.895	0.926									
EI 4	0.893	0.898	0.873									
EI 5	0.810	0.728	0.845									
EI 6	0.886	0.889	0.858									
PSE	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PBC				0.895	0.873	0.909	0.588	0.538	0.626	0.859	0.824	0.880
PBC 1	0.735	0.650	0.792									
PBC 2	0.832	0.847	0.805									
PBC 3	0.847	0.835	0.841									
PBC 4	0.709	0.638	0.784									
PBC 5	0.740	0.673	0.775									
PBC 6	0.729	0.729	0.747									
SN				0.914	0.931	0.882	0.780	0.817	0.714	0.859	0.888	0.801
SN 1	0.866	0.878	0.845									
SN 2	0.888	0.924	0.802									
SN 3	0.896	0.909	0.886									

Table 2 (continued)

Items	Loadings			Composite reliability			AVE			Cronbach's Alpha		
	Complete	M	F	Complete	M	F	Complete	M	F	Complete	M	F
ATEE				0.944	0.935	0.953	0.607	0.568	0.672	0.936	0.926	0.948
ATEE1	0.838	0.826	0.830									
ATEE2	0.824	0.737	0.900									
ATEE3	0.863	0.800	0.923									
ATEE5	0.799	0.803	0.825									
ATEE6	0.833	0.882	0.832									
ATEE7	0.715	0.765	0.754									
ATEE8	0.763	0.715	0.774									
ATEE9	0.674	0.626	0.715									
ATEE11	0.680	0.635	0.673									
ATEE12	0.787	0.749	0.845									
ATEE18	0.772	0.709	0.806									

Table 3 Discriminant validity (complete)

	ATE	ATEE	EI	PBC	PSE	SN
ATE	**0.874**					
ATEE	0.109	**0.779**				
EI	0.791	0.36	**0.851**			
PBC	0.517	0.188	0.615	**0.767**		
PSE	− 0.137	− 0.125	− 0.189	− 0.337	**1.000**	
SN	0.525	0.306	0.620	0.514	− 0.295	**0.883**
Female						
ATE	**0.882**					
ATEE	0.120	**0.810**				
EI	0.799	0.155	**0.838**			
PBC	0.480	0.108	0.535	**0.791**		
PSE	− 0.086	0.049	− 0.142	− 0.347	**1.000**	
SN	0.522	0.271	0.546	0.390	− 0.208	**0.845**
Male						
ATE	**0.851**					
ATEE	0.114	**0.753**				
EI	0.767	0.127	**0.842**			
PBC	0.521	0.294	0.668	**0.734**		
PSE	− 0.122	− 0.275	− 0.163	− 0.289	**1.000**	
SN	0.518	0.367	0.663	0.604	− 0.276	**0.904**

The bolden part throws more light on the concept

Fig. 2 PLS–SEM results for complete
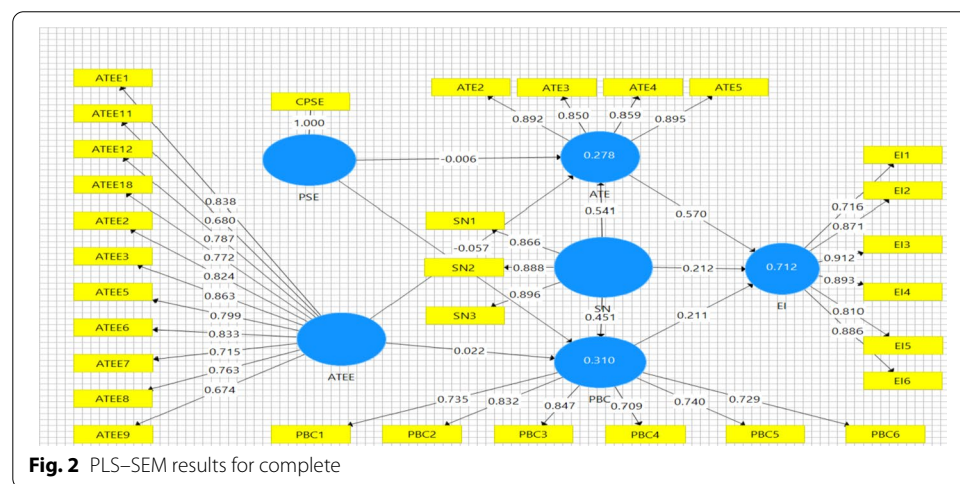
Structural model analysis

Using a two-tailed *t* test with a significance level of 5%, the path coefficient is significant if the *T*-statistics is larger than 1.96. Regarding the Complete model, it can be observed that three out of the nine relationships are not significant as depicted in Table 5. For the Male model, five of the hypotheses are accepted and four are rejected (see Table 6). Whereas, four of the hypotheses associated with the Females are accepted and five rejected as depicted in Table 7.

Figure 5 shows the variance explained (*R* square) in the dependent constructs and the path coefficients (*b*) for the complete model. Consistent with Chin (1998), bootstrapping (5000 re-samples) was used to generate standard errors and *T*-statistics. Bootstrap
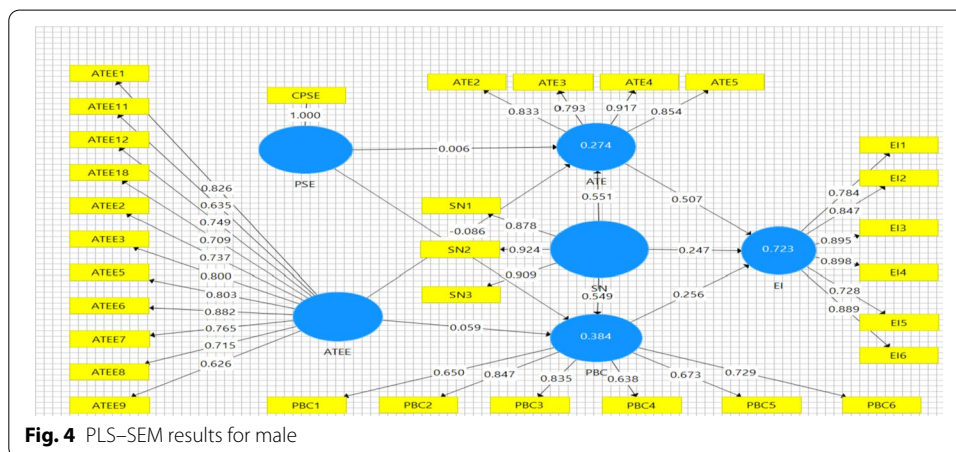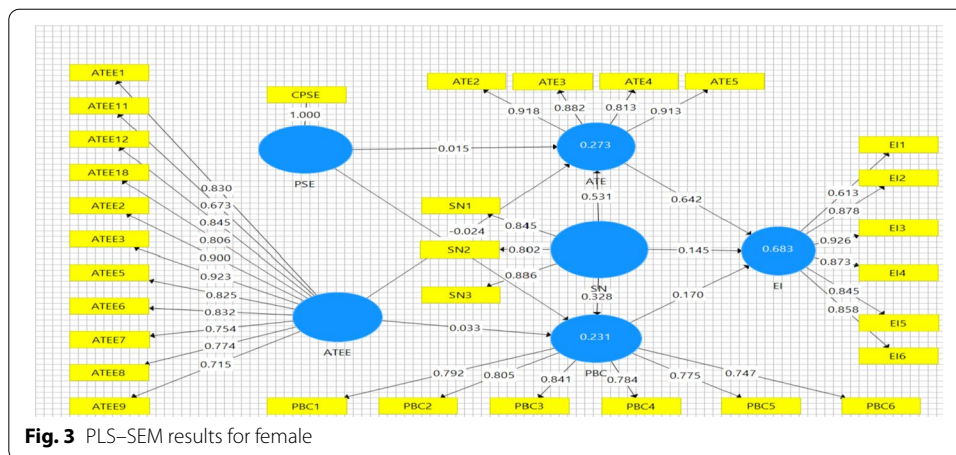
Fig. 3 PLS–SEM results for female

Fig. 4 PLS–SEM results for male

Table 4 *R* square

	Complete	Male	Female
ATE	0.278	0.274	0.273
EI	0.712	0.723	0.683
PBC	0.310	0.384	0.231

represents a non-parametric approach for estimating the accuracy of PLS estimation. This helps in the assessment of the statistical significance of the path coefficients. The Complete model, Male model, and Female model explain 71.2%, 72.3%, and 68.3%, respectively, of the variance in entrepreneurial intention based on SN, ATE, and PBC. These results are encouraging, since most previous research typically explains less than 40%.

Collinearity assessment   Collinearity is a potential issue in the structural model and that variance inflation factor (VIF) value of 5 or above typically indicates such a problem (Hair et al., 2011). The collinearity assessment results for the Combined Model are summarized

Table 5 (Complete): structural model results

Construct	(O)	(M)	STDEV	T statistics	P values	Hypothesis
ATE → EI	0.559	0.559	0.059	9.497	0.000	ACCEPT
ATEE → ATE	− 0.077	− 0.060	0.116	0.662	0.508	REJECT
ATEE → PBC	0.026	0.043	0.128	0.200	0.841	REJECT
PBC → EI	0.219	0.220	0.073	2.991	0.003	ACCEPT
PSE → ATE	− 0.024	− 0.023	0.084	0.287	0.774	REJECT
PSE → PBC	− 0.228	− 0.218	0.084	2.699	0.007	ACCEPT
SN → ATE	0.551	0.543	0.084	6.594	0.000	ACCEPT
SN → EI	0.210	0.210	0.068	3.103	0.002	ACCEPT
SN → PBC	0.423	0.423	0.092	4.589	0.000	ACCEPT

Original sample (O), sample mean (M), standard deviation (STDEV)

Table 6 Male: structural model results

Construct	(O)	(M)	STDEV	T statistics	P values	Hypothesis
ATE → EI	0.511	0.513	0.088	5.825	0.000	ACCEPT
ATEE → ATE	− 0.077	− 0.040	0.154	0.502	0.615	REJECT
ATEE → PBC	0.061	0.097	0.145	0.420	0.675	REJECT
PBC → EI	0.249	0.258	0.105	2.378	0.017	ACCEPT
PSE → ATE	0.028	0.043	0.131	0.213	0.831	REJECT
PSE → PBC	− 0.154	− 0.143	0.130	1.185	0.236	REJECT
SN → ATE	0.588	0.569	0.132	4.446	0.000	ACCEPT
SN → EI	0.247	0.235	0.114	2.175	0.030	ACCEPT
SN → PBC	0.507	0.492	0.125	4.059	0.000	ACCEPT

Original sample (O), sample mean (M), standard deviation (STDEV)

Table 7 Female: structural model results

Construct	(O)	(M)	STDEV	T statistics	P values	Hypothesis
ATE → EI	0.610	0.605	0.087	7.045	0.000	ACCEPT
ATEE → ATE	− 0.077	− 0.044	0.163	0.473	0.636	REJECT
ATEE → PBC	0.108	0.059	0.254	0.424	0.672	REJECT
PBC → EI	0.199	0.194	0.126	1.581	0.114	REJECT
PSE → ATE	− 0.034	− 0.042	0.127	0.270	0.787	REJECT
PSE → PBC	− 0.285	− 0.258	0.121	2.359	0.018	ACCEPT
SN → ATE	0.517	0.502	0.124	4.171	0.000	ACCEPT
SN → EI	0.141	0.154	0.094	1.500	0.134	REJECT
SN → PBC	0.305	0.327	0.140	2.182	0.029	ACCEPT

Original sample (O), sample mean (M), standard deviation (STDEV)

in Table 8. It can be observed that all VIF values are lower than 5, signifying that there is no indicative collinearity between each set of predictor variables.

Measurement invariance of composite models

Measurement invariance of composite models (MICOM) is a logically necessary step before conducting MGA. Hult et. al. (2008, p. 1028) posit that: 'failure to establish data equivalence is a potential source of measurement error (i.e., discrepancies of what is
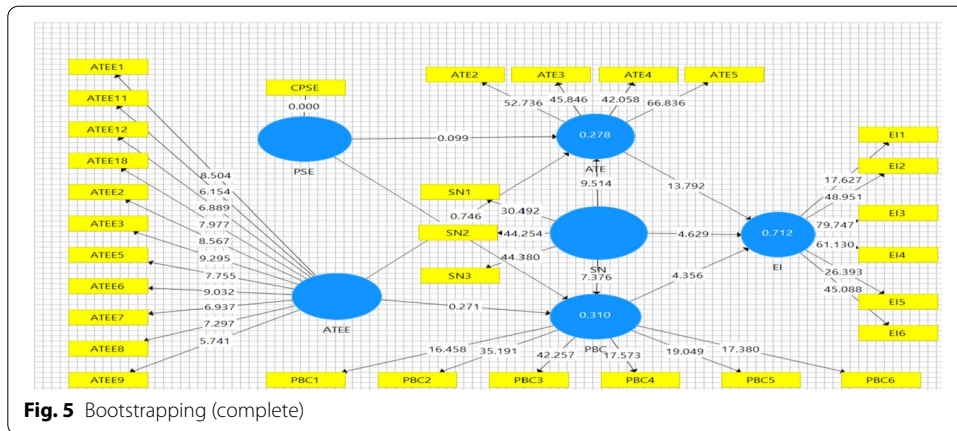
Fig. 5 Bootstrapping (complete)

Table 8 Outer VIF values

Items	VIF
ATE2	2.898
ATE3	2.198
ATE4	2.358
ATE5	2.841
EI 1	1.689
EI 2	3.170
EI 3	4.258
EI 4	3.508
EI 5	2.410
EI 6	3.610
PSE	1.000
PBC 1	1.840
PBC 2	2.595
PBC 3	2.504
PBC 4	1.773
PBC 5	2.108
PBC 6	1.665
SN 1	1.889
SN 2	2.338
SN 3	2.608
ATEE1	3.597
ATEE2	4.051
ATEE3	4.705
ATEE5	2.817
ATEE6	3.724
ATEE7	2.154
ATEE8	2.124
ATEE9	2.368
ATEE11	2.189
ATEE12	2.793
ATEE18	2.325

intended to be measured and what is actually measured), which accentuates the precision of estimators, reduces the power of statistical tests of hypothesis, and provides misleading results'.

The MICOM procedure provides the method for studying the invariance before the multi-group analysis. After confirming the existence of invariance, the next is to apply the MGA, comparing the explained variance of each group. MICOM involves a three-step process:

   a. Configural invariance,
   b. Compositional invariance and
   c. Scalar invariance (equality of composite means and variances).

According to Garson (2016), running MICOM in SmartPLS normally automatically establishes configural invariance. Thus, since statistical output does not apply to the first step, we did not show it. However, steps 2 and 3 are discussed below. It must be noted that in running the MICOM, outer loadings that were insignificant were deleted. This accounts for the difference in the Algorithm figure for the MGA.

Compositional invariance

Compositional invariance is a test of the invariance of indicator weights for measurement (outer) paths between groups (Garson, 2016). According to Henseler et. al. (2016), if the results of MICOM's Steps 1 and 2 (but not step 3) show that there is lack of measurement invariance, partial measurement has been established. This result allows for the comparison of the standardized path coefficients across the groups by performing a multi-group analysis. If the analysis and tests on different required levels do not support full measurement invariance, applied research typically focusses on the least partial fulfillment of measurement invariance (Hair et al., 2010). A result of non-significance means that compositional invariance may be assumed. This implies the correlations are not significantly lower than 1.0, as depicted in Table 9. Compositional invariance has been fulfilled, because the Original Correlation is equal or greater than 5% quantile.

Scalar invariance (equality of composite means and variances)

Following Henseler et. al. (2016), we tested for scalar invariance in a way comparable to that explained in Step 2. Permutation p value tests for Male and Female differences in means and variances for each of the inner model constructs. As shown in Table 10, the

Table 9 MICOM step 2

Items	Original correlation	Correlation permutation mean	5.0%	Permutation p values
ATE	0.999	1.000	0.999	0.190
ATEE	0.981	0.956	0.820	0.371
EI	1.000	1.000	0.999	0.635
PBC	1.000	0.999	0.996	0.841
PSE	1.000	1.000	1.000	0.506
SN	0.999	0.999	0.996	0.396

Table 10 MICOM step 3

Items	Mean—original difference (male–female)	Mean—permutation mean difference (male–female)	2.5%	97.5%	Permutation p-values	Variance—original difference (male–female)	Variance—permutation mean difference (male–female)	2.5%	97.5%	Permutation p values
ATE	0.468	− 0.004	− 0.274	0.265	0.001	− 0.286	0.005	− 0.389	0.396	0.160
ATEE	0.171	− 0.001	− 0.266	0.266	0.218	− 0.184	0.001	− 0.437	0.434	0.415
EI	0.604	− 0.005	− 0.276	0.263		− 0.029	0.005	− 0.361	0.362	0.879
PBC	0.434	− 0.002	− 0.269	0.266	0.002	0.025	0.005	− 0.393	0.403	0.906
PSE	− 0.296	0.002	− 0.259	0.260	0.036	− 0.010	0.000	− 0.008	0.011	0.055
SN	0.322	− 0.001	− 0.279	0.267	0.019	0.261	0.000	− 0.364	0.367	0.162

Fig. 6 MGA algorithm

Fig. 7 MGA female
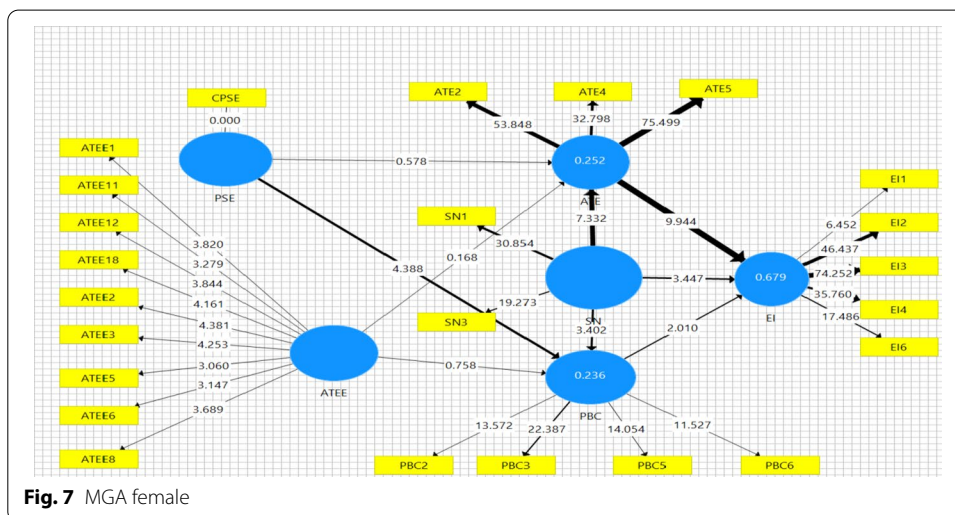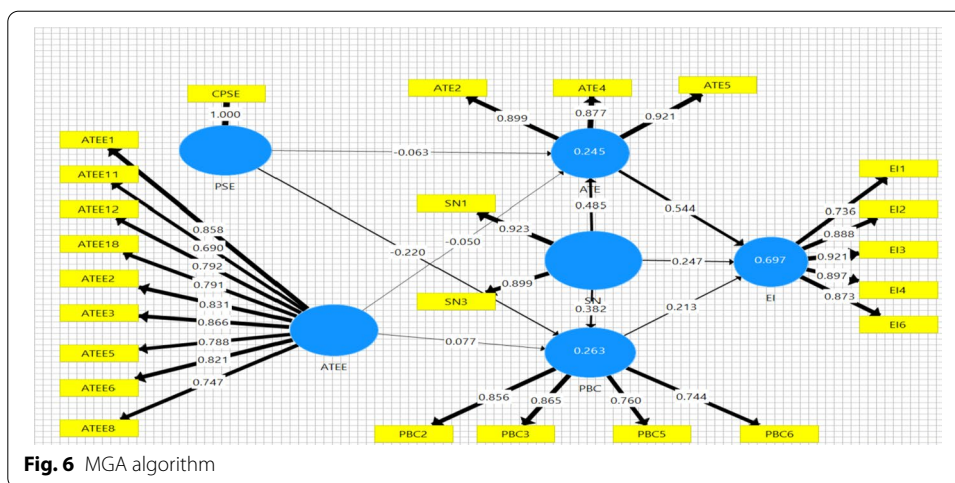
permutations *p* values for Mean Original Difference are significant. However, the permutations *p* values for the Variance original difference are all non-significant. From the forgoing, we can assume Partial invariance.

Multi-group analysis

Having established configural and compositional invariance in Steps 1 and 2, we could compare the path coefficients of Males and Females using a multi-group analysis. The MGA uses independent samples *t* tests to compare paths between groups (Keil et al., 2000). In this study, we divided the sample into two groups: males (110) and females (106). This section presents the results of the MGA for the two groups (Males and Females). According to Becker et. al. (2013) researchers who failed to consider this potential issue may draw incorrect conclusions.

We start by first running the PLS Algorithm to determine whether the results for the group's specific model estimation differ. Using the 'Use Relative Values', stronger path relationships have thicker lines and smaller path coefficients have thinner lines. As shown in Fig. 6, we can apply this representation to compare the results for Males and

Fig. 8 MGA male

Fig. 9 Complete
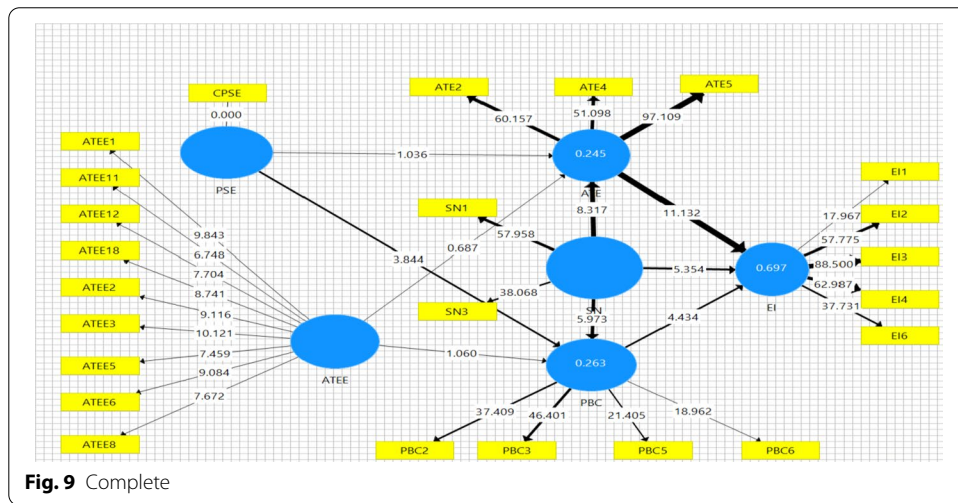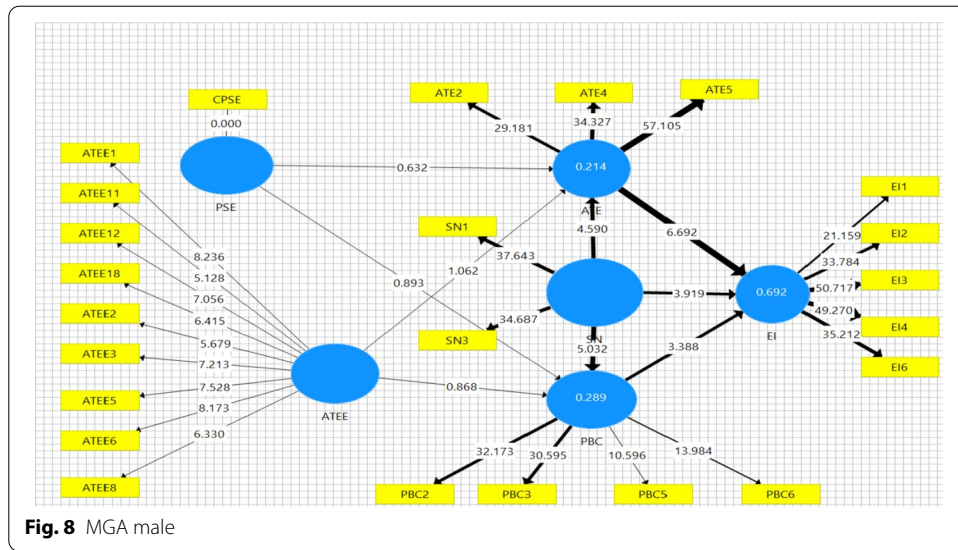
Females. From the figure, we can see that the group specific PLS coefficients differ (e.g., ATE–EI, SN–ATE, and PBC–EI). Since there are differences in the group specific PLS path model estimations, we need to find out if these differences are significant by running the PLS–MGA.

Figures 7, 8 and 9 show the absolute values, outer loadings, path coefficients, and the *R* Square values of Males, Females and Complete. The MGA report provides path coefficients separately for the Male and Female groups, along with bootstrap-estimated standard deviations, *t* values, and significance *p* values as well as confidence intervals. From Figs. 7, 8 and 9, we can see differences in the regression weights or beta coefficients. However, to ascertain whether the differences are significant we have to apply the bootstrap *t* test in the output section on the confidence intervals. From Table 11, it can be seen that the path from ATE–EI, SN–ATE, and SN–PBC confidence intervals overlap. This implies that at the 0.05 significance level, there is no difference in path coefficients between Male and Female samples. Thus, the paths in the structural model (ATE–EI,

Table 11 Bootstrapping results (for MGA)

Items	Path coefficients original (female)	Path coefficients original (male)	Path coefficients mean (female)	Path coefficients mean (male)	STDEV (female)	STDEV (male)	t value (female)	t value (male)	p value (female)	p value (male)
ATE → EI	0.625	0.470	0.623	0.469	0.064	0.072	9.774	6.543	0.000	0.000
ATEE → ATE	−0.028	−0.109	−0.003	−0.094	0.166	0.104	0.166	1.048	0.868	0.295
ATEE → PBC	0.129	0.081	0.108	0.102	0.171	0.095	0.754	0.855	0.451	0.393
PBC → EI	0.143	0.259	0.141	0.266	0.072	0.079	1.999	3.290	0.046	0.001
PSE → ATE	−0.050	−0.060	−0.055	−0.049	0.085	0.095	0.580	0.634	0.562	0.526
PSE → PBC	−0.324	−0.084	−0.313	−0.076	0.072	0.093	4.475	0.899	0.000	0.368
SN → ATE	0.494	0.472	0.485	0.468	0.068	0.105	7.319	4.512	0.000	0.000
SN → EI	0.203	0.286	0.206	0.278	0.060	0.075	3.371	3.818	0.001	0.000
SN → PBC	0.279	0.467	0.291	0.461	0.081	0.092	3.440	5.069	0.001	0.000

Table 12 PLS–MGA

Items	Path coefficients-diff (male–female)	*p* value original 1-tailed (male vs. female)	*p* value new (male vs. female)
ATE → EI	− 0.156	0.947	0.105
ATEE → ATE	− 0.081	0.668	0.664
ATEE → PBC	− 0.048	0.651	0.697
PBC → EI	0.116	0.131	0.263
PSE → ATE	− 0.011	0.537	0.927
PSE → PBC	0.240	0.022	0.043
SN → ATE	− 0.023	0.564	0.872
SN → EI	0.083	0.191	0.382
SN → PBC	0.189	0.063	0.126

Table 13 *F* square

	ATE	ATEE	EI	PBC	PSE	SN
ATE			0.724			
ATEE	0.004			0.001		
EI						
PBC			0.101			
PSE	0.000			0.065		
SN	0.348		0.101	0.253		

SN–ATE, and SN–PBC) are significant for both Males and Females, as depicted in the *p* values columns. However, for the MGA, we focus on Hypotheses H12, H13, H14, and H15. From Table 12, it can be noted that there is significant relationship between PSE and PBC but no significant relationship between the other variables; hence hypotheses H13 is accepted but H12, H14 and H15 are rejected.

According to H12, the relationship between PSE and ATE is stronger for men than women. However, there are no significant relationships between both groups, hence this hypothesis is rejected. According to H13, the relationship between PSE and PBC is stronger for men than women, hence this hypothesis is accepted. According to H14, 'The relationship between ATEE and ATE is stronger for Males than for Females'. From Table 11, it can be seen that the relationship is not significant for both groups, hence we reject this hypothesis. Regarding H15, the relationship between ATEE and PBC is stronger for Males than Females. However, results reveal that the relationship between the Male and Female groups was insignificant. Hence we reject this hypothesis.

F square

The *f*-square equation expresses how large a proportion of unexplained variance is accounted for by R^2 change (Hair et al., 2014). The effect size is assessed with a tool known as *F* square indicated in Table 13 and Fig. 8. Following Cohen (1988) an *F* square value of above 0.35 is considered large effect size; values ranging from 0.15 to 0.35 are medium effect size; values between 0.02 and 0.15 are considered small effect and values less than 0.02 are considered NO effect size. From Fig. 104, it can be observed that the

Fig. 10 *F* square
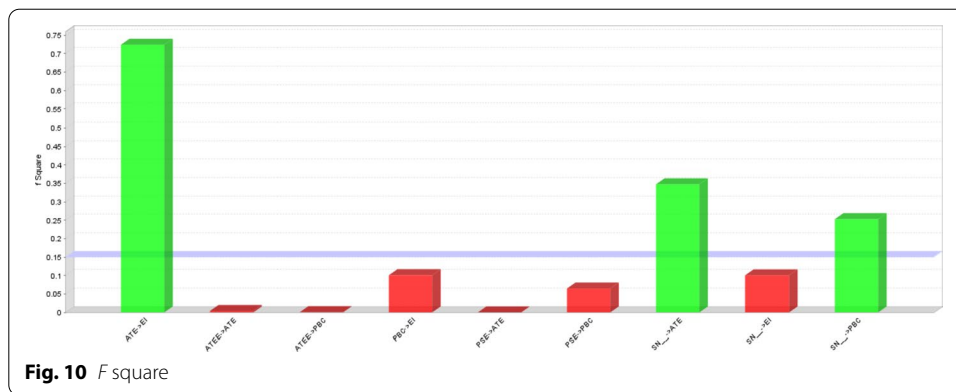
Table 14 PLSc algorithm total indirect effects

	ATE	ATEE	EI	PBC	PSE	SN
ATE						
ATEE			− 0.028			
EI						
PBC						
PSE			− 0.050			
SN			0.404			

Table 15 PLSc algorithm specific indirect effects

	Specific indirect effects
ATEE → ATE → EI	− 0.032
PSE → ATE → EI	− 0.003
SN → ATE → EI	0.308
ATEE → PBC → EI	0.005
PSE → PBC → EI	− 0.046
SN → PBC → EI	0.095

ATE–EI relationship is the highest, i.e., 0.724. This is followed by SN–ATE and SN–PBC, respectively (Fig. 10).

Mediation analysis

According to Aguinis et. al. (2017), mediation refers to the presence of an intermediate variable or mechanism that transmits the effect of an antecedent variable to an outcome. The framework (Fig. 1) for this study called for multiple mediation analysis. As shown in Table 14, there are three Total Indirect Effects. However, the Specific Indirect Effects were six as depicted in Table 15. Tables 14 and 15 reveal the running of the Consistent Algorithm. To identify which of the variables were significant we run the Consistent Bootstrapping. The results are found in Tables 16 and 17. As shown in Table 17 it can be seen that SN → ATE → EI and SN → PBC → EI are significant.

Table 16 Bootstrapping (c) total indirect effects

	Original	Sample	Standard	*T* statistic	*P* values
ATE → EI					
ATEE → ATE					
ATEE → EI	− 0.037	− 0.026	0.080	0.466	0.642
ATEE → PBC					
PBC → EI					
PSE → ATE					
PSE → EI	− 0.063	− 0.062	0.060	1.047	0.295
PSE → PBC					
SN → ATE					
SN → EI	0.400	0.397	0.067	6.008	0.000
SN → PBC					

Table 17 Bootstrapping (c) specific indirect effects

	Original	Sample	Standard	*T* statistic	*P* values
ATEE → ATE → EI	− 0.043	− 0.033	0.066	0.650	0.516
PSE → ATE → EI	− 0.013	− 0.013	0.047	0.286	0.775
SN → ATE → EI	0.308	0.303	0.056	5.535	0.000
ATEE → PBC → EI	0.006	0.007	0.030	0.187	0.852
PSE → PBC → EI	− 0.050	− 0.049	0.027	1.825	0.068
SN → PBC → EI	0.093	0.094	0.040	2.310	0.021

Discussion

The main claim of the TPB is that intention is influenced by three variables, i.e., ATE, SNs, and PBC. This exposition of the Ajzen model lays the foundation for the hypotheses which tested the validity of the model in the present paper. Specifically, we investigated the effect of gender on ATEE and Role Models by applying the TPB (1991). Though empirical studies in entrepreneurship have produced contradictory results, we proceeded to apply the TPB to examine students' entrepreneurial intention, because it is probably one of the most tried and tested theories in entrepreneurial research. We explored the extent to which PSE and EE impact entrepreneurial intentions. We formulated two categories of hypotheses; primary and secondary and conducted a tripartite analysis for Complete, Male and Female models.

This study underscored ATE as one of the important determinants of our framework. The paper exhibited a strong and highly significant relationship between ATE and entrepreneurial intention. This confirms the findings of Krueger et al. (2000) and Mahfud et al. (2020) who reported that ATE has a significant direct relationship with entrepreneurial intention.

Regarding the Complete and Male Models, all the primary hypotheses were accepted. However, with the Female Model four out of the primary hypotheses were accepted. These results are in line with previous studies (Entrialgo & Iglesias, 2016; Liñán & Santos, 2007; Liñán et al., 2011a) which found that SNs have a significant positive correlation with ATE and PBC.

The relationship between ATEE and EI, and PSE and EI were both insignificant. Bae et. al. (2014), in their paper, reported a statistically significant but small positive relationship between entrepreneurship education and entrepreneurial intentions.

With regards to the relationship between PSE/Role Models, the results points out that having a parent who is an entrepreneur positively influence a student's PBC (for the Complete and Female models). In addition, according to BarNir et. al. (2011), this has the probability of increasing one's knowledge, mastery, or general set of ability with regard to engaging in tasks required for becoming an entrepreneur. Interestingly, there was an insignificant relationship between PSE/Role Models and PBC for the male respondents.

According to this study the relationship between PSE and PBC is stronger for Males than Females, hence H13 is accepted. According to Wilson et. al. (2004) women tend to shy away from entrepreneurial activity more frequently than men due to a lower perception of perceived self-efficacy in carrying out entrepreneurial tasks. Verheul et. al. (2003) buttress this by emphasizing that females less frequently perceive themselves as entrepreneurs.

This study fails to fully support previous studies, on how exposure to entrepreneurial education and role models impact on Males and Females. Thus hypotheses H12, H14 and H15 were not supported. We established non-significant effects for gender and parental self-employment. These results are in line with a paper by Bae et. al. (2014), when they conducted a meta-analytic review of 73 studies. The influence of ATEE on PBC was also not significant. These findings are consistent with those of Entrialgo and Iglesias (2017).

This study has confirmed the applicability of the TPB model to entrepreneurial intention and the role of gender. However, we did not find a significant relationship between Males and Females concerning their entrepreneurial intentions for H12, H14 and H15. Therefore, gender had no significance on the path coefficients. That means the gender of a student doesn't affect the relationship between ATEE and EI. The finding further revealed that gender has no influence on the relationship between attitude and intention, which was supported by Nowinski et. al. (2019) and (Jena, 2020). These results are inconsistent with those of Santos et. al. (2016) who found that Males display higher entrepreneurial intentions than Females.

Implications and direction for future research

This study has some interesting implications. First, ATE came out as the most important variable of the model and this implies that entrepreneurial attitudes may be influenced by the relevant stakeholders in academic circles. Though we did not establish a positive correlation between PSE and ATE, influential role models can support nascent entrepreneurs. We recommend the institutionalization of traineeship, elective courses, conference and workshops on entrepreneurship to boost the entrepreneurial spirit of students. In addition, policy-makers can motivate students by providing some fiscal incentives to allow individual and business angel investments in the seed stage of their entrepreneurial activities as proposed by the European Commission (2020).

Our paper extends the studies of Trivedi (2016) by introducing Role Model or Parental Self-employment as an additional antecedent and the role of gender. This study also proximately mirrors the study by Entrialgo and Iglesias (2017), though our study used

a Likert scale to measure entrepreneurial education instead of a dichotomous variable. The findings also contribute to research on parental self-employment (PSE). The results indicate that role model or parental self-employment impact on PBC for the Complete and the Female models. However, there was an insignificant relationship between parental self-employed and PBC for the Male model.

Though we found no significant relationship for ATEE on EI, we suggest that educators and the relevant stakeholders focus on how to stimulate entrepreneurial intentions through education. According to Urbano and Guerrero (2013), it is expedient to expand the scope of the university from the conventional or old-fashioned mode of knowledge to an entrepreneurial ecosystem leading to the concept of an entrepreneurial university.

Notwithstanding the importance of entrepreneurship education in the development of entrepreneurial intentions, this paper revealed that ATEE has no significant impact on ATE and PBC. This probably call for early engagement of the students to expose them to entrepreneurial education (Entrialgo & Iglesias, 2017).

Limitations

In considering the generalizability of this paper, it is important to highlight some limitations. First, the respondents were sampled from a single university in Spain. It will be exciting to replicate the study with a multi-country sample to identify the dynamics of ATEE and PSE in those countries. In addition, the majority of the students were from the Faculty of Law and Business Administration, leading to skewness of the sample characteristics. Furthermore, the insufficient number of samples in the subgroups (Male and Female) has the potential of reducing the power of analysis, leading to sampling error (Hunter & Schmidt, 2004).

Conclusions

The main objective of this study is to examine the role of gender on entrepreneurial education and role models or parental self-employment, by carrying out a multi-group analysis. The paper has contributed to the existing literature on the multi-group analysis of gender on entrepreneurial intentions among university students. Although the differences between Males and Females were not significant for three of the relationships (H12, H14 and H15), the applicability of the TPB to measure entrepreneurial intentions has been supported. This paper has reinforced attitude as one of the most important variable in the study model.

Appendix A

1	**Gender**	Male [ ]	Female [ ]	Prefer not to say [ ]	Other [ ]
2	**How old are you?**	[ ] Less than 20 years	[ ] 20–24 years	[ ] 25–29 years	
3	**Are your parents currently self-employed?**	[ ] YES		[ ] NO	

Based on your opinion, please indicate the most appropriate response with the scale given below. (1) SD = Strongly Disagree (2) D = Disagree (3) N = Neutral (4) A = Agree (5) SA = Strongly Agree

Attitude towards entrepreneurship

4	Being an entrepreneur implies more advantages than disadvantages to me	1	2	3	4 5
5	A career as an entrepreneur is attractive for me	1	2	3	4 5
6	If I had the opportunity and resources, I'd like to start a firm	1	2	3	4 5
7	Being an entrepreneur would entail great satisfactions for me	1	2	3	4 5
8	Among various career options, I'd rather be an entrepreneur	1	2	3	4 5
Perceived behavioral control					
9	Start a firm and kept it working would be easy for me	1	2	3	4 5
10	I am prepared to start a viable firm	1	2	3	4 5
11	I can control the creation process of a new firm	1	2	3	4 5
12	I know the necessary practical details to start a firm	1	2	3	4 5
13	I know how to develop an entrepreneurial project	1	2	3	4 5
14	If I tried to start a firm, I would have a high probability of succeeding	1	2	3	4 5
Entrepreneurial intentions					
15	I am ready to do anything to be an entrepreneur	1	2	3	4 5
16	My professional goal is to be an entrepreneur	1	2	3	4 5
17	I will make every effort to start and run my own enterprise	1	2	3	4 5
18	I am determined to create a firm in the future	1	2	3	4 5
19	I have very seriously thought of starting a firm	1	2	3	4 5
20	I have got the firm intention to start a company some day	1	2	3	4 5
Attitude towards entrepreneurship education					
21	My university helps students to build required network for starting a firm	1	2	3	4 5
22	My university has well-functioning infrastructure to support the new start-up firms	1	2	3	4 5
23	My university arranges for mentoring and advisory services for would-be entrepreneurs	1	2	3	4 5
24	My university uses its reputation to support students that start a new business	1	2	3	4 5
25	My university provides creative atmosphere to develop ideas for new business start-ups	1	2	3	4 5
26	My university provides students with ideas to start a new business firm	1	2	3	4 5
27	My university provides students with the financial means needed to start a new business	1	2	3	4 5

28	My university motivates students to start a new business	1	2	3	4 5
29	My university provides students with the knowledge needed to start a new business	1	2	3	4 5
30	My university arranges lectures of successful entrepreneurs for experience-sharing	1	2	3	4 5
31	My university creates awareness of entrepreneurship as a possible career choice	1	2	3	4 5
32	My university brings entrepreneurial students in contact with each other	1	2	3	4 5
33	My university offers project work focused on entrepreneurship	1	2	3	4 5
34	My university offers traineeship study in entrepreneurship	1	2	3	4 5
35	My university offers elective courses on entrepreneurship	1	2	3	4 5
36	My university offers a bachelor or master study in entrepreneurship	1	2	3	4 5
37	My university arranges conferences and workshops on entrepreneurship	1	2	3	4 5
38	My university organizes business plan competitions and case teaching for entrepreneurship	1	2	3	4 5
Subjective norm					
39	My closest family members think that I should pursue a career as an Entrepreneur	1	2	3	4 5
40	My closest friends think that I should pursue a career as an entrepreneur	1	2	3	4 5
41	People who are important to me think that I should pursue a career as an entrepreneur	1	2	3	4 5

Declarations

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References

Aguinis, H., Edwards, J. R., & Bradley, K. J. (2017). Improving our understanding of moderation and mediation in strategic management research. *Organizational Research Methods, 20*(4), 665–685. https://doi.org/10.1177/1094428115 627498

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human DecisionProcesses, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T.

Ajzen, I. (2002). Behavioral interventions based on the theory of planned behavior. *Research Policy, 2011*, 1–6. https://doi.org/10.1016/j.respol.2007.07.006

Ajzen, I. (2012). The theory of planned behavior. In P. A. M. Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology 1* (pp. 438–459). London, United Kingdom: SAGE.

Amofah, K., Akwaa-Sekyi, E., & Saladrigues, R. (2020). Entrepreneurial intentions among MBA students. *Cogent Business & Management, 7*(1), 1–23. https://doi.org/10.1080/23311975.2020.1832401

Audretsch, D., Horst, R. Van Der, & Thurik, R. (2009). *First section of the annual report on EU small and medium-sized enterprises.*

Bae, T. J., Qian, S., Miao, C., & Fiet, J. O. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review. *Entrepreneurship: Theory and Practice, 38*(2), 217–254. https://doi.org/10.1111/etap.12095

Bagozzi, P. R. (1992). The self-regulation of attitudes, intentions, and behavior. *Social Psychology Quarterly, 55*(2), 178–204.

BarNir, A., Watson, W. E., & Hutchins, H. M. (2011). Mediation and moderated mediation in the relationship among role models, self-efficacy, entrepreneurial career intention, and gender. *Journal of Applied Social Psychology, 41*(2). 270–297.

Becker, J., Ringle, C. M., & Hreats, A. V. V. A. T. (2013). Discovering unobserved heterogeneity in structural equation models to avert validity threats. *MIS Quarterly, 37*(September), 665–694.

Bird, B. (1988). Implementing entrepreneurial ideas: The case for intention. *Academy of Management Review, 13*(3), 442–453. https://doi.org/10.5465/amr.1988.4306970

Block, J. H., Hoogerheide, L., & Thurik, R. (2013). Education and entrepreneurial choice: An instrumental variables analysis. *International Small Business Journal, 31*(1), 23–33. https://doi.org/10.1177/0266242611400470

Bosma, N., Acs, Z. J., Autio, E., Coduras, A. & Levie, L. (2008). Global entrepreneurship monitor executive report. Babson Park, Santiago, London.

Bosnjak, M., Ajzen, I. & Schmidt, P. (2020). The theory of planned behavior: Selected recentadvances and applications. *Europe's Journal of Psychology, 16*(3), 352–356. https://doi.org/10.5964/ejop.v16i3.3107.

Chin, W. W. (1998). Issues and opinion on structural equation modeling. *MIS Quarterly, 22*(1), 7–16.

Cohen, J. W. (1988). *Statistical power analysis for the behavioral sciences*. Lawrence ErlbaumAssociates, Hillsdale, NJ.

Colette, H., Hill, F., & Leitch, C. (2005). Entrepreneurship education and training: Can entrepreneurship be taught? *Education + Training, 47*(3), 158–169.

Crant, J. M. (1996). The proactive personality scale as a predictor of entrepreneurial intentions. *Journal of Small Business Management, 34*(3), 42–49.

Davissson, P. (1995). Determinants of entrepreneurial intentions. Paper presented at the RENT IX, Piacenza, November 23–24.

de Bruin, A., Brush, C. G. & Welter, F. (2007). Advancing a framework for coherent research on women's entrepreneurship. *Entrepreneurship Theory And Practice*, 323–339.

Díaz-García, M. C., & Jiménez-Moreno, J. (2010). Entrepreneurial intention: The role of gender. *International Entrepreneurship and Management Journal, 6*(3), 261–283. https://doi.org/10.1007/s11365-008-0103-2

Engidaw, E. A. (2021). Exploring entrepreneurial culture and its socio-cultural determinants: In case of Woldia University graduating students. *Journal of Innovation and Entrepreneurship, 10*(12), 1–15. https://doi.org/10.1186/s13731-021-00155-7

Entrialgo, M., & Iglesias, V. (2016). The moderating role of entrepreneurship education on the antecedents of entrepreneurial intention. *International Entrepreneurship and Management Journal, 12*(4), 1209–1232. https://doi.org/10.1007/s11365-016-0389-4

Entrialgo, M., & Iglesias, V. (2017). Are the intentions to entrepreneurship of men and women shaped differently? The impact of entrepreneurial role-model exposure and entrepreneurship education. *Entrepreneurship Research Journal, 8*(1), 1–14. https://doi.org/10.1515/erj-2017-0013

European Commission. (2020). Social enterprises and their ecosystems In Europe. Available at http://ec.europa.eu/social/easi. Accessed 22 Aug 2021.

Fayolle, A., & Gailly, B. (2015). On entrepreneurial attitudes and intention: Hysteresis and persistence. *Journal of Small Business Management, 53*(1), 75–93. https://doi.org/10.1111/jsbm.12065

Fayolle, A., Gailly, B., & Lassas-Clerc, N. (2006). Assessing the impact of entrepreneurship education programmes: A new methodology. *Journal of European Industrial Training.* https://doi.org/10.1108/03090590610715022

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(February), 39–50.

Garson, G. D. (2016). *Partial least squares: Regression & structural equation models*. G. David Garson and Statistical Associates Publishing.

Gatewood, E. J., Carter, N. M., Brush, C. G., Greene, P. G., & Hart, M. M. (2003). *Women entrepreneurs, their ventures, and the venture capital industry: An annotated bibliography*. ESBRI.

Gupta, V. K., Turban, D. B., Wasti, S. A., & Sikdar, A. (2009). The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur. *Entrepreneurship Theory and Practice, 33*(2), 397–417.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate data analysis, a global perspective, 7th ed. Pearson Education.

Haus, I., Steinmetz, H., Isidor, R., & Kabst, R. (2013). Gender effects on entrepreneurial intention: a meta-analytical structural equation model. *International Journal of Gender and Entrepreneurship, 5*(2), 130–156.

Henderson, R., & Robertson, M. (1999). Who wants to be an entrepreneur? Young adult attitudes to entrepreneurship as a career. *Education + Training, 41*(5), 236–245. https://doi.org/10.1108/00400919910279973

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems, 116*(1), 2–20.

Hindle, K., Klyver, K., & Jennings, D. F. (2009). *Understanding the entrepreneurial mind*. Springer. https://doi.org/10.1007/978-1-4419-0443-0

Höck, M., & Ringle, C. M. (2006). Strategic networks in the software industry: An empirical analysis of the value continuum. IFSAM VIIIth World Congress, Berlin 2006. Retrieved 12/24/2020 from http://www.ibl-unihh.de/IFSAM06.pdf.

Hoyle, R. H. (1995). *Structural equation modeling*. Thousand Oaks, CA.: SAGE Publications,Inc.

Hunter, J. E. & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings*. Thousand Oaks, CA: Sage.

Hughes, K. D., Jennings, J. E., Brush, C., Carter, S., & Welter, F. (2012). Extending women's entrepreneurship research in new directions. *Entrepreneurship: Theory and Practice, 36*(3), 429–442. https://doi.org/10.1111/j.1540-6520.2012.00504.x

Hult, G. T. M., Ketchen, D. J., Griffith, D. A., Finnegan, C. A., Gonzalez-padron, T., Harmancioglu, N., Huang, Y., & Talay, M. B. (2008). Data equivalence in cross-cultural international business research: Assessment and guidelines. *Journal of International Business Studies, 39*, 1027–1044. https://doi.org/10.1057/palgrave.jibs.8400396

Iakovleva, T., & Kolvereid, L. (2009). An integrated model of entrepreneurial intentions. *International Journal of Business and Globalisation, 3*(1), 66. https://doi.org/10.1504/IJBG.2009.021632

Jena, R. K. (2020). Measuring the impact of business management student's attitude towards entrepreneurship education on entrepreneurial intention: A case study. *Computers in Human Behavior, 107*(January), 106275. https://doi.org/10.1016/j.chb.2020.106275

Keil, M., Tuunainen, V., Tan, C, Y. B., Wassenaar, A., Wei, K. K. & Saarinen, T. (2000). A cross-cultural study on escalation of commitment behavior in software projects. *MIS Quarterly, 24*(2), 299–325.

Kolvereid, L. (1996). Prediction of employment status choice intentions. *Entrepreneurship Theory and Practice, 21*(1), 47–57.

Kolvereid, L., & Isaksen, E. (2006). New business start-up and subsequent entry into self-employment. *Journal of Business Venturing, 21*(6), 866–885. https://doi.org/10.1016/j.jbusvent.2005.06.008

Kolvereid, L., & Moen, Ø. (1997). Entrepreneurship among business graduates: Does a major in entrepreneurship make a difference? *Journal of European Industrial Training, 21*(4), 154–160. https://doi.org/10.1108/03090599710171404.

Kraaijenbrink, J., Bos, G. & Groen, A. (2009). What do students think of the entrepreneurial support given by their universities? *International Journal of Entrepreneurship and Small Business, 9*(1), 110–125.

Kraaijenbrink, J., Spender, J.-C., & Groen, A. J. (2010). The resource – based view: A review and assessment of its critiques. *Journal of Management, 36*(1), 349–372. https://doi.org/10.1177/0149206309350775.

Kristiansen, S., & Indarti, N. (2004). Entrepreneurial intention among Indonesian and Norwegian students. *Journal of Enterprising Culture, 12*, 55–78.

Krueger, N. F. (1993). Growing up entreprenereurial? Some developmental consequences of early exposure to entrepreneurship. In *Academy of Management Proceedings*, (pp. 80–84). Academy of Management.

Krueger, N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing, 15*(5), 411–432. https://doi.org/10.1016/S0883-9026(98)00033-0

Lerner, J. (2005). The university and the start-up: Lessons from the past two decades. *Journal of Technology Transfer, 30*(1–2), 49–56. https://doi.org/10.1007/s10961-004-4357-8

Lin, S. & Si, S. (2014). Factors affecting peasant entrepreneurs' intention in the Chinese context. *International Entrepreneurship and Management Journal, 10*(4), 803–825.

Liñán, F. (2008). Skill and value perceptions: How do they affect entrepreneurial intentions? *International Entrepreneurship and Management Journal, 4*(3), 257–272. https://doi.org/10.1007/s11365-008-0093-0

Liñán, F., & Chen, Y. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions Francisco. *Entrepreneurship Theory & Practice, 33*, 593–617.

Liñán, F., Rodríguez-Cohard, J. C., & Rueda-Cantuche, J. M. (2011a). Factors affecting entrepreneurial intention levels: A role for education. *International Entrepreneurship and Management Journal, 7*(2), 195–218. https://doi.org/10.1007/s11365-010-0154-z

Liñán, F., & Santos, F. J. (2007). Does social capital affect entrepreneurial intentions? *International Advances in Economic Research, 13*(4), 443–453. https://doi.org/10.1007/s11294-007-9109-8

Liñán, F., Urbano, D., & Guerrero, M. (2011b). Regional variations in entrepreneurial cognitions: Start-up intentions of university students in Spain. *Entrepreneurship and Regional Development, 23*(3–4), 187–215. https://doi.org/10.1080/08985620903233929

Mahfud, T., Bruri, M., Sudira, P., & Mulyani, Y. (2020). The influence of social capital and entrepreneurial attitude orientation on entrepreneurial intentions: The mediating role of psychological capital. *European Research on Management and Business Economics, 26*, 33–39.

Matthews, C. H. & Moser, S. B. (1995). Family background and gender: Implications for interest in small firm ownership. *Entrepreneurship and Regional Development, 7*, 365–377.

Mian, S. A. (1996). Assessing value-added contributions of university technology business incubators to tenant firm. Research Policy, 25(3), 325–335.

Mian, S. A. (1997). Assessing and managing the university technology business incubator: An integrative framework. *Journal of Business Venturing, 12*(4), 251–285. https://doi.org/10.1016/S0883-9026(96)00063-8

Moriano, J. A., Gorgievski, M., Laguna, M., Stephan, U., & Zarafshani, K. (2012). A cross-cultural approach to understanding entrepreneurial intention. *Journal of Career Development, 39*(2), 162–185. https://doi.org/10.1177/0894845310384481

Ndofirepi, M. T. (2020). Relationship between entrepreneurship education and entrepreneurial goal intentions: Psychological traits as mediators. *Journal of Innovation and Entrepreneurship, 9*(2), 1–21. https://doi.org/10.1186/s13731-020-0115-x

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

Nowinski, W., Haddoud, M. Y., Lancaric, D., Dana, E., & Czegledi, C. (2019). The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education, 44*(2), 361–379.

Ohanu, B. I., & Shodipe, O. T. (2021). Influence of the link between resources and behavioural factors on the entrepreneurial intentions of electrical installation and maintenance work students. *Journal of Innovation and Entrepreneurship, 10*(13), 1–15. https://doi.org/10.1186/s13731-021-00154-8

Oosterbeek, H., van Praag, M., & Ijsselstein, A. (2010). The impact of entrepreneurship education on entrepreneurship skills and motivation. *European Economic Review, 54*(3), 442–454. https://doi.org/10.1016/j.euroecorev.2009.08.002

Peterman, N. E., & Kennedy, J. (2003). Enterprise education: Influencing students' perceptions of entrepreneurship. *Entrepreneurship Theory and Practice, 28*, 129–144.

Reynolds, P. D., Bygrave, W., & Autio, E. (2004). GEM 2003 executive report. Babson College, London Business School, and Kauffman Foundation.

Roldán, J. L., Sánchez-Franco, M.J., (2012). Variance-based structural equation modeling: guidelines for using partial least squares in information systems research. In Mora, M., Gelman, O., Steenkamp, A. L. and Raisinghani, M. (Eds) *Research methodologies, innovations and philosophies in software systems engineering and information systems* (pp. 193–221). IGI Global: Hershey, PA.

Sánchez-Franco, M. J., & Roldán, J. L. (2005). Web acceptance and usage model: A comparison between goal-directed and experiential web users. *Internet Research, 15*(1), 21–48. https://doi.org/10.1108/10662240510577059

Santos, F. J., Roomi, M. A., & Liñán, F. (2016). About gender differences and the social environment in the development of entrepreneurial intentions. *Journal of Small Business Management, 54*(1), 49–66. https://doi.org/10.1111/jsbm.12129

Scherer, R. F., Adams, J. S., Carley, S. S., & Wiebe, F. A. (1989). Role model performance effects on development of entrepreneurial career preference. *Entrepreneurship Theory and Practice, 13*(3), 53–72. https://doi.org/10.1177/104225878901300306

Shapero, A. & Sokol, L. (1982). Social dimensions of entrepreneurship. In C. A. Kent, D. L.Sexton, K. H. Vesper (Eds.), *Encyclopedia of Entrepreneurship*. Englewood Cliffs, NJ: Prentice Hall.

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

Stephens, K. (2007). Parents are powerful role models for children.

Stoica, O., Roman, A., & Rusu, V. D. (2020). The nexus between entrepreneurship and economic growth: A comparative analysis on groups of countries. *Sustainability (Switzerland), 12*(3), 1–19. https://doi.org/10.3390/su12031186.

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/JSBED-10-2015-0149

Trivedi, R. H. (2014). Are we committed to teach entrepreneurship in business school?: An empirical analysis of lecturers in India, Singapore andMalaysia. *Journal of Enterprising Communities: People and Places in the Global Economy, 8*(1), 71–81.

Trivedi, R. H. (2017). Entrepreneurial-intention constraint model: A comparative analysis among post-graduate management students in India, Singapore and Malaysia. *International Entrepreneurship and Management Journal, 13*(4), 1239–1261. https://doi.org/10.1007/s11365-017-0449-4.

Turker, D., & Selcuk, S. S. (2009). Which factors affect entrepreneurial intention of university students? *Journal of European Industrial Training, 33*(2), 142–159. https://doi.org/10.1108/03090590910939049

Upton, N., Sexton, D., & Moore, C. (1995). Have we made a difference? An examination of career activity of entrepreneurship majors since 1981. In *Frontiers of entrepreneurship research: Proceedings of the 15th annual entrepreneurship research conference*. Babson Park, MA: Babson College.

Urbano, D., & Guerrero, M. (2013). Entrepreneurial universities: Socioeconomic impacts of academic entrepreneurship in a European region. *Gender and Society, 27*(1), 40–55. https://doi.org/10.1177/0891242412471973

Valliere, D. (2016). Measuring regional variations of entrepreneurial intent in India. *Journal of Entrepreneurship, 25*(2), 111–128. https://doi.org/10.1177/0971355716650362

Verheul, I., Thurik, R., Grilo, I., & Van der Zwan, P. (2012). Explaining preferences and actual involvement in self-employment: Gender and the entrepreneurial personality. *Journal of Economic Psychology, 33*(2), 325–341. https://doi.org/10.1016/j.joep.2011.02.009

Verheul, I., Uhlaner, L., & Thurik, R. (2003). Business accomplishments, gender and entrepreneurial self image. SCALES (Scientific Analysis of Entrepreneurship and SMEs)-paper No. 200312, EIM Business and Policy Research.

von Graevenitz, G., Harhoff, D., & Weber, R. (2010). The effects of entrepreneurship education. *Journal of Economic Behavior and Organization, 76*(1), 90–112. https://doi.org/10.1016/j.jebo.2010.02.015

Walter, A., Auer, M., & Ritter, T. (2006). The impact of network capabilities and entrepreneurial orientation on university spin-off performance. *Journal of Business Venturing, 21*(4), 541–567. https://doi.org/10.1016/j.jbusvent.2005.02.005

Walter, S. G., & Dohse, D. (2012). Why mode and regional context matter for entrepreneurship education. *Entrepreneurship and Regional Development, 24*(9–10), 807–835. https://doi.org/10.1080/08985626.2012.721009

Wilson, F., Marlino, D., & Kickul, J. (2004). Our entrepreneurial future: Examining the diverse attitudes and motivations of teens across gender and ethnic identity. *Journal of Developmental Entrepreneurship, 9*(3), 177–197.

Zellweger, T., Sieger, P., & Halter, F. (2011). Should I stay or should I go? Career choice intentions of students with family business background. *Journal of Business Venturing, 26*(5), 521–536. https://doi.org/10.1016/j.jbusvent.2010.04.001

Zhang, Y., Duysters, G., & Cloodt, M. (2014). The role of entrepreneurship education as a predictor of university students' entrepreneurial intention. *International Entrepreneurship and Management Journal, 10*(3), 623–641. https://doi.org/10.1007/s11365-012-0246-z

Zhao, H., Hills, G. E., & Seibert, S. E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology, 90*(6), 1265–1272. https://doi.org/10.1037/0021-9010.90.6.1265

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