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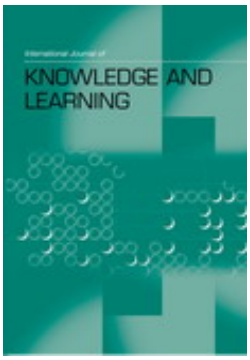

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Entrepreneurial intention among Yemeni students beyond business schools: mediation and moderation approaches

Mugaahed Abdu Kaid Saleh, Manjunath K. Rajappa, Mohammed Mostafa Mohammed Qaied

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Entrepreneurial intention among Yemeni students beyond business schools: mediation and moderation approaches

Mugaahed Abdu Kaid Saleh* and Manjunath K. Rajappa

Department of Management and Business Administration,
Kuvempu University,
Shimoga, 577451, India
Email: mugaahed@yahoo.com
Email: manjurajappa@gmail.com
*Corresponding author

Mohammed Mostafa Mohammed Qaied

Department of Commerce,
Kuvempu University,
Shimoga, 577451, India
Email: mmmq220@hotmail.com

Abstract: Entrepreneurial intention (EI) among students has been widely investigated by many researchers and well presented in earlier literatures, however, EI among students beyond business schools is not equally researched. This study aims to investigate attitudes, subjective norms and perceived behavioural control as mediators in the relationship between entrepreneurial intention and entrepreneurial knowledge/entrepreneurial self-efficacy, and the moderation of gender on the same among students beyond business schools in Yemen. This study is a cross-sectional study, which relies on data compiled from 486 college students using random sampling and applying PLS-SEM for data analysis. The results unveil self-efficacy as the least influential factor on entrepreneurial intention. The results also show partial mediation of attitudes, subjective norms and perceived behavioural control on the relationship between entrepreneurial knowledge and entrepreneurial intention, but not with entrepreneurial self-efficacy, while no moderation of gender is found on any of the relationship of variables in the model. This research adds to the literature by measuring entrepreneurial intention among students beyond business schools in underdeveloped economy and investigating the entrepreneurial antecedents as mediators between entrepreneurial intention and entrepreneurial knowledge/self-efficacy.

Keywords: entrepreneurial intention; attitudes; subjective norms; behaviour; students; business schools; entrepreneurial self-efficacy; entrepreneurial knowledge.

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Biographical notes: Mugaahed Abdu Kaid Saleh is a Yemeni research scholar pursuing his PhD research in India at the Department of Management and Business Administration, Kuvempu University in the field of entrepreneurship and SMEs development.

Manjunath K. Rajappa is an Associate Professor and a Research Supervisor at the Department of Management, Kuvempu University. He obtained his PhD in Stock Derivatives and Strategies for Portfolio Performance Optimisation. His research interest includes risk management, derivatives, strategic HRM, strategic finance, entrepreneurship, etc. He has been a Research Supervisor on Masters and Doctorate research scholars since 2014. He teaches, SAPM, derivatives, risk management, research methodology, and corporate communications, for master students.

Mohammed Mostafa Mohammed Qaied is a research scholar from Yemen pursuing Doctorate Research at the Department of Commerce, Kuvempu University, Shimoga, India. His research interests include microfinance, entrepreneurship and economic development.

1 Introduction

Entrepreneurship is one of the significant tools for transformation and structural change, hence governments prioritise entrepreneurship and entrepreneurial activities to achieve resurgence in the business sector (Zabala-Iturriagagoitia, 2022). There is a significant role of government institutions in the development of entrepreneurship through formal entrepreneurship education programs (Looi and Maritz, 2021). Hence, a combination of entrepreneurship education from different organisations, such as government agencies, incubators/accelerators and universities, promotes the establishment of high-technology firms (Breznitz and Zhang, 2022). Research proves that universities contribute to the development of social leaders of tomorrow by investing in social entrepreneurship education (Bodolica et al., 2021).

The literature presents a wide range of investigation to entrepreneurship, while less studies are dedicated to measure entrepreneurial intention (EI) among the youth in an underdeveloped country such as Yemen, few studies investigated entrepreneurial attitudes (Saleh et al., 2021), EIs among graduates including business students (Saeed et al., 2019; Nabil and Zhang, 2020), entrepreneurship perception level and enterprising skills (Saleh and Manjunath, 2021, 2020) which builds EI among the youth beyond business schools in underdeveloped economies such as Yemen (an untapped area which can be further investigated). In a previous investigation of EI among students (majorly business students), entrepreneurial antecedents explain around 95% of the variance in EI among students. While the highest predictor of EI is found to be subjective norms (52%) followed by perceived behaviour control (42%) while no significance of personal attitude is seen (4%) (Saeed et al., 2019).

This study aims to investigate EI among students beyond business schools in Hadhramaut city in Yemen, the city having history of providing conducive environment for entrepreneurship since the old era. Further, the study aims to find the indirect effect of the entrepreneurial knowledge (EK)/entrepreneurial self-efficacy (ESE) on EI through the mediating role of attitude, subjective norms and perceived behaviour control; and finally,

it aims to explore the moderating role of gender in the influence on EI drawn by entrepreneurial antecedents included in the model of this study.

This study adds to such literature by investigating the mediating role of attitudes, subjective norms and perceived behavioural control on EI in relationship to EK and self-efficacy. Further, the study investigates this model in the context of an underdeveloped economy where literature is scant and less attention is paid towards the development of entrepreneurship intent among the youth. The study is structured as follows: the first section provides an introduction, the second section provides insight into the theoretical background and review of literature, methodology and the measurement are in the third section, then the results and discussion are presented followed by the conclusion and implication.

2 Background in the Yemeni context

Hadhramaut is the biggest governorate in Yemen. It is the home land of Hadhramis who are known for their tendency towards trade and entrepreneurship in history [Jacobsen, (2009), p.7]. Due to their strong tendency in persuing their EIs and activities, Hadhramis established relationships and communication with other communities in Asia and Africa [At-Tameemi, (2017), p.40].

Statistics show that trade has been conducted between Hadhramis and traders in East Africa, Mauritius, India, Colombo, Java, China, Oman, Basrah, Berbera, Karachi and Red Sea Ports [Ingrams, (1936), pp.79–85], India and Southeast Asia, East Africa (Tanzania, Somalia and Kenya) and most of the Arabian Gulf countries (Sumait at al., 2020).

2.1 EI and theory of planned behaviour

The theory of planned behaviour has been widely used to predict intentions of people in general, and it has been widely used to predict the EIs of individuals in particular, as said the behaviour of an individual is explained by their intentions, such intentions are what their attitude (ATE) reveals about subjective norms (SN) and perceived behavioural control (PBC) (Ajzen, 1991; Yang, 2013). This study adopts the theory of planned behaviour to measure and predict the EIs among the new Hadhrami generation, as the theory of planned behaviour has been proven to be a successful predictor of EIs (Mahmood et al., 2019; Joshi et al., 2020; Yang, 2013; Boubker et al., 2021; Su et al., 2021).

The relevance and impact on EI by the three predictors of the theory of planned behaviour has been investigated in the literatures. Arafat et al. (2020) investigated EI among Indian youth and pointed that subjective norms predicts EI the least while the highest predictor is the perceived behaviour. Similarly, Su et al. (2021) reported that the highest effect on EI is observed with personal attitude while the least effect is with subjective norms among students in China. Rueda Barrios et al. (2022) presented evidence that where personal attitude has the highest effect, the subjective norms have the least effect when predicting EI among graduates in Colombia. Further, Nasar et al. (2019) compared short term as well as long term EI among participants from Pakistan and Vietnam and pointed out, where attitudes are the most influential factor; the subjective norms are the least influential when it comes to predicting the short-term EI. Whereas,

while predicting long term EI, perceived behaviour is found to be the least influential and attitudes have the higher degree of impact.

Doanh and Bernat (2019) reported that attitudes are the highest influential factor in creating EI among students in Vietnam, and perceived behaviour being the least effective, and the subjective norms is reported insignificant. Mahmood et al. (2019) reported that perceived behaviour being the highest predictor of EI among Asnaf millennials while the least predictor being subjective norms.

Based on these reviews, it can be concluded that EI and its relationship with these three variables is widely investigated in the literature and mostly found to be significant and positively related. Further, the effect of these variables on the EI varies in context within which the studies are carried out. Taking into consideration the contextual difference of the Yemeni environment, the following hypotheses are developed.

H_1 Attitudes towards entrepreneurship has a direct positive effect on EI.

H_2 Subjective norms have a direct positive effect on EI.

H_3 Perceived behavioural control has a direct positive effect on the EI.

2.2 EK and EI

Studies have pointed out presence of a positive relationship between the entrepreneurial background (EK) of the individuals and their family and EIs (Hussain et al., 2021; Hutasuhut, 2018); and a positive impact of entrepreneurial education on the EIs of individuals (Anwar et al., 2022; Yousaf et al., 2021; Arshad et al., 2018) as there is a difference in the EI based on the difference in the courses taken up by students (Cui and Bell, 2022).

Li and Wu (2019) reported that entrepreneurial education and knowledge being a significant predictor of EI. Prior business exposure indirectly affects shaping EI among individuals (Zaman et al., 2020). However, individuals sometimes show high EI even without high EK (Ni and Ye 2018). Farani et al. (2017) show significant relationship between EK and attitudes towards entrepreneurship, with perceived behavioural control but not the subjective norms. Therefore, the following hypothesis is developed.

H_4 EK has a direct positive impact on EI.

2.3 ESE and EI

Self-efficacy is the individual belief that, they have the ability to perform certain tasks in future (Elnadi and Gheith, 2021), and entrepreneurial self efficacy is the process of increasing the entrepreneurial capabilities among students to become contributing entrepreneurs in future (Darmanto and Yuliari, 2018). Self-efficacy differs from perceived behavioural control. Parkinson et al. (2017) pointed that the ESE and perceived behavioural control are two distinct constructs. Further, ESE is found to be a better predictor than perceived behavioural control.

ESE is evident to have significant impact on EI (Neneh, 2022). Self-efficacy strongly influences EI (Garaika at al., 2019) and acts as a significant predictor of EI (Li and Wu, 2019). This indicates that ESE is more related to individuals' control than the environment and their behaviour, which means that the individuals with high

self-efficacy and controlled behaviour are supposed to have higher EI. Hence, the following hypothesis is developed:

H_5 ESE has a direct positive effect on EI of youth.

2.4 The mediating role of attitudes, subjective norms and perceived behavioural control

Very few studies have investigated the mediating roles of attitudes, subjective norms and perceived behavioural control in relationship with EI and other factors. Tsai et al. (2016) presented evidence of a significant mediating role of attitudes towards entrepreneurship and perceived behavioural control. Farani et al. (2017) reported that attitudes and behaviour control are significant mediators but not the subjective norms.

ESE has a significant effect on attitudes of individuals; however, it is greater among males than females. Further, it mediates the relationship between self-efficacy and EI (Arshad et al., 2016, 2015). Arshad et al. (2020) pointed that the attitude is affected by intrinsic and extrinsic factors and it stimulates EI among the individuals.

Fewer studies have investigated the role of attitudes towards entrepreneurship, subjective norms and perceived behavioural control in mediating the relationship of EI with other factors. Therefore, to address this gap, the study includes the mediation assessment to present evidence of the role of attitudes, subjective norms and perceived behaviour in mediating the relationship of EI with ESE and EK. From this point of view, the following hypotheses are developed:

H_{6a} ESE has a direct positive effect on attitudes towards entrepreneurship.

H_{6b} ESE has a direct positive effect on subjective norms.

H_{6c} ESE has a direct positive effect on perceived behavioural control.

H_7 ESE has indirect positive effect on EI when mediated by attitudes, subjective norms and perceived behaviour.

H_{8a} EK has a direct positive effect on attitudes towards entrepreneurship.

H_{8b} EK has a direct positive effect on subjective norms.

H_{8c} EK has a direct positive effect on perceived behavioural control.

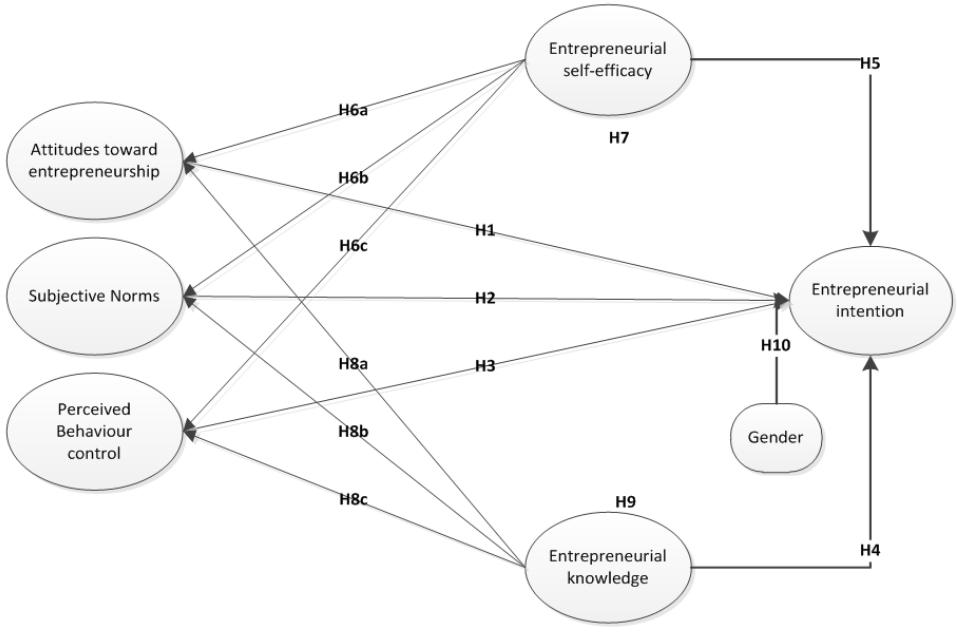
H_9 EK has indirect positive effect on EI when mediated by attitudes, subjective norms and perceived behaviour.

2.5 The moderating role of gender

Based on the differences in the demographic variables, the literature shows that gender has no effect on the EI (Smith et al., 2016). Research also shows that variables such as gender, age, birth order position and marital status have an effect on EIs among graduates while marital status being the major influencer among them (Katundu and Gabagambi, 2014). Subjective norms are observed more among females (Abbas, 2015; Arshad et al., 2016), while males show more perceived behavioural control than females (Arshad et al., 2016).

H_{10} Gender moderates the relationship between entrepreneurship antecedents and EI.

Figure 1 Theoretical research model



Source: Literature review

3 Methodology

An empirical study method is employed in this research by relying on primary data collected from undergraduates, in order to be in position to present evidence about the EI among students beyond business schools in the region of Hadhramaut in Yemen.

3.1 Research sample

The sample taken for this study represents the undergraduate students who are in the verge of deciding their career paths after completing their graduation in university. Since business education and entrepreneurship is somehow oriented in business schools, the study excluded undergraduates from business schools and to measure the intention of students without orientation towards business education during college studies. Entrepreneurship being not oriented in education, science and engineering colleges in Yemeni universities, these undergraduates beyond business schools when studies is assessed to provide accurate evidence as to what kind of EI is observed among the sampled units in the region of Hadhramaut in Yemen.

Following random sampling methods, random numbers of students are taken from each class focusing on students on third and fourth year of college. 500 questionnaires were distributed, among them, 491 are returned with a response rate being 98%. Five cases were excluded from the sample being. Therefore, the total number of responses taken forward for the analysis in the study is 486 students representing in three universities.

As shown in Table 1 majority of participants (82.9%) are below the age of 25, the sample almost equally consists of males and females. Students from a variety of majors have been included in the study from three universities where the majority (70.6%) are from Seiyun University, studying in departments of English (23.7%), computer science (13%), Islamic studies (13.8%), information systems (11.5%) etc. Further, majority of respondents have 'science' as the path of their high school education (76.5%). Majority of respondents are studying in last year of college (46.1%) and third year (35%).

Table 1 Demographic characteristics of respondents

Variable		*Frequency*	*%*
Age	20–25 years	403	82.9%
	26 to 30 years	82	16.9%
	More than 30 years	1	0.2%
Gender	Male	239	49.2%
	Female	247	50.8%
Status	Single	424	87.2%
	Married	62	12.8%
High school major	Science	372	76.5%
	Literature	114	23.5%
University	Hadhramaut	76	15.6%
	Seiyun	343	70.6%
	UST	67	13.8%
Specialisation	Architecture	23	4.7%
	Computer science	63	13.0%
	English	115	23.7%
	Information systems	56	11.5%
	Islamic studies	67	13.8%
	Early childhood education	52	10.7%
	Laboratories	20	4.1%
	Mathematics	46	9.5%
	Petroleum engineering	44	9.1%
Year of study	First year	53	10.9%
	Second year	33	6.8%
	Third year	170	35.0%
	Fourth year	224	46.1%
	Fifth year	6	1.2%

Source: Primary data analysis

3.2 Measurement and statistical tools

The theory of planned behaviour (Ajzen, 1991) is used in this study which measures the impact on EI influenced by attitudes, subjective norms and perceived behavioural control. EI which is the tendency and willingness of individuals to start their own business in

future is measured by six statements adopted from Liñán and Chen (2009) and Liñán et al. (2013). Attitude is a significant influential variable in determining EI, indicating the extent to which individuals are committed to the tendency to establish their own business [this variable was measured by five statements in the questionnaire adopted from Liñán and Chen (2009) and Liñán et al. (2013)]. Subjective norms are summarised by the social pressure that individuals are exposed to with respect to performing specific behaviours [this variable is measured by three statements adopted from Liñán and Chen (2009) and Liñán et al. (2013)]. The third variable is perceived behavioural control which summarises the extent of ease or difficulty in performing the behaviour among individuals [this variable was measured by five statements adopted from Liñán and Chen (2009) and Liñán et al. (2013)].

EI variable is used to measure the level of intention of students to start their own business; the entrepreneurship is measured by six statements [the variables included in the theory of planned behaviour are adopted from Liñán and Chen (2009) and Liñán et al. (2013)].

Further, EK, which involves the background that individuals have about entrepreneurship and entrepreneurial activities including education, training and prior experience [this is measured by six statements adopted from Roxas (2014)], and finally, ESE, which, according to Parkinson et al. (2017) and Wallston (2001) is different from perceived behavioural control as it measures the confidence of individuals in their capabilities to perform certain behaviours [this is measured by six items adopted from Barakat et al. (2014), Cooper and Lucas (2006), and Krueger et al. (2000)], where, respondents are asked about the extent of confidence in their own abilities with respect to establishing their own business.

The collected data has been well pruned and organised by removing incomplete cases, the Likert scale items are coded using five point scale from one to five, one being 'strongly disagree' and five being 'strongly agree'. Descriptive statistics has been used to explore the frequency and percentages of responses towards the adopted measurement items.

The study adopted partial least square based structural equation modelling to measure the reliability and validity of the measurement model, as the PLS-SEM fits the data that does not present normal distribution as one of its characteristics (Hair et al., 2019b).

The constructs in the study are reflective constructs, hence, they are assessed for reliability by examining factor loadings, so as to ensure all factors are loaded satisfactorily towards their constructs (Hair et al., 2019); Cronbach's alpha; Dijkstra and Hensler's rho (Dijkstra and Henseler, 2015) and composite reliability to ensure that each construct shows a reliability value higher than 0.70 (Hair et al., 2016, 2020); average variance explained (AVE) to ensure that their values are higher than 0.50 (Fornell and Larcker, 1981; Hair et al., 2020) and finally variance inflation factor (VIF) to ensure their values do not exceed 3.33, which indicates that multicollinearity exists in the data (Hair et al., 2019b, 2020).

For more reliability check in the measurement model, for discriminant validity in particular, Fornell and Larcker's criteria is applied to ensure that the value of under root of AVE on the diagonal of all constructs is higher than the intera-item correlations (Fornell and Larcker, 1981). Further, Heterotrait-Monotrait criteria is adopted to measure the discriminant validity by ensuring that all values are below 0.85 (Hair et al., 2016).

In the structure model, we assessed p values of path coefficients by using the bootstrapping technique where the sample is divided into 5,000 sub-samples (Hair et al.,

2016) for the purpose of testing hypotheses (Hair et al., 2020). VIF is assessed to detect the tolerance level of multicollinearity among constructs by ensuring that the VIF values are not exceeding 3.33 (Hair et al., 2020).

We examined R square which is the variance explained by endogenous constructs to assess the model's explanatory power (Shmueli and Koppius, 2011). The study adopts the blindfolding procedure in partial least square SEM which relies on removing single points in the data matrix in order to assess Q^2 for measuring the model's predictive accuracy (Rigdon, 2014). Further, differences in the impact based on gender are assessed to identify if the impact on entrepreneurial efficiency differs among males and females.

PLS-predict with ten folds and ten repetitions is applied to generate case-wise predictions in order to assess the predictive power of the model (Shmueli et al., 2016), which is also based on the symmetric distribution of prediction errors where mean absolute error (MAE) is used to compare PLS model with LV model if the distribution is symmetric and the root mean squared error (RMSE) is used otherwise (Shmueli et al., 2019).

For mediation analysis, we followed the criterion described by Hair et al. (2016) which involves three steps; First, checking the direct effect between the independent and dependent variables; Second, checking the indirect effect between the independent and dependent variables through the mediator; and Third, checking the direct effect between the independent and dependent variables with the presence of the mediator. This procedure is run twice, the first time, it is run to test the mediating role of attitude, subjective norms and perceived behavioural control in the relationship between EK and EI. The second run is dedicated to check the same with respect to the relationship between ESE and EI.

We adopted multi group analysis (MGA) to test the moderation of gender on the relationships across variables (Hair et al., 2016). The permutation test is adopted for testing the moderation effect of categorical variables (Afthanorhan et al., 2015) where the p value of the permutation is used to determine if the variable has an effect on the relationship between exogenous and endogenous variables. All the analysis has been carried out through structural equation modelling using SmartPLS Version 3.3.

4 Results and discussion

This section presents the results obtained by analysing the collected data so as to draw meaningful conclusions. It starts with presenting confirmatory factor analysis (CFA) which aims to measure the reliability and validity of the research model. Then the structure model is used to test hypotheses, assessing the predictive power of the research model, and finally, mediation and moderation analysis is presented.

4.1 Assessment of measurement model

The study adopted partial least square based structural equation modelling to measure the reliability and validity of the measurement model. Reflective constructs are assessed for reliability, the reliability of the inner model is assessed through factor loadings, Cronbach's alpha, rho, composite reliability, AVE and VIF (Hair et al., 2019b). As shown in Table 2, the results are found satisfactory where Cronbach's alpha is 0.839 for attitudes, 0.0787 for subjective norms, 0.878 for perceived behavioural control, 0.936 for

EI, 0.823 for EK and 0.922 for ESE. This indicates that the relative constructs have relatively high reliability in the study model.

Table 2 Factor loading and convergent reliability measures

Mean	*Standard deviation*			*Cronbach's alpha*	*rho_A*	*CR*	*AVE*
ATE1	3.75	1.05	0.75	0.839	0.84	0.886	0.609
ATE2	4.01	1.06	0.81				
ATE3	4.00	1.08	0.80				
ATE4	3.84	1.09	0.77				
ATE5	3.73	1.21	0.76				
PBC1	2.72	1.20	0.73	0.878	0.890	0.907	0.619
PBC2	3.37	1.17	0.82				
PBC3	3.29	1.13	0.83				
PBC4	2.95	1.17	0.77				
PBC5	3.02	1.16	0.78				
PBC6	3.69	1.06	0.78				
SN1	3.81	1.18	0.87	0.787	0.835	0.872	0.696
SN2	3.68	1.10	0.88				
SN3	3.52	1.04	0.74				
EI1	3.72	1.22	0.82	0.936	0.936	0.949	0.757
EI2	3.79	1.15	0.85				
EI3	3.94	1.07	0.88				
EI4	3.94	1.13	0.89				
EI5	3.95	1.16	0.89				
EI6	4.07	1.07	0.89				
EK1	3.42	1.36	0.73	0.823	0.829	0.870	0.527
EK2	3.68	1.41	0.74				
EK3	3.51	1.43	0.71				
EK4	4.07	1.38	0.73				
EK5	3.27	1.33	0.72				
EK6	3.23	1.24	0.72				
ESE1	3.56	1.36	0.77	0.922	0.934	0.939	0.721
ESE2	3.63	1.30	0.84				
ESE3	3.81	1.22	0.87				
ESE4	3.81	1.27	0.88				
ESE5	3.82	1.31	0.86				
ESE6	3.95	1.22	0.87				

Source: Primary data analysis

Further, Dijkstra and Hensler's rho (Dijkstra and Henseler, 2015) is assessed and found satisfactory (> 0.70) for all constructs as it ranges from 0.82 to 0.93, this establishes the reliability of the reflective constructs (Hair et al., 2019a). Composite reliability of all

construct is also assessed, where values range from 0.87 to 0.94 which is higher than the minimum value limit (> 0.70), indicating that each statement contributes well towards its relevant construct (Hair et al., 2016, 2020).

AVE is found higher than the minimum value limit (> 0.50), its values range between 0.52 and 0.757, it confirms the reliability of all constructs (Hair et al., 2020). This indicates that the convergent reliability is well established for the factors in the study. Further, VIF is examined to assess the multicollinearity existing among constructs, the values of VIF are found below 3.33, which is the maximum level showing tolerated collinearity (Diamantopoulos, 2008).

This discussion leads to the conclusion that our measurement model is found to be a satisfactorily fit which also shows that ESE as well as EK are possible to be included as predictors to predict their impact on EI among individuals in the context of undergraduate beyond business schools in Yemen.

The study investigated the discriminant validity using the Fornell and Larcker's criteria in which the value of under root of AVE on the diagonal of all constructs is higher than the intra-item correlation (Fornell and Larcker, 1981). In addition to that, the Heterotrait-Monotrait criteria is adopted to measure the discriminant validity where, according to Hair et al. (2016), the value should be lower than 0.85. However, as shown in Table 3, the values of under root of AVE is found higher than the relevant intra-item correlation, and, the values are found to be way below the threshold limit (< 0.85) which establishes discriminant validity among the four constructs in the study.

Table 3 Discriminant validity statistics

Fornell-Larcker criterion test						
	ATE	*EI*	*EK*	*ESE*	*PBC*	*SN*
ATE	0.78					
EI	0.497	0.870				
EK	0.207	0.359	0.726			
ESE	0.071	0.171	0.056	0.849		
PBC	0.279	0.425	0.224	0.072	0.787	
SN	0.352	0.361	0.136	–0.031	0.192	0.834
Heterotrait-Monotrait (HTMT) ratio						
ATE						
EI	0.560					
EK	0.241	0.399				
ESE	0.081	0.181	0.078			
PBC	0.304	0.457	0.246	0.077		
SN	0.432	0.404	0.154	0.055	0.226	

Source: Primary data analysis

This indicates that the respondents were able to distinguish between the statements across constructs while responding to the questionnaire items, which also confirms the reliability and validity of the statements inserted in the questionnaire, to measure the mentioned variables and their impact on shaping EI among students beyond business schools in Yemen.

4.2 Assessment of structure model

In the structure model, the relationships are assessed across variables using the Bootstrapping technique and dividing the sample into 5,000 sub-samples (Hair et al., 2016) for identifying the p values of path coefficients and hypothesis testing (Hair et al., 2020) it is assessed that the VIF ensures the absence of serious collinearity. The VIF values of the inner model are found to be below the threshold limit (< 3.33) confirming that no serious collinearity exists across the constructs (Hair et al., 2020).

For explanatory power of the model, R squared is assessed, which is the variance explained by endogenous constructs, indicating the model's explanatory power (Shmueli and Koppius, 2011). The value of R square for the EI as an endogenous variable is 0.42 which is moderate (Henseler et al., 2009).

Table 4 VIF, R^2 and Q^2 of the structure model

Construct	*VIF*	*R^2*	*Q^2*
Attitudes towards entrepreneurship	1.413	0.043	0.024
Perceived behaviour control	1.194	0.05	0.029
Subjective norms	1.305	0.019	0.009
Entrepreneurial intention	-	0.421	0.313
Entrepreneurial knowledge	1.095	-	-
Entrepreneurial self-efficacy	1.026	-	-

Source: Primary data analysis

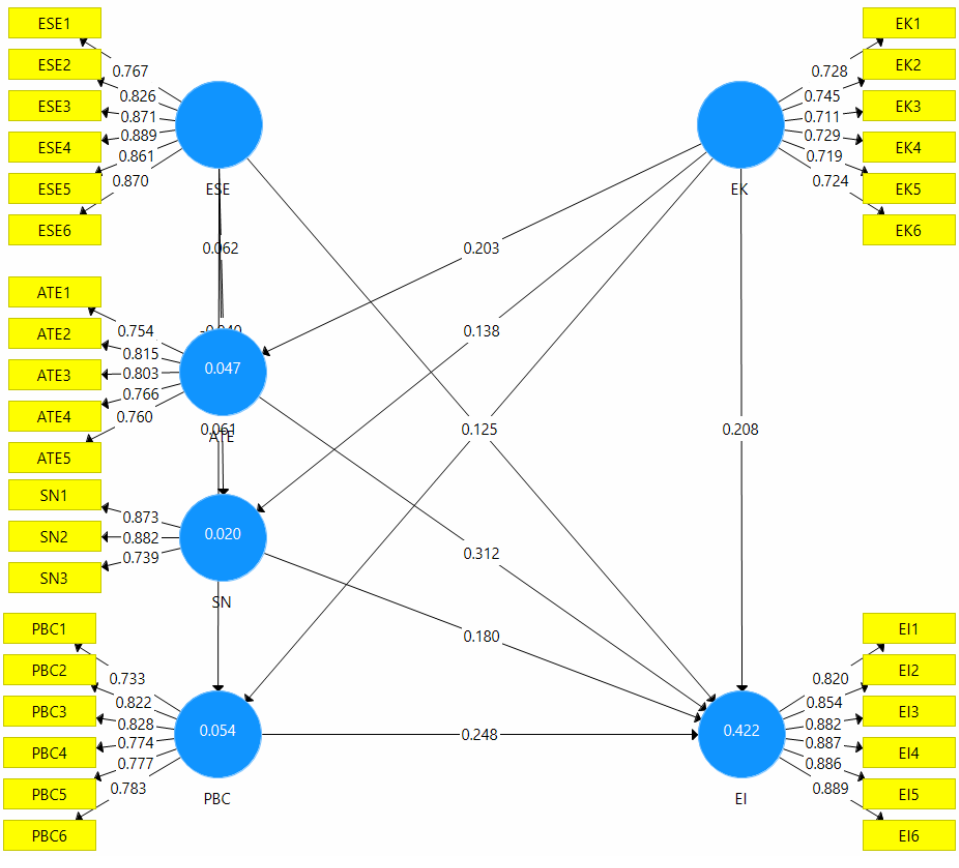
Further, as presented in Table 4, Q^2 is assessed to measure the model's predictive accuracy by using the blindfolding procedure in partial least square SEM which relies on removing single points in the data matrix (Rigdon, 2014). The value of Q^2 for EI is 0.313 which reflects medium predictive relevance in the path model (Hair et al., 2019b).

4.2.1 Impact of entrepreneurial antecedents on EI

After confirming non-existence of multicollinearity across constructs, PLS Algorithm with bootstrapping process of 5000 sub-samples is applied to identify the significance and relevance of the impact of entrepreneurial antecedents on EI among students beyond business schools. As shown in Table 5, Attitude towards entrepreneurship is the most influential factor determining EI among students ($\beta = 0.313$, $p < 0.01$), Perceived behavioural control is the second significantly influential factor determining EI among students ($\beta = 0.248$, $p < 0.01$). EK is an influential predictor of entrepreneurial intent as well ($\beta = 0.208$, $p < 0.01$), and the least influential factors in determining the EI are subjective norms ($\beta = 0.117$, $p = 0.01$) and ESE ($\beta = 0.125$, $p < 0.01$). This unveils that the first five hypotheses (H_1, H_2, H_3, H_4 and H_5) are supported in their impact on entrepreneurship intention.

Figures 2–3 show the model after investigating the relationships across variables in both techniques applied which are the PLS algorithm to identify the relationship across variables, and the Bootstrapping technique to identify the significance level of these relationships.

Figure 2 The measurement model (PLS algorithm) (see online version for colours)

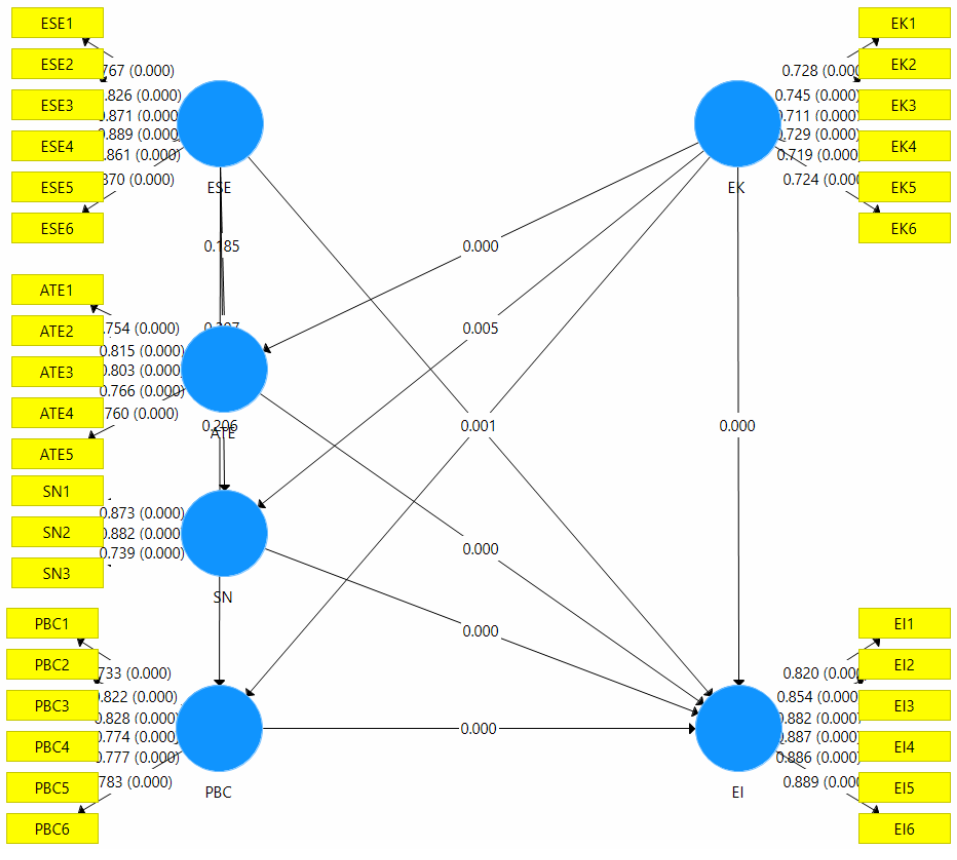


Source: Primary data analysis

The impact of ESE as well as EK on attitudes, subjective norms and perceived behaviour control is also assessed. Our results show that ESE does not have any significant impact on attitudes ($\beta = 0.062$, $p = 0.19$), subjective norms ($\beta = -0.040$, $p = 0.39$) and perceived behavioural control ($\beta = 0.061$, $p = 0.20$), which leads to conclusion that hypotheses (H_{6a}, H_{6b} and H_{6c}) are not supported in the Yemeni context. Further, the results show that EK significantly influences attitudes ($\beta = 0.207$, $p < 0.01$), subjective norms ($\beta = 0.136$, $p = 0.01$) and perceived behavioural control ($\beta = 0.224$, $p < 0.01$). This also shows that Hypotheses (H_{8a}, H_{8b} and H_{8c}) are well supported in assuming the impact of EK on attitudes, subjective norms and perceived behaviour control.

Considering the effect of the antecedents of EI, our results are consistent with previous studies (Ariff et al., 2010; Doanh and Bernat, 2019; Ferreira et al., 2012; Muhammad et al., 2015; Engle et al., 2010; Wach and Wojciechowski, 2016) as our results show significant effect of personal attitudes, subjective norms and perceived behaviour control on EI among Hadhrami undergraduates.

Figure 3 The structure model (bootstrapping) (see online version for colours)



Source: Primary data analysis

Table 5 Path coefficient of the relationship across variables in the model

Path	*β*	*S.D.*	*t*	*p*
ATE → EI	0.313	0.045	6.89	0.00
EK → ATE	0.207	0.044	4.661	0.00
EK → EI	0.208	0.04	5.171	0.00
EK → PBC	0.224	0.043	5.205	0.00
EK → SN	0.136	0.048	2.813	0.01
ESE → EI	0.125	0.037	3.368	0.00
PBC → EI	0.248	0.042	5.919	0.00
SN → EI	0.179	0.043	4.205	0.00
ESE → ATE	0.062	0.047	1.304	0.19
ESE → SN	-0.040	0.046	0.860	0.39
ESE → PBC	0.061	0.048	1.267	0.20

Source: Primary data analysis

In terms of the relationship between EK and EI, our result is consistent with previous studies (Hattab, 2014; Wu and Wu, 2008; Malebana, 2014; Aslam et al., 2012; Ramadhan, 2012), as our results show significant positive relationships between EI and EK. Similarly, in respect to ESE, our results are similar to previous research (Florin et al., 2007; Zhao et al., 2005; Fayolle, 2005) in showing its significant effect on EI.

Further, we investigated the differences between female and male students in respect to path coefficients and their significance in respect to the impact of entrepreneurship antecedents on their EI. Table 6 shows significant path coefficients of the impact of all constructs on EI among male students ($p < 0.01$) while it is different among female students as ESE is found insignificant in impacting EI among female students ($\beta = 0.110$, $p = 0.05$). Further, EK is not significantly impacting subjective norms ($\beta = 0.117$, $p = 0.12$). This indicates that female students and male students responded almost equivalently towards the impact of entrepreneurship antecedents included in this model.

Table 6 Differences of path coefficients among male students and female students

Hypothesis	*Females*				*Males*			
	β	*S.D.*	*t*	*p*	*β*	*S.D.*	*t*	*p*
ATE → EI	0.274	0.063	4.364	0.00	0.341	0.065	5.257	0.000
EK → ATE	0.189	0.063	3.021	0.00	0.234	0.061	3.834	0.000
EK → EI	0.227	0.061	3.725	0.00	0.192	0.05	3.811	0.000
EK → PBC	0.233	0.061	3.833	0.00	0.214	0.063	3.363	0.001
EK → SN	0.117	0.075	1.565	0.12	0.188	0.069	2.715	0.007
ESE → EI	0.110	0.056	1.952	0.05	0.139	0.052	2.692	0.007
PBC → EI	0.246	0.054	4.549	0.00	0.252	0.064	3.954	0.000
SN → EI	0.175	0.058	3.02	0.00	0.167	0.060	2.768	0.006

Source: Primary data analysis

This implies that if female students and male students are in the same status economically and socially, attitudes towards entrepreneurship, subjective norms, perceived behaviour control and EK would have the same impact on their EI. However, in the case of ESE, it is found influential on EI among male students but not female students, which can be attributed to the traditions and cultural attachments in the context of Yemen where women are less encouraged to work and acquire experience in the corporate world, let alone establishing their own business.

When comparing the impact size of these variables among male and female students, all variable show approximately equivalent between males and females. This is different from previous research (Wilson et al., 2007; Díaz-García and Jiménez-Moreno, 2010; Cañizares and García, 2010; Abbas, 2015; Arshad et al., 2016) which identified big differences in the impact of attitudes, subjective norms and perceived behaviour control among males and females.

4.2.2 Predictive power of structure model

PLS-predict tool is applied with ten folds and ten repetitions in order to mimic how predicting new observations can be carried through the model. PLS-Predict is used to generate case-wise predictions in order to assess the predictive power of the model

(Shmueli et al., 2016), which is different from R^2 and predictive relevance (Q^2) (Shmueli et al., 2019). Since the prediction residuals of PLS LV in our study are non-symmetric, then we can use the MAE to compare PLS with LV for assessing the predictive power of the model in our context (Shmueli et al., 2019).

The rule of thumb states that if the MAE values in PLS-SEM are lower than the values in the naïve LM benchmark, then the model is said to have a high predictive power. In our study, with including the two variables of entrepreneurial background as well as ESE, as observed in Table 7, not all the MAE as well as Q^2 predict values displayed by PLS-SEM are lower than the values in naïve LM, which indicates that this model has a medium predictive power when it comes to measuring EI among students beyond business schools in the Yemeni context. It is worth mentioning that the model has a high productive power with the original variables in the theory of planned behaviour without the inclusion of EK and ESE.

Table 7 Predictive power of the structure model

Item	*PLS*		*LM*		*PLS-LM*
	MAE	Q^2	*MAE*	Q^2	
ATE3	0.82	0.021	0.836	0.01	–0.016
ATE4	0.861	0.022	0.878	0.001	–0.017
ATE1	0.809	0.019	0.815	0.008	–0.006
ATE2	0.797	0.031	0.819	0.018	–0.022
ATE5	1.007	0.018	1.026	–0.012	–0.019
EI5	0.892	0.118	0.896	0.107	–0.004
EI6	0.799	0.142	0.802	0.138	–0.003
EI4	0.869	0.097	0.866	0.091	0.003
EI2	0.878	0.089	0.882	0.067	–0.004
EI1	0.938	0.107	0.93	0.104	0.008
EI3	0.811	0.076	0.811	0.064	0
PBC2	0.97	0.03	0.959	0.022	0.011
PBC5	0.959	0.027	0.949	0.036	0.01
PBC1	1.006	0.021	1.006	0.008	0
PBC6	0.823	0.057	0.824	0.041	–0.001
PBC3	0.933	0.011	0.925	0.013	0.008
PBC4	0.985	0.010	0.972	0.032	0.013
SN1	0.901	0.019	0.922	–0.01	–0.021
SN3	0.861	0.002	0.876	–0.035	–0.015
SN2	0.889	0.006	0.893	–0.023	–0.004

Source: Primary data analysis

4.2.3 The mediation of attitude, subjective norms and perceived behaviour

Following the procedure described by Hair et al. (2016) in analysing the mediation relationship, which involves three steps. The first step is to check the direct effect between indepndent variables and dependent variables without including any mediation,

based on this step, if the relationship is significant, then analysis can be taken forward to the second step. In our model EK and ESE are found positively and significantly related to EI ($\beta = 0.211$, $p < 0.05$ and $\beta = 0.126$, $p < 0.05$ respectively), therefore, further analysis of mediation can be undertaken. The second step involves assessing the indirect relationship between the independent variables and dependent variable through mediators and similarly, if this relationship is found significant, the mediation analysis can be taken forward to the third step where the direct relationship with the presence of mediators is assessed.

ESE is not found significantly and positively related to attitudes towards entrepreneurship ($\beta = 0.073$, $p = 0.13$), subjective norms ($\beta = -0.032$, $p = 0.48$) and perceived behaviour control ($\beta = 0.073$, $p = 0.12$), this shows that hypotheses (H_{6a}, H_{6b} and H_{6c}) are not supported, therefore, no further mediation analysis can take part due to the absence of a significant relationship between ESE and entrepreneurial antecedents in our model as this renders the indirect effect between ESE and EI through the three mediators to insignificant, based on this hypothesis (H_7) is not supported.

Further, EK is found positively and significantly related to attitudes towards entrepreneurship ($\beta = 0.207$, $p < 0.01$), subjective norms ($\beta = 0.136$, $p < 0.01$) and perceived behaviour control ($\beta = 0.224$, $p < 0.01$), this means that the hypotheses (H_{8a}, H_{8b} and H_{8c}) are supported. In addition, the indirect effect of EK on EI through attitudes, subjective norms and perceived behaviour control is significant. Therefore, mediation analysis can be taken forward to the third step to assess the effect of the mediators on the relationship between EK and EI.

In the third step, the direct effect of EK on EI is assessed again with the presence of mediators. EK is significantly and positively related to EI with the presence of attitude towards entrepreneurship ($\beta = 0.206$, $p < 0.01$), subjective norms ($\beta = 0.137$, $p < 0.01$) perceived behaviour control ($\beta = 0.226$, $p < 0.01$) as mediator variables.

This indicates the existence of partial mediation roles of attitudes towards entrepreneurship, subjective norms, and perceived behaviour control in the relationship between EK and EI which means that hypothesis (H_9) is supported.

4.2.4 The moderating role of gender

In order to measure the moderating effect of gender on the relationships across variables in the model, MGA is adopted (Hair et al., 2016). The permutation test is applied since the moderator is categorical (Afthanorhan et al., 2015).

As shown in Table 8, gender does not have any moderating effect on any of the relationships across variables in the model. This means that the effect of exogenous variables on endogenous variables does not differ when we split participants according to their gender. Therefore, no moderation effect is detected when measuring EI among students beyond business schools in Yemen. This implies that the effect on the individuals' intention will not differ when the characteristics remain the same among male and female participants. Our results differ from previous research that reported a moderating effect of gender (Arshad et al., 2016; Abbas, 2015).

On one hand, research has indicated that males and females perceive entrepreneurship and self-consistent career similarly which means that gender is not a major player in some scenarios (Díaz-García and Jiménez-Moreno, 2010). On the other hand, previous research has indicated that gender plays a significant role when it comes to essential enterprising skills among youth in Yemen (Saleh and Manjunath, 2020), EI in the MENA

region (Setti, 2017), perceiving the impact of social entrepreneurship (Al-Khalqi, 2017). However, gender did not play a significant role in entrepreneurial attitude among Yemeni youth (Saleh et al., 2021), entrepreneurship perception (Saleh and Manjunath, 2021), and EI in crisis (Al-Qadasi and Gongyi, 2020). The absence of the effect of gender as a moderating role in this research model can be attributed to the nature of respondents in this study. The data was collected from undergraduates in the city of Hadhramout is the homeland for Hadhramis who are known for hard work, self-reliance, asceticism, abstinence, not liking showmanship, honesty, passing on values and principles (Shabkshi, 2015), to the extent that they become an example of the individuals who dedicate their life for what they believe in and work hard towards achieving it. Their experience is not famous only in Yemen, but they have spread their entrepreneurial efforts to the gulf, Asia and Africa (Almogren, 2011). They are strict in applying specific rules and principles which contribute to their success in trade and entrepreneurship such as the way they spend money and run their enterprises (Bahareth, 2017).

Table 8 Statistics related to the moderating effect of gender on variables relationships

Path	*Path coefficients original (females)*	*Path coefficients original (males)*	*Path coefficients original difference (females – males)*	*Path coefficients permutation mean difference (females – males)*
ATE → EI	0.274	0.341	–0.067	–0.001
EK → ATE	0.189	0.234	–0.045	0.000
EK → EI	0.227	0.192	0.036	0.000
EK → PBC	0.233	0.214	0.019	0.000
EK → SN	0.117	0.188	–0.071	–0.002
ESE → EI	0.110	0.139	–0.029	–0.001
PBC → EI	0.246	0.252	–0.005	0.002
SN → EI	0.175	0.167	0.008	0.000
	2.50%	*97.50%*	*Permutation p-values*	*Remarks*
ATE → EI	–0.18	0.174	0.482	Not supported
EK → ATE	–0.18	0.17	0.628	Not supported
EK → EI	–0.16	0.159	0.665	Not supported
EK → PBC	–0.17	0.177	0.824	Not supported
EK → SN	–0.19	0.19	0.464	Not supported
ESE → EI	–0.15	0.147	0.708	Not supported
PBC → EI	–0.17	0.168	0.951	Not supported
SN → EI	–0.17	0.164	0.927	Not supported

Source: Primary data analysis

Having a look at the activities and contribution of Hadhramis whether in the region of Hadhramaut or in diaspora implies that they have great attitude and intentions for taking part in entrepreneurial activities and work towards achieving such goals. The very basic life that Hadhramis experienced in the old era of Hadhramaut easily drove them towards crafts, trade and entrepreneurial activities in order to survive, generate income and

improve life standards among themselves as a community. At the same time, this creates an earnest need to investigate the same among the youth in the region of Hadhramaut city.

5 Conclusions and implication

Our study concludes a partial mediation of attitudes, subjective norms and perceived behaviour control in affecting EI among students beyond business schools in an underdeveloped economy by EK. No mediation of the same was possible in regards to ESE. Further, Gender has no moderation effect on any of the variables relationships in the model. Hence it is concluded that further efforts devoted towards the orientation of EK and self-efficacy can significantly enhance the extent of entrepreneurial intent among undergraduates. We argue that orienting business and entrepreneurship concepts among undergraduates is contributary even when taking place in an underdeveloped economy such as in the case of this study (Yemen).

The implication of this research can be summarised in first, being the first study to investigate EI among the youth in the Hadhrami community in Yemen beyond business schools. Second, being a tool for educational institution to orient entrepreneurship and entrepreneurial skills among undergraduates beyond business schools, and third, being a tool for policy makers and business incubators to pay much heed towards supporting business venturing and entrepreneurial activities among the youth in the Hadhrami community.

6 Research limitation

Based on this discussion, our study suggests paying attention to orienting entrepreneurial education among youth in colleges beyond business schools (Sidek et al., 2018; Ibidunni et al., 2017). Policy makers are supposed to adopt programs that are dedicated to supporting innovative ideas among the youth through business incubation plans and strategies (Ajagbe et al., 2015; Motilewa et al., 2015) which lead to better entrepreneurial orientation (Aslam et al., 2012; Saleh and Manjunath, 2020). Our study also suggests spreading awareness about entrepreneurship and its role that can be played in achieving growth and economic welfare in the community via educational institutions (Olokundun et al., 2018; Izedonmi et al., 2007) in order to achieve better growth in business venturing (Sidek and Mohamad, 2014; Mohamad and Sidek, 2013).

Regardless of the effort made to ensure the robustness of the adopted methodology, limitations still exist which are related to the data collection, as we collected data at a particular point of time in a cross-sectional design, therefore, a variation might take place in a different way of collecting data. Limitations are also related to the sample as our study took undergraduate to test the mediation of attitudes, subjective norms and perceived behaviour control, further research could include more diversity in the sample such as including graduates or school droppers to provide an output based on a wide variety in the sample. Further, a comparative investigation of two underdeveloped economies would add more robustness to the study output.

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