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Article

# “Entrepreneurizing” College Programs to Increase Entrepreneurial Intentions: A Mediation Framework

Mahmoud Ibrahim Fallatah <sup>1,\*</sup>  and Tahar Lazhar Ayed <sup>2,3</sup>

<sup>1</sup> Department of Business Administration, College of Business, Umm Al-Qura University, Makkah 24382, Saudi Arabia

<sup>2</sup> School of Business and Law, Dar Al-Hekma University, Jeddah 22246, Saudi Arabia

<sup>3</sup> School of Commerce, University of Sfax, Sfax 3025, Tunisia

\* Correspondence: mifallatah@uqu.edu.sa

**Abstract:** The impact of entrepreneurship on the development of emerging economies is widely recognized. Research has focused on studying factors that increase entrepreneurship in societies, including the role of education in increasing entrepreneurial intentions among students. In this paper, we contribute to the entrepreneurship and education literature by examining the impact of entrepreneurial college programs on entrepreneurial intentions. Further, we study the mediating roles of perceived benefits and individual creativity. Using a sample of 438 students from a public university in Saudi Arabia, our findings reveal that students enrolled in entrepreneurial programs have higher levels of entrepreneurial intentions than those enrolled in non-entrepreneurial programs, and that perceived benefits and individual creativity partially mediate the aforementioned relationship. The paper opens the door for future research in the entrepreneurship and education literature and provides several managerial implications.

**Keywords:** entrepreneurship; entrepreneurial intentions; education; Saudi Arabia; individual creativity; perceived benefits



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## 1. Introduction

The impact of entrepreneurship on the development of emerging economies has been much discussed in the literature (Bruton et al. 2008, 2021). Specifically, research suggests that entrepreneurship has a positive impact on economic growth, employment, and productivity (Acs 2006; Audretsch et al. 2011; Lu et al. 2021). Thus, it is paramount for countries to create environments in which entrepreneurship is encouraged. One driver of entrepreneurship that has received much attention in the literature is education (e.g., Aronsson 2004; Hägg and Jones 2021; Honig 2004; Ndou 2021; Liñán et al. 2011; Potter 2008; Rauch and Hulsink 2015; Warhuus et al. 2021), which explains why countries around the world have invested heavily in entrepreneurship education, especially at the university level (Brush et al. 2003; Katz 2003; Lu et al. 2021; Ndou et al. 2018; Zhou and Xu 2012). Education has been related positively to entrepreneurial intentions (EI), defined as the intention to engage into an entrepreneurial activity in order to create a new business (Barba-Sánchez and Atienza-Sahuquillo 2018; Krueger et al. 2000; Lee et al. 2011; Liñán and Chen 2009; Liñán et al. 2011). Thus, for entrepreneurship researchers, it is essential to study entrepreneurial intentions since intention is largely recognized as the best predictor of behavior (Ajzen 1991).

Ample research has examined the relationship between education and the likelihood of an individual to become an entrepreneur (e.g., Amofah and Saladrígues 2022; Dickson et al. 2008; Elnadi and Gheith 2021; Lu et al. 2021; Van der Sluis et al. 2005), with varying results. On the one hand, for example, Acs and Armington (2005) detected a positive relationship between college education and the formation of new ventures. Similarly, Rauch and Hulsink (2015) determined education, particularly that related to entrepreneurship,

to be influential in the intentions of students to be entrepreneurs. Recent studies also determined that entrepreneurship education increased entrepreneurial intentions among business graduates (Anjum et al. 2022) and engineering students (Asimakopoulos et al. 2019). On the other hand, studies such as that of Van der Sluis et al. (2008) conclude that the relationships between education and EI is insignificant. Further, a meta-analytic study determined entrepreneurship education to have a negative impact on EI (Oosterbeek et al. 2010). These conflicting results suggest that context matters (Liñán et al. 2016; Walter and Block 2016). Specifically, there must be some contexts and factors where education encourages the formation of new ventures, and other contextual factors that have no impact on producing potential entrepreneurs. Among those factors are cognitive factors that research has determined to be significant in explaining behavioral decisions in the field of entrepreneurship (Baron 2004; Liñán and Chen 2009).

In this paper, our objective is to examine the impact of education on entrepreneurial intentions. Specifically, consistent with previous research (e.g., Foote and Hysa 2022; Boldureanu et al. 2020), we combine the Theory of Human Capital (Becker 1975) and the Entrepreneurial Self-Efficacy theory (Chen et al. 1998) with the Theory of Planned Behavior (TPB) (Ajzen 1991) and the theory of Entrepreneurship Event Model (EEM) (Shapero and Sokol 1982) to study the nature of educational programs (i.e., the degree to which they are entrepreneurial) and their effect on EI among college students in Saudi Arabia. Further, we build on the aforementioned theories to explore the mediating roles of individual creativity and perceived benefits.

Thus, our contribution in this paper is threefold. First, we contribute to the current debate on whether there is a relationship between education and entrepreneurial intentions. Some scholars have determined that education, in general, contributes to individuals' human capital (e.g., Ahn and Winters 2022; Parker and Praag 2006). Thus, educated individuals possess knowledge and skills that enable them to choose careers in a distinct way compared to the less educated ones, including the choice of being entrepreneurs (Lofstrom et al. 2014). Importantly, entrepreneurship education where individuals learn technical skills in areas such as strategic planning and developing business plans has been determined to be significantly related to entrepreneurial intentions (Martin et al. 2013; Rauch and Hulsink 2015; Ayed 2020). On the contrary, other studies determined education to be ineffective in predicting the likelihood of an individual becoming an entrepreneur (e.g., Dickson et al. 2008; Oosterbeek et al. 2010). In this paper, we extend the debate on the relationship between education and entrepreneurship by focusing not only on the degree to which students have been exposed to entrepreneurship education per se (e.g., Souitaris et al. 2007; Walter and Dohse 2012), but on the impact of the content and delivery of a collegiate program on the entrepreneurial intention of students.

Second, we contribute to the literature by building a model that links entrepreneurs' individual characteristics to their intention on engaging in entrepreneurial activities. The Theory of Planned Behavior (TPB) (Ajzen 1991) suggests that several personality traits act as motivational antecedents to entrepreneurial intentions, such as personal attitude, subjective norms, and perceived behavioral control. Further, the theory of Entrepreneurship Event Model (EEM) (Shapero and Sokol 1982) suggests that perceived desirability and perceived feasibility are also critical in prompting entrepreneurial behaviors (Dickel and Eckardt 2021; Krueger et al. 2000). Research has also defined other determinantal individual characteristics that positively impact entrepreneurial behaviors, such as alertness (Kirzner 1997), ego resilience (Block and Block 1980; Block and Kremen 1996; Chadwick and Raver 2020; Pérez-Nordtvedt and Fallatah 2022), sustainability traits (Joensuu-Salo et al. 2022), and spirituality (Pérez-Nordtvedt and Fallatah 2022). In this paper, our model seeks to examine the mediating roles of two relevant and important factors, individual creativity and individual's perceived benefits, in the relationship between Entrepreneurial Programs (EP), defined as graduate and undergraduate programs where technical knowledge and personal entrepreneurial skills are embedded in the program's courses and activities, and EI.

Third, we study the aforementioned relationship in the context of Saudi Arabia, an emerging yet wealthy economy. While several studies examined EI in Saudi Arabia (e.g., [Aloulou 2015](#)), few studies have examined the topic recently (e.g., [Ayed 2020](#); [Elnadi and Gheith 2021](#); [Hoda and Fallatah 2022](#)). Studying entrepreneurship in the context of Saudi Arabia at this time is vital since the country has set its Vision 2030, which put innovation and entrepreneurship at the forefront of its objectives ([Fallatah 2021](#)). Additionally, research has emphasized the role of culture in entrepreneurship ([Liñán and Chen 2009](#)), highlighting the fact that societies differ in their level of support and encouragement towards entrepreneurship ([Busenitz and Lau 1996](#)). Thus, our paper should shed some light on the role that education could play in helping the Kingdom achieve its entrepreneurial aspirations.

The rest of the paper is structured as follows. In the next section, we develop arguments on the relationship between education and EI. Then, we discuss the mediating roles of individual creativity and perceived benefits. The methodology section follows, where we describe our data collection process and analytical technique and present the results of our study. The paper concludes with the discussion and the conclusion sections.

## 2. Theoretical Background and Hypotheses Development

### 2.1. Entrepreneurial Programs and Entrepreneurial Intention

Several theories have been utilized to study EI; chief among them is the Theory of Planned Behavior (TPB) ([Ajzen 1991](#)), which emphasizes the role of intention as the main predictor of behavior. In the entrepreneurship literature, the theory explains that personal attitude (PA), subjective norms (SN), and perceived behavior control (PCB) are determinantal in influencing EI. Another major theory that has been employed to study EI is the Entrepreneurial Event Model (EEM) ([Shapero and Sokol 1982](#)), which indicates that desirability, feasibility, and propensity to act are key in regard to individuals' intentions to create a venture. Therefore, we expect that having the necessary knowledge and skills will increase an individual's capability and confidence to start their own business.

In regard to education and its impact on EI, scholars have relied on the Human Capital Theory ([Becker 1975](#)), which suggests that societies derive economic benefits by investing in people, particularly through education ([Sweetland 1996](#)). Chiefly, research asserts that education has a profound impact on the economic capability of individuals ([Schultz 1971](#)). Thus, research concludes that the knowledge and skills that individuals acquire through education and the various types of training are positively related to their intention to be entrepreneurs ([Liñán 2004](#); [Liñán and Chen 2009](#); [Ndou 2021](#)). Previous research also determined that education increased student awareness of entrepreneurship ([Bae et al. 2014](#); [Garavan and O'Cinneide 1994](#)).

Additionally, scholars have utilized the Entrepreneurial Self-Efficacy theory ([Chen et al. 1998](#)) to explain EI. Entrepreneurial self-efficacy refers to an individual's belief in their ability to perform the entrepreneurship-related tasks effectively ([Chen et al. 1998](#); [McGee et al. 2009](#)). Research argues that education should focus not only on providing knowledge, but also on entrepreneurial skills such as innovation, facing challenges and risk-taking, and more importantly on the belief system of potential entrepreneurs ([Chen et al. 1998](#); [Colombelli et al. 2022](#)).

Thus, consistent with the self-efficacy theory, we argue that education increases the individual capability to perform entrepreneurial tasks. Specifically, education has an important role in developing technical, personal, and relational skills that are necessary for entrepreneurs to succeed ([Baron 2006](#)). While teaching students the technical aspects of entrepreneurship such as strategic planning and building business models is important ([Rasmussen and Sørheim 2006](#)), developing other necessary entrepreneurial skills that focus on the entrepreneur as an individual such as risk-taking and alertness is equally important. Those skills are necessary to increase student awareness of entrepreneurship ([Chen et al. 1998](#)), even among non-business students who are not necessarily exposed to technical knowledge about entrepreneurship ([Asimakopoulos et al. 2019](#); [Gilmartin et al. 2019](#); [Vodă and Florea 2019](#)). As put by education and curriculum scholars, entrepreneurial

skills should be implemented in the social process of schooling (Gibb 2008; Giroux and Penna 1979). Education scholars emphasize that pedagogical models should be built upon a theoretical framework which situates schools within a societal context (Apple 1975). Thus, we believe that entrepreneurship, as a vital element of society, should be promoted heavily in the classroom, not only in business-related majors, but in all specialties.

Therefore, we argue that EPs are likely to produce potential entrepreneurs. As explained by the TBP (Ajzen 1991), we believe that the personal attitude and the perceived control behavior of students, as major determinants of EI, should also be evident in students who possess entrepreneurial skills (Liñán 2004; Liñán and Chen 2009). Additionally, as emphasized by EEM (Shapero and Sokol 1982), we argue that possessing such skills increases the individual desirability, feasibility, and propensity to act. In general, EP should develop a mindset among students and equip them with knowledge and skills that encourage students to think of entrepreneurship as a career option after their graduation (Colombelli et al. 2022). Put differently, we predict that students enrolled in such programs are more likely to have entrepreneurial intentions than their counterparts.

**H1.** *There is a positive relationship between enrolling in entrepreneurial college programs and entrepreneurial intentions among students.*

## 2.2. Perceived Benefits

As discussed above, enrolling in entrepreneurial programs should increase student awareness of entrepreneurship (Bae et al. 2014; Garavan and O’Cinneide 1994). Specifically, such programs should introduce students to the nuances of entrepreneurship and the required steps to becoming entrepreneurs. Students would be exposed to the benefits that entrepreneurship entails. Thus, we assert that being in an entrepreneurial program in college will provide students with more opportunities to appreciate the “perceived benefits” (PB) of entrepreneurship.

In turn, we argue that acknowledging the perceived benefits of entrepreneurship will lead students to form entrepreneurial intentions (Wu and Li 2011). More specifically, while enrolling in entrepreneurial programs might help increase entrepreneurial intentions among students, we believe that this will not materialize unless students believe in the benefits that might accrue to them from such an endeavor, whether they are economic (Parker 2008) or psychological benefits in the form of personal achievements (Delmar 2000). That is, students must perceive that being an entrepreneur is a favorable option compared to other options such as being employed by a public or a private organization. Thus, we hypothesize that perceived benefits will mediate the relationship between enrolling in entrepreneurial programs and having entrepreneurial intentions among students.

**H2.** *Perceived benefits mediate the relationship between entrepreneurial college programs and Entrepreneurial Intentions among students.*

## 2.3. Individual Creativity

Defined as the production of novel and useful ideas (Amabile 1996), creativity has been much discussed as a major component of entrepreneurship (Schumpeter 1934). Indeed, creative individuals are the ones who discover entrepreneurial opportunities and generate new ideas to exploit them (Baron 2006; Shane and Venkataraman 2000). While creativity is often thought of as a trait that individuals are born with, research asserts that creativity could be learned. To illustrate, Gundry et al. (2014) confirm that pedagogical approaches in education are very important in strengthening the students’ ability to generate ideas. Thus, in entrepreneurial programs where brainstorming, problem-solving and role-playing along with other teaching methods that stimulate creative thinking are implemented, students are expected to develop several skills that encourage creativity (Osborn 1957; Ward 2004).

On the other hand, research suggests that creative individuals are more likely to discover opportunities and to exploit them (Gundry et al. 2014). Thus, since entrepreneurship



is based on discovering new opportunities (Shane and Venkataraman 2000; Schumpeter 1934), and consistent with other scholars (e.g., Bellò et al. 2018), we argue that individual creativity will lead to higher levels of entrepreneurial intentions. Hence, we hypothesize that individual creativity (IC) will act as a mechanism through which entrepreneurial programs impact EI.

**H3.** *Individual creativity mediates the relationship between entrepreneurial college programs and Entrepreneurial Intentions among students.*

Figure 1 depicts our proposed model describing the impact of entrepreneurial programs on EI and the mediating roles of perceived benefits and individual creativity.

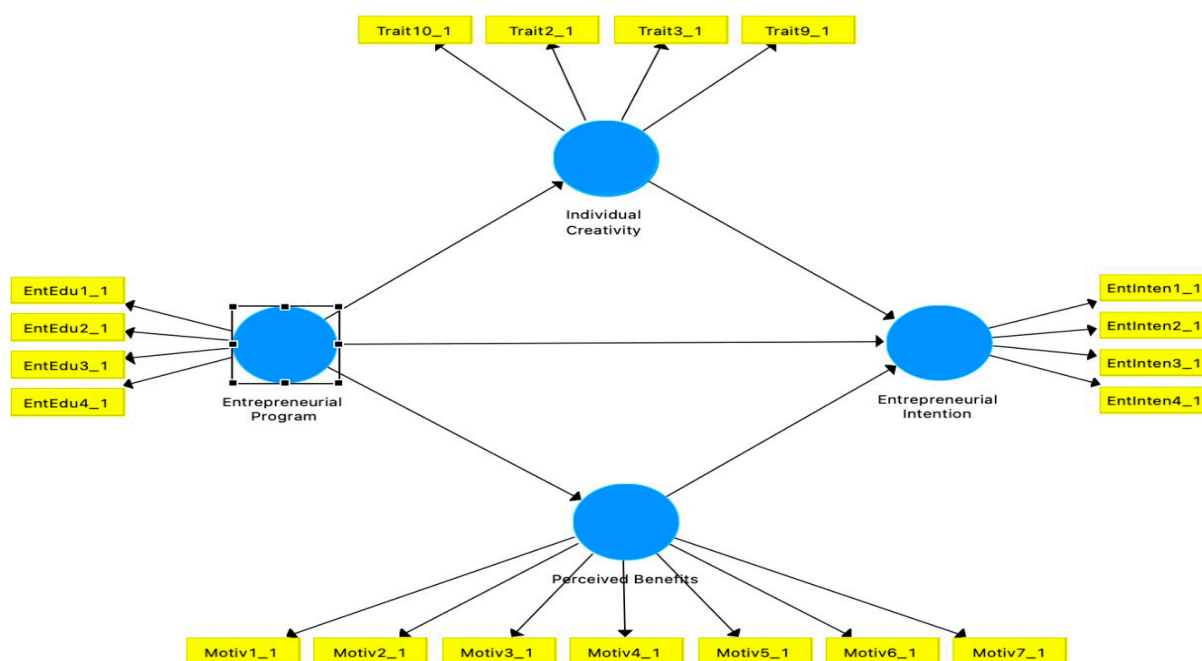


Figure 1. Research model and hypotheses.

### 3. Method

#### 3.1. Sample

We followed a snowball sampling approach to collect data from graduate and undergraduate students in the college of business, where there is a mandatory course in entrepreneurship in one department, and the college of engineering, a college that has been determined to support entrepreneurship (Gilmartin et al. 2019), in a large public university in Saudi Arabia that has been emphasizing entrepreneurship in their recent strategic plan, with various degrees of response from its colleges. We collected data through surveys. The survey was translated from English to Arabic by a Saudi working professional fluent in both languages. Then, one of the authors fluent in both languages translated the survey back to ensure there were no changes in the meanings of the questions (Brislin 1986). Due to WhatsApp being the number one communication mode and because it is ubiquitously used for conducting business in Saudi Arabia (Saudi Arabia Social Media Statistics 2020), we sent a link of the online survey to students via email or a WhatsApp text. This is a common practice in research in the context of Saudi Arabia (e.g., Pérez-Nordtvedt and Fallatah 2022).

The survey was sent to 700 students from both colleges. The total number of surveys completed was 438, indicating a 62.57% response rate. Of our sampled students, approximately 52% were males, approximately 81% were undergraduate students, 82.4% majored in business, and 86.5% were under the age of 30. Additionally, 62.1% of our sample participants had working experience, 38.6% indicated that they have started or co-started a

business in the past, and the majority stated that neither their parents (67.4%) nor any of their friends (58.4%) have started a business. Table 1 summarizes our sample.

**Table 1.** Description of the sample.

Profile	Measures	Frequency	Percentage
Distributed	-	700	-
Received	-	438	-
Valid	-	438	63.57
Gender	Male	229	52.3
	Female	209	47.7
Age	≤30	379	86.5
	>30	59	13.5
Education level	≤2 years	134	30.6
	>2 and ≤4 years	221	50.5
	>4	83	18.9
Field of study	Bus.	361	82.4
	N-Bus.	77	17.6
Parent who previously started a business	No	295	67.4
	Yes	143	32.6
Many friends have created their own business	No	256	58.4
	Yes	182	41.6
Worked for a small or new company	No	166	37.9
	Yes	272	62.1
Started a business	No	269	61.4
	Yes	169	38.6

### 3.2. Measures

#### 3.2.1. Dependent Variable

Consistent with previous studies, we used the scale developed and validated by (Liñán and Chen 2009) to measure *EI*. Using a 5-level Likert scale, students were asked to evaluate the level of their agreement with several statements, such as “my principal professional goal is to be an entrepreneur” and “I have very seriously thought about finding a firm”.

#### 3.2.2. Independent Variables

To measure *Entrepreneurial programs*, we used a pre-validated scale adopted from Walter and Block (2016) to measure the degree to which the college programs were entrepreneurial. Using a 5-level Likert scale, students were asked to evaluate the level of their agreement with several statements such as “my program helped me to understand the role of entrepreneurship in society” and “my program provided me with skills and competences that enable me to run a business”.

The measure used to assess *perceived benefits* was based on the scale developed by Amabile’s Work Preference Inventory (WPI) (Amabile et al. 1994), which was later validated and adopted in several studies (e.g., Barba-Sánchez and Atienza-Sahuquillo 2012, 2018). The scale included items such as “entrepreneurship will permit me to develop professionally and personally” and “entrepreneurship will permit me to be satisfied with my work”.

The measure of *individual creativity* was an adopted version of the scale developed by Bandera et al. (2018). Students were asked to evaluate the level of their agreement with the following two statements: “I am creative when asked to work with limited resources” and “I often make novel connections and perceive new relationships between various pieces of information”.

#### 3.2.3. Control Variables

As typical in *EI* studies with student samples, we controlled for *gender* (0 = female, 1 = male), *age*, and the *field of study* (0 = business, 1 = engineering), as well as *level of students* (0 = 2 years, 1 = between 2 and 4 years; 2 = 5 years and more). In addition, because prior experiences affect the desirability and the feasibility of starting a new venture

(Krueger 1993), we accounted for students' prior experience in entrepreneurship; asking if *students*, their *parents*, or any of their *friends* have ever started a business (0 = yes, 1 = no).

#### 4. Analysis and Results

To test the hypotheses of our model, we used Structural Equation Modeling (SEM), a technique that is commonly used to estimate complex models with many constructs, indicator variables and structural paths without distributional assumptions imposed on the data (Hair et al. 2019). SEM is also a technique that has been widely used in studies related to EI (e.g., Farooq et al. 2018) and studies related to education and academic programs (e.g., Holtbrügge and Engelhard 2016). We used path analysis to test the direction and significance of the direct effect hypotheses.

##### 4.1. PLS-SEM Algorithm: The Measurement Model Evaluation

To establish a valid and reliable measurement model, we followed the recommendation of Kline (2015) and used CR and AVE to test internal reliability and convergent validity, respectively (Bagozzi and Yi 1988; Hair et al. 2019; Nunkoo and Ramkissoon 2012; Nunkoo et al. 2013). The values of CR were all above 0.7, and all AVEs were above the cutoff point of 0.5 (Fornell and Larcker 1981) (Table 2).

**Table 2.** Outer Loadings, Composite Reliability, and Average Variance Extracted.

Variables and Items	OL	CR	AVE	Adj R <sup>2</sup>
<b>Entrepreneurial Program (EP)</b>				
(1) My school education program helped me develop my sense of initiative—a sort of entrepreneurial attitude.	0.823			
(2) My school education program helped me to better understand the role of entrepreneurs in society.	0.810			
(3) My school education program made me interested to become an entrepreneur.	0.866	0.905	0.705	
(4) My school education program gave me skills and competences that enable me to run a business.	0.858			
<b>Individual Creativity (IC)</b>				
(1) I am creative when asked to work with limited resources.	0.591			
(2) I often make novel connections and perceive new relationships between various pieces of information.	0.732	0.841	0.573	3.9%
(3) I can produce a large number of ideas (fluidity).	0.844			
(4) I can produce new and unusual ideas (originality).	0.834			
<b>Perceived benefits (PB): Entrepreneurship will permit me to:</b>				
(1) Be the best at everything I do.	0.701			
(2) Develop professionally and personally.	0.786			
(3) Feel satisfied with my work.	0.706			
(4) Cover my personal needs.	0.743	0.893	0.546	5.3%
(5) Have good work relations.	0.801			
(6) Contribute to social well-being.	0.772			
(7) Gain social prestige.	0.650			
<b>Entrepreneurial Intention (EI)</b>				
(1) My principle professional goal is to be an entrepreneur.	0.700			
(2) I will make every effort to start and run my own enterprise.	0.873			
(3) I am determined to create a firm in the future.	0.755	0.875	0.638	31.4%
(4) I have very seriously thought of starting a firm.	0.853			

Additionally, to test the discriminant validity of our model, we followed the Fornell–Larcker criterion (Fornell and Larcker 1981), which requires that the square root of the AVE



of each construct must be greater than its highest correlation with the other constructs (Hair et al. 2017), a criterion that our findings fulfill. We also checked the VIF values and determined that all of them were lower than 5, which confirms the nonexistence of multicollinearity (Shirokova et al. 2016).

4.2. PLS-SEM Bootstrapping: The Structural Model Analysis

Performing the structural model analysis, results of the  $R^2$  value show that our proposed model explains 31% of total variance in EI. Path coefficient values and t-values suggest that all relations in our model are significant and positive ( $p$ -value < 0.01). Particularly, Hypothesis 1, which predicted a positive relationship between EP and EI, is supported ( $\beta = 0.105$ ,  $t = 2.663$ ,  $p$ -value = 0.008). Figure 2 and Table 3 present the results of the path analysis. While all relationships were positively significant, our findings show that all independent variables contribute weakly to the explaining of their relative dependent variables as  $f^2$  values were less than 0.15 (Cohen 1988).

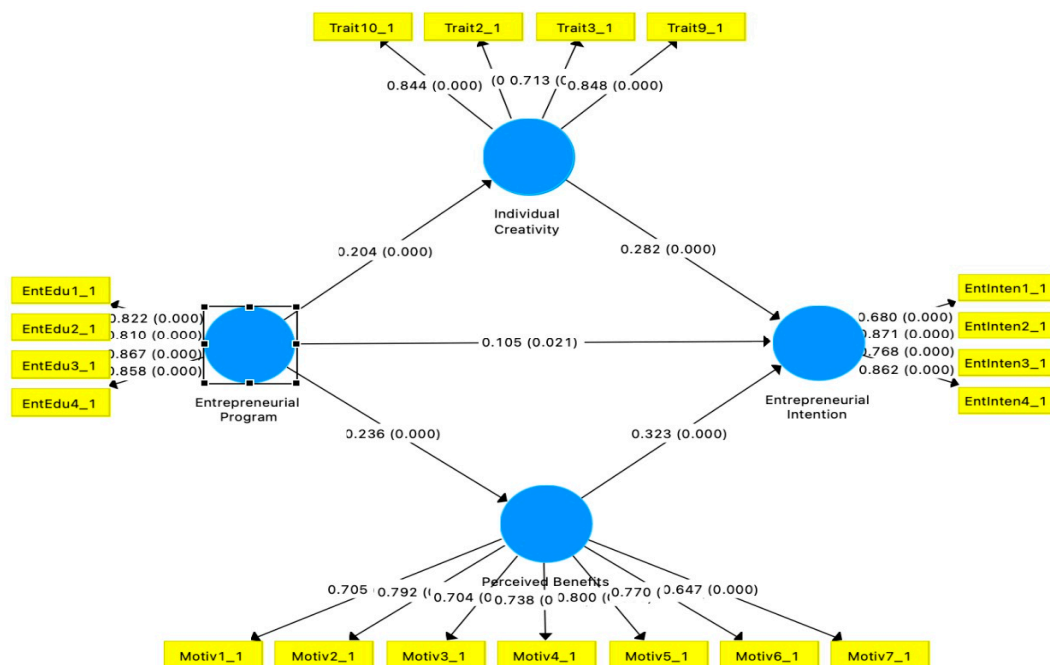


Figure 2. Measurement and structural model.

Table 3. Path coefficients.

Paths	Path Coefficients ( $\beta$ )	T Statistics ( O/STDEV )	$p$ -Values	$f^2$	VIF	Decision
EP -> EI	0.105	2.663	0.022	0.017	1.071	Supported
EP -> IC	0.204	4.764	0.000	0.045	1.000	Supported
EP -> PB	0.236	4.901	0.000	0.060	1.000	Supported
IC -> EI	0.282	5.923	0.000	0.081	1.393	Supported
PB -> EI	0.323	5.981	0.000	0.109	1.412	Supported

To test Hypothesis 2 and Hypothesis 3, which suggested mediating roles for IC and PB in the relationship between EP and EI, we followed the approach of Zhao et al. (2010). First, we could confirm that the mediation exists because all the indirect effects in the model were significant (Table 4). The findings show that EP has a significant impact on EI through PB ( $\beta = 0.077$ ,  $t = 3.590$ ;  $p$ -value = 0.000), which supports Hypothesis 2. In addition, the results show that EP has a significant impact on EI through IC ( $\beta = 0.058$ ,  $t = 3.679$ ;

$p$ -value = 0.000), which supports Hypothesis 3. Then, we concluded that the relationship between EP and EI is partially mediated by IC and PB, as the direct effect between EP and EI was also significant (Preacher et al. 2007; Preacher and Hayes 2008; Ayed 2020).

**Table 4.** Mediation analysis.

Indirect Paths	Path Coefficients ( $\beta$ )	T Statistics	$p$ -Values
EP -> PB -> EI	0.077	3.590	0.000
EP -> IC -> EI	0.058	3.679	0.000

## 5. Discussion

We argued that the more entrepreneurial the college program is, the more likely it is that the students have EI. Informed by the Human Capital Theory (Becker 1975) and the Entrepreneurial Self-Efficacy theory (Chen et al. 1998), we suggested that the knowledge and skills that students are exposed to in their formal education and the accompanying activities will positively impact their EI (Liñán 2004; Liñán and Chen 2009). Further, the study suggested mediating roles for PB and IC in the relationship between EP and EI.

Our findings supported the idea that collegiate programs that contain necessary entrepreneurial knowledge and skills in their contents and activities were more likely to produce students with EI. This is in line with previous research that detected a positive relationship between education and EI (Ahn and Winters 2022; Martin et al. 2013; Rauch and Hulsink 2015). Specifically, our findings confirmed the findings of recent research that detected a positive relationship between entrepreneurship education and EI in Saudi Arabia (Ayed 2020). On the other hand, while several research have determined insignificant (e.g., Van der Sluis et al. 2008) or negative (e.g., Oosterbeek et al. 2010) relationship between entrepreneurship education and EI, we believe that as universities are more aware of their role in the entrepreneurship ecosystem, college programs nowadays are more entrepreneurial in their curriculum and various activities. Thus, education had maybe not been impactful in the past, but our study, along with other recent ones, provides evidence that in cases where universities emphasize entrepreneurship, we are more likely to witness an increase in EI among students.

Further, our findings provided evidence that PB is a mediating mechanism through which EP impacts EI. More specifically, while enrolling in EP should increase EI among students directly, our findings illustrate that students tend to develop EI once they perceive the potential benefits of being entrepreneurs compared to other options (Delmar 2000; Parker 2008; Wu and Li 2011).

Likewise, our findings supported our hypothesis that EI is higher among students partially due to their individual creativity that they developed while in the program. Research has shown that creative individuals are more likely to discover entrepreneurial opportunities (Baron 2006; Shane and Venkataraman 2000; Schumpeter 1934). Our findings are also consistent with previous research that highlighted the role of education in increasing learners' creativity (Gundry et al. 2014).

### 5.1. Contributions, Limitations, and Future Research

Our study offers several contributions to the education and EI literature. First, it extends the conflicting debate over the role of education in promoting EI among students. Our study realizes that contextual factors matter in the Education–EI relationship. Thus, it suggests and determines that education per se might not be enough to increase EI, but that it is rather the entrepreneurial nature of the program that actually impacts EI among students. Second, our study develops and tests a model that links the entrepreneurs' individual characteristics to their intention in engaging in entrepreneurial activities. Our model examines the mediating roles of perceived benefits and individual creativity in the relationship between education and EI. As the debate continues over the role of education in EI, it is critical to explore the roles of other factors that might act as mechanisms through

which the relationship functions. Third, acknowledging the importance of entrepreneurship in emerging countries (Schumpeter 1934), we contribute to the literature of entrepreneurship in these countries (Bruton et al. 2008; Tracey and Phillips 2011) by examining our model in Saudi Arabia, as the country takes on a major transformation plan that focuses on promoting entrepreneurship.

While our study provides several contributions to research, there are some limitations that should be noted. First, our data were collected from a single university, which might have an impact on the outcomes of our study, given that different universities have different cultures and priorities. Thus, future research could provide a more comprehensive study that includes different public and private universities in Saudi Arabia. Second, as typical with cross-sectional studies, our findings provide evidence of correlation between EP and EI, but we cannot confirm causation. Therefore, we recommend future studies to collect longitudinal data to offer a more accurate explanation of the relationship between EP and EI. In addition, as conflicting results continue to emerge in the relationship between EP and EI, interested scholars could find it appealing to examine the role of other contextual factors that affect the relationship.

### 5.2. Practical Implications

Along with our theoretical contributions, our study also provides several practical implications for policy-makers and university administrators. First, policy-makers in emerging economies can utilize education to promote entrepreneurship. In a country such as Saudi Arabia, where entrepreneurship is at the forefront of a national vision, policy-makers can contribute significantly to the vision by fostering entrepreneurship education in universities. Second, for university administrators, graduate and undergraduate programs should be designed to be more entrepreneurial by embedding nuances and entrepreneurial skill training in their course contents and extracurricular activities. While it is expected to include some elements of entrepreneurship education in business-related programs, our findings suggest that all non-business programs should also have activities that instill entrepreneurial skills in their students.

## 6. Conclusions

Entrepreneurship has been shown to have a huge role in emerging economies, and research has shown inconsistent results about the contribution of education to EI among students. Our study focuses on the help of the nature of educational programs in universities in increasing EI among students. We detect evidence that students enrolled in entrepreneurial programs are more likely to have EI than those in non-entrepreneurial programs. We also determine perceived benefits and individual creativity to have mediating roles between EP and EI. More studies are needed to further understand the ways in which universities can increase EI among its students.

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