

The influence of the university entrepreneurial ecosystem on the entrepreneurial intentions of students in Vietnam

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Abstract

Purpose – The paper aims to explore the intricate relationship between the university entrepreneurial ecosystem and the entrepreneurial intentions of students in Vietnam.

Design/methodology/approach – By using the structural equation modelling approach, the study examines how various components of the ecosystem – including entrepreneurship policy, access to culture and entrepreneurial education – influence students' motivation to pursue entrepreneurial ventures.

Findings – The findings reveal that a robust entrepreneurship education significantly enhances students' entrepreneurial intention, while the theory of planned behaviour construct is insignificant for business administration majors. Entrepreneurship education mediates the relationship between entrepreneurial policy and intention, with notable differences between public and private university systems.

Originality/value – This research provides valuable insights for educators and policymakers seeking to create a more conducive environment for fostering entrepreneurship among university students in Vietnam.

Keywords University entrepreneurship ecosystem, Entrepreneurial intention, Public/private university system, SEM, Vietnam

Paper type Research paper

1. Introduction

The entrepreneurial ecosystem plays a crucial role in fostering start-up growth, economic innovation and job creation (Cao and Shi, 2021; Opute *et al.*, 2021). According to Isenberg (2011), it comprises various independent domains – government agencies, educational institutions, entrepreneurial networks and investors – each offering essential resources and expertise to support business ventures. A robust entrepreneurial ecosystem promotes



creativity, risk-taking, mentorship, networking and knowledge sharing, facilitating the commercialisation of innovative ideas (Clayton *et al.*, 2018; Audretsch *et al.*, 2019; Nicotra *et al.*, 2018). It also provides legal support to reduce market entry barriers, enabling sustainable growth and scalability (Spigel and Harrison, 2018; Stam and Van de Ven, 2021).

Educational institutions play a central role in this ecosystem by inspiring entrepreneurship, offering resources and driving innovation during all entrepreneurial stages, from idea formation to growth (Lehmann *et al.*, 2020; Rice *et al.*, 2014). Universities advance public knowledge, promote civic engagement and foster interdisciplinary collaboration, influencing students – the key agents of societal transformation (Ashcroft, 1987; Frost, 2011; Nielsen and Gartner, 2017). Evaluating the impact of university-level entrepreneurial ecosystems on business students' entrepreneurial intentions provides benchmarks for their effectiveness in shaping future entrepreneurs (e.g. Appendix Table A1). Global research underscores the influence of university entrepreneurial ecosystems on students' entrepreneurial intentions, with evidence from studies across China (Zhang *et al.*, 2022; Magasi *et al.*, 2023), Saudi Arabia (Elnadi and Gheith, 2021), India (Chengalvala and Rentala, 2017) and other regions (Nowiński *et al.*, 2019). However, theoretical inconsistencies and varying impacts of factors like entrepreneurial culture, policies and organisational structure highlight the importance of context (Abdullahi *et al.*, 2021; Turker and Sonmez Selçuk, 2009; Jarpa *et al.*, 2020). Tran's (2024) bibliometric analysis identifies a need for more research on the influence of university type (public vs private) on entrepreneurial intentions. Moreover, some studies suggest education's impact on entrepreneurial intention may be insignificant (Byabashaija and Katono, 2011; Bae *et al.*, 2014), mediated by external factors (Duong, 2022; Adu *et al.*, 2020) or non-existent (Praag and Ophem, 1995; Kusumojanto *et al.*, 2020). Serbian research revealed only 10.8% of entrepreneurs held university degrees, with most having lower educational attainment (Stefanović and Stošić, 2012), a pattern linked to job dissatisfaction or unemployment-driven necessity. Deli (2011) contends that less-skilled individuals are not inherently entrepreneurial, while opportunity-driven entrepreneurship often involves highly skilled actors. Supporting this, cross-national data show self-employment rates of 1.7% among Malaysian graduates (Mohamad *et al.*, 2015), 7% in Vietnam (Ministry of Education and Training, 2024) and 8–15% in Europe (European Commission, 2025), highlighting the complex, context-dependent relationship between education and entrepreneurial intentions.

In Vietnam, there has been a growing emphasis on developing university-based entrepreneurial ecosystems through targeted policies, including the Youth Entrepreneurship Support Program (2022–2030), National Start-up Day and the Vietnam-Finland Innovation Partnership Program Phase 2 (2014–2018). Key initiatives, such as the Project on Supporting students and Pupils in Entrepreneurship (2017–2025), aimed to equip 90% of students with entrepreneurial skills by graduation, a goal achieved according to the Ministry of Education and Training's 2023 review. These efforts have strengthened Vietnam's national entrepreneurial landscape and laid a foundation for evaluating the role of higher education in fostering entrepreneurship. However, these positive signs are like the tip of the iceberg. Vietnamese higher education is still struggling with inherent obstacles in developing effective entrepreneurship programs. Two persistent problems facing entrepreneurship education in Vietnam, in general and higher education in particular, include inadequate government involvement, coupled with inherent shortcomings of the education system. Based on Doan (2021), performance metrics from national assessments show systemic weaknesses, with entrepreneurship curricula scoring below 2 out of 5 points at the primary level and only 3 points at universities. These discouraging results reflect a downward trajectory over the five years from 2013 to 2017, illustrating how educational institutions

remain vulnerable when it comes to innovation-focused programs. The second important challenge to entrepreneurship education in Vietnam lies in the systemic limitations in the university system. According to the Global Entrepreneurship Index (GEI), the research of [Pham Thi and Ngo Minh \(2022\)](#) recognised that Vietnam's entrepreneurial ecosystem demonstrates strengths in opportunity perception, start-up skills, market size and experiential learning, yet lags in institutional networking, education, cultural support and risk acceptance.

This article addresses two key challenges: the complex role of university entrepreneurial ecosystems in shaping students' entrepreneurial intentions and the lack of differentiation among student demographics, such as academic backgrounds, cultures or prior entrepreneurial exposure. Using the SEM structural model, grounded in the Theory of Planned Behaviour and ecosystem components (policies, education, culture and support), this study pursues three objectives. First, it identifies factors within the entrepreneurial ecosystem influencing students' entrepreneurial intentions. Second, it uses the extended TPB framework to provide empirical evidence, examining mediating variables affecting business administration students' intentions. Finally, it explores the influence of institutional contexts (public vs private universities), focusing on Vietnam. The study relies on literature-based hypotheses, surveys across three Vietnamese universities and SEM analysis, with findings, implications and recommendations presented in Section 4.

2. Theoretical framework and hypotheses

The definition of a start-up ecosystem is diverse. This is because it is defined in various ways, at different scales and through studies with different designs and data based on various entrepreneurship concepts. Among these, the ideas articulated by [Isenberg \(2011\)](#), [Spigel \(2017\)](#), [Mason and Brown \(2014\)](#), [Spilling \(1996\)](#), [Stam \(2015\)](#) and [Theodoraki and Messeghem \(2017\)](#) have influenced the most recent investigations. The diversity of start-up ecosystems is also reflected in their configurations, as they depend on the socio-cultural attributes, infrastructure, economic structures and specific institutional gaps of each region and locality selected for study ([Spigel, 2017](#)). To establish a specific theoretical framework and ensure coherence for the proposed research hypotheses, this article adopts concepts ranging from the macro to the micro level as follows:

Firstly, Austrian economics emphasises that social science explanations must begin with the subjective mental states of individuals ([Horwitz, 1994](#)). Thus, any analysis of the relationship between entrepreneurial ecosystems and entrepreneurial ideas that fails to consider individuals' thoughts, feelings, judgments and perceptions ([Storr, 2010](#)) is incomplete. This paper, therefore, hypothesises that economic activity is rooted in individuals' knowledge of the economy, justifying research focused on business administration students. It also supports using the theory of planned behaviour to mediate the relationship between the entrepreneurial ecosystem and students' entrepreneurial intentions. [Kolvereid \(1996\)](#) contends that stronger perceived behavioural control increases the intention to start a business, and entrepreneurial intention is the most widely studied precursor to entrepreneurship ([Ferreira et al., 2012](#)). Intention reflects students' thoughts, feelings and evaluations of entrepreneurship, aligning with the Austrian school's theoretical foundation. On the other hand, this school of thought uses the term "Serendipity Economy" to describe the structure of the economy as "an emerging and unpredictable economic model unfolding in the future, not in a linear manner, but through randomness and circumstances" ([Rasmus and Rasmus, 2016](#)), which is highly relevant to the context and conditions of Vietnam.

Next, the concept of a start-up ecosystem chosen in this article is [Stam's \(2015\)](#) definition: "An entrepreneurial ecosystem is a set of interdependent actors and coordinated factors that lead to productive entrepreneurship in a particular region". This concept is

particularly suitable for developing countries, where fostering entrepreneurial spirit can drive economic growth and development by addressing resource scarcity and institutional gaps through leveraging local resources and the active participation of educational institutions (Mwatsika, 2018; Bamfo *et al.*, 2023).

On the other hand, by adhering to Stam's (2015) concept, the article also acknowledges the interdependence and causality of factors within the start-up ecosystem (Wurth *et al.*, 2023). In this context, the networks and relationships among domains within the start-up ecosystem determine its configuration and development, thereby influencing entrepreneurial motivation (Fernandes and Ferreira, 2022). Because the start-up ecosystem in this article is confined to the university setting, its configuration is based on the Babson College model, which includes eight key components: Education, Research and Development, Access to Capital, Support Networks, Policy, Markets, Infrastructure and Cultural Attitudes towards Entrepreneurship.

Finally, according to the Austrian School of Economics, entrepreneurial intention is considered a driver of innovation and development (Bylund, 2020; Novak, 2021), but it is a subjective phenomenon influenced by personal values, experiences and attitudes towards risk and opportunity (Schwarz *et al.*, 2009; Holcombe, 2009). Therefore, the Theory of Planned Behaviour framework is employed in this article as a mediating variable to study the relationship between the university start-up ecosystem and students' entrepreneurial intentions.

2.1 Theory of planned behaviour and intentions

The Theory of Planned Behaviour (TPB), a widely recognised theory in social psychology, explains human behaviour in decision-making through three key factors: attitude towards the behaviour, subjective norms and perceived behavioural control, which collectively shape behavioural intention (Ajzen, 1991; Kautonen *et al.*, 2015; Krueger and Carsrud, 1993). The main components of this theory include:

- Attitudes Towards the Behaviour (AT) reflect an individual's evaluation of the positivity or negativity of a behaviour, representing beliefs and values about the outcomes of that behaviour. This component encompasses three aspects: cognitive, affective and behavioural (Ostrom, 1969; Garcia-Santillan *et al.*, 2012). The interaction among these aspects constitutes the individual's attitude towards the behaviour, which is a necessary condition for predicting actual behaviour through the principle of attitude consistency (Breckler, 1984; Bentler and Speckart, 1979).
- Subjective Norms (SN) refer to an individual's perception of social pressure regarding their likelihood of engaging in a specific behaviour. These norms are shaped by cultural values, legal frameworks, collective regulations (forming injunctive norms) and empirical observations (forming descriptive norms). Injunctive norms guide acceptable behaviour based on societal expectations, while descriptive norms offer insights into actual behavioural patterns observed within groups.
- Perceived Behavioural Control (BC) reflects an individual's belief in their ability to perform a specific behaviour, influenced by personal competence, prior experience and external environmental factors (Fishbein and Cappella, 2006).

These three components interact with one another and collectively influence behavioural intention (EI), which serves as the direct precursor to actual behaviour (Hagger *et al.*, 2022; La Barbera and Ajzen, 2020). By integrating cognitive, social and environmental factors, the Theory of Planned Behaviour (TPB) provides a framework for modifying, encouraging and intervening in behaviour within a social context (Ajzen and Schmidt, 2020; Ajzen, 2020).

Based on the TPB framework and the research objectives, the article proposes the following related hypotheses:

H1. Antecedents of TPB (AT, SN, and BC) positively influence EI.

H2. SN positively affects both AT and BC.

2.2 University entrepreneurship ecosystem

The university entrepreneurship ecosystem is a dynamic framework that drives innovation, creativity and economic growth within academic institutions and their communities, fostering entrepreneurial talent and supporting the commercialisation of research and ideas (Rice *et al.*, 2014; Matt and Schaeffer, 2018).

The entrepreneurship ecosystem model selected for universities is based on the model of Babson College, which consists of eight groups of factors. However, due to limitations in the data collection process, the configuration of the entrepreneurship ecosystem at the universities participating in the study includes only the factors of Education, Support, Policy and Cultural Attitudes towards entrepreneurship.

2.2.1 Entrepreneurship education. The Marxist perspective emphasises that humans are central to mastering nature, driving material production and shaping society's productive forces (Wright *et al.*, 1992). Enlightenment philosopher Jean-Jacques Rousseau similarly noted, "Nature forms the physical human being; education shapes the spiritual human being" (Rousseau, 2008). In an entrepreneurial ecosystem, while various organisations contribute to creating and circulating material value, universities uniquely generate spiritual value and provide the workforce essential for material production. The quality of human resources, particularly developed through higher education, significantly impacts national development. Notably, universities rank as a crucial component of entrepreneurial ecosystems, second only to intrinsic innovation factors, underscoring their role in fostering and advancing regional and national ecosystems (Taich *et al.*, 2016). Research consistently highlights the vital role of entrepreneurial education in universities in strengthening ecosystems and encouraging entrepreneurial intentions (Mei *et al.*, 2020; Maresch *et al.*, 2016; Iwu *et al.*, 2021; Kusumojanto *et al.*, 2021; Liu *et al.*, 2019; Wegner *et al.*, 2020). This forms the foundation for proposing the hypothesis:

H3. Entrepreneurial education positively influences the TPB structure.

2.2.2 University support. Universities have evolved from being a part of the entrepreneurial ecosystem to becoming central hubs for early-stage entrepreneurial activities (Allahar and Sookram, 2019). Beyond being centres of knowledge and expertise, they connect professionals in fields like law and accounting with entrepreneurial needs (Williams Middleton *et al.*, 2020). University experts often advise entrepreneurs, helping refine ideas and improve technical, technological and operational aspects while mitigating risks (Breznitz *et al.*, 2019). They also directly support student entrepreneurs by providing institutional funding and resources, reducing financial risks. In addition, universities play a crucial role in evaluating, testing and advancing student entrepreneurial ideas into viable products ready for commercialisation (Sorokin *et al.*, 2022). In Vietnam, the Ministry of Education and Training's Project 1665, "Supporting students and Pupils in Entrepreneurship by 2025," positions universities as key supporters, offering experience, incubation and connections to investment funds. Studies confirm that universities significantly influence students' entrepreneurial intentions through various support mechanisms (Anjum *et al.*,

2020; Lu *et al.*, 2021; Bazan *et al.*, 2019; Liu *et al.*, 2022). Based on this, the article proposes the following hypothesis:

H4. University support positively correlates with the structure of TPB.

2.2.3 Entrepreneurial culture. The university ecosystem not only promotes the development of essential skills and competencies but also fosters a supportive entrepreneurial culture that nurtures entrepreneurial intentions (Solesvik *et al.*, 2014; Sajjad *et al.*, 2012; Piperopoulos, 2012). Entrepreneurial culture reflects the values, beliefs and norms surrounding risk-taking and mutual support within an organisation (Hayton and Cacciotti, 2013). Empirical studies, including those by Solesvik *et al.* (2014), Porfirio *et al.* (2023) and Huyghe and Knockaert (2015), highlight its connection to entrepreneurial intentions. This article proposes the following hypothesis to explore this relationship in Vietnam:

H5. Entrepreneurial culture positively influences the TPB structure.

2.2.4 Entrepreneurship policy. The theoretical foundation for considering education as a mediating variable in the relationship between entrepreneurship policies and entrepreneurial intentions is based on Hoppe (2016). This perspective views the shift of entrepreneurship education from an economic to an educational context as a response to increasing policy emphasis on integrating entrepreneurship into the educational system (Berglund and Holmgren, 2013). Mahieu (2006) demonstrates that policy shapes the implementation and integration of entrepreneurship education at various levels. Entrepreneurship policy (ES) is interpreted in multiple ways, ranging from macro- to micro-environments, all of which influence the entrepreneurial process (Mamun *et al.*, 2017), including the effects of the cultural environment on entrepreneurship (Gasse and Tremblay, 2011).

University entrepreneurship policies involve strategies and support measures designed to promote entrepreneurial spirit (Mamun *et al.*, 2017). Research by Fayolle and Gailly (2015), Hayter *et al.* (2018), Huang *et al.* (2021) and Murad *et al.* (2024) highlights the diverse and complex effects these policies have on students' entrepreneurial intentions, influenced by the specific components of the policies. Key initiatives often include integrating entrepreneurship into the curriculum, offering experiential learning through incubators, mentorships and industry networks (Åstebro *et al.*, 2012; Braunerhjelm, 2007; Audretsch *et al.*, 2019), and shaping perceptions of entrepreneurship as a career path (Krueger *et al.*, 2000; Passavanti *et al.*, 2023; Yao *et al.*, 2016; Guerrero *et al.*, 2020). The literature underscores the significant role of such policies in fostering entrepreneurial skills, mindsets and broader ecosystems for students (Huang *et al.*, 2021), necessitating further research to optimise their impact.

In addition, these policies influence entrepreneurship education (Berglund and Holmgren, 2013; Huang *et al.*, 2020), build a culture of innovation (Jabeen *et al.*, 2017) and provide critical support for aspiring entrepreneurs (Liguori *et al.*, 2018; Yi, 2021).

This serves as the essential basis and groundwork for putting forward and proposing the stated hypothesis:

H6a. University entrepreneurship policies (EP) positively impact students' entrepreneurial intentions (EI).

H6b. Entrepreneurship policies (EP) positively affect entrepreneurship education activities (EE).

- H6c. Entrepreneurship policies (EP) positively influence university support for entrepreneurial activities.
- H6d. Entrepreneurship policies (EP) positively contribute to the university's entrepreneurial culture.
- H7. Other elements within the entrepreneurial ecosystem mediate the relationship between entrepreneurship policies (EP) and entrepreneurial intentions (EI).

2.3 Institutional framework and university entrepreneurial ecosystem

According to [Marginson \(2006\)](#), higher education institutions are classified into three types: elite research universities, emerging research universities and universities of applied sciences and professional colleges. Each type differs in orientation, functions, structure and policies, as shown in [Table 1](#) below.

The higher education system in Vietnam, while not differentiated according to this structure, can be observed through the amended 2018 Law on Higher Education. Public universities in Vietnam generally align with the potential research group, whereas most private universities fall under the application-oriented group. Consequently, the differences in these environments lead to varying entrepreneurship policies. Public universities receive more government support, possess greater prestige and have a stronger research orientation, which enables them to have higher potential for advanced technology transfer. In contrast, private institutions may focus on commercialisation and attracting venture capital due to their flexible collaboration policies and broader investment networks.

The coexistence of these two types of institutions offers opportunities for fostering an entrepreneurial ecosystem, but also poses challenges for policymakers in devising effective strategies. Research shows that the interaction between public and private universities significantly shapes university entrepreneurship policies, influencing innovation and economic development ([Salamzadeh et al., 2015](#)). However, other studies argue that institutional differences do not markedly affect entrepreneurial intentions ([Canever et al.,](#)

Table 1. Segment of higher education organisations

Segment 1	Advanced research university	Characterised by autonomy in education and research, a prestigious reputation, high-quality performance, and proficient students. Operates on a limited training scale with substantial resources. Development driven by social status and power, featuring a rigorous and selective admission process
Segment 2	Potential research universities	Emerging research universities are aiming for Segment 1 status but are lacking significant achievements in research and education. Face brain drain as top talent migrates to Segment 1. Participate in limited, inefficient revenue-generating activities. Operate with constrained resources and relatively open admissions
Segment 3	Applied universities and professional colleges	These institutions, often private or commercialised public entities, focus on training but face limited resources. Dependent on revenue and enrollment, they prioritise cost and quality balance, incur high marketing expenses, and operate under strong market pressures with completely open admissions

Source(s): [Marginson, 2006](#), p. 8

2017; Dubey, 2022). This article investigates the impact of university types on the entrepreneurial ecosystem and intentions through the following hypotheses:

- H8. University type (IF) positively impacts university entrepreneurship policies (EP).
- H9. Elements of the entrepreneurial ecosystem mediate the link between university type (IF) and students' entrepreneurial intentions (EI).
- H10. University type moderates the relationship between entrepreneurship policies (EP) and entrepreneurial intentions (EI), with this relationship being stronger in public universities than in private ones.

3. Method

3.1 Participants, survey and procedure

An experimental study was conducted based on a survey of Business Administration students at three universities in Ho Chi Minh City, Vietnam. The selection of students with an economic background ensures that entrepreneurial intentions (EI) can be established (Davidsson and Honig, 2003). Specifically, 900 questionnaires were distributed to Business Administration students at Ho Chi Minh City University of Law, Ho Chi Minh City University of Banking and Van Lang University. The questionnaires were screened to ensure the accuracy of the input data and to exclude incomplete responses, missing data related to variables or outliers in the data set (Barchard and Pace, 2011; Mirzaei *et al.*, 2022). After screening, the study obtained 508 valid questionnaires, achieving a response rate of 56.44%.

The survey was initially prepared in English, translated into Vietnamese and back-translated to ensure linguistic accuracy and consistency in meaning (Brislin, 1980; Kreiser *et al.*, 2002). It was reviewed by two scholars (a Bulgarian professor and a Vietnamese PhD holder) and pilot-tested on 20 randomly selected students from Ho Chi Minh City University of Law, who were excluded from the final sample. Feedback from the pilot test was used to refine the questionnaire. Both online surveys via Google Forms and in-class paper distribution were utilised. Data entry was handled concurrently in Vietnam (for paper questionnaires) and Bulgaria (for online surveys) to ensure accuracy (Barchard and Pace, 2011). Faculty members assisting with the research managed and gathered all completed questionnaires.

Correspondingly, the article offers the conceptual model illustrated by Figure 1 as follows

3.2 Sample and descriptive statistics

Table 2 details the demographics of business administration students from various Vietnamese universities (gender, academic year and institution type) who participated in the survey. Over 60% of the participants were female, one-third were first-year students and 58.46% of the 508 participants attended public universities, with the remainder attending private institutions.

3.3 Measurement of variables

Data for the main variables in the TPB structure and illustrative variables for the university's entrepreneurial ecosystem were collected through a survey questionnaire with questions based on a five-point Likert scale (1: strongly disagree; 2: disagree; 3: neutral; 4: agree; and 5: strongly agree) and two nominal questions, along with one ordinal question regarding the demographic factors of the survey participants (gender, type of organisation and academic year).

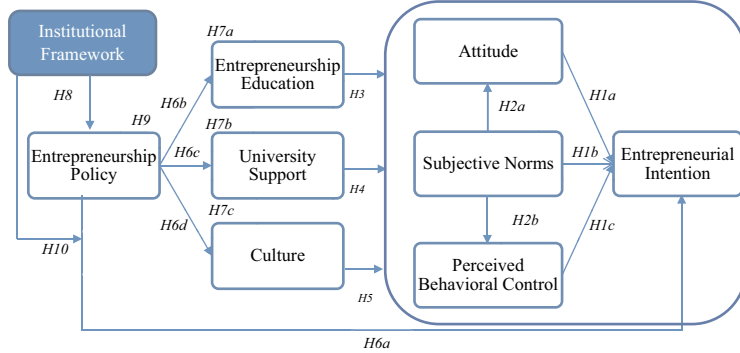


Figure 1. Theoretical Framework with hypotheses (Model 1)

Source: Own interpretation and synthesis upon [Huang et al. \(2021\)](#), [Hasan et al. \(2017\)](#), [Liguori et al. \(2018\)](#), [Adıgüzel and Musluhittinoglu \(2021\)](#), [Liñán and Chen \(2009\)](#) and [Lu et al. \(2021\)](#)

Table 2. Descriptive statistics of the sample

Variables	Number	%
<i>Gender</i>		
Male	169	33.27
Female	339	66.73
<i>School year</i>		
Year 1	171	33.66
Year 2	105	20.67
Year 3	132	25.98
Year 4	100	19.69
<i>University system</i>		
Public	297	58.46
Private	211	41.56

Source(s): By author

The study by [Choukir et al. \(2019\)](#) served as a reference for proposing the nominal demographic questions (gender and academic year), while the type of organisation factor was derived from the research of [Wannamakok and Yonwikai \(2023\)](#) and [Canever et al. \(2017\)](#). Meanwhile, the Likert scale questions were selected, adjusted and developed based on the study by [Huang et al. \(2020\)](#) for the entrepreneurial policy (EP), the study by [Hasan et al. \(2017\)](#) for the entrepreneurial education (EE) and the study by [Liguori et al. \(2018\)](#) for university support and entrepreneurial culture within the organisation. Notably, the group of questions related to the TPB structure was primarily drawn from the study by [Lu et al. \(2021\)](#), with additional input from the research of [Adıgüzel and Musluhittinoglu \(2021\)](#).

3.4 Analytical strategy

SPSS 26 was used to assess the reliability of the measurement scale, common method bias and to perform exploratory factor analysis (EFA). Structural equation modelling (SEM) was

then conducted using AMOS 24 within SPSS. SEM involves two main steps: the measurement model and the structural model (Hair *et al.*, 2021; Mueller and Hancock, 2018). The measurement model applies confirmatory factor analysis (CFA) to examine relationships between variables and observations, while the structural model uses path analysis to explore causal relationships between latent and explanatory variables (Streiner, 2006; Mueller and Hancock, 2018).

3.4.1 Reliability testing, common method bias and exploratory factor analysis. To reduce common method bias, the survey process included the following measures: (1) Participants were informed of the voluntary and confidential nature of their participation (Kılınc and Firat, 2017). (2) Surveys were conducted at three universities at different times, in different classes and under varying contexts to minimise mood-related influences (Schwarz and Sudman, 2012; MacKenzie and Podsakoff, 2012). (3) Based on Brown (2015), all independent, dependent and control variables were included in the factor analysis. Results identified six factors with eigenvalues above 1.0, accounting for 63.77% of the variance. The first factor explained 30.04%, while the remaining factors explained 33.73%, confirming that common method bias was not an issue as no single factor dominated (Podsakoff *et al.*, 2003).

Table 3 reveals that all variables achieved a total explained variance exceeding 55%. Cronbach's alpha and Composite Reliability values ranged from 0.7–0.8, indicating strong reliability and internal consistency (Taber, 2018; Peterson and Kim, 2013). The extracted factors followed a normal distribution, and most variables had Kaiser–Meyer–Olkin (KMO) values above 0.6, confirming sample adequacy for EFA, except for the entrepreneurial attitude (EA) variable group. Convergent validity was assessed using three criteria:

- (1) Factor loadings must be significant and exceed 0.50.
- (2) Composite reliability must exceed 0.70.
- (3) Average variance extracted (AVE) must be 0.5 or higher (Afthanorhan, 2013; Hair *et al.*, 2014).

As shown in Table 3, these criteria were met, confirming convergent validity.

Discriminant validity reflects the degree to which one construct is distinct from another (Hair *et al.*, 2014). It is established when the square root of the AVE for each construct exceeds its correlations with other constructs in the model (Fornell and Larcker, 1981). Table 4 shows the means, standard deviations and correlations of the main variables, with all correlations lower than the square root of the AVE for each variable, confirming discriminant validity.

3.4.2. Structural equation modelling analysis.

Streiner (2006) and Mueller and Hancock (2018) explain that conducting a CB-SEM structural model involves two steps: measuring the model using confirmatory factor analysis (CFA) and determining its structure through path analysis. CFA is used to assess the relationships between research variables and observations, ensuring the model fits the data. Based on fit indices (absolute, relative and parsimony), the SEM model's structure is then refined (Barrett, 2007; Wu *et al.*, 2009).

Once the structural model meets the required conditions, path analysis, conducted via AMOS, explores causal relationships between latent variables and validates the proposed hypotheses.

4. Results

The proposed sets of hypotheses were tested using the two-step CB-SEM structural equation modelling approach. During the CFA factor testing, some variables were removed to

Table 3. EFA results

Variables	Items (remained)	Factor loading	ACP	KMO	CR	Cronbach's alpha	AVE
<i>EI</i>	3 (3)		64.783	0.787	0.880	0.818	0.648
EI1		0.755					
EI2		0.816					
EI3		0.815					
EI4		0.831					
<i>EP</i>	3 (3)		77.332	0.730	0.911	0.851	0.773
EP1		0.887					
EP2		0.888					
EP3		0.862					
<i>EE</i>	5(4)		58.647	0.813	0.893	0.813	0.675
EE2	EE1 was removed due to low loading	0.838					
EE3	factor	0.842					
EE4		0.827					
EE5		0.778					
<i>US</i>	4(4)		55.266	0.703	0.831	0.727	0.553
US1		0.745					
US2		0.722					
US3		0.806					
US4		0.697					
<i>C</i>	3(3)		63.468	0.673	0.839	0.712	0.634
C1		0.786					
C2		0.821					
C3		0.782					
<i>EA</i>	2(0)		79.535	0.500	0.886	0.742	0.796
EA1	EA was disqualified for low KMO	0.892					
EA2		0.892					
<i>BC</i>	3(3)		66.031	0.665	0.853	0.743	0.660
BC1		0.820					
BC2		0.855					
BC3		0.759					
<i>SN</i>	4(4)		65.287	0.739	0.883	0.821	0.653
SN1		0.809					
SN2		0.829					
SN3		0.785					
SN4		0.809					

Source(s): By author

enhance the explanatory power of the remaining variable groups. Based on the results evaluating the fit of the CFA structure (Table 5), it can be concluded that the proposed measurement model is relatively well-suited to the data and provides a sufficient basis to test the hypothesised causal relationships using the adjusted model (Shi *et al.*, 2019; Marsh *et al.*, 2020).

4.1 Direct impact within the theory of planned behaviour structure

Because the EA factor was excluded during the exploratory factor analysis, hypotheses *H1a* and *H2a* lack a basis for conclusion. The remaining hypotheses were tested through an analysis of the direct impacts within the TPB structure of the remaining factors (the influence of BC and SN on EI, and the impact of SN on BC).

Table 4. Discriminant validity testing

Variable	Mean	SD	EP	EE	US	C	EI	BC	SN
EP	3.101	0.922	<i>0.879</i>						
EE	3.502	0.799	0.392*	<i>0.822</i>					
US	3.481	0.774	0.366*	0.391*	<i>0.744</i>				
C	3.689	0.782	0.286*	0.373*	0.623*	<i>0.796</i>			
EI	3.833	0.814	0.190*	0.305*	0.304*	0.349*	<i>0.805</i>		
BC	3.724	0.866	0.251*	0.299*	0.375*	0.406*	0.450*	<i>0.812</i>	
SN	3.698	0.872	0.213*	0.306*	0.422*	0.395*	0.504*	0.663*	<i>0.808</i>

Note(s): * $p < 0.01$. Italicised diagonal values show the square root of AVE, while off-diagonal values are construct correlations. Discriminant validity exists if diagonal values exceed off-diagonal ones in rows/columns

Source: By author

Table 5. Model fit criteria of the CFA model

Criteria	Chi-square/df	ρ	CFI	TLI	RMSEA
Model	3.312	0.00	0.910	0.894	0.068
Evaluation criteria	<5		>0.9	>0.8	<0.00

Source(s): By author

The results in [Table 6](#) indicate that two hypotheses related to the relationship between TPB antecedents and EI are not supported (*H1b* for SN and *H1c* for BC). This suggests that the TPB structure does not align with the data set collected from three universities in Vietnam. Meanwhile, hypothesis *H2b* regarding the relationship between SN and BC is supported.

Vietnam's perceived behavioural control (PBC) demonstrates a declining trajectory over time ([Maheshwari and Kha, 2022](#)). This trend stems from the underdeveloped research and development (R&D) component within the start-up ecosystem, which progresses at a suboptimal pace. Such stagnation engenders inefficient R&D transfer, thereby diminishing students' perceived behavioural control regarding entrepreneurial pursuits ([Nguyen et al., 2020](#)). Furthermore, heterogeneity in students' social backgrounds may yield divergent relationships between the theoretical premises of the Theory of Planned Behaviour (TPB) and entrepreneurial intentions within the Vietnamese context ([Nguyen et al., 2020](#)).

Table 6. Evaluating the model for the TPB structure

Hypotheses	Estimate	S.E.	C.R.	Empirical evidence
<i>H1b</i> : EI / SN	5.498**	4.085	1.346	Unsupported
<i>H1c</i> : EI / BC	-5.370**	4.349	-1.235	Unsupported
<i>H2b</i> : BC / SN	0.946**	0.051	18.623	Supported

Note(s): ** $p < 0.001$

Source(s): By author

The theoretical framework of the Dunning-Kruger effect in psychology (Kruger and Dunning, 1999) posits that enhanced business knowledge typically reduces confidence. Nevertheless, a critical deficiency in Vietnam’s higher education system resides in its entrepreneurship curriculum (Doan, 2021). This inadequacy likely leaves business students at surveyed institutions insufficiently equipped with essential entrepreneurial knowledge. Consequently, these students exhibit a propensity for overconfidence that exceeds their actual competence (Dao et al., 2021), concurrently reducing their susceptibility to influence from proximate social networks such as family and peers. Accordingly, subjective norms are observed to lack significant correlation with students’ entrepreneurial intentions in Vietnam, a finding consistent with both the current analysis and prior research by Nguyen et al. (2020).

4.2 *The impact of entrepreneurial ecosystem factors on the theory of planned behaviour structure*

Similar to the effects within the TPB structure, most hypotheses regarding the relationship between certain factors in the entrepreneurial ecosystem and subject norms and perceived behavioural control are not supported (Table 7), except for the impact of cultural factors on subject norms.

To examine the relationship between factors within the university start-up ecosystem and the entrepreneurial intentions of business administration students in Vietnam, the following adjusted structural model is proposed in Figure 2:

Based on the new model, the results of testing the relationship between factors within the start-up ecosystem (excluding start-up policies) and entrepreneurial intention are presented in Table 8. Specifically, only the factor of entrepreneurial education has a direct impact on students’ entrepreneurial intention (accepting H3d, rejecting H4d and H5d).

4.3 *Impact of policies on the entrepreneurship ecosystem and entrepreneurial intention*

According to the results in Table 9, entrepreneurship policies influence other factors within the entrepreneurial ecosystem, such as education, culture and support activities, but they do not have a direct impact on students’ entrepreneurial intentions.

With the results of testing H3, 4, 5 and H6, Hit can be seen that the entrepreneurial education variable may serve as a mediating variable in examining the impact of entrepreneurial policies on entrepreneurial intentions. According to Baron and Kenny (1986), a variable is considered a mediator when it meets the following conditions:

- Changes in the levels of independent variables significantly affect changes in the mediator variable, illustrated by Path a (satisfied by hypothesis H6b).

Table 7. Result of the impact of the startup ecosystem on TPB structure

Hypotheses	Estimate	S.E.	C.R.	Empirical evidence
H3b: SN / EE	0.013**	0.056	0.235	Unsupported
H3c: BC / EE	-0.025**	0.021	-1.198	Unsupported
H4b: SN / US	-0.928**	0.391	-2.375	Unsupported
H4c: BC / US	-0.142**	0.130	-1.093	Unsupported
H5b: SN / C	1.556**	0.408	3.814	Supported
H5c: BC / C	0.102**	0.113	0.899	Unsupported

Note(s): ** $p < 0.001$

Source(s): By author

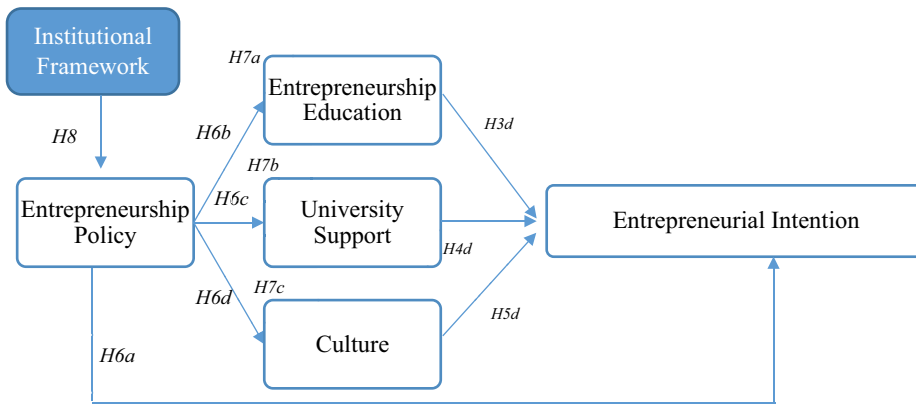


Figure 2. Adjusted SEM model and hypotheses (Model 2)

Source: By author

Table 8. Evaluating the impact of the university ecosystem on entrepreneurial intentions

Hypotheses	Estimate	S.E.	C.R.	Empirical evidence
<i>H3d</i> : EI / EE	0.155**	0.047	3.338	Supported
<i>H4d</i> : EI / US	0.317**	0.190	1.669	Unsupported
<i>H5d</i> : EI / C	0.173**	0.192	0.900	Unsupported

Note(s): ** $\rho < 0.001$

Source(s): By author

Table 9. Evaluating the impact of entrepreneurial policy on other factors

Hypotheses	Estimate	S.E.	C.R.	Empirical evidence
<i>H6a</i> : EI / EP	-0.012**	0.049	-0.251	Unsupported
<i>H6b</i> : EE / EP	0.381**	0.050	7.652	Supported
<i>H6c</i> : US / EP	0.180**	0.041	4.392	Supported
<i>H6d</i> : C / EP	0.249**	0.042	6.004	Supported

Note(s): ** $\rho < 0.001$

Source(s): By Author

- Changes in the mediator variable significantly affect changes in the dependent variable, illustrated by Path b (satisfied by hypothesis *H3d*).
- When Paths a and b are controlled, the previously significant relationship between the independent variables and the dependent variable is no longer significant (full mediation) or decreases in coefficient (partial mediation).

To test the final condition in the criteria for mediation, the adjusted measurement model is compatible, and the results of the model testing are presented in [Table 10](#).

Table 10. Model fit for the model with EE as the mediator

Criteria	Chi-square/df	ρ	CFI	TLI	RMSEA
EI / EE / EP	4.007	0.00	0.941	0.924	0.077
Evaluation criteria	<5		>0.9	>0.9	<0.00

Source(s): By author

With the model having EE as an intermediary in Figure 3, Table 11 shows that entrepreneurship policy (EP) positively influences entrepreneurship education (EE), which fully mediates the relationship when EP does not directly affect entrepreneurial intention (EI). Without EE's mediation, the link between EP and EI is not significant (Baron and Kenny, 1986).

4.4 Impact of the type of university organisation

4.4.1 Direct and indirect impact of types of university organisation. Based on the results in Table 12, it can be observed that university institutional factors have a direct impact on

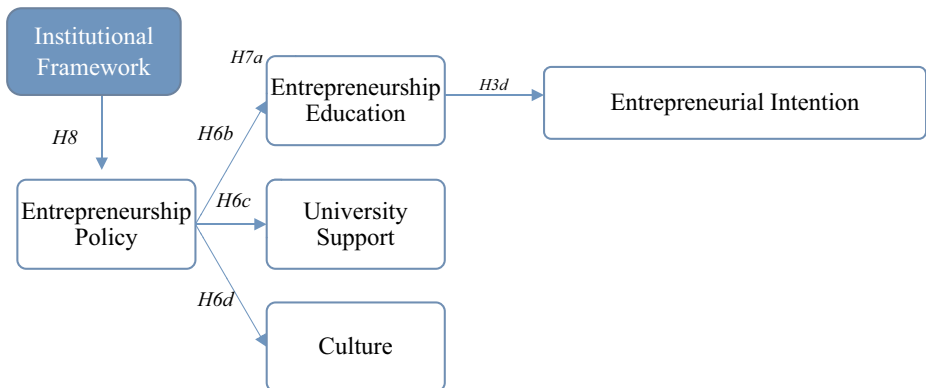


Figure 3. Pathway model with EE as the mediator (Model 3)

Source: By author

Table 11. Evaluating the pathways in model 3

Hypotheses Indirect effects		Model 3 (The EE premise is an intermediary factor)			
	Estimate	S.E.	C.R.	Empirical evidence	
EI / EP	0.043**	0.046	0.941	Unsupported	
EE / EP	0.363**	0.049	7.388	Supported	
EI / EE	0.255**	0.050	5.117	Supported	

Mediating effects: direct, indirect and total

Hypotheses	From	Mediation	To	Direct effect	Indirect effect	Total effect
H7a	EP	EE	EI	0.043	0.255 × 0.363 = 0.093	0.136

Note(s): ** $\rho < 0.001$

Source(s): By author

Table 12. Evaluating the impact of types of university organization

Hypotheses	Estimate	S.E.	C.R.	Empirical evidence		
Model 2						
H8a: EP / IF	1.079**	0.084	12.811	Supported		
Model 3						
H8b: EP / IF	1.105**	0.084	13.121	Supported		
Mediating effects: direct, indirect and total						
Hypotheses	From	Mediation	To	Direct effect	Indirect effect	Total effect
H9a	IF	EP	EE	0.000	1.105 × 0.363 = 0.401	0.401
H9b	EP	EE / EP	EI	0.000	0.401 × 0.255 = 0.103	0.103

Note(s): ** $\rho < 0.001$
Source(s): By author

entrepreneurship policies. Hypothesis *H8* is accepted in both models: the model incorporating all other factors of the entrepreneurial ecosystem (Model 2) and the model where entrepreneurial education serves as the sole intermediary factor (Model 3). When Hypothesis *H8* is supported by empirical evidence, entrepreneurship policies also become an intermediary factor in the model measuring the influence of university institutional factors on entrepreneurial education, support activities and entrepreneurial culture within universities. At the same time, entrepreneurial education serves as an intermediary factor for the impact of university institutional factors on entrepreneurial intentions.

4.4.2 Regulatory impact of university organisational type. To evaluate the potential regulatory impact of university organisational type, the study conducted independent SEM analyses for two groups of students from public universities (297) and private universities (211). The AMOS model was also employed to assess differences in structural parameters (if any). According to Byrne (2013), a moderating effect occurs when there is a difference $\Delta\chi^2/df > \chi^2$ value at Δdf with a significance level of 0.05, indicating that the moderating variable is statistically significant in the baseline model.

According to Table 13, for the two groups, the model with the impact of institutional factors has a chi-square value of 452.281 ($df = 115, \rho < 0.000$), and the model without the influence of institutional variables has a chi-square value of 327.551 ($df = 100, \rho < 0.000$). The value of $\Delta\chi^2 = 124.73, \Delta df = 15$ ($\rho = 0.000 < 0.01$) is greater than the χ^2 value at Δdf with a significance level of 0.05. Therefore, a moderating effect appears when the factor of university organisational type is included at the model level. This result indicates a significant difference in the models for the public group compared to the private group. The differences for each path coefficient have been examined and are illustrated in Figure 4. The

Table 13. Model fit criteria with university institution types as a moderator variable

Criteria	Chi-square	df	Chi-square/df	CFI	TLI	ρ	RMSEA
Model 3	452.281	115	3.933	0.903	0.886	0.000	0.076
Model 4 (without IF)	327.551	100	3.276	0.930	0.915	0.000	0.067
Evaluation criteria			<5	>0.8	>0.8		<0.00

Source(s): By author

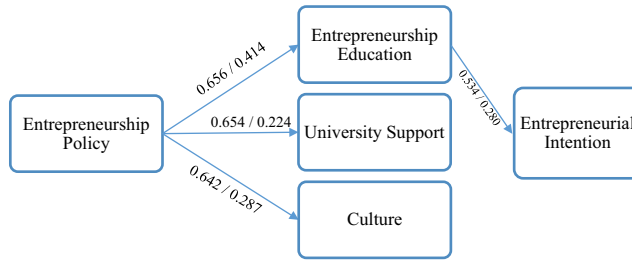


Figure 4. Path parameters by organisation type
Source(s): By author

paths adhere to Model 3 to limit the emergence of paths that reflect different influences between students from public and private universities.

When examining the moderating effects across different groups of entrepreneurial ecosystem factors, the results in Table 14 indicate that although there are differences in chi-square values for the path from entrepreneurial policy to other factors within the university ecosystem, the *p*-value is larger than 0.01. Therefore, no moderating effect exists. Meanwhile, with the moderation of the types of organisational variables, the impact of entrepreneurial education on students’ entrepreneurial intentions shows significant variation. Specifically, the effect of entrepreneurial education on the entrepreneurial intentions of students in public universities is higher (estimate for the public group is 0.635) compared to students in private universities (estimate for the private group is 0.009).

5. Discussion and conclusions

The analysis of SEM data from 508 business administration students shows that the Theory of Planned Behaviour (TPB) construct plays a minimal role in understanding entrepreneurial intentions in Vietnam. This finding contrasts with earlier research in Vietnam (Maheshwari and Kha, 2022; Maheshwari, 2025; Nguyen *et al.*, 2019) and studies in countries like Malaysia (Al-Jubari *et al.*, 2019), India (Roy *et al.*, 2017), Romania (Shook and Bratianu, 2010) and Saudi Arabia (Aloulou, 2016). The difference arises because prior studies typically surveyed large, mixed-discipline student samples, whereas this study focuses

Table 14. Evaluating differences in the impact of university organisational type

Hypotheses	x2	χ^2/df	CFI	RMSEA	Estimate	$\Delta x2(\Delta df)$	ρ	Empirical evidence	
EP → EE	Public	17.541	1.349	0.995	0.034	0.515**	35.056 (6)	0.176	Unsupported
	Private	52.597	2.768	0.934	0.092	0.026**			
EP → US	Public	40.537	3.118	0.972	0.085	0.676**	29.799 (1)	0.217	Unsupported
	Private	10.738	1.342	0.986	0.040	0.053			
EP → C	Public	27.220	3.402	0.973	0.090	0.495**	16.007 (1)	0.191	Unsupported
	Private	11.213	1.402	0.981	0.044	0.108			
EE → EI	Public	46.976	1.807	0.984	0.052	0.635**	132.474 (1)	0.007***	Supported
	Private	179.45	6.646	0.718	0.164	0.009			

Note(s): ** $\rho < 0.001$, *** $\rho < 0.01$

Source(s): By author

specifically on business administration students, who tend to have greater entrepreneurial knowledge and stronger intentions (Davidsson and Honig, 2003). Furthermore, differences in individual characteristics, experiences, cultures and environments may limit the relevance of TPB constructs (Liñán and Chen, 2009). The study's emphasis on the impact of university entrepreneurial ecosystems also diminishes the importance of individual-level TPB factors (Zhao *et al.*, 2010; Autio *et al.*, 2001), a conclusion supported by research such as Gnyawali and Fogel (1994) and Shapero and Sokol (1982). In contrast to the findings of Anjum *et al.* (2020) and Su *et al.* (2021), key components of the entrepreneurial ecosystem from an institutional perspective, including entrepreneurial support mechanisms and cultural factors, failed to demonstrate statistically significant effects within the proposed research model. This outcome underscores the inherent limitations of applying the Theory of Planned Behaviour (TPB) framework to contexts where localised environmental and cultural dynamics diverge substantially from those observed in prior studies conducted in other regions. The lack of a significant causal relationship suggests that the TPB framework may not comprehensively account for critical region-specific variables influencing the development of entrepreneurial intentions.

Entrepreneurship education emerges as a significant factor influencing entrepreneurial intentions, in line with findings from the UK, Italy (Souitaris *et al.*, 2007), Spain, China (Liñán and Chen, 2009), France (Fayolle and Gailly, 2015) and Central Europe (Nowiński *et al.*, 2019). This study reinforces the mediating role of entrepreneurship education in linking entrepreneurship policy to entrepreneurial intentions, supported by earlier research (Liñán and Fayolle, 2015; Nabi *et al.*, 2017; Walter *et al.*, 2013; Zelin *et al.*, 2021). However, university support activities and entrepreneurial culture exhibit no significant influence on intentions, contrary to research by Anjum *et al.* (2020), Su *et al.* (2021) and Litzky *et al.* (2020). This can be explained by the non-significance of TPB in the current study, as prior research validating the positive impact of these factors also confirmed TPB's relevance. These findings indicate that Vietnam's current entrepreneurship education frameworks and policy implementations are specifically tailored to address the needs of business administration students, thereby effectively fostering the development of entrepreneurial intentions.

The article also highlights the positive impact of university organisation type on entrepreneurship policy, supporting the findings of Reyad *et al.* (2020) and Pihie and Bagheri (2013) but diverging from Canever *et al.* (2017) in Brazil. The demonstrated influence of university organisation type on entrepreneurship policy establishes it as a mediator that affects entrepreneurship education, support activities and entrepreneurial culture. Entrepreneurship education mediates the relationship between organisation type and entrepreneurial intentions, with notable differences between public and private universities. The study finds entrepreneurship education has a stronger impact on intentions among public university students (estimate = 0.635) compared to private university students (estimate = 0.009), challenging earlier findings that private universities foster stronger entrepreneurial activity (Reyad *et al.*, 2020; Ouragini *et al.*, 2024; Cao and Ngo, 2019; Lima *et al.*, 2015). This aligns with Pihie and Bagheri (2013), who argue institutional effects vary based on macro-environmental factors (Barral *et al.*, 2018) and student education levels (Canever *et al.*, 2017). This finding not only refutes the traditional view of the pioneering role of private universities in entrepreneurship education (Reyad *et al.*, 2020; Ouragini *et al.*, 2024) but also opens up new directions for analysing the construction of entrepreneurial universities for public universities. The study also highlights the multidimensionality of macro factors such as state policies, market competition pressures (Barral *et al.*, 2018) and the complex interaction between learners' cognitive abilities (Canever *et al.*, 2017) and the

education system. This reinforces the argument of Pihie and Bagheri (2013) about the diversity in the way institutions impact entrepreneurial ecosystems, from internal governance mechanisms to relationships with stakeholders. The research results emphasise the need to consider the institutional characteristics of management organisations when developing policies for entrepreneurship development in higher education.

This study contributes both empirically and theoretically by providing insights into how university entrepreneurial ecosystems, comprising education, policies, culture and support, shape entrepreneurial intentions. It offers practical recommendations for educators and policymakers to design effective entrepreneurship programs and foster supportive environments in public and private universities. In addition, the findings validate the importance of tailoring theoretical frameworks to contextual research settings, pointing to the relevance of the Austrian school of economics for analysing entrepreneurial behaviour in emerging markets.

Vietnamese universities, especially public institutions, need to increase investment in building a synchronous start-up support ecosystem. Business incubators need to be equipped with modern facilities, connected to a network of experienced advisors and angel investors. Technology transfer centres need to act as a bridge between scientific research and practical application, while co-working spaces need to be flexibly designed to promote multidisciplinary cooperation. As the technology transfer process becomes smoother and more efficient, the influence of perceived behavioural control factors may change in a positive direction, thereby increasing the effectiveness of environmental factors on students' entrepreneurial intentions.

Universities should enhance their role in supporting student entrepreneurship through training, business community engagement and fostering positive entrepreneurial attitudes. They need to provide entrepreneurship knowledge, assist with business idea development and ensure projects are practical and market-relevant. Universities should establish idea incubators, leverage expert networks for start-up advice and monitor students' implementation of their ideas. Business schools should collaborate with technical institutions to create effective student entrepreneurship teams that combine business acumen with innovation capacity.

Nonetheless, the study has limitations. It examines intentions rather than behaviours and focuses exclusively on business administration students, restricting applicability in broader cultural or policy contexts. Some ecosystem components were omitted, potentially limiting the analysis. Furthermore, Vietnam's entrepreneurial ecosystem is still developing, with universities playing an unclear role and lacking standardised evaluation criteria. Although this study contributes to advancing ecosystem measurement tools, further research is needed to address these gaps.

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Table A1. Summary of related studies

Author(s)	Theoretical framework	Method	Related criteria	Sample
Guerrero et al. (2016)	Agency theory; institutional theory	The multilevel and diverse methodological approach	Entrepreneurial universities play a pivotal role in innovation and entrepreneurship, driving economic growth and addressing socio-economic challenges within broader innovation ecosystems	Seven studies on entrepreneurial universities in the USA and European contexts
Wright et al. (2017)	Entrepreneurial Universities Framework based on Zahra and Wright (2011) and Cooke et al. (1997) . Innovation and Entrepreneurship Ecosystems based on Isenberg (2011) and Mason and Brown (2014)	Multilevel analysis and quantitative surveys	Essential criteria for assessing entrepreneurial universities are fostering entrepreneurial intentions in students and staff, efficient technology transfer, and building ecosystems that provide access to resources and networks	Studies cover various European and US universities, both teaching-led and research-focused, with data from thousands of students and researchers on entrepreneurial behavior and environments
Ehadi and Gheith (2021)	Theory of planned behavior (TPB) and the entrepreneurial event model (EEM); entrepreneurial orientation model (EO); social cognitive theory	Quantitative, survey-based approach; structural equation modelling (PLS-SEM), ANOVA, ANCOVA, and MANOVA	Factors of the university ecosystem, finance, policy and entrepreneurship education shape entrepreneurial intention. This relationship is reflected in the impact of self-efficacy, ecosystem support and TTOs' involvement of STEM students	259 students from six Saudi universities
Mehrap et al. (2017)	Herzberg's (1960) two-factor theory, the Theory of Planned Behavior (TPB)	Discussion-based approach; factor analysis	The relationship between the university entrepreneurial ecosystem and female students' entrepreneurial intention is reflected in the influence of perceived socio-cultural barriers (e.g. family support, social expectations), self-efficacy related to entrepreneurship, and some factors related to the educational system in promoting entrepreneurship (e.g. curriculum and pedagogy; supportive environment)	254 female business students from a private and a public university
Guerrero et al. (2020)	Douglas and Shepherd's utility-maximising function	Exploratory study approach; multinomial logistic regression	University ecosystems, like incubators, influence graduates' career choices, from	8948 graduates of the Monterrey Institute of Technology and Higher Education (ITESM) in Mexico

(continued)

Table A1. Continued

Author(s)	Theoretical framework	Method	Related criteria	Sample
Ali <i>et al.</i> (2019)	Entrepreneurial Ecosystem Theory primarily draws from the work of Isenberg (2011)	Symmetric modelling [structural equation modelling (SEM)]; asymmetric analysis [fuzzy-set qualitative comparative analysis (fsQCA)]	academia to self-employment or The entrepreneurial ecosystem in a university includes access to finance, government support and policies, social and cultural influences, and education	310 female students in Saudi Arabia
Pandit <i>et al.</i> (2018)	Theory of planned behavior	Quantitative survey method [confirmatory factor analysis (CFA)]	Entrepreneurship education is the process of equipping individuals with the skills, knowledge, and ability to gain insights, recognize opportunities, and take action (Kaltenecker <i>et al.</i>, 2015)	499 undergraduate and 364 graduate STEM students in India
Secundo <i>et al.</i> (2020)	Entrepreneurship education (EE) theory following the Austrian school of economics	Ethnographic case study (ethnography and semi-structured in-depth interviews with key informants)	Entrepreneurial culture, as described by Bramwell and Wolfe (2008) , refers to a mindset where the efforts of pioneering professors and students inspire others within universities to view entrepreneurship as a viable pursuit	Contamination Labs (CLabs) in Italy from 2017 to 2019
Sansone <i>et al.</i> (2021)	Extracurricular Engagement Theory of Hattie and Timperley (2007)	Quantitative survey method (logit regression)	Student-Led entrepreneurial organizations (SLEOs) significantly enhance their members' entrepreneurial intentions, making them a vital part of the university ecosystem that promotes an entrepreneurial culture	Junior Enterprises Europe (JEE) associates in 2016
Ferrandiz <i>et al.</i> (2018)	Entrepreneurial Ecosystem Theory by Isenberg (2011)	Qualitative case study approach	The Internal Entrepreneurship Education Ecosystem comprises Curricular, Co-curricular, and Research domains (Brush, 2014)	Students enrolled in the master's in entrepreneurship and leadership program in Spain
Source(s): By author				