Journal of Comparative International Management

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Volume 25, Number 2, 2022

URI: https://id.erudit.org/iderudit/1096763ar
DOI: https://doi.org/10.55482/jcim.2022.33294

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Publisher(s)

Management Futures

ISSN

1481-0468 (print)
1718-0864 (digital)

Explore this journal

Cite this article

Ayiku, A., Grant, E. & Mensah, P. (2022). Stimulating University Student Entrepreneurship: Evidence from an African Developing Country. *Journal of Comparative International Management*, *25*(2), 221–245. https://doi.org/10.55482/jcim.2022.33294

Article abstract

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Stimulating University Student Entrepreneurship: Evidence from an African Developing Country

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Entrepreneurship education at the tertiary level is gaining ground within developing economies like Ghana. But empirical studies that assess the role of universities in stimulating and consolidating entrepreneurship traits are limited in emerging economies. This study is a quantitative study that adopts the structural equation model approach to examine the effect of four constructs (Attitude, Subjective Norm, Perceived Behavioral Control, and the Role of University) on the *Entrepreneurship Intention* of university students in Ghana. *Results indicate a significant positive relationship between university entrepreneurial role and student entrepreneurial intention. Also, both attitude and subjective norm had a significant positive association with student entrepreneurial intention. The relationship between perceived behavioral control and student entrepreneurial intention was a significant negative relationship. These results provide an empirical basis for leveraging universities to stimulate students' entrepreneurial intention within developing economies such as Ghana.*

Keywords: Student entrepreneurship, developing countries, perceived behavioral control, entrepreneurship intention; Ghana

Introduction

Entrepreneurship has been advanced in literature to hold an integral position in national development (Fini, Meoli, Sobrero, Ghiselli & Ferrante, 2016; Jansen, van de Zande, Brinkkemper, Stam, & Varma, 2015; Nyadu-Addo & Mensah, 2018). In fact, both developed and developing countries continue to benefit significantly from entrepreneurship in terms of job creation, innovation, goods and service provision, and philanthropic activities (Davey, Hannon & Penaluna, 2016; Dzisi & Odoom, 2017; Fini et al., 2016; Nyadu-Addo & Mensah, 2018). As consequence, scholars and practitioners have taken a keen interest in advancing the course of entrepreneurship (Davey et al., 2016), particularly in developing the role of institutions of higher learning to foster entrepreneurship intention (EI) and behavior among students (Davey et al., 2016; Fini et al., 2016; Jansen et al., 2015).

Universities and other learning institutions are increasingly viewed as places where student behavior can be built and modeled to produce socially acceptable individuals (Fini, Grimaldi, Santoni, & Sobrero, 2011, Fini et al., 2016) who can contribute significantly to job creation and fit within the existing corporate environment. For instance, research found that students participating in entrepreneurship education showed an increase in attitude and perceived behavioral control (Rauch & Hulsink, 2015). Thus, promoting entrepreneurship at the highest point of education is in the right direction for the desired socioeconomic change and growth. This is especially true in developing economies (Nabi, Liñ´an, Liñ´an, Krueger & Walmsley, 2017; Rauch & Hulsink, 2015) that face several institutional voids and constraints (Edelman, Manolova, Shirokova, & Tsukanova,, 2016; Ciambotti & Pedrini, 2019).

In cases where individuals have developed entrepreneurial desires and tendencies from their family and societal backgrounds (Denanyoh, Adjei & Nyemeky, 2015; Rauch & Hulsink, 2015), the nurturing of such entrepreneurial traits and potential at the highest level of education becomes particularly important. Allowing students to develop their entrepreneurial trait outside of the school environment may not bode well for the strategic development of nations. But in a carefully designed entrepreneurial program or educational system, it can be asserted that such education will translate into desired strategic outcomes (Denanyoh et al., 2015; Rauch & Hulsink, 2015).

Modelling the behavioral dimension of students within the educational system is key to boosting EI (Malebana, 2014; Sieger, Fueglistaller, Zellweger, 2014; Wach &Wojciechowski, 2016). Thus, building the EI of students is better experienced within the school environment, as had been advanced by numerous empirical studies (Denanyoh et al., 2015; Fayolle, Gailly, Fayolle, 2015; Naa, Arthur, Appiah-Nimo & Ofori, 2018). Within developing economies like Ghana, the design of student entrepreneurship programs and courses is now gaining ground (Amanamah, Owusu & Acheampong, 2018; Denanyoh et al., 2015). Some universities and scholars are contending with the fact that the university has a primary responsibility to teach in a manner that upholds the mission of the institution, rather than focusing solely on nurturing and building an entrepreneurial mindset (Davey et al., 2016; Küttim, Kallaste, Venesaar & Kiis, 2014).

Developing economies have yet to catch up with developed economies' innovative entrepreneurial programs and education (Boahemaah, Xin, Dobge & Pomegbe, 2020; Stelmaszczyk, 2020). Despite this, various governments and tertiary education institutions have made some commendable efforts to deliver entrepreneurial education and training (Denanyoh et al., 2015; Naa et al., 2018).

Entrepreneurship education in Ghana continues to face numerous challenges as this endeavour is rare among tertiary institutions (Dzisi & Odoom, 2017; Nyadu-Addo & Mensah, 2018). Nurturing attitudes and intention of students within the tertiary environment has been lacking among universities in Ghana and developing countries as well (Dzisi & Odoom, 2017; Pedrini, Langella & Molteni, 2017). Since the emergence of entrepreneurship courses in 2010, few efforts have been made to examine how these courses have contributed to stimulating entrepreneurial behavior among students and graduates (Denanyoh et al., 2015; Naa et al., 2018). Out of 10 state Polytechnique tertiary institutions in Ghana, one has a course in entrepreneurship (Denanyoh et al., 2015). Therefore, it is evident that there is a dearth of entrepreneurship education in Ghana,

which is not encouraging interest in entrepreneurship, particularly among students. In Ghana, there is greater demand than supply for jobs (Boahemaah et al., 2020; Denanyoh et al., 2015), and the burden of graduates looking for work is overwhelming both the public and commercial sectors (Affum-Osei, Asante, Forkouh, Aboagye & Antwi, 2019; Baah-Boateng, 2015). Developing the attitude and intention of students to think and adopt entrepreneurship is considered one of the surest ways to ensure job creation and business development (Boahemaah et al., 2020; Denanyoh et al., 2015).

EI has been discussed at great length in previous literature with focus on student attitudinal dimensions and desires (Boahemaah et al., 2020; Denanyoh et al., 2015). The contribution of academic environments to stimulating entrepreneurial attitude in students has been discussed in literature to suggest a significant positive association (Jansen et al., 2015; Wach & Wojciechowski, 2016). To a large extent, authors have underpinned their discussion on the theory of planned behavior where variables such as attitude, subjective norm and perceived behavioral control are pivotal in explaining entrepreneurial intention (Kautonen, van Gelderen & Fink, 2015; Wach & Wojciechowski, 2016). Efforts to consider student EI have resulted in little incorporation or useful clarification of the effect of university entrepreneurial role (Kautonen et al., 2015; Malebana, 2014). These earlier empirical studies did not provide measures for the university entrepreneurial role as a factor in their model. For instance, Denanyoh *et al.* (2015) in their effort to factor the impact of students' EI at the tertiary level, did not create any variables that measured university entrepreneurial role for their model, even though their study was situated in a developing economy.

In this study we aim to address the following research question: does the university entrepreneurial role, attitude, subjective norm and perceived behavioral control have an impact on student EI? To address this question, we conducted a quantitative study in the interesting setting of universities in Ghana. We submitted a survey to over 500 university students via email. A total of 436 questionnaires were completed. and retrieved. This gave a response rate of 87.2%. With our result, we contribute to literature by designing a metric for university entrepreneurial roles (UER) and how it impacts student EI. Secondly, this study provides an empirical basis for using theory of planned behavior to design university roles and interventions that stimulate students' entrepreneurial behavior.

The paper proceeds as follows. In the next section we document recent theoretical evidence on student entrepreneurship by highlighting the role given to universities and

the major variables of the theory of planned behavior. We then introduce the EI literature and present our hypotheses. We proceed by documenting the research methodology, and by highlighting our findings. Next, we discuss the results providing contributions to theory and practice. Limitations and further research are presented as well.

Theoretical Background

We have divided the discussion of theoretical background into five sections: i) role of universities in student entrepreneurship intention, ii) the need for entrepreneurship education in Ghana, iii) student entrepreneurship in Ghana, iv) entrepreneurial intention, and v) the theory of planned behavior.

Role of Universities in Student Entrepreneurship Intention (EI)

The role of the university in recent times is increasing, with more importance being placed on these institutions by governments and society at large. Universities are primarily viewed as sources of higher education, citadels of knowledge (Boahemaah et al., 2020; Denanyoh et al., 2015). It must be noted that the role of the university in entrepreneurship education is still being debated (Amanamah et al., 2018; Boahemaah et al., 2020). Some have expressed the fear that universities may over-concentrate on entrepreneurship education and leave behind their primary mandate and mission (Davey et al., 2016).

In a report by Herrmann (2008) with focus on putting entrepreneurship at the centre of higher education, some specific roles that universities play in the effort to promote entrepreneurship education were discussed: developing entrepreneurial teaching and learning practices; engaging stakeholders inside and outside the university; and creating an enabling institutional environment (Herrmann, 2008). The development of teaching and learning practices as a course is multifaceted, and thus requires educators to have a vast degree of knowledge and experience. There is therefore the need to develop the expertise and technical capacity of educators if entrepreneurship education is to be effective and efficient within the university environment (Denanyoh et al., 2015; Shamsudin, Mamun, Nawi, Nasir & Zakaria, 2017).

University authorities must ensure that experimentation, critical thinking, discovery, and innovative pedagogies are incorporated into the curriculum of entrepreneurship education. While in the school environment, students must be seen experimenting and experiencing best practices within industry. The use of simulations and modeling should thus be made part of the teaching and learning of entrepreneurship (Davey et al., 2016; Denanyoh et al., 2015). Thus, stakeholder participation is very key to entrepreneurship education.

When it comes to entrepreneurship education, the university has several stakeholders both within and outside of the university. It is important to therefore examine the interest of all these stakeholders before undertaking entrepreneurship education. The business community for instance are external stakeholders who envisage that the university will train and empower young graduates to establish their own businesses after completing school. It must be noted that some new ventures are even carried out while students are within the school environment and under training (Davey et al., 2016; Denanyoh et al., 2015). Thus, these student entrepreneurs need guidance and direction if they are to survive within the market environment (Boahemaah et al., 2020; Denanyoh et al., 2015; Herrmann, 2008). In particular, the government stands to gain when students create sustainable businesses with the potential to increase job creation, reduce unemployment rates, and contribute to overall revenue generation of the country (Boahemaah et al., 2020; Fini et al., 2016; Rauch & Hulsink, 2015). The government is thus regarded as a major stakeholder of entrepreneurship education. The interest of government could be in creating and directing entrepreneurship education to areas where the country has comparative advantage so that the country will gain significantly. An entrepreneurship education that is not tailored to meet the areas where a country has comparative advantage may produce graduates who do not fit within the economic demography of a country (Boahemaah et al., 2020; Denanyoh et al., 2015). Internally, the university must develop courses and programs that are of interest to the Vice Chancellor, the Dean of the various schools and faculties. These internal stakeholders have the capacity to change

the course and direction of the entrepreneurship education within the university (Boahemaah et al., 2020; Davey et al., 2016).

The ecosystem of the entire university significantly affects student entrepreneurship. Today, students are very discerning in evaluating which university is most likely to make them self-reliant after completing school, and thus select universities that best equip them with entrepreneurial skills (Boahemaah et al., 2020; Davey et al., 2016; Denanyoh et al., 2015). Universities, both private and public, are therefore designing courses and programs which incorporate entrepreneurship tendencies and EI in students (Davey et al., 2016; Fini et al., 2016; Jansen et al., 2015). Creating an enabling ecosystem of entrepreneurship means that some institutional cultures must be altered to suit the habits and attitudes required for effective and efficient entrepreneurship education (Davey et al., 2016; Jansen et al., 2015). Some bad habits and attitudes of existing staff and students must be reduced and molded, so that entrepreneurial thinking can be shaped in the minds of students. Creating an environment for capacity building should be the topmost priority of a university that seeks to undertake effective entrepreneurship education.

Understanding the role of the university in driving EI among students with theory of planned behavior as a theoretical foundation was bolstered by Meeralam & Adeinat (2022). In their study the focus was on female students enrolled in private and public universities in Saudi Arabia. The study found that university support plays a significant role in stimulating the EI of female students. In another study by Rocha, Moraes, de & Fischer (2022), the role of the university in promoting entrepreneurial behavior was also examined. Their study found that students' EI is positively influenced by the university environment. Their study was also built on the understanding that "the stronger the intention, the more likely an individual will engage in a given activity" (Rocha et al., 2022, p. 43).

The Need for Entrepreneurship Education in Ghana

Within Ghana, entrepreneurship courses at tertiary institutions started after 2010. For instance, the University of Cape Coast started its entrepreneurship course in the 2014/15 academic year (Naa et al., 2018), and of the 10 polytechnics, entrepreneurship training is only carried out in Kumasi Polytechnic (Denanyoh et al., 2015). The lack of entrepreneurship education within Ghana is evident, which limits the fostering of entrepreneurship interest especially among students. The demand for jobs exceeds the supply of jobs in Ghana (Boahemaah et al., 2020; Denanyoh et al., 2015). Both the public and the private sector are overwhelmed by the increasing pressure of graduates seeking employment (Affum-Osei et al., 2019; Baah-Boateng, 2015). According to a World Bank report, as many as 50% of graduates who leave Ghanaian universities and polytechnics fail to find jobs for 2 years after national service, and 20% do not find jobs for 3 years (Robb et al., 2014). Evidently, graduates are completing tertiary institutions with inadequate entrepreneurial skills. Simply, there is a mismatch between what industry demands and those skills possessed by graduates (Affum-Osei et al., 2019; Baah-Boateng, 2015; Boahemaah et al., 2020).

Student Entrepreneurship in Ghana

Student entrepreneurship has been on the agenda for many nations and academic institutions (Boahemaah et al., 2020; Dzisi & Odoom, 2017; Robb, Valerio & Barton, 2014) since it holds a

significant role in socioeconomic transformation. There is no generally accepted definition of student entrepreneurship, but the central idea is that student entrepreneurship is undertaken by a student while at school and through some form of intrapreneurship with an established firm as students' progress in his or her chosen career (Boahemaah et al., 2020; Davey et al., 2016). There are a considerable number of student entrepreneurs across the globe. For example, in the United States of America, it was found that a student was twice as likely as an academic to start a new venture after the completion of his or her university education (Åstebro, Bazzazian & Braguinsk, 2012; Davey et al., 2016). Studies on student entrepreneurship have made efforts to examine the various determinants of student intention on entrepreneurship, focusing largely on the behavioral dimension (Denanyoh et al., 2015; Nyadu-Addo & Mensah, 2018). Student entrepreneurship seeks to bolster the critical thinking of students and to inspire creative solving of societal problems by designing innovative and unique products and services. Student entrepreneurs are challenged to be forward thinking, adopt new technologies in problem solving, and product and service designs (Jansen et al., 2015). Student entrepreneurship creation has been done through the institution of various incubations, entrepreneurship clinics and periodic seminars (Jansen et al., 2015; Nyadu-Addo & Mensah, 2018).

Student entrepreneurship within Ghana is lacking empirical studies, much like other countries within developing economies (Dzisi & Odoom, 2017). Again, efforts by the various universities and polytechnics to undertake entrepreneurship education is now gaining ground. The public universities in Ghana have made efforts to establish various centers that focus primarily on student entrepreneurship. For example, the University of Cape Coast has the Centre for Entrepreneurship and Small Enterprise Development which supports the University of Cape Coast Business Incubator (UCCBI). The Kwame Nkrumah University of Science and Technology (KNUST) also has the Kumasi Business Incubator (KBI). In 2012, KNUST also introduced an entrepreneurship clinic (Nyadu-Addo & Mensah, 2018).

Entrepreneurial Intention (EI)

Efforts made by universities in entrepreneurial education have largely been to trigger EI in students (Jansen et al., 2015; Nyadu-Addo & Mensah, 2018). To commence any venture, the student must at first compete on the benefit and significance of his or her action. The student therefore examines carefully how worthwhile it is to enter entrepreneurship. Simply, the creation of a job and/or a firm requires that the individual first creates an intention before actual commencement. Ideation on the job means that an individual first has an intention on such a job.

EI is defined as "the conscious state of mind that precedes action and directs attention toward entrepreneurial behaviors such as starting a new business and becoming an entrepreneur" (Bird, 1988; Krueger & Carsrud, 1993). There are several factors that influence how a student may create his or her own EI. But largely, the student operating within the school environment is bound to be impacted by the school culture and norms that exist. Should the school reflect entrepreneurship to be noble and valuable, many students will seriously consider becoming entrepreneurs (Boahemaah et al., 2020; Fini et al., 2016; Küttim et al., 2014). Within the school environment, many factors stimulate EI of the student (Nyadu-Addo & Mensah, 2018). The association with colleagues within a group, the teaching and learning process, and the mission and vision of the institutions have their

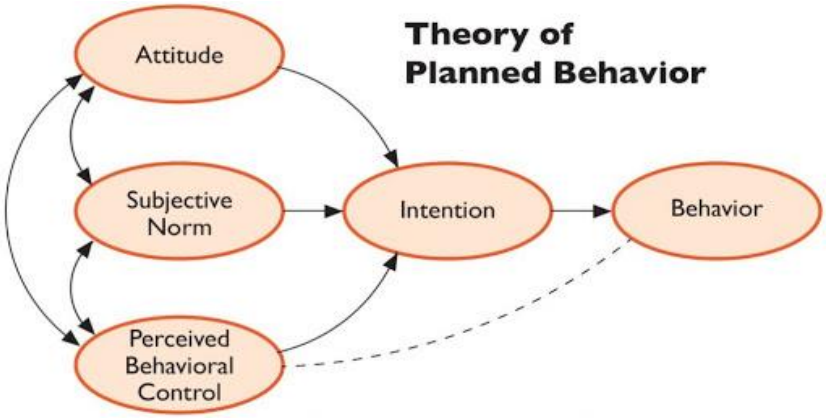
individual and combined effects on how a student develops EI (Boahemaah et al., 2020; Fini et al., 2016; Küttim et al., 2014; Zhang, Duysters & Cloodt, 2014).

Building EI among students is rooted in the theory of planned behavior as depicted by extant literature (Anjum, Amoozegar, Farrukh & Heidler, 2022). Key elements to form EI for a new business include attitude, the degree to which the students can handle business, and the social context (in this case the university environment) (Anjum et al., 2022; Naa et al., 2018; Pedrini et al., 2017). Students who are given the correct stimulating environment, that is, entrepreneurial education form an EI (Anjum et al., 2022; Mukhtar, Wardana, Wibowo & Narmaditya, 2021). University being a social institution with the capacity to model behavior has been pivotal in molding students' attitudes, skills and desires for business through entrepreneurial courses and programmes (Fayolle et al., 2015; Mukhtar et al., 2021; Naa et al., 2018).

The Theory of Planned Behavior (TPB)

Numerous studies have used TPB to understand society and the occurrence of many phenomena in the field of social science, politics, ethics, and business (Ajzen, 2002; Ajzen, Joyce, Sheikh &Cote, 2011; Kautonen et al., 2015; Malebana, 2014). Ajzen (1991) is largely credited with the development of TPB. By Ajzen (1991), an individual builds his or her intention by relying on three thematic variables — attitude, subjective norm and perceived behavioral control (Ajzen, 1991). This framework on behavior formation is depicted in Figure 1 below.

Figure 1: Theory of Planned Behavior



Source: Ajzen (1991).

Within an educational setting, the students come with different attitudes that must be modeled by the educational institution for desired outcomes. Generally, attitude is a behavioral dimension which seeks to typify one's emotion and feeling about something. Attitude therefore becomes a patterned form of one's behavior. In simple terms, an attitude relates to those gestures and

expressions that emanate from an individual within a given society (Ajzen, 1991; Kautonen et al., 2015; Malebana, 2014; Wach & Wojciechowski, 2016). Within an educational setting, a carefully designed stimulus or program will help students to develop an attitude that is desirable.

Society has stated standards and values that are expected of every individual. These societal values and norms become a standard against which individuals are measured. These set of values and standards are therefore the subjective norms that influence an individual's intention and behavior within society (Malebana, 2014; Pedrini et al., 2017). Society requires every individual to reduce all negative tendencies and increase all positive behaviors and actions. Several studies have confirmed that subjective norms positively influence the behavioral intention of an individual (Fang, Ng, Wang & Hsu, 2017; McDonald & Crandall, 2015). In the view of Ajzen (1991, p.183) perceived behavioral control is the "person's perception of the ease or difficulty of performing the behavior of interest." When an individual perceives that a behavior to be difficult to undertake, the tendency to engage in such behavior reduces. Perceived behavioral control is determined by an individual's assessment of his or her own abilities, as well as the opportunities and resources available to make a decision to engage in a behavior (Ajzen, 1991; Kautonen et al., 2015; Wach & Wojciechowski, 2016). In fact, when an individual thinks he or she has sufficient resources and opportunities, and few barriers, his perceived behavioral control will be greater (Ajzen, 1991).

Hypotheses Development

Entrepreneurial education and entrepreneurial intention

Some empirical studies have examined the extent to which the university uses its role to stimulate the EI of students. In a study conducted by Zhang *et al.* (2014), the role of entrepreneurship education undertaken by the university was examined as a predictor to student EI. The study used the theory of planned behavior and Shapero's entrepreneurial event model to underpin the theoretical understanding of the study. Ten (10) universities were selected and a total of 494 respondents were sampled for the study. A probit analysis framework was used in the study. They found that there was a significant positive association between entrepreneurship education and EI. This finding is key and forms the basis for conjecturing our hypothesis. Furthermore, the type of university had a combined interactive effect with gender and study major on the relationship between entrepreneurship education and EI.

The point of departure for this current study and that conducted by Zhang *et al.* (2014), is that Zhang and colleagues used dummy dependent variables whereas this current study uses a five-point Likert Scale to measure the EI. Again, Zhang *et al.* (2014) did not create a measure for university entrepreneurial role (UER), unlike in this current study (Zhang et al., 2014). In South Africa, Malebana (2014) examined EI in rural university students. The study also used TPB as a theoretical foundation. The use of TPB in modeling entrepreneurial behavior by Malebana (2014) provides a basis for its usage in this current study. It was found that students had intention for starting their own businesses once they completed their university education. Pedrini *et al.* (2017) focused their study on whether entrepreneurial education programs (EEP) impact EI among MBA students in Ghana. The study used TPB as a theoretical foundation. The study used 30 "E4impact MBA" students within Accra (Ghana). The study combined an explanatory approach and a mixed-

method quasi-experimental design to examine the relationship between EEP and EI. The data analysis was done using an ANOVA test. The study found a significant positive association between EEPs and EI. This study is relevant to the current study because it uses TPB and EEP to predict student EI. The points of divergence of this study and our current study are that the current study uses a larger sample size of all university students from a developing economy, and a structural equation model (SEM), as opposed to the use of ANOVA test. Nyadu-Addo & Mensah (2018) examined entrepreneurship education in Ghana using the entrepreneurship clinic of KNUST as a case study. The study found that through the entrepreneurship clinic, students developed the interest in creating new ventures, and some participants of the clinic also had the opportunity to be given business coaches and participate in incubation programs. This finding provides grounds for conjecturing a favorable relationship between the many different entrepreneurial roles played by the university and how they contribute to student's EI.

Fayolle et al. (2015) examined the impact of entrepreneurship education on entrepreneurial attitudes and intention. The study found that there was a significant positive mean difference in attitude toward entrepreneurial behavior as students go through EEP. Likewise, there was significant positive difference in perceived behavioral control as students go through EPP. The observed difference in perceived subjective norms was found to be negative and insignificant (Fayolle et al., 2015). Anjum et al. (2022) considered EI, taking into consideration the role played by entrepreneurship education (EE) and entrepreneurial passion (EP). The study considered university support as a moderating variable. The study found that perceived university support has a significant positive moderating effect on the association between students' attitude to entrepreneurship and EI.

Based on the foregoing theoretical and empirical reviews, this study postulates that:

H1: There is a significant positive relationship between university EE roles and student EI.

Student's attitude and entrepreneurial intention

A person's opinions regarding an action, such as whether they find it to be positive or negative, might predict their desire to engage in a specific action (Anjum et al., 2022). The action of a student to engage in an entrepreneurship course and, in turn, their ambition to become entrepreneurs, are influenced by their attitude toward entrepreneurship (Amanamah, 2017; Fayolle et al., 2015). As the saying goes, "attitude determines altitude" (Amanamah, 2017; Shanton, 2011). Students' attitudes toward entrepreneurship education may therefore be seen as a crucial motivator for EI. Every ambitious entrepreneur should have a positive attitude as part of their mindset. In a similar vein, how students view entrepreneurship will influence how they approach an entrepreneurship course and what they gain from this experience.

Student attitude towards EI has been examined by extant literature to have a significant association (Anjum et al., 2022; Mohammed, Fethi & Djaoued, 2017; Wardana et al., 2020). Mohammed et al. (2017) focused their study on the theory of planned behavior (TPB) to establish the association among attitude, subjective norm, perceived behavioral control and EI using 175 students from the University of Tlemcen.

The structural equation modeling technique was used. The study found a significant effect of attitude on EI. Another study conducted by Mahfud, Triyono, Sudira & Mulyani (2020) centered on polytechnic students' entrepreneurial attitude orientation, social capital, and psychological capital. Like previous studies, their study found that entrepreneurial attitude orientation influenced the EI of polytechnic students. Therefore, it is postulated that:

H2: There is a significant positive relationship between attitude and student EI.

Student's subject norms and entrepreneurial intention

Subjective norms are an individual's estimation of the social pressure they feel to engage in the desired behavior (Krithika & Venkatachalam, 2014; Mohammed et al., 2017). Subjective norms are believed to consist of opinions about how others, who may be significant to the individual in some manner, would prefer that they act. For instance, within a developed country, how a student will feel about entrepreneurship may be different from those within developing country. A Ghanaian society which is dominated by SMEs has the tendency to put pressure on an individual student to start his or her own entrepreneurial endeavour after graduation (Amanamah, 2017).

Mohammed et al. (2017) in their study showed that subjective norms have a significant effect on EI. The study conducted by Krithika & Venkatachalam (2014) in Bangalore also considered the association between subjective norms and EI. The study also found a significant relationship between subjective norms and EI. Saraih (2019) focused the investigation on learning orientation, subjective norms, and EI within Malaysia. A significant association was found between EI and subjective norms. From the foregoing, it is hypothesized that:

H3: There is a significant positive relationship between subject norm and student EI.

Student's perceived behavioral control and entrepreneurial intention

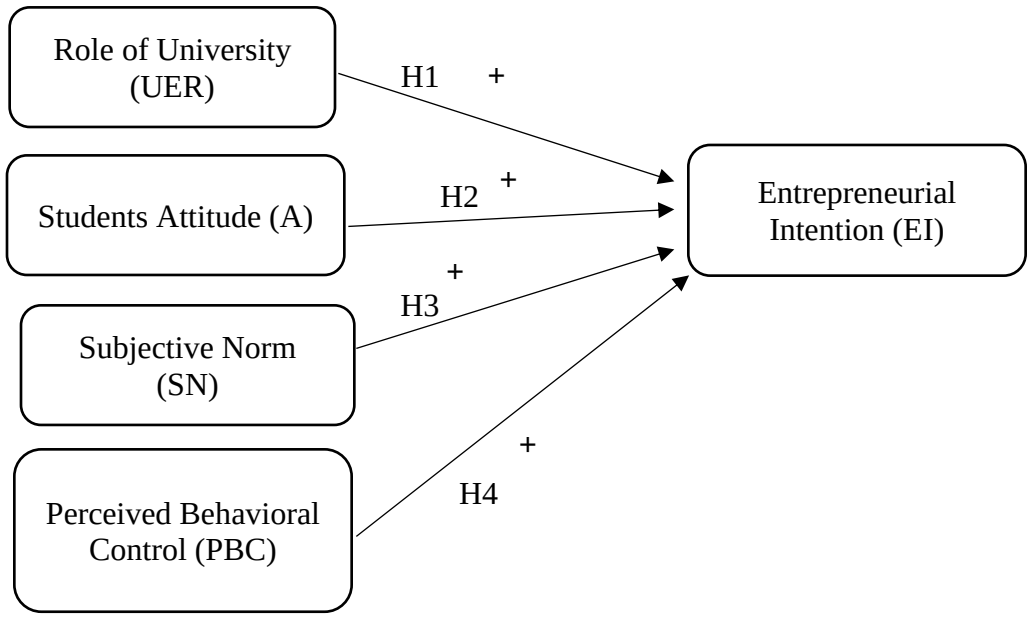
The degree to which a person believes they have control over a behavior is known as perceived behavioral control (Ajzen, 2002; Amanamah, 2017; Majeed, Ghumman, Abbas & Ahmad, 2021). Central to developing an EI is a person's position of locus of control (Asante & Affum-Osei, 2019). An individual or a student who holds the perception that he or she can venture into entrepreneurship after their higher education level achievement will develop a strong positive relationship towards entrepreneurship (Ajzen, 2002; Asante & Affum-Osei, 2019).

In their study, Rauch & Hulsink (2015) established that perceived behavioral control has a moderating role between entrepreneurship education and EI. Mohammed et al. (2017) found that there is no significant association between perceived behavioral control and EI. Majeed et al. (2021) on their part, measured entrepreneurial behavior in Pakistani students while also using TPB. The study found that perceived behavioral control has a positive significant association with EI. Thus, we hypothesize that:

H4: There is a significant positive relationship between perceived behavioral control and student EI.

Gathering these hypotheses, this study aims to validate the model depicted below in Figure 2.

Figure 2: Proposed Model



Methodology

We have divided our methodology section into three sections: i) research setting and data collection, ii) data analysis, and iii) measures.

Research Setting and Data Collection

The study is conducted in Ghana with particular focus on university students. It is a quantitative study, with data collection and analysis relying on questionnaire, a regression analysis framework, and hypothesis testing. The questionnaire administered was adapted from earlier empirical studies by Ajzen, (2011), Boldureanu, Ionescu, Bercu, Bedrule-Grigorut & Boldureanu, (2020), Kautonen et al., (2015); and Pugh, Lamine, Jack & Hamilton, (2018). In selecting the sample size, a simple random sampling technique is adopted.

The entire population of university students as at 2017 stood at 289,827, as reported by the National Accreditation Board (NAB) of Ghana. Based on the total target population of 289,827, the sample size for the study was estimated using the Yamane (1967) function. This gave an estimated sample size of 399 university students. In relation to the factor analysis framework, both convergent and discriminant validity were estimated using composite reliability (CR) and average variance extracted (AVE) (Hair, Matthews, Matthews & Sarstedt, 2017; Leguina, 2015).

Data Analysis

For analysis of data collected, a structural equation model (SEM) technique was used. IBM SPSS version 24 and AMOS statistical software was used to analyze the data. A factor analysis (specifically a confirmatory factor analysis) was conducted as the first step to carrying out a full SEM to test the associations that exist among the variables of interest. SEM was chosen because it provides a robust basis for assessing the relationship between numerous variables that appear in a complex manner (Blanco-Encomienda & Rosillo-Díaz, 2021; Hair et al., 2017; Leguina, 2015).

Measures

EI being a latent variable was measured using a five-point Likert scale adapted from earlier empirical studies conducted by Boldureanu *et al.* (2020) and Kautonen, van Gelderen & Tornikoski (2013). In all, EI had 6 measurement items.

Attitude (A) is an unobserved variable but measured with the help of a five-point Likert scale adopted from Kautonen, et al. (2013). Attitude was measured with 5 items.
PBC was also measured using a five-point Likert scale because the variable is a latent variable. The measurement was adopted from Kautonen, et al. (2013). PBC was measured with 4 items.

Subjective Norm (SN) which is part of the pillar of TPB was also measured using a five-point Likert scale adopted from Kautonen *et al.* (2013). SN was measured using 4 items.

Role of University (UER) measure was adapted from the study conducted by Pugh *et al.* (2018). UER had six measurement items in all.

Measurement items for all measures are listed in Appendix 1.

Findings

500 questionnaires were circulated to university students via the internet. A total of 436 questionnaires were completed and retrieved. This gave a response rate of 87.2%. Through data screening, 23 incomplete and invalid questionnaires were rejected. Thus, a total of 413 were valid and used for the analysis.

From Table 1, male respondents were the majority (317, 76.8%). This confirms the data from the National Accreditation Board (NAB) of Ghana, where male students dominate
at the tertiary level of education. The number of undergraduates for this study dominated as compared to postgraduate students (Undergraduate=235, 56.9%; Postgraduate=178, 43.1%).

Table 1: Respondents' Background Information

	Description	Frequency	Percent	Cumulative Percent
Gender	Male	317	76.8	76.8
	Female	96	23.2	100
Programme	Undergraduate	235	56.9	56.9
	Postgraduate	178	43.1	100
`Year	First Year	110	26.6	26.6
	Second Year	32	7.7	34.3
	Third Year	29	7.0	41.4
	Fourth Year	64	15.5	56.9
	Fifth Year	146	35.4	92.2
	Sixth Year	32	7.7	100
	Total Sample Size (N)	413	100.0	

For the factors to demonstrate strong convergent validity, the AVE index estimated should be greater than 0.5 (Hair et al., 2017; Leguina, 2015; Afthanorhan, Ahmad & Mamat, 2014). The AVE estimates for all the variables were above the threshold. This bolsters the internal consistency of the test items to conduct further factor analysis. Composite reliability (CR) also measures the internal consistency of the measurement items, and the agreed minimum threshold is set at 0.7 (Hair et al., 2017; Leguina, 2015; Afthanorhan et al., 2014). From Table 2 the CR for all the items were greater than 0.7.

The inter-item correlation between the independent variables for this study showed the absence of multi-collinearity (see Table 3). The various inter-item correlation did not cross the borderline of 0.7 to indicate high correlation between the items (Daoud, 2017; Mishra, 2017).

Table 2: Validity Estimations

Variables	Items	Factor Loading	AVE	CR
Entrepreneurship Intention (EI)	EI4	0.827	0.722804	0.939499
	EI5	0.932		
	EI6	0.726		
	EI7	0.789		
	EI8	0.893		
	EI9	0.915		
Attitude (A)	A10	0.968	0.834778	0.96187
	A11	0.867		
	A12	0.905		
	A13	0.933		
	A14	0.892		
Subjective Norm (SN)	SN15	0.82	0.669738	0.89016
	SN16	0.845		
	SN17	0.778		
	SN18	0.829		
Perceived Behavioral Intention (PBC)	PBC19	0.836	0.662746	0.886932
	PBC20	0.768		
	PBC21	0.788		
	PBC22	0.861		
University Entrepreneurial Role (UER)	UER23	0.829	0.810064	0.962241
	UER24	0.932		
	UER25	0.952		
	UER26	0.806		
	UER27	0.943		
	UER28	0.927		

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Table 3: Component Correlation Matrix

	EI	A	SN	PBC	UER
EI	**1**				
A	0.698	**1**			
SN	0.402	0.469	**1**		
PBC	0.454	0.380	0.504	**1**	
UER	0.436	0.439	0.221	0.653	**1**

The rule of thumb for establishing discriminant validity using the Fornell-Larcker criterion is that the square root of AVE for the latent variables within the model should be greater than inter-item correlation value among the latent variables (Afthanorhan, Ghazali & Rashid., 2021; Henseler Ringle, and Sarstedt, 2015). The estimated Fornell-Larcker values are placed on the principal diagonals of the Table 4.

Table 4: Discriminant Validity: Fornel-Larcker Criterion Tests

	EI	**A**	**SN**	**PBC**	**UER**
EI	**0.850**				
A	0.698	**0.914**			
SN	0.402	0.469	**0.818**		
PBC	0.454	0.380	0.504	**0.814**	
UER	0.436	0.439	0.221	0.653	**0.900**

Table 5: Discriminant Validity: Heterotrait-Monotrait (HTMT)

	EI	**A**	**SN**	**PBC**	**UER**
EI					
A	0.853				
SN	0.757	0.892			
PBC	0.754	0.702	0.655		
UER	0.703	0.656	0.605	0.793	

Henseler et al. (2015) developed a unique method for evaluating discriminant validity: the heterotrait-monotrait ratio of correlations (HTMT). The HTMT gauges how comparable latent variables are. The rule of thumb for HTMT criterion is that discriminate validity is established when HTMT is less than 0.9 (Henseler et al., 2015). None of the estimated HTMT values were greater than 0.9 and this indicates the establishment of discriminate validity (see Table 5).

To determine the reliability of the individual items, Cronbach's alpha was estimated. The rule of thumb is that the index should be greater than 0.7 (Bonett and Wright, 2015;
Journal, Vaske, Beaman & Sponarski, 2017). From Table 6, all the measurement items attained internal consistency in measuring their respective variables. With the internal consistency bolstered, the next step was the conduction of confirmatory factor analysis.

Table 6: Reliability Scores

	Cronbach's α	**No. item**
EI	0.847	6
A	0.917	5
SN	0.852	4
PBC	0.811	4
UER	0.816	6

The study had four independent variables (attitude, subjective norm, perceived behavioral control and university entrepreneurial role) and a dependent latent variable. All these variables were put into a single multifactorial confirmatory factor analysis (CFA) using AMOS 18. The maximum likelihood estimation was used seeing that the study performed CFA.

The model fit was estimated using Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA) model fit criteria. Per the CFI, a model is fit if the estimated index is greater than 0.95 (Cangur & Ercan, 2015; Lai & Green, 2016). From Table 7 above, the estimated CFI is 0.968, indicating a good fit. Also, TLI should be greater than 0.95 (Bouwstra et al., 2019). Again, TLI in this study was greater than the minimum threshold (TLI=0.974). RMSEA was 0.004 which is regarded as a "close fit" (Garrido, Abad & Ponsoda, 2016; Hair et al., 2017; Kenny, Kaniskan & Mccoach, 2015). The total variance explained in this model was 79.64%.. Thus, the conjectured model can explain the variation in the dependent variable up to 79.64% with only 20.36% being explained by factors outside of this model. To test the hypotheses, the study used SEM in AMOS 18.

Table 7: Fit Measures

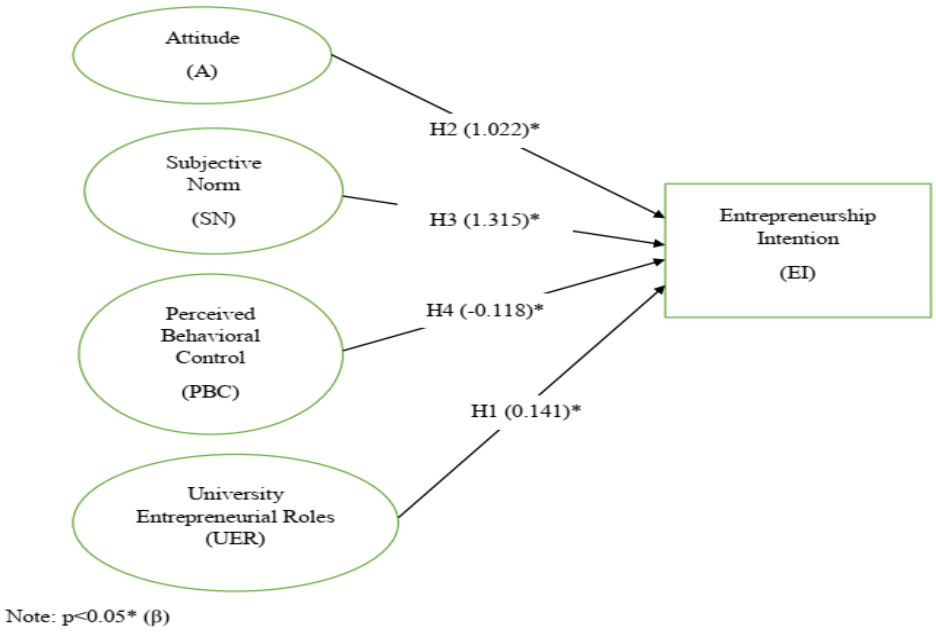
			RMSEA 90% CI	
CFI	TLI	RMSEA	Lower	Upper
0.968	0.974	0.004	0.179	0.189

See Figure 3 below for standardized estimates for the model. Results from Table 8 above indicates H1 ($p<0.014$, t-value=2.474, $\beta=0.14$) was supported. Thus, there is a significant positive relationship between university entrepreneurial role and student EI. H2 ($p< 0.001$, t-value=13.447, $\beta=1.02$) was affirmed in this study. Simply, there is a positive significant relationship between attitude and student EI within the university. H3, which postulates that there is a significant positive relationship between subjective
norm and student EI, was also supported ($p< 0.001$, t-value=5.164, $\beta=0.315$). H4 was not supported in this study ($p< 0.001$, t-value=-3.806, $\beta=-0.118$). Earlier studies from Fang *et al.* (2017), and McDonald & Crandall (2015) had found a positive association.

Table 8: Standardized Structural Coefficients of the Model

	Estimate	S.E.	t-value	P	Hypotheses	Decision
Intercept	1.7029	0.485	3.511	< 0.001		
EI←UER	0.141	0.057	2.474	< 0.014	H1	**Supported**
EI←PBC	-0.118	0.031	-3.806	< 0.001	H4	**Not Supported**
EI←SN	0.315	0.061	5.164	< 0.001	H3	**Supported**
EI←A	1.022	0.076	13.447	< 0.001	H2	**Supported**

Figure 3: Standardized Estimates for the Model



Discussion

We have divided our discussion section into five sections: i) the role of the university, ii) influence of universities to stimulate entrepreneurial intention, iii) influence of attitude on entrepreneurial intention, iv) influence of subjective norms on entrepreneurial intention, and v) influence of perceived behavioral control on entrepreneurial intention.

The Role of the University

The need to drive entrepreneurial desires and attitudes among youths, and students has been comprehensively stated from this study and those of earlier studies (Fang et al., 2017; McDonald & Crandall, 2015). Universities, even though they may be diverse, holistically contribute to creating the desired levels of entrepreneurial interest and intention among students (Amanamah et al., 2018; Denanyoh et al., 2015). What is thus required is the design of approaches and strategies that work better in the context of a specific country (Ghana in this instance). Through innovative approaches, universities can collaborate with society and industry to bring about the desired level of entrepreneurial spirit among students. It must be stated that creating of such behavioral interest is better defined and implemented through the theory of planned behavior, as can be seen in earlier empirical studies (Amanamah *et al.*, 2018; Denanyoh *et al.*, 2015; Fang *et al.*, 2017; McDonald and Crandall, 2015). Entrepreneurial desires and attitude of students must be modeled within the right environment, and universities are better situated to provide such learning encounters. The efforts made by universities in Ghana are commendable, even though they are at their early stages

of growth (Nyadu-Addo & Mensah, 2018). There is the need to consolidate such efforts and programs with clear and empirical studies to better inform policy and curriculum development.

The university is indeed the citadel of learning and shaping of tomorrow's entrepreneurs, and failure to anchor such university efforts within society and industry will lead to failure rather than the anticipated sustainability. Industry participation in creating entrepreneurial minds in students cannot be underestimated (Amanamah *et al.*, 2018; Denanyoh *et al.*, 2015; Nyadu-Addo & Mensah, 2018). Mobilizing and transferring entrepreneurial experience by engaging guest lectures and conducting workshops is rightly in line and should be encouraged throughout entrepreneurship programs in universities. This has the potential to increase students' interest, since they see industry players as role models (Campopiano, Minola & Sainaghi., 2016).

Influence of Universities to Stimulate Entrepreneurial Intention

This article has provided an empirical basis within the Ghanaian context on the need to leverage on universities to stimulate students' EI [H1 ($p<0.014$, t-value=2.474, $\beta=0.14$)]. As students undergo entrepreneurial education in the university, there is a high possibility that they will create their own businesses in the future. This finding corroborates earlier studies conducted by Zhang *et al.* (2014), Malebana (2014), and Nyadu-Addo & Mensah (2018). Particularly the works of Nyadu-Addo & Mensah (2018) in Ghana strongly demonstrate that, as students are taken through entrepreneurship education, they create their own businesses after completing university.

Mentoring, coaching, entrepreneurship clinics and incubators, as exist in Kwame Nkrumah University of Science and Technology (KNUST) and the University of Cape Coast, have the tendency to drive higher the interest of students towards entrepreneurship (Nyadu-Addo & Mensah, 2018). Building the entrepreneurship ecosystem around the various universities is key to attaining sustainable entrepreneurship growth and development in Ghana and beyond. Driving such student interest and intention with society in mind is key. This streams from the fact that students tap their values from society, and as society perceives entrepreneurship as good and key to sustainable development, it is important to model entrepreneurship education around such good social norms.

Influence of Attitude on Entrepreneurial Intention

H2 was supported in this study ($p< 0.001$, t-value=13.447, $\beta=1.02$). This significant positive relation between attitude and student EI is supported by earlier studies conducted by Luthje & Franke (2003) and Souitaris, Zerbinati & Al-Laham (2007). The Souitaris *et al.* (2007) study used an experimental design framework that showed the attitude of science and engineering students was stimulated towards entrepreneurship as they went through entrepreneurship programs in university. More so, in the study by Luthje & Franke (2003) it was revealed that there was favorable attitude of MIT students towards the creation of their own jobs.
Understanding the dimensions of attitudes, and the indicators of student attitude, is important. Student attitudes towards EI are subject to change within educational settings. For instance, the educator and educational environment may bolster student entrepreneurial activity. This finding further consolidates our understanding of the theory of planned behavior as a student's attitude impacts intention.

Influence of Subjective Norms on Entrepreneurial Intention

H3, which postulates that there is a significant positive relationship between subjective norms and student EI, was supported ($p < 0.001$, t-value=5.164, β=0.315). This finding confirms earlier studies conducted by Malebana (2014) and Pedrini *et al.* (2017). Universities should offer entrepreneurship programs that project good societal values, a point supported by this study.

Within educational environments it is prudent to incorporate subjective norms to educating students who are the future leaders of business. It is therefore paramount to identify those subjective norms that bolsters students' intention to become entrepreneurs and drive business engagements. The positive association between subjective norms and student EI is also confirmed in the study by Bhuyan and Pathak (2019). Emphasis on subjective norms is because students come from varied cultural and societal backgrounds, and forming EI is therefore influenced by these societal norms.

Influence of Perceived Behavioral Control on Entrepreneurial Intention

H4 was not supported in this study ($p < 0.001$, t-value=-3.806, β=-0.118). Earlier studies from Fang *et al.* (2017) and McDonald and Crandall (2015) had found a positive association. The negative significant association identified between perceived behavioral control and entrepreneurial intention is consistent with a study by Mohammed et al. (2017). The reason for this negative association could be arising as a result of context, the location of the study, and the population adopted for the study as was the case for the study conducted by Mohammed et al. (2017).

Whether necessary opportunities and resources are present or not is the subject of perceived behavioral control. They manifest via a factoring of the relevance or strength of each control attribute by the individual's perception of the power of the relevant control attribute. Focus on perceived behavioral control must be whether the control is internal or external, that is personal capabilities and situational characteristics respectively (Maes et al. 2014). The educational institution must be able to understand whether the individual's perceived behavioral control arise from personal capabilities or from situational characteristics so as too carefully design entrepreneurial programs.

Conclusion: Limitations and Further Research

The generalizability of our results is limited given our sampling and discussions were focused on the university and entrepreneurial ecosystem of Ghana. Therefore, care must be taken when generalizing our reported results to other developing countries. We have limited our discussion of implications to Ghana, taking care not to suggest direct applicability of our results to other African and developing countries. Future studies should replicate our investigation in other developing economies to further understanding of the generalizability of this study, and to discover the possible impact of contextual factors. Regardless of this limitation, this study has made empirical contributions to the study of student EI and highlighted the important role that universities play in student development. As we have demonstrated, blending social norms and the entrepreneurial role of the university is key to creating a sustainable entrepreneurial ecosystem (cf., Malebana, 2014; Nyadu-Addo & Mensah, 2018; Pedrini *et al.*, 2017).

An additional limitation of our study is that the investigation was limited to a set of four possible predictors of student EI. Further studies could focus on individual factors, and on the outcomes of university efforts (such as mentoring and coaching) in the shaping of student EI and sustainable entrepreneurial ecosystems. For example, a study could examine mentoring within the university as a stimulant of student entrepreneurship in developing countries. Likewise, future studies within Ghana, and in other developing countries, could investigate how entrepreneurship clinics and incubators in universities have stimulated student entrepreneurship while using TPB a theoretical foundation.

In conclusion, this study has shown the importance of entrepreneurial education, attitude, and subjective norms in the shaping of student EI in the developing economy of Ghana. It is our hope that the results reported in this study can assist those working to understand and develop the entrepreneurial ecosystem in other developing countries.

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Appendix 1: Measurement Items

Scale	Items (response options strongly disagree=1 to strongly agree 5)
Entrepreneurial Intention[a]:	
E1	I intend to take steps to start a business in the next 12 months.
E2	I am willing to make every effort to become an entrepreneur.
E3	I have serious doubts that one day I will end up creating a business.
E4	I am determined to create a business in the future.
E5	My professional goal is to become an entrepreneur.
E6	It is likely that one day I will start a business.
Attitude[b]:	
A1	For me, taking steps to start a business in the next 12 months would be attractive.
A2	For me, taking steps to start a business in the next 12 months would be useful.
A3	For me, taking steps to start a business in the next 12 months would be positive.
A4	For me, taking steps to start a business in the next 12 months would be important.
A5	For me, taking steps to start a business in the next 12 months would be inspiring.
Subjective Norm[b]:	
SN1	My closest family members think that I should take steps to start a business in the next 12 months.
SN2	My best friends think that I should take steps to start a business in the next 12 months.
SN3	People who are important to me think that I should take steps to start a business in the next 12 months.
SN4	My lecturers close to me think that I should take steps to start a business in the next 12 months.
Perceived Behavioral Control[b]:	
PBC1	If I wanted to, I could take steps to start a business in the next 12 months.
PBC2	If I took steps to start a business in the next 12 months, I would be able to control the progress of the process to a great degree myself.
PBC3	It would be easy for me to start a business in the next 12 months.
PBC4	If I want to take steps to start a business in the next 12 months, no external factor, independent of myself, would hinder me in taking such action.
University Entrepreneurial Roles[c]:	
UER1	Mobilizing and transferring entrepreneurial experience by engaging Guest lectures and conducting workshops.
UER2	Creating an entrepreneurial culture and ecosystem by engaging the community and opinion leaders through Campus in the City's Events.
UER3	Conducting world-class research into entrepreneurship (and associated areas), which underspin all activities.
UER4	Playing leadership or governance roles in region and strengthening local economies networks.
UER5	Providing programmes and services to businesses in locality to enhance growth, resilience, and vitality.
UER6	Educating current and next generation of entrepreneurs, managers, innovators to increase creative capital of region.

Scale Sources:

[a] Kautonen, van Gelderen and Fink (2013) and Boldureanu et al. (2020)

[b] Kautonen, van Gelderen and Fink (2013)

[c] Pugh et al. (2018)