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The mediating role of perceived behavioral control in the relationship between entrepreneurship education and entrepreneurial intentions of university students in Ethiopia

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Abstract

Unemployment of graduates from higher education institutions has become a common phenomenon in Ethiopia. To minimize this problem, entrepreneurship development and promoting entrepreneurial ecosystems have been considered as a remedy. Among others, this could be achieved through fostering entrepreneurship education. Hence, the purpose of this paper is to investigate the mediating role of perceived behavioral control in the relationship between entrepreneurship education and entrepreneurial intentions in Ethiopian Universities. Explanatory research design was used and data were collected using a self-administered questionnaire from a sample of 335 undergraduate students who have taken the course entrepreneurship in four Ethiopian universities. Structural Equation Modeling (SEM) approach using AMOS software was employed and confirmed both measurement and structural model fit before analysis. Then, the findings revealed that entrepreneurship education has a positive and significant effect on entrepreneurial intentions and perceived behavioral control. Moreover, perceived behavioral control positively predicts entrepreneurial intentions. The findings further explained that perceived behavioral control has a partial mediating effect in the relationship between entrepreneurship education and entrepreneurial intentions. Therefore, universities in Ethiopia should work on different initiatives that enhance knowledge, attitude, and skills of students on entrepreneurship that could help them to develop perceived behavioral control so as to enhance their intentions to become nascent entrepreneur after their graduation.

Keywords: Entrepreneurship education, Entrepreneurial intentions, Perceived behavioral control, Ethiopia, University students

Introduction

Entrepreneurship and entrepreneur are a buzzword that everybody talks about and want to be an entrepreneur since it is declaring one's own economic freedom. Entrepreneurship is an essential element for socio-economic development of a nation through

value creation activities, innovation, diversifying markets, enhancing productivity and efficiency, and creating employment opportunities (European Commission, 2003; Linan et al., 2005; Moriano et al., 2012; Ojeifo, 2013; Shane & Venkataraman, 2000; Werotaw, 2010). Cognizant of this, to promote entrepreneurship and produce entrepreneurial-minded graduates from universities, entrepreneurship education has got a great emphasis from policymakers, academicians, and researchers. Entrepreneurship education emerges as a very lucrative career option for university graduates (Kennedy, 2003; Nowinski, et al., 2017) since entrepreneurial competencies that are necessary for new venture creation and growth can be acquired through it. According to Woollard et al. (2007) and Low (2011) entrepreneurship skills and competencies can be obtained from formal education and training. Entrepreneurship education is one aspect of education that familiarizes learners with entrepreneurial attributes and competencies and creates in person the intentions to take risks of creating an enterprise by applying knowledge, skills, and attitude they have obtained from it (Nwosu & Ohia, 2009; Ginanjar, 2016).

Entrepreneurship education offered in universities has been recognized as one of the important ingredients that help students to understand entrepreneurship, develop an entrepreneurial attitude, enhances perceived behavioral control and accepts being an entrepreneur as a career option (Gorman et al., 1997; Kourilsky & Walstad, 1998). The European Commission in its report witnessed that “Entrepreneurship can be increased through education, especially entrepreneurship education” (European Commission, 2006). But still, entrepreneurship education and entrepreneurial activities on the ground are at their infant stage in Ethiopian universities (Muddee et al., 2015). Hailay (2005) witnessed that in Ethiopia educated human resources less likely prefer being an entrepreneur as a career option. Moreover, the Ministry of Education Report (2013) confirmed that 80 to 90 percent of graduates are searching for a job to be hired in either private or public after graduation. Additionally, it has been observed where university graduates are searching for employment opportunities in overstretched public enterprises and as a result, become unemployed (Astuti & Martdianty, 2012). This result indicates a high number of university graduates unemployed and become hopeless and addicted to substance abuse.

According to Werotaw (2010), entrepreneurship is increasingly being recognized as key components of education and practiced today and every learner should be allowed to acquire knowledge, skills, and attitude required to make an innovative and creative contribution within their working practice. It is a guarantee today to have creative, innovative, dynamic, and independent indigenous solutions seeking young generation to prosper the country one step ahead (Greene, 2013). The entrepreneurial young generation is an advantageous asset of any nation. However, engagement of universities in entrepreneurship education is pivotal for the development of entrepreneurial cultured societies and Safeguard University graduates from unemployment. Entrepreneurship promotion by universities and teaching entrepreneurship courses helps to facilitate the creation of an entrepreneurial ecosystem which in turn, will help prospective graduates (final year students) to develop perceived behavioral control and possess entrepreneurial intentions and becoming a nascent entrepreneur in their future endeavor or

after finalizing their university studies. Bird (1988) defines intention is the state of mind leading a person's attention and action towards certain behavior. Entrepreneurial intentions are desires to own or start a new business (Krueger, 2009). Entrepreneurial intention is a prerequisite for being an entrepreneur since entrepreneurship is a planned and conscious activity to happen (Linan & Chen, 2009). Therefore, it is possible to nurture entrepreneurial intentions through different initiatives such as public awareness, training, and education. Entrepreneurial intention is a single best predictor of actual behavior (Ajzen, 1991). Absence of working on nurturing entrepreneurial intentions of students in the university results into lack of employment opportunities among graduates (Oni & Mavuyangwa, 2019). This problem has been severe in low-income countries such as Ethiopia, whereby university graduates expect employment opportunities rather than creating own enterprise after graduation.

Albeit few researches conducted on entrepreneurship education and entrepreneurial intentions in Ethiopia (see Aga & Singh, 2022; Ayalew & Zeleke, 2018; Bereket & Yesuf 2015; Dugassa, 2012), there was no scientific endeavor that investigates the mediating role of perceived behavioral control on the relationship between entrepreneurship education and entrepreneurial intentions. Sondari (2014) has suggested further research on predictive ability of entrepreneurship education on entrepreneurial intentions. Besides, there are inconsistent findings from extant literature about the effect of entrepreneurship education on entrepreneurial intentions. For instance, Kuttim et al. (2014) and Kim-Sun et al. (2016) revealed that participation in entrepreneurship education was exerted positive impact on entrepreneurial intentions of university students. However, Gurel et al. (2010), Sanyal and Al Mashani (2018) found that entrepreneurship education did not play a significant role in promoting entrepreneurial traits and intentions of university students. Mahendra et al. (2017) conducted research in Indonesia and found that there was no significant relationship between entrepreneurship education and entrepreneurial intention. As a result, the present study is conducted to confirm whether entrepreneurship education has a significant effect or not on entrepreneurial intentions of university students, predicting power of PBC on entrepreneurial intentions from Ethiopian context and to fill the gap in existing literature by investigating the mediating role of PBC on the relationship between entrepreneurship education and entrepreneurial intentions.

Therefore, the present paper focuses on the direct effect of entrepreneurship education on entrepreneurial intentions and indirect effect of entrepreneurship education on entrepreneurial intentions via mediating role of perceived behavioral control based on the data collected from undergraduate prospective graduates of 2018/2019 of four universities found in Ethiopia.

The remaining sections presented as follows. We review the theoretical and empirical literature on entrepreneurship, entrepreneurial intentions, and perceived behavioral control, which leads to the formulation of four hypotheses consecutively after discussions. Next, we present conceptual framework pictorial. Then, the third section presents the methods of the study and followed by the fourth section that is results, the fifth section is discussions. Finally, we discuss the conclusions, limitations, and future research.

Review of literature, hypotheses, and conceptual framework

The effect of entrepreneurship education on entrepreneurial intentions

Entrepreneurship education is inculcated in the curriculum as a course and designed as a program that provides students with the necessary knowledge, skills, and attitudes as they create their enterprise after graduation in many universities across the globe (Ekpoh & Edet, 2011; Ooi et al., 2011). It is delivering teaching and/or training courses typically for students or small group of entrepreneurs on how to start up a business; how to generate business ideas, how to develop and implement a business plan, how to manage small businesses, and a variety of aspects of the small business development process (Pages & Kenneth, 2003). According to Davidsson (1991), entrepreneurship education has become a prominent field of study nowadays. This field has emerged from multiple disciplines such as management, economics, education, psychology, and technical studies. Entrepreneurship education is booming worldwide now since it is vital for the socio-economic development of a nation (Katz, 2003). It focuses on students' entrepreneurial abilities so that they develop entrepreneurial intentions that formal methods of education do not do. Besides, Gorman et al. (1997) conducted ten years of an extensive review of literature on entrepreneurship education and reach on the conclusions that most of the entrepreneurship can be taught, or can at least be encouraged by entrepreneurship education.

Numerous scholars have discovered that exposure to entrepreneurial education significantly increases participants' entrepreneurial intentions (Dendup & Acharja, 2017; Fayolle et al., 2006; Keat et al., 2011; Lee et al., 2006; Luthje & Franke, 2003; Packham et al., 2010; Pittaway & Cope, 2007; Souitaris et al., 2007; Zhao et al., 2005). Krueger et al. (2000) and Rauch and Hulsink (2015) found that entrepreneurial intentions and behavior can be learned via entrepreneurship education. The study conducted in China also attested that EED has stimulating EIs (Lavelle, 2021). Shen and Huang (2022) have studied that both formal and informal education significantly predicting entrepreneurial behavior. For this, we can say that entrepreneurship education is one of the environmental support variables that can influence the entrepreneurial attitude and intention of students in universities. However, Sanyal and Al Mashani (2018) claims that entrepreneurship education has no significant effect on entrepreneurial intentions. Even if majority of existing empirical evidences revealed the contribution of entrepreneurship education for entrepreneurial development, it is at its infant stage in Ethiopia. There are some initiatives such as recognition and attention given in Educational Roadmap Development (2018–2030) of the country. For example, even though the importance of entrepreneurship is recognized by universities, there are no actual entrepreneurship policies and strategies that promote entrepreneurship beyond teaching a single course for the students. Even, there are many problems observed in Ethiopian higher education institutions on the development and promotion of entrepreneurship and graduating entrepreneurial-minded students' as desired. There is no clear policy, manuals, guidelines that urge higher education institutions to promote entrepreneurship education, the way the course entrepreneurship delivered has also multifaceted problems such as the method of teaching, an assessment used, course content, credit hour, semester when the course

is given. Lecturers teaching the course have little or no practical experience in running their businesses and most have not had formal training in teaching entrepreneurship. According to McMullan and Long (1985); Vesper and McMullan (1988), the content and teaching methods have to be differentiated between entrepreneurship and traditional business courses. But in Ethiopia traditional lecturing is the most basic tool and examination is the main assessment method used for entrepreneurship in tandem with other courses. Few researches conducted in Ethiopia still revealed that entrepreneurship education has significant effects on the entrepreneurial intentions of university students (Mesfin & Shumet, 2018; Dugassa, 2012). But these studies focused on only engineering and business students. Therefore, to fill this gap by participating students from all field of studies from both public and private, the researcher set the following hypothesis.

Hypothesis 1: Entrepreneurship education has significant effect on entrepreneurial intentions.

The effect of entrepreneurship education (EED) on perceived behavioral control (PBC)

The first scholars who were applying the theory of planned behavior (TPB) with the specific context of entrepreneurship education were Krueger et al. (2000). They found that entrepreneurship education has an impact on the antecedent of entrepreneurial intentions identified by TPB (i.e., attitude toward behavior, social norm, and perceived behavioral control). Moreover, Wilson et al. (2007), stated that students' sense of entrepreneurial self-efficacy or PBC can be improved by entrepreneurship education since it engages students' in various learning opportunities such as business idea generation, business plan writing, role modeling, and case study. Walter and Dohse (2012), Karimi et al. (2016), Oyugi (2015) also confirmed entrepreneurship education programs positively related to PBC and other antecedents of entrepreneurial intentions. However, Fayolle et al. (2006) PBC was not highly influenced by entrepreneurship education. Besides, Souitaris et al. (2007) found there was no significant relationship between entrepreneurship education programs and PBC. The results from empirical evidence show inconsistent findings on the effect of entrepreneurship education on PBC; as a result, the present study formulated the following hypothesis to test the effect of entrepreneurship education on PBC from the Ethiopian context.

Hypothesis 2: Entrepreneurship education has significant effect on perceived behavioral control.

The effect of perceived behavioral control (PBC) on entrepreneurial intentions (EIs)

Ajzen (1991) introduced PBC as another antecedent factor that can influence intentions. He defined as a "person's perception of the ease or difficulty of performing the behavior of interest".

It is related to the self-efficacy concept which focuses on a person's perception towards a behavior simplicity and/or complexity. PBC referred to control people's beliefs towards various factors associated with the issues that could ease them or not (Yean et al., 2015). According to Krueger et al. (2000) in the field of entrepreneurship, entrepreneurial self-efficacy has proved to be a remarkable predictor of

entrepreneurial intentions. Perceived behavioral control has an impact on intentions and actions since it deals with an individual's perception of the ease or difficulty of performing certain behavior and its actual role varies depending on situational factors (Bux, 2016). Sesen (2012) conducted research in Turkish found that PBC has a positive and significant impact on entrepreneurial intentions. Karimi et al. (2016), Alexander and Honig (2016) indicated that PBC is the strongest and positive predictor of EIs. Yap et al. (2013) stated that PBC is the most controversial construct due to inconsistency in the empirical findings on the impact of PBC on EIs. For example, Engle et al. (2010) conducted scientific research in 12 countries to test the predicting ability of antecedents of entrepreneurial intentions on entrepreneurial intentions and found that perceived behavioral control (PBC) was significant predictor of entrepreneurial intention only in seven countries. Thus, the following hypothesis is developed to test the influence of PBC on EIs of university students from Ethiopian context.

Hypothesis 3: Perceived behavioral control has significant effect on entrepreneurial intentions.

The mediating effect of perceived behavioral control

The mediating effect is created when a new third variable/construct intervenes between two related variables. It highlights the distinction between direct and indirect effects. The direct effects are the relationship between two constructs with a single arrow (Hair et al., 2019). As discussed above in the present study, there are three direct relationships. Those are the direct effect of entrepreneurship education on entrepreneurial intentions (EED-EIs) and PBC (EED-PBC), and the effect of PBC on entrepreneurial intentions (PBC-EIs). The indirect effects are those relationships that involve a sequence of relationships with at least one intervening construct (ibid). Thus, in the present study, the researcher has tried to find the mediating role of PBC on the relationship between entrepreneurship education and entrepreneurial intentions (EED-PBC-EIs) but there was scant empirical evidence on the mediating role of PBC in the relationships of entrepreneurship education and entrepreneurial intentions. For example, Oyugi (2015) conducted research in Uganda on the mediating effect of self-efficacy on the relationship between entrepreneurship education and entrepreneurial intentions of university students and found that self-efficacy was partially mediating the relationship between entrepreneurship education and entrepreneurial intentions. The study conducted in China showed that entrepreneurial self-efficacy plays a complete mediating role between EED and EIs (Wu et al., 2022). The second empirical evidence that the researcher found was the study conducted in Malaysia on public university students found that perceived behavioral control proved as significant mediators in individual entrepreneurial orientation and entrepreneurial intentions relationships (Awang et al., 2016). Moreover, the study conducted in Ghana on exploring factors mediating the relationships between EED and EIs among undergraduate students revealed that PBC has significant indirect effect in the relationships (Adu et al., 2020). However, the study conducted on vocational institutions students

in China attested that EE does not impact EI indirectly by way of PBC (Lavelle, 2021). Thus, there are inconsistent empirical evidences on the issue. Besides, there is only limited empirical evidence on the mediating role of PBC in the relationship between EED and EIs. Therefore, this study is assumed to fill the gap in the extant literature and confirms on the mediating role of PBC in the relationship between entrepreneurship education and entrepreneurial intentions of university students in general and particularly from the Ethiopian context. Thus, the following hypothesis was designed in the current study:

Hypothesis 4: Perceived behavioral control has a significant mediating effect on the relationship between entrepreneurship education and entrepreneurial intentions.

Conceptual framework

In the following figure (Fig. 1) entrepreneurship education is an exogenous variable that influences entrepreneurial intentions and perceived behavioral control. Thus, as clearly depicted the present study investigates the effect of entrepreneurship education directly on entrepreneurial intentions and indirectly via perceived behavioral control based on data gathered from undergraduate university students in Ethiopia.

The above pictorial presentation of the conceptual framework (Fig. 1) depicted the effect of entrepreneurship education on entrepreneurial intentions (H1), the effect of entrepreneurship education on perceived behavioral control (H2), and the effect of perceived behavioral control on entrepreneurial intentions (H3). Perceived behavioral control is also used as an intervening variable on the relationship between entrepreneurship education and entrepreneurial intentions (H4). In this relationship, we may say that adequate entrepreneurship education enhances students' perceived behavioral control (self-efficacy), and this in turn increases the entrepreneurial intentions of students. Perceived behavioral control for undergraduate students' is a function of entrepreneurship education (those who have taken the course entrepreneurship in case of the present study), and help to explain the entrepreneurial intentions of students.

Methods of the study

Entrepreneurship education

Similarly to other developing countries, Ethiopia has faced severe problem of unemployment, in particular, the number of university graduates that could not get employment

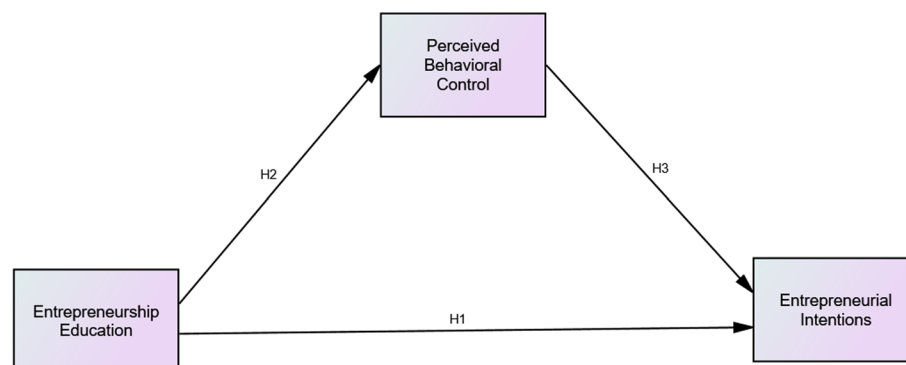


Fig. 1 Conceptual framework

opportunities in either public or private institutions is increasing due to the absence of vacancy and scant organization exists. To alleviate this severe problem, Ethiopia has given attention to entrepreneurship promotion and development. For instance, the Education Development Roadmap (2018–2030) of Ethiopia urges universities found in the country (both public and private) to make entrepreneurship compulsory course for every student starting from 2019/2020 academic year. This policy direction aims to enhance university graduates' knowledge about entrepreneurship, develop an entrepreneurial attitude, self-efficacy, and intentions. This could make university graduates consider being an entrepreneur (job creators) as a career option than job seekers after their graduation. This study took students who had taken the course entrepreneurship as participants. The course description is almost the same since the harmonized curriculum is used in the country for undergraduate students. But instructors might use various teaching materials and methods for this course but such variables and others like the type of university, gender, a field of study, and families' entrepreneurial background were controlled in the present study.

Participants and procedures of data collection

During the 2018/2019 academic year, a survey was used in four universities (three public and one private) to measure the effect of entrepreneurship education on entrepreneurial intentions and the mediating role of PBC in the relationship between entrepreneurship education and entrepreneurial intentions. This research used a quantitative method; a self-administered questionnaire was distributed for students who had successfully completed entrepreneurship course. Participants were final year students who have finished the class lectures and assessment and waiting for the graduation ceremony and issuance of a diploma. This time was selected purposely since it is the right time to get reliable information about their entrepreneurial intentions, and PBC they have had in the universities. Besides, they have knowledge of entrepreneurship education.

Undergraduate students who took the course entrepreneurship at four universities were selected based on inclusiveness of all generations of universities in Ethiopia; which are Haramaya University, Madda Walabu University, Mettu University, and Rift Valley University as the sample for the study and the total sample size used was 335. These universities were taken to inculcate a wide range of participants such as students from a different generation of public universities (i.e., first, second, and third generations, respectively, as mentioned), and students from a private university (Rift Valley University). During the study period, entrepreneurship course was not compulsory for every program that is why respondents for our questionnaire were selected on a purposive basis. Before giving the questionnaire the purpose of the questionnaire was explained for students and then requested their consent to participate after informing the secret of the information is highly confidential and would not affect them in any way. In a nutshell, participants in this study involved voluntary.

The sample respondents included students' from a multidisciplinary field of studies such as business and economics, agriculture, engineering and technology, social sciences, and humanities. Hence, the findings can be generalizable since an adequate

sample size of participants from different fields of study was used. The profile of students' participating in the current research revealed that gender-wise majority 213 (63.6%) were male and the remaining 122 (36.4%) were female that is in line with gender composition students in Ethiopian universities; the mean age of the respondents was 23.77 with a standard deviation of 3.44, and 183 (54.63%) were from public universities and 152 (45.37%) were from a private university.

Measurement of the constructs

The measurement constructs used in this study were adopted from extant scales found in the literature (see Kolvereid & Isaksen, 2006; Kruenger, 2009; Linan & Chen, 2009). All items except demographic information were measured using a seven-point Likert scale anchored from 1 representing "strongly disagree" to 7 representing "strongly agree". The high score on each item indicate high agreement level of the respective respondents on the statement and vice versa. A high score on the items indicated more of the respective construct. The entire construct used was the latent variable and measured with several items. Accordingly, the entrepreneurial intention (EI) is an endogenous variable that was measured based on 7 items such as 'I am ready to do anything to be an entrepreneur/to create a firm'; perceived behavioral control was measured based on 7 items such as 'to start a business/firm and keep it working would be easy for me', and entrepreneurship education was measured based on 16 items such as 'entrepreneurship course creates in me the high desire of creating my own job' (see Appendix, Table 4).

Reliability and validity of the instruments

The reliability and validity of the instruments used in the present study were checked. As can be seen in Table 1, Cronbach Alpha Coefficient (α), Composite Reliability (CR), and Average Variance Extracted (AVE) were used to check internal reliability, and construct validity (convergent and discriminant validity) of the constructs used in the present study. Cronbach alpha coefficient (α) and composite reliability measure the internal consistency of the items. Their difference is we use Cronbach alpha during exploratory factor analysis (EFA) and CR during confirmatory factor analysis (CFA). Some scholars argued that CR is more powerful than ' α ' because Cronbach's alpha may produce a serious underestimation of the internal consistency of latent constructs (Werts et al., 1974). The threshold required in most cases for internal consistency of the construct (both α

Table 1 Correlations, Cronbach Alpha (α), composite reliability and average variance extracted

Construct	No. of items	EED	PBC	EIs	Cronbach Alpha (α)	Composite reliability (CR)	Average variance extracted (AVE)
Entrepreneurship Education (EED)	16	0.747			0.95	0.95	0.56
Perceived behavioral control (PBC)	7	0.49**	0.797		0.93	0.92	0.64
Entrepreneurial intentions (EIs)	7	0.526**	0.68**	0.808	0.92	0.93	0.65

Diagonal values stated in bold are greater than the off-diagonal results that ensures existence of discriminant validity

** < 0.01

Source: Survey result, 2018

and CR is greater than or equal to 0.70 (Hair et al., 2019). In the present study for all constructs the Cronbach alpha and CR are greater than 0.70, this ensures the existence of internal reliability of the present study. As stated by Hair et al. (2019), the existence of construct validity could be checked by the results of convergent and discriminant validity. Convergent validity means how the items measuring the construct are close to each other or degree of correspondence between constructs and their measures (Bagozzi & Phillips, 1982; Peter, 1981). Convergent validity exists if the AVE value of the construct is greater than or equal to 0.50 (Fornell & Larcker, 1981; Hair & Lukas, 2014). The AVE of the three constructs used in this paper ranges from 0.558 to 0.653; this confirms the existence of convergent validity. Discriminant validity measures how much each constructs deviating from each other or measuring the extent to which a construct is truly distinct from other constructs (Bagozzi & Phillips, 1982). The existence of discriminant validity is checked by comparing the square root of AVE with the correlations for each of the constructs in the model (Chin, 1998). Accordingly, the existence of discriminant validity confirmed if the square root of the AVE is greater than the correlations among the latent variables. In Table 1, the diagonal values (i.e., 0.747, 0.797, and 0.808) are the square root of AVE that is greater than the off-diagonal results. This also indicates the existence of discriminant validity.

Statistical analysis

The quantitative data analysis was applied in the present study. As a first step, an exploratory factor analysis (EFA) was performed on the items to assess the degree to which the individual items on a scale truly club together around one or more dimensions. The items should be loaded according to the dimensions/factor they are measuring. That means items designed to measure the same dimension should load on the same factor and those items designed to measure different factors should be loaded on different factors (LoBiondo-Wood & Haber, 2006). The extraction method used was principal component analysis with varimax rotation type. According to Hair et al. (2019), the varimax method has proved successful as an analytical approach to obtaining an orthogonal rotation of factors and is the most widely used orthogonal rotation method. Accordingly, 30 items were run and the items club together under their own respective four constructs. These are 16 items under entrepreneurship education, 7 items under perceived behavioral control, and 7 items under entrepreneurial intentions. The factor loading for all items was greater than 0.50, hence no item was deleted from further analysis. Items remaining after these explorations were used to build the construct used in the next steps of SEM analysis.

Hypotheses were tested using SEM Analysis of Moment Structure (AMOS) with maximum likelihood estimation based on the covariance matrix (Arbuckle, 2012). First, the measurement model was tested and validated using confirmatory factor analysis (CFA), and then the path analysis structural model was tested (Hair et al., 2019; Kline, 2010). Albeit the Chi-square in the present study model was found statistically significant ($\chi^2(380) = 562.618$, $P = 0.000$), but the ratio of Chi-square to degrees of freedom was satisfactory ($\chi^2/DF = 1.481$) since the recommended threshold is less than 5. Besides, the values of other alternative fit indices were within recommendable levels (NFI = 0.928,

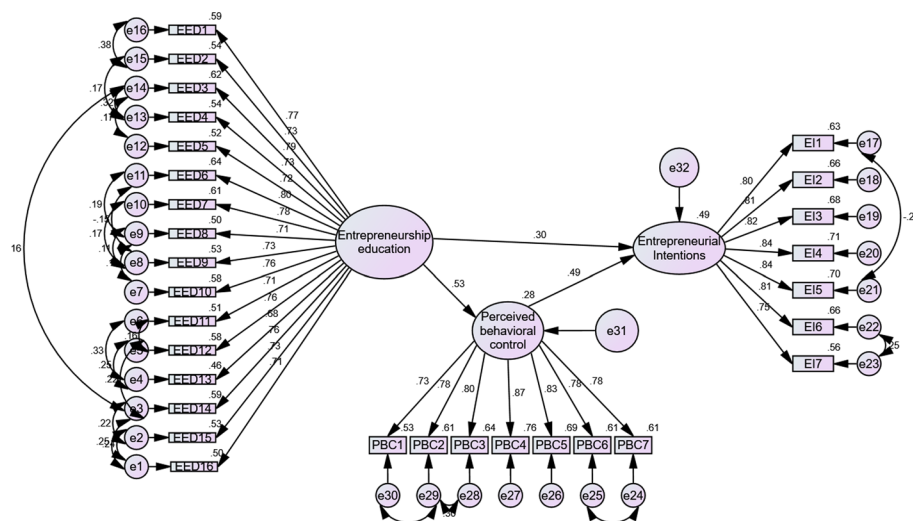


Fig. 2 Survey result, 2018

CFI=0.975, GFI=0.901, AGFI=0.878, RMSEA=0.038). Thus, the hypothesized model of the three constructs is a suitable measurement model in the current study. Finally, the results of the analysis are presented in tables and figures in the way that the reader could easily understand.

Results of the study

Under this section, the structural equation modeling (SEM) approach was used to test the hypothesized model depicted under conceptual frame work (Fig. 1). In SEM approach, a two-step analysis is usually performed. The first step, the assessment of

Table 2 Standard regression weights and their significance for each path

Path analysis			Estimate	P	Results
Perceived behavioral control	←	Entrepreneurship education	0.53	***	Significant
Entrepreneurial intention	←	Perceived behavioral control	0.49	***	Significant
Entrepreneurial intention	←	Entrepreneurship education	0.30	***	Significant

*** < 0.001

Source: Survey result, 2018

Table 3 Hypotheses results

Hypothesis statements	Estimate	P-value	Results on hypothesis
Entrepreneurship education has significant effect on entrepreneurial intentions	0.30	0.001	Supported
Entrepreneurship education has significant effect on perceived behavioral control	0.53	0.001	Supported
Perceived behavioral control has significant effect on entrepreneurial intentions	0.49	0.001	Supported
Perceived behavioral control has a significant mediating effect on the relationship between entrepreneurship education and entrepreneurial intentions	0.26 (0.53*0.49)	0.001	Supported

Source: Survey result, 2018

measurement model is done under section three (Methods of the study) and confirmed that the constructs used in this study are suitable for structural analysis. Thus, we test the hypotheses under this section based on structural analysis conducted by AMOS software, as shown in Fig. 2.

As can be seen in Table 2, the effect of entrepreneurship education on perceived behavioral control is significant with ($\beta = 0.53$, $P < 0.001$), the effect of perceived behavioral control on entrepreneurial intention is significant with ($\beta = 0.49$, $P < 0.001$), and the effect of entrepreneurship education on entrepreneurial intention is significant with ($\beta = 0.30$, $P < 0.001$). Based on these results we can support the following hypotheses. As reported in Fig. 1, 49% of variance in entrepreneurial intentions was come from entrepreneurship education and perceived behavioral control.

As can be seen from Table 3, entrepreneurship education has a significant effect on entrepreneurial intentions, and perceived behavioral control; perceived behavioral control has a significant effect on entrepreneurial intentions, and the relationship between entrepreneurship education and entrepreneurial intentions was partially mediated by perceived behavioral control since both the direct and indirect results are significant after PBC intervened in the relationship between entrepreneurship education and entrepreneurial intentions.

Discussion

The purpose of this study was to assess the mediating role of perceived behavioral control in the relationship between entrepreneurship education and entrepreneurial intentions. In this endeavor, the effect of entrepreneurship education on entrepreneurial intentions and PBC, and the effect of PBC on entrepreneurial intentions were tested. To address this purpose, survey of 335 undergraduate students who had taken the course entrepreneurship from four universities of Ethiopia were participated.

The findings were compatible with many of extant empirical evidences on the effect of entrepreneurship education on entrepreneurial intentions but nevertheless inconsistency also present with few studies. Entrepreneurship education has significant positive effect on entrepreneurial intentions in this study. This finding is compatible with (Dendup & Acharja, 2017; Fayolle et al., 2006; Kuttim, et al., 2014; Kim-Sun, et al., 2016; Lavelle, 2021; Lee et al., Luthje & Franke, 2003; Packham et al., 2010; Pittaway & Cope, 2007; Shen & Huang, 2022; Souitaris et al., 2007; Zhao et al., 2005) those found exposure to entrepreneurship education increases the entrepreneurial intentions of students. However, contrary to the present finding Mahendra et al. (2017); and Sanyal and Al Mashani (2018) reported that there was no significant relationship between entrepreneurship education and entrepreneurial intentions. In Ethiopian context, entrepreneurship education would foster entrepreneurial intentions of university students since entrepreneurship education is in the infant stage and university degree does not guarantee to employment opportunities (Ayalew & Zeleke, 2018). As a result, students who have got exposure to entrepreneurship education change their mind set and moved to entrepreneurial activities after their graduation.

The second hypothesis is the effect of entrepreneurship education on perceived behavioral control. The present study reported entrepreneurship education has significant

positive effect on perceived behavioral control ($\beta=0.53$, $P<0.001$). That means in Ethiopia if university students get exposure to entrepreneurship education, their perceived behavioral control (self-efficacy) of becoming an entrepreneur will be enhanced. This is in line with previous studies such as Karimi et al. (2016), Oyugi (2015), Wilson et al. (2007) that revealed students' sense of entrepreneurial self-efficacy or PBC can be improved by entrepreneurship education since it engages students' in various learning opportunities such as business idea generation, business plan writing, role modeling, and case study. However, contrary to the present finding there is empirical evidence that indicated entrepreneurship education has no significant impact on students PBC (Fayolle, et al., 2006). Besides, Souitaris et al. (2007) found there was no significant relationship between entrepreneurship education and PBC.

The finding of this study on the effect of PBC on entrepreneurial intentions is consistent with previous empirical evidence. We found PBC has a significant positive effect on entrepreneurial intentions that are also supported by Karimi et al. (2016), Krueger et al. (2000), Bux (2016), Sesen (2012), Aga and Singh, (2022), and Alexander and Honig, (2016). These scholars based on surveys in different countries reported PBC has a significant effect on entrepreneurial intentions. The theory of planned behavior (Ajzen, 1991) also proves as PBC is among the predictor of intentions. Regarding the mediation effect of PBC on the relationship between entrepreneurship education and entrepreneurial intentions, the present study confirmed PBC has partially mediated the relationship since both the direct and indirect effects were significant after it intervened in the relationship. The finding is also supported by results provided by previous researchers (see Adu et al., 2020; Awang et al., 2016; Drost and McGuire, 2011; Oyugi, 2015; Wu, et al., 2022) that reported the mediating effect of perceived behavioral control (entrepreneurial self-efficacy) between entrepreneurship education and entrepreneurial intentions. Albeit the researchers exhaustively researched the findings that contrary to the mediating role of PBC in the relationship between entrepreneurship education and entrepreneurial intentions, unfortunately found only the study conducted on vocational institutions of students in China that attested EE does not impact EI indirectly by way of PBC (Lavelle, 2021).

Conclusions

This paper aimed at the mediating role of perceived behavioral control in the relationship between entrepreneurship education and entrepreneurial intentions. SEM approach using AMOS software was employed for analysis. The data confirmed both measurement and structural model fit before analysis. Our study indicated that entrepreneurship education has a positive significant effect on entrepreneurial intentions and PBC. That means the entrepreneurship education given for students in Ethiopian university play a pivotal role in enhancing entrepreneurial intentions and their PBC to become an entrepreneur in their future career. And the study reported the significant and positive effect of PBC on entrepreneurial intentions supporting the theory of planned behavior as one antecedent of entrepreneurial intentions. The paper also confirms PBC has a partial

mediation effect in the relationship between entrepreneurial education and entrepreneurial intentions based on the data collected from undergraduate university students of Ethiopia.

In a nutshell, entrepreneurship education is crucial to develop entrepreneurial intentions and perceived behavioral control of university students. Therefore, the delivery of this course can mitigate the unemployment of university graduates since it has the potential to enhance entrepreneurial intentions and perceived behavioral control of becoming an entrepreneur. This study also motivates further study on mediation and/or moderation and it also helps policymakers and universities to design and deliver successful entrepreneurship education for the students and produces university graduates with an entrepreneurial mindset.

Limitations and future research

Firstly, the present study was a cross-sectional study design that highlights the existence of statistical relationships between the constructs only. But based on the phenomenon of this study (entrepreneurship education), it would be better if the influence of entrepreneurship education was investigated over a period of time and the relationship between intentions and actual behavior explored in future research. In the second place, this research includes only one independent (entrepreneurship education), one mediator (PBC), and one dependent (entrepreneurial intentions). Therefore, future research may also include other antecedents of entrepreneurial intentions such as attitude toward entrepreneurship and subjective norm as a mediator variable between the relationship of entrepreneurship education and entrepreneurial intentions, and more independent variables that can influence entrepreneurial intentions might be taken into account.

Thirdly, the limitation of this study is its scope. The survey was conducted only to four universities (three public universities and one private university) in Ethiopia. As a result, this limits the generalization of our findings to only universities in Ethiopia. Thus, in future scientific endeavor more number of universities with larger sample size should be done. Finally, we recommend that others could replicate this study in experimental form such as comparison of those who took the course with those who did not take, public versus private, and before and after taking the course entrepreneurship. Besides, as noted in the previous section, the variables controlled in this study such as type of university, gender, a field of study, and families' entrepreneurial background can be inculcated in the future study.

Appendix

See Table 4.

Table 4 Items of the constructs (variables) used in the study

Code	I. Entrepreneurship Education (EED)							
	Items	1	2	3	4	5	6	7
EED1	Entrepreneurship course creates in me high desire of creating my own job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED2	The entrepreneurship course increases my understanding of the importance of entrepreneurship to both the society and individuals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED3	Entrepreneurship course enhances knowledge in business start up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED4	Entrepreneurship course enhances skills in business start up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED5	Entrepreneurship course gives me a sense that being an entrepreneur at my level is possible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED6	Entrepreneurship course increases my understanding of environmental assessment of for business startup (Opportunity Scanning)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED7	Entrepreneurship course increases my understanding of financial preparation and sources for entrepreneurial ventures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED8	Entrepreneurship course increases my understanding of money utilization and management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED9	Entrepreneurship course enable me to get the skills of preparing business plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED10	Entrepreneurship course enhances my understanding of identifying market needs and wants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED11	Entrepreneurship course enhances my ability to develop networks (e.g., obtaining useful advice/information from professors, guest speakers or classmates)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED12	Entrepreneurship course interests me very much because of it teaches how to become a successful business person/entrepreneur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED13	Entrepreneurship course taught me to deal with tolerance of ambiguity in the real world	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED14	Entrepreneurship course enhances my ability to identify a business opportunity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED15	Entrepreneurship course is very important for my field of study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EED16	Entrepreneurship course has significance influence on my career decision after my graduation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
II. Perceived Behavioral Control (PBC)								
	Items							
PBC1	To start a business/firm and keep it working would be easy for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PBC2	I am ready to start a feasible business enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PBC3	I can manage the creating process of a new business enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PBC4	I know the necessary practical details needed to start a business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PPC5	I know how to develop an entrepreneurial project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PBC6	If I tried to start a firm, I would have a high probability of succeeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PBC7	I have no fear of failure if I would have started my business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
III. Entrepreneurial Intentions (EIs)								
	Items							
EI1	I am ready to do anything to be an entrepreneur/to create firm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EI2	My professional goal is to become an entrepreneur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EI3	I will make every effort to start and run my own firm in the future	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EI4	I am determined to create a firm in the future	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EI5	I have very seriously thought of starting a firm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EI6	I have the firm intention to start a firm some day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

To what extent do you agree or disagree with the following items given under each constructs. Indicate your level of agreement with the following items from (1—strongly disagree, 2—disagree, 3—slightly disagree, 4—neither agree nor disagree, 5—slightly agree, 6—agree and 7—strongly agree)

Abbreviations

EIs	Entrepreneurial Intentions
EED	Entrepreneurship Education
PBC	Perceived Behavioral Control
TPB	Theory of Planned Behavior

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