

The Entrepreneurship and Influencing Factors: A case study of university students in Da Nang, Vietnam

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Abstract This study aims to explore the factors that affect the entrepreneurship of students in Da Nang, including four factors: (1) Personal factors, (2) Family factors, (3) Educational factors, and (4) Social factors. The authors make use of mixed methods including both quantitative research method, and qualitative research method. The qualitative research method is employed to identify meanings, confirmations, adjustments, and complements for concept-measurement variables in the conceptual model. Quantitative research is conducted from a sample of 394 students across many universities in Da Nang City. The study processed and analyzed survey data from employees using the Smart PLS 4 software with PLS-SEM method. The analysis results from the model show that there are 5 factors affecting students' entrepreneurship: (1) Motivation, (2) Capacity, (3) Experience, (4) Teaching content, and (5) Social norms. In addition, for the educational factors, (6) teaching content has a meaningful indirect impact on entrepreneurship through capacity-mediated variables, and (7) teaching methods have a meaningful indirect impact on entrepreneurship through capacity-mediated variables. The results of the study have implications for students with entrepreneurship in Da Nang City. To order to positively respond to the entrepreneurship of students at schools in the area. University need to focus on the educational environment and the quality of their subjects, as well as on building programs and courses related to business associated with practice, to provide effective teaching methods to students' entrepreneurship. In particular, families, economic managers, local authorities, and banks need to support Da Nang students to have a healthy competitive environment, build a capital supply so that graduates can freely start a businesses in the current economy.

Keywords: entrepreneurship, personal factors, family factors, educational factors, social factors

1. Introduction

1.1. Statement of the Problem

Entrepreneurship is an important factor in economic development, job creation, and quality of life improvement (Reynolds al., 2005). In recent years, Vietnam has continued to maintain its leading position in the world in terms of the entrepreneurship index among the 15 countries participating in the survey. In addition, educating students helps promote the entrepreneurship of (Pounder, 2017). According to a report by (AGER, 2023), 88% of Vietnamese students believe that having their own business is a desirable opportunity. According to a survey by the University of Da Nang in 2022, 35% of students intend to start a business after graduation, and 20% have participated in small business activities or start-up projects. The Da Nang Department of Science and Technology 2023 has implemented many start-up support programs for students, including training, counseling, and financial support, with more than 200 students participating. Topics related to entrepreneurship have been previously studied by many researchers (Bikram Prajapati al., 2023; Muigai, 2012; Seun, 2017), who have studied personal factors, family factors, educational factors, and social factors. However, many researchers consider only each factor that affects entrepreneurship without conducting an overall study, with practical and theoretical bases on the research group identifying the research topic: "Entrepreneurship and influencing factors: A case study of university students in Da Nang, Vietnam.

1.2. Objective of the Study

The factors affecting entrepreneurship and research models related to this issue should be identified to provide practical results and better understand student entrepreneurship. Specifically, when educational factors are analyzed, teaching methods and teaching content affect entrepreneurship through the intermediate variable of capacity. Some ideas should be proposed to increase the entrepreneurship of students, specifically those in Da Nang.



1.3. Significance of the Study

1.3.1. Theoretically

The study utilizes components of the Theory of Planned Behavior, The Theory of Reasoned Action and Human Capital Theory by (Becker, 1964), to examine the determinants of entrepreneurship, such as demographic factors and contextual elements, among university students. The study contributes to the theoretical argument regarding the impact of the educational environment on students' competencies, which in turn influences their entrepreneurship.

1.3.2. Practical

In the results of the study, specific policies and measures are proposed to encourage entrepreneurship and support student entrepreneurship and career development in Da Nang. A deep understanding of student entrepreneurship also helps local businesses better understand the motivations and desires of the younger generation, thereby creating appropriate business strategies to attract and retain students' young human resources. In addition, research can contribute to creating an environment that promotes entrepreneurship and entrepreneurship in the student community and society, thereby promoting the economic and career development of individuals and businesses in Da Nang.

1.4. Research question

Within the framework of this study, the authors formulated the following research questions:

- i: How do factors affect the entrepreneurship of students in Da Nang?
- ii: How does the educational environment impact students' entrepreneurship and business capacity in Da Nang?

2. Literature review

2.1. Entrepreneurship

Entrepreneurship is a highly compelling and significant field on a global scale. This heightened interest and significance are further amplified by various factors. For developed economies, entrepreneurial activities are revitalizing the economy, and they are acting as a solution for the problem of unemployment (Yusof et al., 2007). A thriving economy relies not only on entrepreneurs identifying, assessing, and seizing opportunities to innovate and produce new goods and services but also on how swiftly ideas are judged as successes or failures through the profit-and-loss mechanism (Joseph, 2007). Entrepreneurship is a general term indicating a company in the incubation stage. This term is especially popular for technology companies in their conception and development stage. Entrepreneurship also implies that a business entity, be it either an individual or a group of people, explores new business opportunities or new working manners to establish independence, constant innovations and risk acceptance to create new value in current business contexts (Bird, 1988).

In addition, (Rwigema et al., 2004) describe entrepreneurship as the process of conceptualizing, organizing, initiating, and—through creativity—cultivating a business opportunity into a potentially high-growth venture in a dynamic, unpredictable environment. This refers to the knowledge, skills, and behaviors necessary to cultivate entrepreneurship. Moreover, entrepreneurship can drive entrepreneurs to continuously develop their talents, purposefully manage resources, organize production efficiently, and create innovative breakthroughs that promote socioeconomic development (Schulte-Holthaus, 2023). According to (Ribeiro, 2017), entrepreneurship is a crucial factor in economic development, especially for developing countries, as it drives economic growth and innovation capacity across various industries. Entrepreneurship also means self-employment to create jobs and promote the economy, especially among young students (Koe et al., 2012). Thus, to ensure a continuous source of new entrepreneurs in the economy, policymakers should be aware of the entrepreneurial intentions of potential entrepreneurs as well as factors that encourage their entrepreneurship.

2.2. Entrepreneurship Education

The university environment plays a crucial role in fostering students' entrepreneurial ideas. (Hansemark, 1998) noted that traditional education is marked by the mere transfer of knowledge and abilities, whereas entrepreneurship education is seen as a model for changing attitudes and motivations. According to (Young, 1997), entrepreneurship education is defined as "the structured, formal conveyance of entrepreneurial knowledge, including the concepts, skills, and mentality that individual business owners use during the course of starting and developing their growth-oriented businesses." He also describes entrepreneurial learning as the active and cognitive processes that individuals employ as they acquire, retain, and use entrepreneurial knowledge. Entrepreneurship education should not only focus on developing individual skills but also stimulate traits that enable them to create new and innovative plans while integrating content from traditional business principles such as resource management (both material and human resources), marketing, and sales operations to develop business thinking (Pounder, 2017). Similarly, (Alberti et al., 2004) define entrepreneurship education as the structured formal conveyance of entrepreneurial competencies, which includes the concepts, skills, and mental awareness used by individuals during the

process of starting and developing their growth-oriented ventures. Additionally, it contributes to economic and social progress as well as a better quality of life. The Education Association, (2008) stated that entrepreneurship education is not just about teaching someone to run a business. It also aims to encourage creative thinking and promote a strong sense of self-worth and empowerment. Through entrepreneurship education, students not only learn how to start a business but also cultivate many more skills and knowledge.

2.3. *The Theory of Reasoned Action - TRA*

The theory of reasoned action (TRA) posits that an individual's intention to perform a specific behavior is influenced by two factors: attitudes and subjective norms. Attitude refers to an individual's positive or negative evaluation of performing a behavior, shaped by their beliefs about the consequences and the importance of these outcomes. Subjective norms involve social pressures or perceived influences from significant others, such as family and friends, regarding behavior. These norms measure the extent to which a person believes others think they should or should not engage in the behavior. The TRA suggests that positive attitudes and perceived social pressure increase the likelihood of performing a behavior. However, TRA does not account for perceived behavioral control, which led to the development of the theory of planned behavior (TPB) by (Ajzen, 1991). The TPB adds perceived behavioral control as a factor influencing behavioral intention and behavior, addressing the limitation of the TRA. The TRA has been widely applied in psychology, marketing, and health promotion to understand and predict human behavior.

2.4. *The Theory of Planned Behavior – The TPB*

The theory of planned behavior (TPB), developed by (Ajzen, 1991), extends the theory of reasoned action (TRA) to explain and predict human behavior. The TPB suggests that behavior is influenced by three main factors: attitude toward the behavior (favorable or unfavorable evaluation), subjective norms (social pressure to perform the behavior), and perceived behavioral control (ease or difficulty of performing the behavior). The theory posits that stronger attitudes, subjective norms, and perceived behavioral control lead to stronger intentions to engage in the behavior. The TPB is often used to explain business behavior as a function of business intention (Krueger et al., 2000).

2.5 *Human Capital Theory by (Becker, 1964)*

Human capital theory, developed by (Becker, 1964; Schultz, 1961), studies the value of education and experience. Becker defines human capital as the skills and knowledge individuals gain through investments in education, training, and experience. This investment leads to acquired knowledge and skills that enhance business success. Human capital increases the ability to perform business tasks and exploit opportunities (Shane & Venkataraman, 2000) and is essential for continuous learning and skill acquisition (Ackerman et al., 1990). Factors such as managerial and industry experience, as well as education, are crucial (Ruch & Frese 2000). Thus, the theory supports education as a means to promote entrepreneurial development and activity.

3. **Hypotheses and research framework**

3.1. *Personal factors*

Personality is a distinct trait expressed by an individual who is defined by the individual's dynamic interaction with the environment (Cervone et al., 2008). (Webster, 1989) defines personality as "the sum of the traits and characteristics that form the distinct personal nature of some person or thing" and refers to its adherence to "moral qualities, moral standards, principles, and the like". Personality traits can be classified and ranked on the basis of the correlation between them (DeYoung et al., 2007). In this study, personality traits are measured in a positive direction on the basis of the views of (Kickul et al., 2002).

(Hindle, 2007) defines entrepreneurial capacity as an individual's ability to identify and pursue opportunities to create and grow a business. It involves a combination of skills, knowledge, attitudes, and behaviors that enable individuals to identify and seize opportunities, take calculated risks, and innovate in response to changing market conditions. According to (Collins et al., 2006), entrepreneurial capacity is a necessary and basic enough condition to pursue effective entrepreneurial behavior. Furthermore, (Mitchelmore et al., 2010) explain that entrepreneurial competence is important for the growth and success of businesses.

Motivation is the act of personal motivation, acting toward specific goals, which is the psychological process of organizing behavior, motivated by rewards in the socially accepted model of behavior, including elements in the workplace for development (Kevin et al., 2016). Young entrepreneurs must be motivated from the beginning to promote passion, master life and make a difference, thereby creating entrepreneurship (Papastergiadis et al., 2014). Individuals with high motivation are more likely to be ready to start a business than people with low motivation when they engage in activities or tasks with high qualifications, responsibilities, or personal results (Nemarundwe et al., 2003).

(Obschonka et al., 2010) provided experience in the study of entrepreneurship, which is the experience in the employment of students (part-time, contract, etc.) related to business. Many researchers (Fayolle et al., 2015; Kassean et al., 2015) have noted that experience is important in driving entrepreneurship and behavior in the future. In addition, (Corbett, 2005, 2007) argued that entrepreneurs learn through experience and improvisation, suggesting that previous experience of failure will spur the development of empirical guessing methods that can benefit the sustainability of new business ventures. These discussions lead to the following hypotheses:

Hypothesis 1 (H1): Personality has a positive and significant effect on entrepreneurship.

Hypothesis 2 (H2): Entrepreneurial capacity has a positive and significant effect on entrepreneurship.

Hypothesis 3 (H3): Motivation has a positive and significant effect on entrepreneurship.

Hypothesis 4 (H4): Experience has a positive and significant effect on entrepreneurship.

3.2. Family factors

Family orientation can be understood as a relationship in which family members provide encouragement, advice, and various forms of support to one another in pursuing business careers (Sequeira et al., 2007). The support received from the family, often characterized as long-term emotional support (Procidano et al., 1983), plays a significant role in fostering an individual's desire and confidence in starting a business. Furthermore, finance is the lifeblood of new business ventures (Edelman, 2014). Finance helps young entrepreneurs pursue more capital-intensive strategies, such as exploration and testing (Cooper et al., 1994). After graduation, university students are often excluded from most traditional channels for financing at an early stage, such as credit cards or bank loans (Ozgen & Minsky, 2013). They often receive sponsorship in the early stage from friends and family (Bird, 1988; Van Auker et al., 1996; Winborg et al., 2001). Thus, family involvement may have the added benefit of facilitating borrowing from external sources (Chua et al., 2011), which further facilitates the participation of young entrepreneurs in start-up activities. These discussions lead to the following hypotheses:

Hypothesis 5 (H5): Family orientation has a positive and significant effect on entrepreneurship.

Hypothesis 6 (H6): Finance has a positive and significant effect on entrepreneurship.

3.3. Educational factors

University education plays a pivotal role in promoting entrepreneurship as a viable career choice by offering essential theoretical knowledge and exposure (Ambad & Damit, 2016). Entrepreneurship learners should be taught using practical and conceptual methods to equip them with the necessary knowledge and skills to handle challenges in entrepreneurial activities (Augustus, 2023). At university, students can gain entrepreneurial knowledge and skills, including the right attitude, business competence, and the ability to identify new job opportunities (Hassan, et al., 2020). The training program enables students to apply theory, gain business experience, and engage in real projects, helping them expand their thinking, foster creativity, increase motivation, and develop teamwork skills (Oosterbeek et al., 2008; Francisco Liñán, 2015).

According to (Novac Alexandra, 2022), effective teaching methods are crucial for building a solid foundation that engages young people in entrepreneurial activities and enhances their ability to absorb knowledge and interest in entrepreneurship. (Athayde, 2009) suggested that educational programs aimed at increasing students' awareness of entrepreneurship as a career choice can positively influence entrepreneurial characteristics. Practical aspects of entrepreneurship education, as highlighted by (Farhangmehr et al., 2016; Khalili et al., 2014; Jakubiak et al., 2016), can significantly enhance students' entrepreneurial skills and motivation as they progress through their courses. These discussions lead to the following hypotheses:

Hypothesis 7 (H7): Teaching methods have a positive and significant effect on entrepreneurship.

Hypothesis 8 (H8): Teaching content has a positive and significant effect on entrepreneurship.

3.4. Social factors

Government policies play a crucial role in supporting the formation of dynamic business startups and in encouraging businesses during their early stages of development, particularly in the initial phase of the entrepreneurial journey (Ambad & Damit, 2016). Research by (Mazzarol et al., 1999) shows that social factors such as legal policies related to business, other state policies, and infrastructure development all directly affect the business activities of startups.

Social norms are expressed through people's attitudes (family members, colleagues, friends) toward business activities and startups (Elfving et al., 2009). According to (Ajzen, 1991) TPB, social norms affect people's psychological behavior and help them consider and come to a certain decision, thereby creating pressure for people in society to have may or may not perform a desired behavior. When society has a positive and normal attitude toward business activities, more individuals tend to want to become entrepreneurs and actively seek ways to realize this goal (Jonathan et al., 2020)

Finally, social media has been identified as a platform for student entrepreneurs to sell products and services as well as interact and connect with customers in the most convenient way (Noorshella et al., 2019). Using social media as a marketing tool allows companies to connect with experts in the field, conduct research, connect with the community, and obtain business

opportunities (Smith et al., 2004). Therefore, on the basis of the above arguments, this study proposes the following hypotheses:

Hypothesis 9 (H9): Economic policy and society have a positive and significant effect on entrepreneurship.

Hypothesis 10 (H10): Social norms have a positive and significant effect on entrepreneurship.

Hypothesis 11 (H11): Media has a positive and significant effect on entrepreneurship.

3.5. The mediations of entrepreneurial capacity on the between entrepreneurship education and entrepreneurship.

Entrepreneurship education is proposed to "improve an individual's entrepreneurial capacity, skills, knowledge, and cognitive abilities, facilitating a better understanding of the business process through business education methods and entrepreneurial teaching content" (Fayolle et al., 2006). According to (Nguyen et al., 2023), entrepreneurship education and entrepreneurial capacity play fundamental roles in improving entrepreneurship. Entrepreneurship has a strong mediating effect on the relationship between entrepreneurship education and entrepreneurship among college students. Furthermore, various researchers have argued that entrepreneurial competence mediates the relationship between entrepreneurship education and entrepreneurship, especially since exposure to entrepreneurship education can facilitate competency development in students as well as confidence in entrepreneurship and in efficiency and success. The majority of studies point to the positive impact of entrepreneurship education on the cultivation of entrepreneurial skills and abilities, thereby enhancing overall entrepreneurial competence (Alharbi et al., 2018; Bae et al., 2014; Florin et al., 2007; Gorman et al., 1997). Therefore, on the basis of the above arguments, this study proposes the following hypotheses:

Hypothesis 12 (H12): Teaching content has a significant mediating effect on the relationship between entrepreneurship education and entrepreneurship.

Hypothesis 13 (H13): Teaching methods have a significant mediating effect on the relationship between entrepreneurship education and entrepreneurship.

The research model is shown in Figure 1 below:

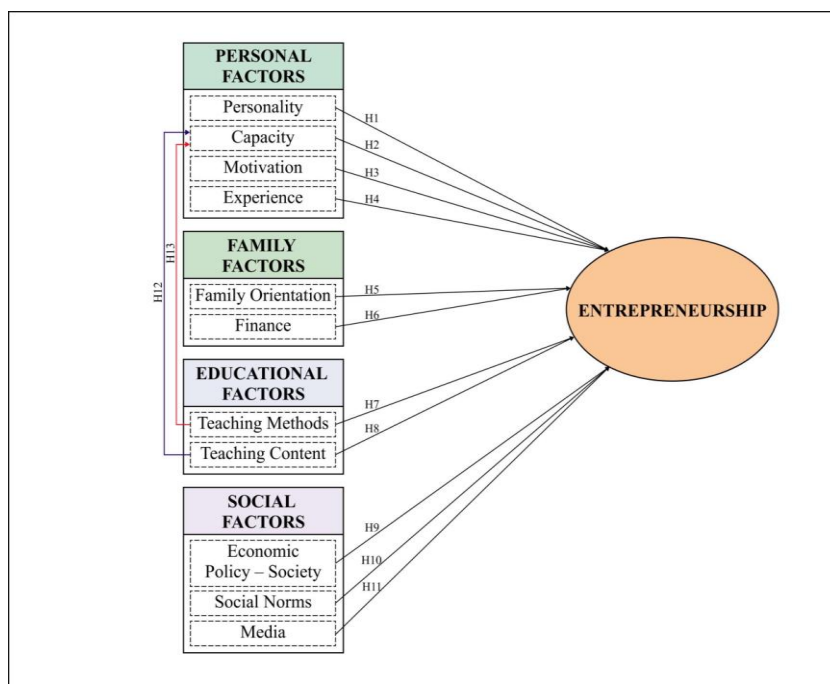


Figure 1 Research model.

4. Materials and methods

Quantitative research aims to examine the relationships between factors and entrepreneurial intention, with the mediating role of capacity. The total population at the end of 2023 is 9 universities. The survey was conducted among students at the university in Da Nang City, Vietnam. The sampling method used was accidental sampling, with a total sample of 394 college students. The questionnaires were administered via Google Forms and distributed via WhatsApp, Facebook, Zalo, Instagram, and direct surveys. This study used a 5-point Likert scale (1 = "Strongly disagree" to 5 = "Strongly agree") as a scale for each item. The questionnaires included five items for assessing personality traits, six items for entrepreneurial capacity, four items for motivation, four items for experience, four items for family orientation, four items for finance, four items for teaching methods, five items for teaching content, five items for socioeconomic policies, five items for social norms, five items

for social media, and four items for entrepreneurship. Table 1 presents references for the dimensions and indicators of all the variables tested in this study.

Table 1 Framework of Dimensions.

Factor	Dimension	Previous Research
Personal	Personality	DeYoung, Quilty, and Peterson (2007); Kickul & Gundry (2002).
	Capacity	Collins et al. (2006); Hindle (2007); Mitchelmore & Rowley (2010).
	Motivation	Nemarundwe & Cronkleton (2003); Papastergiadis & Lynn (2014).
	Experience	Corbett (2005, 2007); Fayolle et al. (2006); Gird & Bagraim (2008); Kassean et al. (2015).
Family	Family Orientation	Tao Shencho (2017); Zellweger et al. (2011).
	Finance	Chua et al. (2011); Iñaki Peña (2002); Steier (2003).
Educational	Teaching methods	Alharbi et al. (2018); Bae et al. (2014); Farhangmehr et al. (2016); Florin et al. (2007); Gorman et al. (1997); Khalili et al. (2014); Zahra Arasti et al. (2012).
	Teaching content	Boyd (2017); Chen et al. (1998); Fayolle et al. (2006); Jakubiak & Buchta (2016); Nguyen et al. (2023); Saeed et al. (2015).
Social	Economic policy - society	Ambad & Damit (2016); Tolu Olarewaju, (2023).
	Social norms	Autio et al. (1997); Jonathan Levie et al. (2020); Lüthje and Franke (2003).
	Media	Kuhn et al. (2016); Nylander et al. (2011).

Finally, the data collected through questionnaires were entered and analyzed via partial least squares structural equation modeling (PLS-SEM) and SMART PLS 4 for statistical analysis. The mediating effect was tested while running PLS-SEM with bootstrapping at 5000, and the significance of the indirect effects was checked via the bias-corrected percentile method.

5. Results

5.1. Statistical Analysis Description

Table 2 summarizes the demographic data of the respondents who participated in this study. Frequencies and percentages were used to examine the distribution of the respondents by gender, university, field of study and year in university.

Table 2 Demographic data of the respondents.

Statistical indicators: N = 394		Frequency	Percentage
Gender	Male	150	38.1
	Female	244	60.9
Which year are you in college?	Freshman	60	15.2
	Sophomores	151	38.3
	Juniors	118	29.9
	Seniors	65	16.5
Field of Study	Economics Sector	229	58.1
	Languages	43	10.9
	Medicine/Pharmacy	14	3.6
	Technology Sector	48	12.2
	Engineering	32	8.1
	Tourism Sector	22	5.6
	Education	6	1.5
Universities	Duy Tan University	103	26.1
	Danang University of Economics	68	17.3
	Danang University of Foreign Languages	14	3.6
	Danang University of Architecture	30	7.6
	Da Nang University of Science and Technology	40	10.2
	Da Nang University of Education	14	3.6
	Danang University	28	7.1
	FPT College/University	35	8.9
	Dong A University	62	15.7

According to the data in Table 2, 150 (38.1%) of the respondents are male, and 244 (60.9%) are female. For the academic year, the results revealed that the highest number of sophomore students who participated in the survey was 151 (38.3%), followed by 118 (29.9%), 65 (16.5%), and 60 (15.2%) junior students. For the field of study, students majoring in economics accounted for the highest percentage, 229 (58.1%), and 103 (26.1%) respondents were students of Duy Tan University, which was the highest percentage.

5.2. Reliability and validity of the measurement scale

According to Hair et al. (2013), an observed variable is considered meaningful when the outer loading value is 0.7 or higher, and those with values below 0.4 should be discarded. In the study with the sample ($n = 394$), variables with outer loadings > 0.6 were considered reliable. The analysis results indicate that the load factors for CAP5 (0.54), PER2 (0.55), and CAP4 (0.57) are less than 0.7. As a result, these variables were excluded from the model. The remaining observational variables met the satisfactory criteria, ranging from a minimum value of 0.62 (PER4) to a maximum value of 0.87 (TEC3, FIN2, FIN2).

As shown in Table 3, the Cronbach's alpha (CA) values for construct reliability ranged from 0.70--0.85, which is greater than the threshold value of 0.7 (Nunnally & Bernstein, 1994). Table 3 also shows the composite reliability (CR) values, with values ranging from 0.8--0.9, which exceeds the threshold value of 0.7 (Kline, 2015).

To measure convergent validity, average variance extracted (AVE) and factor loadings are tested (Hair et al., 2017). The values of all the factor loadings are greater than 0.7. The AVE values of all the factors range from 0.5--0.69, meaning that they are greater than the threshold value of 0.5. On the basis of the loading factors and the AVE, convergent validity for all the constructs is stated to be fulfilled.

Table 3 Results of the Measurement Model.

Item	Outer Loading	Cronbach's Alpha	Consistent Reliability Levels Internally (CR)	Average Variance Value (AVE)
PER 1: I tend to choose careers that require exploration and creativity.	0.76	0.70	0.80	0.50
PER 3: I think success or failure will come from myself rather than from other people and circumstances.	0.71			
PER 4: The risk of failure is a big concern for me.	0.62			
PER 5: I aspire and pursue success.	0.72			
CAP1: I am always willing to do anything to become an entrepreneur.	0.74			
CAP2: I have the ability to plan my business for the future.	0.81	0.72	0.83	0.55
CAP3: I have good communication and social skills.	0.75			
CAP6: I am confident in my leadership skills, good business management.	0.65			
MOV1: Entrepreneurial motivation has always driven my career.	0.81			
MOV2: I'm always ready to be my own master.	0.85			
MOV3: I have always been motivated to make money.	0.84	0.85	0.90	0.69
MOV4: I always try to turn business ideas into reality.	0.81			
EXP1: I participated in extracurricular activities on entrepreneurship and entrepreneurship held at the school.	0.81			
EXP2: I have participated in the management (class officials, unions) at the school.	0.69			
EXP3: I have participated in extracurricular activities of school-affiliated businesses.	0.75			
EXP4: I have been working part-time with a part-time job related to my major.	0.65	0.70	0.82	0.53
FAO1: I was encouraged by my family members to start my own business.	0.79			
FAO2: My family is willing to provide me with resources and equipment to help me with my business.	0.69			
FAO3: I have the support of my family members in the business.	0.85			
FAO4: My family is a strong driving force for my business.	0.69			
FIN1: My family has the ability to raise capital for my business.	0.87	0.83	0.89	0.67
FIN2: My family has the ability to solicit sponsors for my business campaign.	0.87			
FIN3: My family is willing to sponsor financially.	0.81			
FIN4: My family guarantees business loans that make it easy to access capital from banks.	0.68			
TEM1: Startup competitions create practical opportunities and spark a passion for business for students.	0.77			
TEM2: The University's learning method has helped me improve my ability to come up with creative ideas about starting a business.	0.72	0.80	0.87	0.62
TEM3: The university focused on developing my business skills.	0.70			

TEM4: The University organizes business-oriented activities through competitions such as start-ups, start-up conferences.	0.81			
TEC1: Competitions in entrepreneurship activities have helped me develop entrepreneurship.	0.78	0.81	0.87	0.58
TEC2: I was encouraged to pursue a project at university.	0.79			
TEC3: Entrepreneurship activities should not be limited to business students.	0.87			
TEC4: The University provided me with ideas to start a new business.	0.73			
TEC5: My university education helped me develop creative ideas to become an entrepreneur.	0.76			
SEP1: The local government has simplified the process of applying for business applications for students.	0.80	0.83	0.88	0.59
SEP2: The government actively supports courses and training for business students.	0.81			
SEP3: Entrepreneurship policy enhances the readiness of individuals to start a business.	0.83			
SEP4: The government supports funding for student start-up projects.	0.73			
SEP5: Strengthen the organization of internship and experience activities at enterprises so that students can be exposed to the business environment.	0.67			
SOS1: My family has always supported me to become an entrepreneur.	0.69	0.75	0.83	0.50
SOS2: People around me encouraged me to be an entrepreneur.	0.68			
SOS3: Starting a business in the Vietnamese market is operating very smoothly.	0.74			
SOS4: In Vietnam, business is considered worthwhile albeit risky.	0.73			
SOS5: Entrepreneurs are an example for me to pursue my future career.	0.68			
SOM1: The media always celebrates successful entrepreneurs.	0.75	0.83	0.88	0.59
SOM2: The media often praises young entrepreneurs.	0.76			
SOM3: The media constantly encourages others to develop new business ideas. Communication always encourages others to develop new business ideas.	0.80			
SOM4: I have a better understanding of the skills and motivations needed to successfully launch a new business from the media.	0.79			
SOM5: I have learned more about starting my own business through the media.	0.75			
EN1: I have a positive attitude toward business.	0.77	0.77	0.85	0.59
EN2: I have faith in my business ability.	0.81			
EN3: Planning, considering opportunity costs, controlling business-related issues.	0.78			
EN4: Become an entrepreneur because that is my favorite thing.	0.71			

Finally, to measure discriminant validity, the heterotrait–monotrait ratio (HTMT) was measured Hair et al. (2017) and Henseler et al. (2015). As shown in Table 4, all the constructs had HTMT values lower than 0.85, and values ranging from 0.85 to 0.9 are acceptable, which indicates good discriminant validity. With this study sample, an HTMT index < 0.9 was considered. The results after two runs revealed that no pair of factors had a value of 1 in the 2.5% and 97.5% percentiles. On the basis of these findings, discriminant validity has been established. No issues related to validity and reliability emerged in the findings of the measurement model assessment analysis.

5.3. Structural model results (PLS–SEM)

Tables 5 and 6 show the results of the structural model estimation of PLS–SEM with the help of the SmartPLS application. The structural model can be evaluated by assessing the value of the coefficient of determination (R^2), the effect size (f^2), the predictive relevance (Q^2), and the path coefficient of each research hypothesis (Hair et al., 2019).

As shown in Table 5, the analysis revealed the model's robustness, as indicated by a variance percentage (R^2) of 44% for entrepreneurial capacity and 64% for entrepreneurship. In addition, the results of the analysis revealed a Q^2 value of 0.42 (CAP), which indicates moderate predictive relevance. The entrepreneurship variable is 0.60, which indicates high predictive

relevance according to the standards (Hair et al., 2019). Furthermore, as shown in Table 5, most of the f^2 values are in a large category according to the standards (Hair et al., 2019).

Table 4 Results of discriminant validity (HTMT).

	CAP	EN	EXP	FAO	FIN	MOV	PER	SEP	SOM	SOS	TEC	TEM
CAP												
EN	0.87											
EXP	0.75	0.63										
FAO	0.74	0.62	0.63									
FIN	0.64	0.52	0.57	0.80								
MOV	0.73	0.79	0.40	0.56	0.46							
PER	0.79	0.79	0.53	0.61	0.46	0.87						
SEP	0.61	0.67	0.50	0.62	0.58	0.51	0.61					
SOM	0.68	0.74	0.47	0.51	0.49	0.79	0.69	0.59				
SOS	0.83	0.84	0.62	0.75	0.67	0.71	0.74	0.74	0.70			
TEC	0.82	0.88	0.64	0.71	0.65	0.75	0.81	0.76	0.72	0.81		
TEM	0.73	0.72	0.65	0.67	0.58	0.63	0.75	0.68	0.59	0.77	0.88	

Table 5 Q², R² and R² adjusted indices.

Factors	Q ²	R ²	R ² Adjusted
EN	0.60	0.64	0.63
CAP	0.42	0.44	0.43

Table 6 Results of partial least square path analysis.

Hypothesis	Path	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P value	VIF	f ²	Decisions
H ₁	PER → EN	0.04	0.04	0.04	0.84	0.40	2.24	0.00	rejected
H ₂	CAP → EN	0.187	0.18	0.05	3.56	0.00	2.35	0.04	accepted
H ₃	MOV → EN	0.19	0.19	0.05	3.60	0.00	2.77	0.04	accepted
H ₄	EXP → EN	0.08	0.08	0.04	1.91	0.05	1.65	0.01	accepted
H ₅	FAO → EN	-0.03	-0.03	0.05	0.62	0.53	2.10	0.00	rejected
H ₆	FIN → EN	-0.07	-0.07	0.05	1.50	0.14	1.90	0.00	rejected
H ₇	TEM → EN	0.02	0.02	0.06	0.30	0.77	2.39	0.00	rejected
H ₈	TEC → EN	0.35	0.35	0.06	5.69	0.00	3.27	0.06	accepted
H ₉	SEP → EN	0.08	0.08	0.05	1.48	0.14	1.95	0.01	rejected
H ₁₀	SOS → EN	0.17	0.17	0.05	3.21	0.00	2.42	0.03	accepted
H ₁₁	SOM → EN	0.09	0.09	0.05	1.87	0.06	2.17	0.01	rejected

According to Chatterjee & Simonoff (2013); Hair et al. (2019), the model appears multilinear when the VIF is greater than 5. Table 6 shows that the variance inflation factor (VIF) index of the paths in the model is less than 5, so the model does not appear to be multicollinear.

The PLS-SEM technique was employed for estimation and analysis, which substantiated the formulation of the hypotheses. Table 6 presents the beta (β) values, t values, and p values associated with these hypotheses. On the basis of the results of hypothesis testing, as shown in Table 6, five of the eleven hypotheses in this study were accepted. For the direct effect, CAP, MOV, EXP, TEC and SOS have positive and significant effects on entrepreneurship (EN) (coefficient, $\beta = 0.187$, t statistic = 3.56, $p < 0.00$), ($\beta = 0.19$, t statistic = 3.60, $p < 0.00$), ($\beta = 0.08$, t statistic = 1.91, $p < 0.05$), ($\beta = 0.35$, t statistic = 5.69, $p < 0.00$), and ($\beta = 0.17$, t statistic = 3.21, $p < 0.00$), respectively. Therefore, H₂, H₃, H₄, H₈, and H₁₀ are accepted. The observed relationships between PER, FAO, FIN, TEM, SEP, SOM and entrepreneurship ($p > 0.05$) were found to be nonsignificant, so H₁, H₅, H₆, H₇, H₉ and H₁₁ were rejected.

On the basis of the data from Table 7 above, the results of hypothesis testing for the moderating role of the CAP showed that the CAP is able to moderate the relationship between TEM and EN ($\beta = 0.04$, $t = 2.64$, $p < 0.00$). The independent variable TEC is also known to have a significant effect on the dependent variable EN through the mediating variable CAP on the basis of empirical data ($\beta = 0.09$, $t = 2.64$, $p < 0.00$). The calculation shows that entrepreneurial capacity plays a mediating role in the relationship of TEM and TEC with entrepreneurship.

Table 7 Mediation effects through specific indirect effects.

Hypotheses	Path	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P - values	Decisions
H ₁₂	TEM→CAP→EN	0.04	0.04	0.01	2.64	0.008	Mediation
H ₁₃	TEC→CAP→EN	0.09	0.09	0.03	3.14	0.002	Mediation

6. Discussion

This study highlights the significance of personal factors (such as personality, entrepreneurial capacity, motivation, and experience), family factors (including family orientation and financial support), educational factors (such as teaching methods and content), and social factors (including economic policy, social norms, and media) in influencing the entrepreneurship of students. Notably, the study clarifies the mediating role of student competencies in the relationship between entrepreneurship education and entrepreneurship. The research results are shown in Figure 2 below.

6.1. Personal factors

Hypotheses 2, 3, and 4 support the findings of this study, which demonstrate a relationship between entrepreneurial capacity, motivation, and experience with entrepreneurship. This implies that entrepreneurial capacity, motivation, and experience can positively affect students' entrepreneurship. Motivation significantly positively impacts entrepreneurship (Papastergiadis & Lynn, 2014). Motivated students drive passion, take control of their lives, and foster entrepreneurship. Capacity positively influences entrepreneurship (Kuratko et al., 2009; Leitão & Franco, 2011). Combined skills, knowledge, and calculated risk-taking in a dynamic market environment are essential for effective entrepreneurial behavior. Experience positively impacts entrepreneurship (Gird & Bagraim, 2008). This once again bolstered the scientific evidence of previous studies. However, the results of the current study show no direct significant link between personality and entrepreneurship. The results indicate that factors such as capacity, motivation, and experience are extremely important in fostering the entrepreneurship of students in Da Nang city and that capacity enables students to adapt quickly to changes in the business environment, allowing them to develop creative and effective solutions to emerging challenges. Practical experience through business activities or internships in companies and enterprises is crucial in helping students understand what is required when they choose the path of entrepreneurship in the future. Finally, motivation plays a key role in maintaining a positive mindset, which drives the entrepreneurship of students.

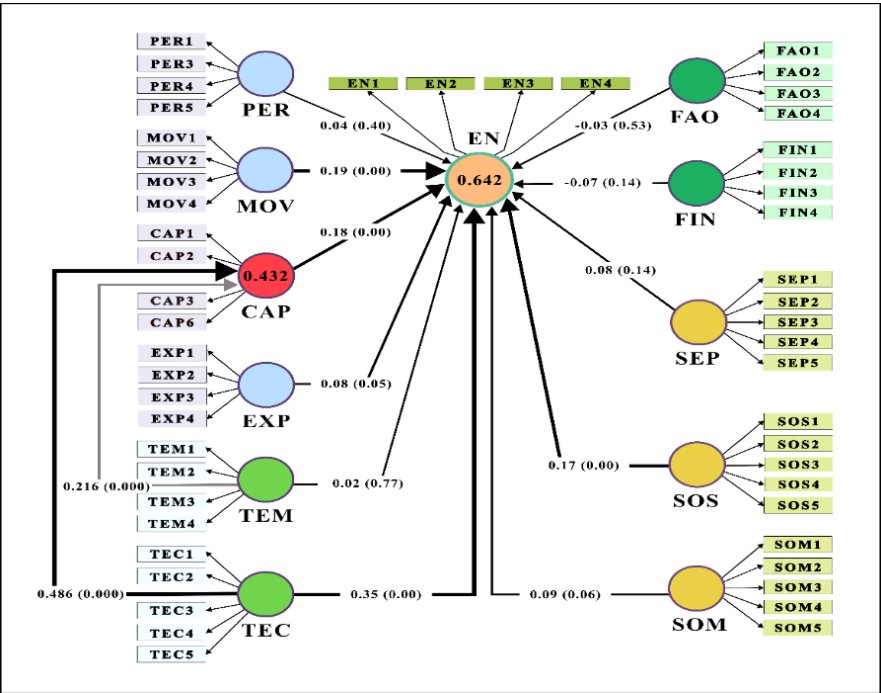


Figure 2 Results of the partial least squares structural equation modeling (PLS-SEM).



6.2. Educational factors

This study was designed to test for the prediction of H₇ and H₈ with respect to educational factors. The results of the current study show no direct significant link between teaching methods and entrepreneurship. This result contradicts the authors' previous arguments (Farhangmehr et al., 2016; Jakubiak & Buchta, 2016; Khalili et al., 2014). However, this finding is in line with the studies of Augustus (2023); Francisco Liñán (2015); Oosterbeek et al. (2008), who reported that teaching content directly influences the entrepreneurship of students as entrepreneurs. This finding occurs because teaching content exposes students to the world of entrepreneurship and stimulates their entrepreneurial interest and knowledge (Ajzen, 1991), hence increasing their propensity to exhibit attitudes such as behavioral control, take risks and be proactive in creating their own businesses. Therefore, the educational environment serves as a pivotal factor in cultivating students' entrepreneurship, as it provides them with essential knowledge of entrepreneurship, thereby enhancing and solidifying their entrepreneurial mindset.

6.3. Family and social factors

The results show that there is a direct positive impact of social norms on students' entrepreneurship. The results agreed with those of researchers such as Ajzen (1991); Elfving et al. (2009); Jonathan Levie et al. (2020), who also reported a significant relationship between social norms and entrepreneurship. This is because subjective norms refer to social influence from various sources (e.g., family and friends) that guide human action. In Vietnam, social influence is very high with respect to an entrepreneurship career where the future is unknown.

In addition, the results of the current study show no direct significant link between economic policy—society, media, family orientation, finance and entrepreneurship. This result contradicts the authors' previous arguments (Ambad & Damit, 2016; Bird, 1988; Noorshella et al., 2019; Van Auken et al., 1996; Winborg & Landström, 2001).

6.4. Mediating role of entrepreneurial capacity

After the mediating effect of the capacity variable is evaluated, it can be concluded that entrepreneurship education (teaching methods, teaching content) plays a more significant role in fostering entrepreneurship. The entrepreneurship education environment is recognized as a critical factor in promoting entrepreneurship and innovation, particularly in developing countries. Extensive research has demonstrated that entrepreneurship education enhances entrepreneurial activity and equips individuals with the essential skills needed to formulate business and growth strategies. Our findings show that entrepreneurship education contributes to the enhancement of students' entrepreneurial capacity, whereas students' entrepreneurial capacity contributes to the formation and development of their entrepreneurial intentions. This finding supports earlier studies (Martínez-Martínez and Ventura, 2020; Nguyen et al., 2023). Our study confirms that students' entrepreneurial capacity serves as a partial mediator in the relationship between entrepreneurship education and their entrepreneurial intentions.

7. Conclusions

This study examines factors influencing student entrepreneurship in Da Nang, focusing on personal, family, educational, and social factors. It highlights the mediating role of entrepreneurial capacity between entrepreneurship education and entrepreneurship. Findings show that entrepreneurial capacity, motivation, experience, teaching content, and social norms positively impact entrepreneurship, supporting the theory of planned behavior, reasoned action, and human capital theory. The study confirms that entrepreneurial capacity partially mediates the link between education and entrepreneurship. These findings provide a comprehensive and insightful view of entrepreneurship and entrepreneurship education, highlighting key factors that influence entrepreneurial intentions and offering important implications for educational policies and practices. However, limitations include the focus on Da Nang, which may limit generalizability, the use of a cross-sectional design, and reliance on self-reported data prone to biases. Future research should use diverse samples, longitudinal designs, and objective measures. In summary, entrepreneurship serves as a catalyst for economic growth and innovation. This study highlights the need for further research on mediation effects and provides valuable insights for policymakers and universities. By enhancing entrepreneurship education and implementing supportive measures such as subsidies and tax incentives, they can effectively promote entrepreneurial activities.

Ethical considerations

The research was conducted following the guidelines stipulated in the Helsinki Declaration. Our research has been approved by the Institutional Ethics Committee of Duy Tan University. The consent to participate in this study is in written form, and detailed information about the study was provided to each participant. Written consent forms were signed by all participants before their inclusion in the study.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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