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Article

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The impact of entrepreneurship knowledge on students' e-entrepreneurial intention formation and the moderating role of technological innovativeness

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Abstract

In the era of Industry 4.0, online entrepreneurship is gradually seen as an essential tool that brings innovative values to the integration and development of a country. The rapid failure of nascent businesses stemming from a lack of human capital directed this study to explore the role of students' knowledge and technological innovativeness in motivating students to form e-entrepreneurial intentions. Information collected from 405 students from universities in Vietnam via online questionnaires was analysed using SmartPLS 4 to test the relationships among seven factors proposed in the research model. The results show that entrepreneurial education and prior experiences are the foundation for improving students' perceived feasibility and usefulness, forming their entrepreneurial motivation. Next, entrepreneurial motivation becomes an important premise for promoting students' entrepreneurial intentions more effectively. Furthermore, the study found that students' technological innovativeness moderated the relationship between their entrepreneurial motivation and intention to set up a digital business.

Keywords: E-entrepreneurial intention, Education, Prior experience, Technological innovativeness, Motivation

Introduction

Starting a business is gradually being seen as an important part of modern life today. Being a firm owner not only contributes to supporting job creation to aid the national economy to grow and prosper (Gieure et al., 2019), but it also helps entrepreneurs pursue their passion for business (Wiklund et al., 2019). In Vietnam, the emergence and operation of small and medium-sized enterprises in Vietnam have increased 36% of the country's added value when SMEs account for 97% of all companies and employ up to 60% of the workforce in this country (Chowdhury et al., 2022). Realizing the importance of this large number of SMEs, the Government has paid attention and proposed policies to support the development of these SMEs, such as making business regulations more straightforward and reducing income taxes, and notably Project 844, "Support

Innovative Startup Ecosystem in Vietnam Until 2025", approved by the Prime Minister in 2016 to create a favourable startup environment in Vietnam to promote the formation and the contribution of these businesses to national development (Asian Development Bank [ADB], 2022; OECD, 2021).

The advancement of recent technologies has created a new business model in the form of online called e-commerce as a compromise between traditional business and creativity and innovation in the digital era. Therefore, it is considered to have contributed significantly to the country's economic development through innovation activities to create new value propositions, especially in emerging markets (Herman et al., 2022; Soto-Acosta, 2020; Turban et al., 2018). This is a favourable condition for potential entrepreneurs to explore and seize business opportunities with low financial capital requirements but can gain more competitive advantages than traditional entrepreneurs (Lian & Yen, 2017). From there, the concept of e-entrepreneurship was formed to refer to individuals or organizations that establish a new business on a digital platform or carry out the creative transformation of the current business form to an online form by partially or fully applying modern scientific and technological achievements to business activities (Duan, 2022).

In Vietnam, small and medium-sized enterprises are also making great efforts to implement creative innovations by researching and applying new technologies in product development, business operations, and especially marketing (OECD, 2021). Above all, Vietnam's Internet usage rate reached 70.3%, of which 62.8% of users use online shopping applications on mobile devices (We Are Social & Hootsuite, 2021). Grasping consumer trends and considering them as a favourable condition for the development of online business models, the Vietnamese Government has focused on supporting and investing in these creative businesses, especially young startups, to initially improve the entrepreneurial spirit as well as the ability to succeed of potential entrepreneurs with a record high investment of 1.4 billion USD, even after just going through the Covid-19 pandemic (National Innovation Center, 2021). Previously, the National Technology Innovation Fund was also established by the Ministry of Science and Technology in 2015 to encourage potential entrepreneurs and scientists to participate in the creation of startup companies to promote economic growth (ADB, 2022).

According to Pham et al. (2023), today's student is a potential force possessing many advantages for e-entrepreneurial careers (Tuan & Pham, 2022). These students show a lot of enthusiasm and motivation for entrepreneurship (Fiet, 2001). In addition, they can bring unique and broad perspectives to the problems faced (Kaylan et al., 2022). They are not only supported by the universities to approach the knowledge in business but are also passionate about research, looking for opportunities to use technology, as well as quickly adapting to innovations to seize opportunities for their career (Isaacs et al., 2020). Support from the government and the availability of socio-environmental resources at the current are favourable conditions to help students think more positively about entrepreneurship (Dou et al., 2019; Yao et al., 2016). However, internal factors of the enterprise, such as shortage of human resources, financial resources, and no support from the external environment, especially in the case of lack of human capital as a required characteristic of an as well as business knowledge and skills, are still considered to be the main problem faced by potential student entrepreneurs and leading to the

failure of small businesses, especially in the early stages of business establishment (Filho et al., 2017; Mayr et al., 2021).

Entrepreneurial knowledge is an indispensable resource, providing a sustainable competitive advantage for students to successfully start a business, achieve efficiency, and maintain its existence and growth in the early stage (Zeng et al., 2023). This knowledge is mainly accumulated from past education and prior experiences (Omerzel & Antončič, 2008). The university's teaching and training on business entrepreneurship help students understand the difficulties in the business process while also providing students with the necessary skills to overcome them (Lai & To, 2020). Since then, entrepreneurship knowledge has been believed by researchers to play an essential role in changing students' thinking and attitudes, helping them realize their true abilities and tend to pursue a more entrepreneurial path (Karyaningsih, 2020; Mohammed et al., 2023).

Entrepreneurship education can enhance entrepreneurial creativity by strengthening knowledge and shaping entrepreneurial attributes (Rodrigues et al., 2010). Besides, McCord et al. (2015) also stated that business experiences support all aspects of student's critical thinking by creating favourable conditions for students to engage in practical business problems. From there, students know how to apply their knowledge from previously completed projects into practice (Bajada & Trayler, 2013). Thus, students' business-related perceptions will be enhanced when stimulated by environmental factors, as previously stated in the theory of planned behaviour (Ajzen, 1991), social cognitive theory (Bandura, 1986), and findings from related studies (Barton et al., 2018; Belso-Martínez et al., 2013; Mullins & Cronan, 2021). Specifically, the necessary basic knowledge and skills that students acquire inside and outside of school serve as the essential foundation to help realize the positive results that self-employment brings to view it as a driving force and enhance a more robust entrepreneurial spirit to achieve those expected results (Hassan et al., 2021). Therefore, with a critical role in shaping and promoting students' entrepreneurial intentions, entrepreneurial education and prior entrepreneurial experience can be seen as predictors or explanations for differences in students' entrepreneurial intentions (Franke & Luthje, 2004; Roxas, 2014). Successful startups require entrepreneurs to flexibly apply acquired knowledge to situations and problems in today's innovative economy. Thus, shaping students' entrepreneurial mindset by providing the proper business knowledge is crucial to gaining competitive advantages over other countries (Jena, 2020).

Douglas and Shepherd (2000) argue that people will be more motivated to become an entrepreneur when they perceive self-employment's total income and autonomy benefits to be higher than when working in other jobs on the market. Previously, when Moy et al. (2001) studied the entrepreneurial motivation of Thai and Hong Kong university students, they concluded that motivations such as external rewards, intrinsic rewards, autonomy, family security, and change management have made an individual choose entrepreneurship as their future career. Recent studies looking at entrepreneurial motivation also found that this factor promotes the formation and development of entrepreneurial intention (Lang & Liu, 2019; Schlepphorst et al., 2020). This motivation can empower individuals to face challenges and difficulties. It guides them to continue their chosen career path to achieve the desired results (Shahzad et al., 2021). In addition, motivation is based on the perception that the behaviour that individuals want

will achieve positive outcomes when performed, as well as the likelihood that they will be able to complete it (Packham et al., 2010). Therefore, it is necessary to consider the impact of perceptions related to technology-based entrepreneurship on student motivation. With support from the university providing entrepreneurship courses and related extracurricular activities, collected experience helps recognize the positive results that self-employment brings as a driving force and enhances a more robust entrepreneurial spirit to achieve those expected results (Hassan et al., 2021). From there, students actively increase their perception of e-entrepreneurship through the courses and activities provided by the university, especially the perceived feasibility of entrepreneurial behaviour and the usefulness of technology application in the entrepreneurial process (Patzelt & Shepherd, 2009; Wu & Wu, 2008).

Another source of human capital is personal traits, which are thought to contribute to shaping a similar personality type when interacting with information technology (Dai et al., 2015; Yuan et al., 2016). One of those personality types is innovation, which refers to the tendency of individuals to support or propose unique, new ideas and participate in experimentation, leading to the development of new products, services, or technologies (Lumpkin & Dess, 2001). Therefore, individual technological innovativeness is also conceptualized as a particular personality trait, such as openness, confidence, and always looking for opportunities and challenges (Abubakre et al., 2022), and is used to explain why the individual wants to learn and use new technology (Agarwal & Prasad, 1998). In motivating individuals to form an e-entrepreneurial intention, many risks may limit entrepreneurial motivation. This limitation also creates many disadvantages in shaping and implementing the e-entrepreneurial intention (Ajzen, 2015; Henley, 2005; Malebana, 2014). Although starting a successful business will bring many material and spiritual achievements, once mistakes occur, the business cannot keep up with the market and suffers severe consequences (Cantamessa et al., 2018). Therefore, pursuing or deciding to establish a company requires potential entrepreneurs to have a high risk-taking tendency and innovation to respond to continuous changes in strategy as well as technology when running a business to avoid catastrophic failures and become a successful entrepreneur in today's extremely competitive business environment (Shahzad et al., 2021; Valliere, 2019).

Furthermore, previous studies confirm the close connection between entrepreneurs and innovation because it depends on whether entrepreneurs create economic growth (Schumpeter & Swedberg, 2021). Cheng (2014) has also argued that the more innovative individuals are, the more likely they are to seek and use new technologies to enjoy and achieve the long-term benefits they provide when solving problems. Nowadays, studies on individual technological innovativeness have also been conducted in various fields, such as online learning (Bubou & Job, 2022), innovative work behaviour (Wu & Yu, 2022), and the satisfaction of online entrepreneurs (Lian & Yen, 2017). When researching the business field, most studies only focus on the impact of individual innovativeness on business results (Chege et al., 2020; Huang et al., 2022). Very few studies have examined its influence on entrepreneurial intention (Al-Mamary & Alshallaqi, 2022; Ugwueze et al., 2022). However, those studies only consider innovation as a direct influencing and stimulating factor and do not assume other potential roles, such as moderation. This current situation has led to

the urgency of considering and exploring the potential moderating role of technological innovativeness in research on e-entrepreneurial intentions of students, which is an early but crucial stage in deciding whether a business is established (Farrukh et al., 2019).

The support and significant growth potential of the country mentioned above have created an attractive business environment to attract foreign investment and help potential entrepreneurs in Vietnam access many opportunities and start their innovative journey more smoothly. However, while those supports could effectively promote the desire of many people to start up, only a few have the capital, drive, and determination to make that idea a reality and successfully manage that startup (Suong & Dien, 2021; To & Le, 2021). This has led to the necessity for a research topic in e-entrepreneurship to provide empirical results and policy suggestions to improve morale and operational efficiency for creative businesses, not only in Vietnam but can also be considered and applied in other countries. Many scholars have researched the intention to operate a business, but most focus on the traditional form, especially in emerging economies like Vietnam (Bui et al., 2020; Khuong & An, 2016; Nguyen et al., 2019), although Internet business is perceived to have more growth potential because it allows entrepreneurs to exploit business opportunities, reduce capital in investment and operation (Pickernell et al., 2013). Not only that, although there are many studies on business intentions on digital platforms, there are still some limitations. These limitations are usually in terms of the sample, research scope, as well as not being able to fully consider the factors that have the potential to affect the e-entrepreneurial intention with a direct, moderating, or mediating role, especially technology-related ones (Alferaih, 2022; Al-Mamary & Alraja, 2022; Vafaei-Zadeh et al., 2023).

Therefore, the research questions are posed as follows: How to enhance students' e-entrepreneurship intention? How do universities support students to have a more positive perception towards establishing a digital business? Does students' technological innovativeness influence the enhancement of motivation towards e-entrepreneurship intention? Thus, this article aims to identify and evaluate the importance of knowledge (including education and previous related experiences) for e-entrepreneurial intention formation through recognizing the feasibility, usefulness, and premise of intention as entrepreneurial motivation, notably exploring the moderating impact of individual technological innovativeness in the relationship between students' e-entrepreneurial motivation and intention.

This article evaluates and expands the entrepreneurial intention research theoretical model by considering additional technology-related factors, such as perceived usefulness and individual technological innovativeness, to explore entrepreneurial intention in the current industrial era 4.0. Therefore, one of the exciting findings of the study is the moderating role of technological innovativeness in the relationship between students' e-entrepreneurial motivation and intention. In addition, the research not only suggests policies to help strengthen the capital needed by a future e-entrepreneur but also suggests several policies to help minimize demographic differences to ensure that students have equal and effective learning conditions and nurture the spirit of creative entrepreneurship.

Theoretical framework and hypotheses

E-entrepreneurial intention

E-entrepreneurial intention (EEI) is defined as a subjective meaning or idea about establishing and owning a new business based on electronic devices and the Internet, considered the primary predictor of individuals' actual business behaviour (Halbusi et al., 2022; Michaelis et al., 2020). Krueger et al. (2000) argue that becoming an entrepreneur is a planned behaviour, not a spontaneous decision. Organizing human resources, finding a suitable operating position, amassing money for startup capital, or preparing to develop a product or service are activities commonly found in a business plan when an individual or organization intends to establish a business of its own (Aldrich & Martinez, 2001; Zott & Amit, 2010). This aligns with Shapero and Sokol's (1982) observation that the intention to perform a previously proposed behaviour will be formed first and is the direct antecedent of the actual behaviour. Therefore, the more substantial the intention, the likelihood that the behaviour will be performed. Focusing on the study of EEI greatly aids in predicting startup behaviour and proposing appropriate solutions to promote the trend of innovative startups based on technology because the intention is an important and decisive premise for predicting future behaviour (Thompson, 2009).

In contrast, Armitage and Conner (2001) found no strong connection between intention and behaviour. In the process of developing intention into behaviour, there are still many factors affecting the outcome of this process, such as education (Rauch & Hulsink, 2015), financial support (Ghouse et al., 2021), perceived feasibility (Liñán & Santos, 2007; Moghavvemi et al., 2016). When attitudes towards entrepreneurship are affected, it will also change an individual's intention to start a business over time, so the educational background plays a vital role in helping people realize that transition is easier (Su et al., 2021). Specifically, entrepreneurial education can improve students' competence and confidence, promoting a more positive perception of entrepreneurship by providing a full range of necessary knowledge and increasing experiential activities in business (Abdelfattah et al., 2023; Ashari et al., 2021).

Entrepreneurial knowledge

This article's entrepreneurial knowledge is an overview of individuals' necessary, correct understanding of the concept of online business and how to apply it to develop new products, build businesses, sell products/services, and evaluate the business environment with the support of modern technological devices and applications (Clinkard, 2018; Karyaningsih, 2020). Therefore, knowledge is a foundation to help entrepreneurs understand, analyse, interpret, and use information about the environment and the resources inside their business to achieve the most favourable results when setting up a company independently (Roxas, 2014). Omerzel and Antončič (2008) demonstrated that the business knowledge of entrepreneurs is reflected through four dimensions, including (1) formal education, (2) work experience, (3) functional skills, and (4) self-confidence and this knowledge has a positive influence on the success of the business.

Liñán et al. (2011) argue that entrepreneurial intention is fundamentally motivated by external environmental factors such as culture, society, and educational programmes, particularly entrepreneurship courses designed in that programme. These courses can

potentially shape the development of students' awareness of self-employment by fostering a positive attitude about it (Krueger & Carsrud, 1993). Entrepreneurial knowledge is acquired and accumulated during an individual's interaction with the environment in which they live, the education they have access to, and business-related practices (Hussain et al., 2021; Martin et al., 2013). Research results on human capital in Vietnam have also shown that individuals with much knowledge from business-related experience gained from courses and real-life experiences are less afraid of failure. From there, these individuals' attitudes and perceptions toward entrepreneurship are much more positive and have a significantly higher entrepreneurial tendency than those with less knowledge (Doan & Phan, 2020; Van Trang et al., 2019). As such, entrepreneurial knowledge acquired in the process that potential entrepreneurs receive education or hands-on experience in the field in the past is an indispensable source of human capital, helping them more precise and more certain perception and belief in their propensity to be entrepreneurs (Karyaningsih, 2020; Roxas, 2014).

Entrepreneurial education

Entrepreneurial education refers to short-term teaching and training that can be delivered through a variety of formats, such as courses offered by universities, mentoring programmes, and online courses from other educational sources aim to equip students with the necessary knowledge and skills so that they can establish a more successful technology-based business (Dana et al., 2021; Permatasari & Anggadwita, 2019). It provides opportunities for students to explore small business operations in simulated or real-life forms to solve situations and build business development projects (Fiet, 2001; Segal et al., 2005). Since then, the educational background has positively affected an individual's likelihood of becoming an entrepreneur (Arenius & Minniti, 2005). Knowledge and skills acquired from business courses are important in supporting awareness and enhancing entrepreneurship through career orientation for students (Higgins & Refai, 2017; Peterman & Kennedy, 2003; Shapero & Sokol, 1982).

Kadir et al. (2012) believe that when entrepreneurial education is organized appropriately, it helps students have a more positive view of setting up their businesses. Therefore, the education and training of basic technology knowledge are often considered indispensable jobs when wanting to expand students' understanding of the application of technological achievements to business activities (Badaruddin et al., 2012; Hasanah & Setiaji, 2019; Mugiono et al., 2021). In Vietnam, entrepreneurial education can also strongly inspire students' entrepreneurial spirit, increase the rate of being more confident in their abilities, and ready to face difficulties in the future when acting as a deciding factor affecting the perceived feasibility of students (Tung et al., 2020). From there, the study proposes the following hypotheses:

H1a: Entrepreneurial education positively affects students' perceived usefulness.

H1b: Entrepreneurial education positively affects students' perceived feasibility.

Prior experience

Prior experience in an entrepreneurial context refers to previous work experiences at an SME, or even experience refers to the individual having previously done business (Obschonka et al., 2011). Business prior experience is learning from the outside

through hands-on experience in business-related activities (Stam & Schutjens, 2006). One of the basic assumptions of the entrepreneurial event model (EEM) is that prior experience indirectly affects entrepreneurial intentions through individuals' perceptions and propensity to act in a positive direction (Iakovleva & Kolvereid, 2009; Shapero & Sokol, 1982). According to Ucbasaran et al. (2003), the more experience, the more knowledge base and mindset of entrepreneurs are enhanced to create favourable conditions to help them identify business opportunities. Individuals with more experience will have a more willing and positive attitude to face and solve difficulties in all areas they encounter.

Ayalew (2020) found that students exposed to many previous entrepreneurial activities had higher entrepreneurial intentions with a similar pattern than those without experience. Individuals with less experience will find it extremely difficult to start and maintain a company independently, making becoming an entrepreneur not one of the top career choices for students (Lin et al., 2017). In the case of Vietnam, Nguyen (2020) also found that the type of experiences that indicate participation in actual entrepreneurial activities, such as those mentioned in the study, demonstrate a significant favourable influence on how students perceive their ability to plan and execute entrepreneurial actions to be greater than the experience of having family entrepreneurs suggested by many previous studies (Drennan et al., 2005; Liñán & Santos, 2007). From that, the article hypothesized the following:

H2a: Prior experience positively affects students' perceived usefulness.

H2b: Prior experience positively affects students' perceived feasibility.

Perceived usefulness

Perceived usefulness is defined by Davis (1989) as the degree to which potential users believe that using a particular application system will increase their job performance. In this study, perceived usefulness is defined as the degree to which potential entrepreneurs believe that applying new technologies to start an online business will help them improve business results and has been proven to be one factor that strongly influences individuals' e-entrepreneurship (Ilyas et al., 2023; Zamzami, 2021).

It has been confirmed by Venkatesh (1999) who investigated the motivations that inspire users to have more favourable opinions about learning and using new technology. Similarly, Davis (1989) also considers perceived usefulness as a kind of extrinsic motivation such as money, fame, and reward to motivate users to use technologies to bring higher work efficiency as well as achieve those external rewards. According to Packham et al. (2010), individual motivation is formed based on that person's perception of the behaviour that motivation is driving that person to perform. Therefore, in e-entrepreneurship, the more positive students' perceived usefulness of modern technologies is, the more motivated students are to start businesses with the support of current technologies to achieve the results they want when choosing to become online entrepreneurs. Huang (2020) has shown that when students are aware of the benefits of online tools, their motivation, attitude, and satisfaction towards adopting them are more robust. From the above arguments, the following hypothesis is proposed:

H3: Perceived usefulness positively affects students' entrepreneurial motivation.

Perceived feasibility

Perceived feasibility is the degree to which individuals perceive their ability to successfully carry out business activities, from establishing themselves to operating and maintaining a new business on the digital platform (Maheshwari et al., 2022). Individuals who perform new tasks and gain knowledge from that experience favourably can often positively reinforce themselves. This reinforcement helps them to create a self-assessment system and to set a series of personal goals proficiently. Thereby, their attitudes and perceptions are also significantly affected. Students develop their standards and are more motivated when it comes to behaviours to accomplish their goals, especially intending to become more independent in their careers (Singh & Dwivedi, 2022).

The importance of this perceived perspective is even more evident in the presence of entrepreneurial motivation. Each person's motivation to pursue or perform a particular behaviour is formed based on the individual's perception of that behaviour and their ability to complete it (Packham et al., 2010). Similar to this study, perceptions of the support of environmental factors can also determine their entrepreneurial motivation (Estay et al., 2013). Delmar and Wiklund (2008) agree that motivation can significantly impact a firm's growth by influencing its persistence in achieving goals (Shane et al., 2003). Therefore, students who are aware of the significant possibility of success in their entrepreneurship career will tend to create needs and desires for that positive entrepreneurial outcome and view it as a motivation to push themselves to come up with a new business idea, plan and prepare carefully to implement their business project. From that, the research hypothesized the following:

H4: Perceived feasibility positively affects students' entrepreneurial motivation.

Entrepreneurial motivation

Entrepreneurial motivation refers to the outcomes individuals desire and strive to achieve when starting their online business (Nazri et al., 2016). All human actions result from a process by which cognitive and motivational factors, along with personal abilities such as intelligence and skills, drive them (Locke, 2000; Shane et al., 2003). Thus, motivation is thought to be related to orientation, effort, and persistence in human intention and behaviour (Ryan & Deci, 2000). Malebana (2014) argues that specific pull and push motivations motivate individuals to carry out their entrepreneurial behaviour. Pull motivation refers to a positive desire from within that motivates an individual to engage in business (Wang et al., 2006). It includes making a profit or seeing the business as an opportunity to demonstrate that they can be independent, successful, and recognized (Wickham, 2006).

In contrast, push motivation refers to external factors, often in a negative direction, such as dissatisfaction with traditional jobs, no promotion opportunities, low pay, discomfort with leader supervision, or, most importantly, to avoid unemployment (Buttner & Moore, 1997; Curran & Blackburn, 2001; Roffey et al., 1996). However, students are reported to be more interested and enthusiastic in running their businesses when motivated by internal motivations rather than external rewards (Simola, 2011).

Entrepreneurial motivation supports students mentally. The more entrepreneurially motivated students are, the more interested and determined they will be to become an entrepreneur. As a result, entrepreneurs tend to act aggressively, show more creative sides and are willing to overcome barriers to ideating and implementing their new business model. Outcomes achieved when conducting business behaviour can satisfy their own needs and desires (Kumaran & Anand, 2016).

Similarly, Barroso-Tanoira (2017) also believes that for a successful business career, students must have a lot of will and motivation to learn new things before that. Therefore, students with stronger entrepreneurial motivation will spend more effort to achieve their business goals. From there, business development ideas and plans are more likely to be realized (Santoso & Oetomo, 2018). The following hypothesis is proposed:

H5: Entrepreneurial motivation positively affects students' e-entrepreneurial intention

Technological innovativeness

Technological innovativeness refers to the degree to which individuals are willing to access, experience, and apply new modern scientific and technical achievements in their entrepreneurial activities (Abubakre et al., 2022). Becoming an entrepreneur is a preplanned behaviour, not a spontaneous action (Ajzen, 1991; Shapero & Sokol, 1982). This plan is created when the individual intends to establish a business, so the intention is considered a prerequisite in predicting whether the individual will carry out entrepreneurial behaviour (Bagozzi et al., 1989). Therefore, the study of EEI formation is an area of interest. Researchers can rely on individual characteristics to explain trends and how they perform a specific behaviour (Miller, 2015), in which technological innovativeness is a potential factor influencing this process.

Business operations today are being greatly supported by new digital technologies. Today's leading technology trends in Industry 4.0 include cloud computing, 3D printing, mobile devices, and many other social media (Abubakre et al., 2022). Enterprises are forced to constantly change to gain competitive advantage through timely identification and taking advantage of emerging opportunities in the current business environment (Kraus et al., 2018). Therefore, Abubakre et al. (2022) argued that if entrepreneurs want to be successful in their field, it is necessary to consider the extent to which the individual is willing to apply new technologies in business operations. This willingness also represents the extent to which the user is ready to take risks, reactions, and openness to experimenting with new technologies. However, individuals living in a country with a collectivist culture, like Vietnam, will often avoid risks and new things (Hofstede, 1980). As a result, essential aspects of entrepreneurs, such as self-control and innovation, will be limited (Mueller & Thomas, 2001). The formation of an EEI has also become difficult due to the lack of original and new ideas and participation in experimentation, leading to the development of new products, services, and technologies that align with the times (Lumpkin & Dess, 2001).

However, university support has been identified as minimizing obstacles to individuals' motivation to become entrepreneurs. Motivation is considered the key driving force of intention because it can significantly explain and predict the likelihood that individuals will attempt a behaviour to achieve their goals (Estay et al., 2013; Ward et al., 2019). Universities can very effectively support students in limiting the problem of hindering

motivation by providing courses and training programmes that encourage students' openness and creativity in business in order to improve the spirit and innovation performance of these potential entrepreneurs in the future (Anjum et al., 2021; Shahzad et al., 2021). Once innovativeness is enhanced, individuals tend to be more open to receiving business opportunities and interested in, accepting, and experiencing transitions to new technologies because individuals want to aim for the long-term benefits that business opportunities and new technologies bring (Faiers et al., 2007; Rogers et al., 2014).

From there, this personality also increases the likelihood that individuals choose entrepreneurship more than those less ready for innovation (Rauch et al., 2018). Thereby, character and motivation are believed to be related to risky, innovative behaviours such as entrepreneurship (Vasalampi et al., 2014). Therefore, individuals who possess technological innovativeness tend to start businesses that apply new technologies to achieve the achievements that those individuals expect from industry, which is higher entrepreneurial motivation than those who do not. Previously, Cheng (2014) also argued that an individual's innovative personality could positively moderate the interaction between extrinsic and intrinsic motivation, specifically perceived usefulness, enjoyment, and intention to use mobile learning. So, the more innovative individuals are, the more they tend to seek and try to use new technologies to gain long-term benefits that technology brings or enjoy the excitement when solving the problem they encounter, thereby making their intention to use new technology even more robust. From that, the study hypothesized the following:

H6: Technological innovativeness moderates the relationship between entrepreneurial motivation and EEI.

Methodology

Sample

Data used to test 6 research hypotheses (see Fig. 1) were collected via an online survey through student groups and forums in Ho Chi Minh City on the social network Facebook from October to December 2022, which was answered by undergraduate students studying in Ho Chi Minh City using a convenience sampling method. According to Jager et al. (2017), besides the benefits that this sampling method brings in saving costs and time, this method is also easy to access and implement to collect information from subjects effectively students. However, this method also has a potential limitation: its ability to generalize to the overall sample is not high. Therefore, the number of surveys must ensure a minimum sample size to eliminate outliers.

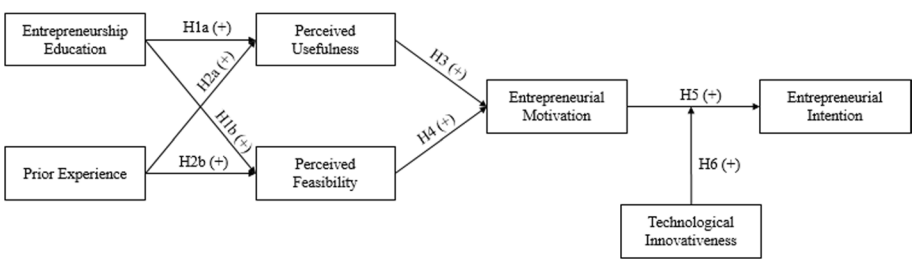

Fig. 1 Conceptual framework

Hair et al. (2014) suggest that the sample size should follow a ratio of 10:1 for best research results. Because the study uses 27 observed variables, the minimum sample size was determined with $N = 27^{*}10 = 270$. However, this study collects information with a sample size larger than the minimum sample size to ensure the estimation accuracy when eliminating invalid questionnaires (Ghauri et al., 2020). After 2 months of conducting the survey and filtering out invalid answer sheets, the study collected 405 valid answer sheets. This number of survey samples also meets the minimum sample size requirement of 400 to ensure an accurate estimate of the study population (Charter, 1999). The subjects participating in the survey are all students studying at universities in Ho Chi Minh City. Gender factor was equally surveyed with 222 male students and 183 female students. Most survey subjects are fourth-year students or above majoring in business administration.

Procedure

The survey respected and was committed to data anonymity and confidentiality. We acquired informed consent from participants, and the ethics committee of Ho Chi Minh City Open University approved this research with decision number 2638/QD-DHM dated October 10, 2022.

Measures

The questionnaire is designed in two parts. In the first part, survey respondents will be asked to answer demographic questions which are coded such as gender "What is your gender?" (coding with male = 1 and female = 2); academic year "What year are you a student?" (First year = 1, 2nd year = 2, 3rd year = 3, 4th year and above = 4); major "What is your field of study?" (Business Administration = 1, Marketing = 2, Information Technology = 3, Graphic Design = 4, Others = 5); internet using frequency "What is the average time you spend using the internet each day?" (1 h = 1, 2 h = 2, 3 h = 3, Over 3 h = 4); and entrepreneurship learning background "Have you ever studied courses on business entrepreneurship? (Ever = 1, Never = 2). The second part includes 27 questions to measure seven concepts. This study has inherited the scales from previous related studies. The Likert scale is used to support the respondents' answers better because of its popularity and simplicity. The answers in section 2 of the questionnaire are sorted from 1 to 5, corresponding to "Strongly disagree" to "Strongly agree" (Anjaria, 2022).

Entrepreneurial education (EE) is measured by the 4-variable scale of Jiatong et al. (2021). These observed variables were edited to determine the extent to which university curriculum and educational activities provide students with the necessary knowledge, skills, and opportunities for e-entrepreneurship. A sample item is "The learning model in the classroom provides the required knowledge toward e-entrepreneurship". Survey participants rated the degree to which they agreed with these measures by placing each item on a 5-point scale from 1 to 5, corresponding to increasing levels from "Strongly disagree" to "Strongly agree".

Prior experience (PE) is designed from the scale of Obschonka et al. (2010). This scale has been edited and adapted to fit a more digital context when measuring experiences related to online business in this study, such as holding important positions,

participating in school management, clubs or product ideas, or creating transactions of that product, for example, "I often sell things to people via the Internet".

Perceived usefulness (PU) is built with four items in the scale developed by Davis (1989). This scale has been modified and used in this study to fit the research context. Precisely, it measures the likelihood that students perceive the benefits of incorporating technology into an upcoming digital business, such as improving work operations performance, saving time, and controlling business effectively, such as "Using information technology improves my job performance" and "Overall, I find the technology platform useful in all aspects of starting an online business".

Perceived feasibility (PF) is measured by four variables developed by Tehseen and Haider (2021). These observed variables were calibrated and used to determine how students feel they can effectively use available capital and their efforts to start an online business smoothly in this study. A sample item among them is "I can control the creation process of a new online business".

Entrepreneurial motivation (EM) is inherited from Ooi and Ahmad's (2012) scale. This scale has been calibrated to measure the extent to which external and internal rewards motivate students to intend to become digital entrepreneurs in this study. This measure includes three variables measuring internal rewards, including enjoying the feeling of excitement, proving one's ability, and getting recognition, and a variable calculating external rewards, increasing personal income, for example, "I want to start up an online business to enjoy the excitement".

Technological innovativeness (TI) is originally measured by three observed variables from the scale of Alkawsi et al. (2021). Specifically, this measure is used to collect data about the degree to which students are willing to explore and experience new technologies, such as "I like to experiment with new information technology" and "Among my fellows, I am usually the first to try out new information technology".

Entrepreneurial intention (EI) is measured by five observed variables developed by Liñán and Chen (2009). Its main content is to evaluate the degree to which students aim, consider, intend, endeavour, and are willing to establish and operate a company independently with digital technology's partial or complete support. Examples include "My professional goal is to become an entrepreneur on digital platforms" and "I have very serious thoughts of starting an online business".

Data analysis

SmartPLS version 4.0 is used for data analysis, including measurement model assessment, structural model assessment, and research hypothesis testing by partial least squares structural equation modelling (PLS-SEM) techniques. PLS-SEM is a non-parametric analysis method, so it can explore the explanatory variance of latent variables that cannot be observed directly (Hair et al., 2019). PLS-SEM is applied in this study because it has been suggested for use by many authors recently, especially in the fields of management and technology, thanks to the reliable estimates it provides when focusing on exploring the dependent variable by explaining the most variance in models with complex paths, small sample sizes, little information about the residual distribution, and requiring assessment of the structural model as well as measurement model (Khan et al., 2021; Sobaih & Elshaer, 2022; Tang et al., 2022). Besides, SmartPLS is software that does

not require too much complex technical knowledge to implement (Hair et al., 2019). Some previous researchers have also identified it as one of the software that should be prioritized for PLS-SEM analysis because of its ease of use (Cepeda-Carrion et al., 2018; Hair et al., 2017; Usakli & Kucukergin, 2018). Implementation steps and specific evaluation criteria are based on the guidelines of Hair et al. (2019) for evaluating the research hypotheses.

Specifically, data analysis begins with the measurement model assessment to consider whether the seven research variables are eligible to continue with the structural model assessment stage. The article evaluates the reflective measurement model because the scales are inherited from previous studies. The indicators in each construct are a consequence of the representative structure that they belong to Hanafiah (2020). According to Hair et al. (2019), robustness checks reinforce the stability and reliability of the findings in the study (Sarstedt et al., 2020). Suppose the measurement models have met the evaluation criteria of the above measurement model. In that case, data analysis continues with the structural model assessment to evaluate the model's ability to explanatory and predictive power as well as testing hypotheses.

Results

Sample descriptive statistics

Table 1 presents descriptive statistics on the demographic characteristics of the respondents. The results show that the percentage of participation between the gender groups is not much, although there is a difference. Specifically, male students accounted for 54.8% (222 students) and female students accounted for 45.2% (183 students). The study also broadened the scope of the survey to collect data from freshman to fourth-year students and above from different disciplines instead of focusing on one to explore more deeply (Daim et al., 2016). However, most of the survey subjects are in the group of fourth-year

Table 1 Descriptive statistics on the demographic characteristics

Variable		Definition	Frequency	Percentage
Gender	Dichotomous variable	1 = Male	222	54.8
		2 = Female	183	45.2
Academic year	Ordinal category variable	1 = First year	42	10.4
		2 = Second year	54	13.3
		3 = Third year	123	30.4
		4 = Fourth year and above	186	45.9
Major	Nominal category variable	1 = Business Administration	166	41
		2 = Marketing	100	24.7
		3 = IT	39	9.6
		4 = Graphic design	27	6.7
		5 = Others	73	18
Internet using time	Ordinal category variable	1 = 1 h a day	21	5.2
		2 = 2 h a day	39	9.6
		3 = 3 h a day	55	13.6
		4 = Over 3 h a day	290	71.6
Entrepreneurship learning background	Dichotomous variable	1 = Learned	265	65.4
		2 = Not Learned	140	34.6

N = 405

students and above (45.9%) and business administration majors (41%). This is also believed to be a favourable condition for explaining EEI since business-oriented students are said to provide more helpful information (Hmieleski & Lerner, 2016).

Up to 71.6% of students participating in the survey use the Internet with a high frequency, specifically over 3 h a day, followed by 3 h accounting for 13.6%, 2 h accounting for 9.6%, and the lowest is 1 h with a rate of 5.2%. In addition, the percentage of students who have studied online business courses (65.4%) is higher than those who have never studied (34.6%). Thus, with the university actively updating and adding digital model-based business courses to the curriculum to create opportunities for experiencing more technical business projects, these students are now gradually approaching and prioritizing technology devices because of their convenience and high applicability in learning and working activities.

Measurement models assessment

According to Hair et al. (2019), reflective measurement model assessment requires the use of outer loading, composite reliability (CR), Cronbach's alpha (CA), average variance extracted (AVE), and HTMT to serve as evaluation criteria. First, the loadings should be above 0.7 to ensure that the latent variable explains more than 50% of the variation of the indicator so that the observed variables are of good quality and the initial concepts are suitable for subsequent tests. The results in Table 2 show that all 27 observed variables in the model are qualified with a significant level when the outer loadings are all over 0.7 with p-values < 0.01.

CR is preferred to evaluate the internal consistency reliability because CR is a value obtained by calculating the weights of observed variables based on the loadings of the indicators in that structure, so it is more accurate than CA (Hair et al., 2019). However, CR and CA are used in this study to evaluate the reliability because CR is considered too liberal and CA is too conservative. This means that CA may give lower results and CR may give higher results, and the actual reliability is considered to be in the above value range (Hair et al., 2019). Therefore, considering CR and CA values is essential in demonstrating that the scales achieve consistent reliability. The cut-off value for CR and CA is suggested to be greater than 0.7. The higher this value, the greater the reliability of the scales. However, these two values should not exceed 0.95 to achieve an appropriate level of reliability, ensuring the diversity necessary to create valid multi-item constructs. The results from Table 2 show that the CR ranges from 0.849 to 0.924, and the CA ranges from 0.762 to 0.896. Therefore, all seven scales achieved good reliability.

Next is to check the convergent validity based on the average variance extracted (AVE) and outer loading. AVE is the average total amount of variation that a latent variable can explain the observed variables within that construct. Therefore, the AVE must be considered to ensure that the latent variables represented in the research model can explain the variance of the observed variables that belong to it. The proposed evaluation standard is that AVE must be greater than 0.5 to ensure that each research variable can explain at least 50% of the variance of its observed variables (Hair et al., 2019). Meanwhile, the outer loading has a threshold value of 0.700. In this study, the AVE of the concepts satisfying the requirements ranged from 0.584 to 0.765, while the outer loading varied between 0.704 and 0.899 (see Table 2).

Table 2 Convergent validity results

Construct	Measures	Loadings	Mean	Std	CR	CA	AVE
Entrepreneurial education (EE)					0.849	0.762	0.584
EE1	The learning model in the classroom provides the required knowledge for e-entrepreneurship	0.808***	3.70	0.842			
EE2	Education in school drives skills and abilities related to e-entrepreneurship	0.801***	3.61	0.771			
EE3	The education activities incorporate e-entrepreneurship matters and allow opportunities for students to begin an online business	0.704***	3.78	0.759			
EE4	I think that e-entrepreneurship occasion could be enlarged through educational activities	0.739***	3.77	0.774			
Prior experience (PE)					0.867	0.770	0.685
PE1	I had some important responsibilities in my classroom (e.g., class spokesperson, class monitor), in a club (e.g., chairman, vice chairman)	0.826***	3.73	0.818			
PE2	I engaged in selling things or thinking of things that would sell well (e.g., selling things to friends) on digital platforms	0.817***	3.78	0.787			
PE3	I often sold things to people via the Internet	0.839***	3.75	0.782			
Perceived usefulness (PU)					0.901	0.854	0.696
PU1	Using information technology improves my job performance	0.832***	4.09	0.718			
PU2	Using information technology saves me time	0.848***	4.07	0.746			
PU3	Using information technology gives me greater control over my work	0.839***	4.06	0.792			
PU4	Overall, I find the technology platform useful in all aspects of starting an online business	0.817***	4.13	0.759			
Perceived feasibility (PF)					0.872	0.805	0.631
PF1	I can control the creation process of a new online business	0.797***	3.58	0.819			
PF2	I know necessary practical details to start an online business	0.791***	3.57	0.805			
PF3	I know how to develop an e-entrepreneurial project	0.792***	3.75	0.803			
PF4	If I tried to start a new firm on digital platforms, I would have a high probability of succeeding	0.795***	3.75	0.801			
Entrepreneurial motivation (EM)					0.867	0.795	0.621
EM1	I want to start up an online business to enjoy the excitement	0.712***	3.63	0.848			
EM2	I want to start up an online business to prove I can do it	0.817***	3.83	0.801			

Table 2 (continued)

Construct	Measures	Loadings	Mean	Std	CR	CA	AVE
EM3	I want to start up an online business to gain public recognition	0.796***	3.75	0.848			
EM4	I want to start up an online business to increase my income	0.820***	3.97	0.847			
Technological innovativeness (TI)					0.921	0.871	0.795
TI1	I like to experiment with new information technology	0.878***	4.02	0.786			
TI2	I would not hesitate to try out new information technology	0.896***	4.00	0.819			
TI3	Among my fellows, I am usually the first to try out new information technology	0.899***	4.05	0.830			
E-Entrepreneurial intention (EEI)					0.924	0.896	0.708
EI1	My professional goal is to become an entrepreneur on digital platforms	0.805***	3.78	0.814			
EI2	I have very seriously thought of starting an online business	0.807***	3.73	0.834			
EI3	I am determined to create an online business in the future	0.845***	3.82	0.836			
EI4	I will make every effort to start and run my own online business	0.864***	3.84	0.846			
EI5	I am ready to do anything to be an entrepreneur on digital platforms	0.884***	3.81	0.850			

***$p < 0.01$

Table 3 Discriminant validity

	EEI	EE	PE	EM	PF	PU	TI
EEI							
EE	0.578						
PE	0.507	0.658					
EM	0.847	0.597	0.600				
PF	0.682	0.815	0.793	0.680			
PU	0.550	0.575	0.708	0.594	0.570		
TI	0.488	0.500	0.540	0.711	0.495	0.674	

Finally, the assessment of the discriminant validity between the scales is performed. Discriminant validity refers to the degree to which a construct in the model is empirically different from other constructs in the structural model. Therefore, discriminant validity should be assessed carefully to ensure that measures capture unique concepts, reduce interference between constructs, improve interpretation of results, and establish the independence of constructs in structural models. Previous researchers proposed using the heterotrait–monotrait (HTMT) correlation ratio of these to evaluate with the threshold of 0.85 (Henseler et al., 2015; Kline, 2015). The heterotrait–monotrait ratio of correlations (HTMT) index for the pairs of variables presented in Table 3 is also lower

Table 4 Variance inflation factor (VIF)

	PU	PF	EM	EEI
EE	1.339	1.339		
PE	1.339	1.339		
PU			1.294	
PF			1.294	
EM				1.597
TI				1.814

Table 5 PLS-predict assessment

Variables	PU	PF	EM	EEI
R^2	0.373	0.535	0.370	0.560
Q^2	0.365	0.529	0.281	0.228

than the cut-off value of 0.85. Therefore, all seven concepts in the research model have reached reliability, convergent, and discriminant validity, so they are eligible for the next stage of structural model assessment (Hair et al., 2019).

Structural model assessment

The problem of multicollinearity is checked before testing the hypothesis to ensure that the regression coefficients between the variables in the model are not biased. The value used to evaluate this phenomenon is the variance inflation factor (VIF). According to Hair et al. (2019), the VIF value is considered at an ideal level when it is less than 3, because the multicollinearity between concepts is considered very low, even unlikely. The results show that the VIF values are acceptable to predict that multicollinearity does not significantly impact the relationships when it ranges from 1294 to 1814 (see Table 4).

Next, the coefficients of determination (R^2) are evaluated to measure the extent to which endogenous factors explain the variation of the dependent variable in the research model. According to Hair et al. (2019), this value ranges from 0 to 1 and is divided into three increasing levels: weak, moderate, and strong, equivalent to 0.25, 0.5, and 0.75, respectively. Table 5 shows that EEI has R^2 (0.560) at a moderate level. It means entrepreneurial motivation explains 56% of the variation in EEI, and the remaining 44% is from errors and other effects not considered in the conceptual model. Additionally, while PF is explained by education and prior experience to a moderate extent at 53.5% ($R^2 = 0.535$), the size to which these two factors explain the variation in PU is weak ($R^2 = 0.373$). These two perceptions thus explain 37% of the variation in entrepreneurial motivation ($R^2 = 0.370$). Therefore, the endogenous variables gain explanatory power through these coefficients of determination in the context of exploratory research on human perception and intention (Hair et al., 2019).

Then, the blindfolding procedure is performed, and the Q^2 value is used to measure the predictive accuracy of the research model. Hair et al. (2019) believe the Q^2 value should be greater than 0 for the model to meet the predictive suitability. This level of accuracy gradually increases from small, medium to large when the Q^2 value is higher

than 0, 0.25, and 0.5, respectively. The model achieves predictive ability when the Q^2 values of perceived usefulness, perceived feasibility, entrepreneurial motivation, and EEI are all greater than 0. In particular, perceived feasibility shows high accuracy with a Q^2 value of 0.529 and low, especially EEI, with a Q^2 value of 0.228 (see Table 5).

Table 6 presents the results of hypothesis testing based on the regression coefficient and p-value. The results show that there is a positive impact of entrepreneurship education on students' perception of usefulness and perception of feasibility for business on technology platforms, with regression coefficients of $\beta = 0.239$ ($p < 0.01$) and $\beta = 0.439$ ($p < 0.001$), respectively. Therefore, Hypothesis 1a and Hypothesis 1b are both accepted. Thus, entrepreneurial education has a more substantial effect on perceived feasibility than on perceived usefulness, suggesting that university support in terms of knowledge will enhance their perception of the possibility of success more effectively.

The positive relationship between experience and perceived usefulness and perceived feasibility in Hypothesis 2a and Hypothesis 2b has the opposite result. The results presented in Table 6 show that previous related experiences positively affect perceived usefulness ($\beta = 0.455$, $p < 0.01$) more significantly than when affecting perceived feasibility ($\beta = 0.405$, $p < 0.001$). Similarly, other research hypotheses were also confirmed as acceptable (see Table 6).

Discussion

E-entrepreneurship is cultivating the mindset and skills to pursue new business ideas in new media and technologies (Davidson & Vaat, 2010). University support plays a vital role in supporting students to do so, providing the necessary knowledge and business skills as well as fostering openness of students in exploring and using new technologies through digital entrepreneurship courses and training programmes (Nowiński et al., 2019; Ratten & Usmanij, 2021).

The findings of this study indicate that taking courses related to e-entrepreneurship will help individuals with a shallow initial level of entrepreneurial intention have the opportunity to clarify their short- and long-term personal goals. Since then, the EEI is also favourably increased through a more positive perception of the success of entrepreneurial behaviour and the positive effects of technology in business activities (Peterman & Kennedy, 2003). The article also supports previous findings on the impact of entrepreneurship education on perceived feasibility (Barton et al., 2018;

Table 6 Hypothesis testing results

Hypothesis	Relationship	*β*	*p*-value	Result
H1a	Entrepreneurial education → perceived usefulness	0.239	0.000	Accepted
H1b	Entrepreneurial education → perceived feasibility	0.439	0.000	Accepted
H2a	Prior experience → perceived usefulness	0.455	0.000	Accepted
H2b	Prior experience → perceived feasibility	0.405	0.000	Accepted
H3	Perceived usefulness → entrepreneurial motivation	0.301	0.000	Accepted
H4	Perceived feasibility → entrepreneurial motivation	0.405	0.000	Accepted
H5	Entrepreneurial motivation → EEI	0.666	0.000	Accepted
H6	Technological innovativeness*entrepreneurial motivation → EEI	0.143	0.025	Accepted

Volery et al., 2013). Therefore, the more training and education students receive in the field of business, the more positively they perceive the feasibility of becoming a digital entrepreneur as their future career.

Empirical results also support these results in a variety of previous fields, such as business internationalization, startup policies, and enterprise resource planning (Blomstermo et al., 2004; Mullins & Cronan, 2021; Patzelt & Shepherd, 2009) when pointing out that students have access to an educational programme that fully provides a system of knowledge and practical business experience, believes knowledge and applications help them do business based on digital platforms more effectively. Thereby, this finding shows that entrepreneurial education from the university plays a crucial role in raising students' awareness of technology-based entrepreneurship because of its significant impact on both antecedent components combined from the EEM (Shapero & Sokol, 1982) and the TAM (Davis, 1989), which are perceived feasibility and perceived usefulness.

Similarly, the significant influence of experience on perceived usefulness has contributed to reconfirming previous findings (Belso-Martínez et al., 2013; Lee et al., 2013). However, many previous studies have demonstrated that experience has little influence on individuals' perceptions of the benefits of using specific information technology systems (Abbad et al., 2009; Manis & Choi, 2019). Therefore, the study's findings have contributed to reaffirming this positive impact relationship, especially in accepting information technology systems in the e-entrepreneurship process to provide effective solutions. Experimental results and conclusions drawn from them aim to contribute to the development of future research.

The importance of experience in the student's research model of EEI is also shown through a strong positive impact on perceived feasibility. Compared with the results of Drennan et al. (2005), the extent to which the experience comes to perceived feasibility is more significant because the experiences in this study are more positive and extended to enhance students' human capital. In particular, this result contrasts the study of Yordanova et al. (2021) when they concluded that there is no influence in the relationship between experience and perceived feasibility since they only evaluated students' professional experience in technology businesses. Therefore, this result affirms that the positive perception of e-entrepreneurship is strongly motivated by unfavourable experiences and actual working experience in business, technology, and governance when participating in activities with important positions at the university.

The importance of knowledge and experience is even more evident when making the extent to which perceived usefulness affects entrepreneurial motivation (Wang et al., 2022). Kong and Wang (2021) suggest that recognizing the benefits that behaviour brings is one of the most effective stimulators of learning motivation. Not only that, the results show that this relationship is significantly strengthened under the influence of education and prior experiences compared to the findings of Wang et al. (2022) in the context of platform-based language learning mobile. Although this research belongs to the more complex field of technology-based entrepreneurship, when equipped with knowledge and skills from university or other related experiences, perceived usefulness further strengthens the student entrepreneurial

motivation. Therefore, students with more positive perceived usefulness towards digital business are more motivated by e-entrepreneurship (Rivero & Ubierna, 2021).

The study also shows similarities with the findings of Rivero and Ubierna (2021) when showing that the higher the entrepreneurship perceived feasibility, the stronger the entrepreneurial motivation of students. Feasibility is demonstrated through individual preparation in terms of knowledge, skills, and experiences gained at university (Rivero & Ubierna, 2021). In their study, the surveyed students believed they would have more opportunities and achieve positive results in entrepreneurship when they were fully trained in the business field. Therefore, the study's findings on perceived feasibility under the influence of education and experience not only contribute to confirming the previous results of Rivero and Ubierna (2021), but also explain its role as a foundational factor supporting the formation of entrepreneurial motivation by helping students perceive more positively their abilities as well as their ability to succeed when doing business.

Sivarajah and Achchuthan (2013) have shown that entrepreneurial motivation is critical in promoting entrepreneurial intention. This study's results confirm when the impact of entrepreneurial motivation has the most decisive effect on EEI (Hassan et al., 2021). However, previous studies only focused on business students and did not consider the external factor of entrepreneurship education (Malebana, 2021). Therefore, students, regardless of study year, are motivated to start a business, especially those majoring in business administration (Karhunen & Ledyaeva, 2010; Solesvik, 2013). Therefore, this study helps point out the importance of educational background related to entrepreneurship in analysing and predicting the influence of motivation on students' e-entrepreneurial intention.

Above all, the moderating role of technological innovativeness is also discovered in the relationship between entrepreneurial motivation and EEI. Once students feel more open and ready to innovate in the face of rapid business changes, they tend to explore and experience new technologies more to enjoy the exciting feeling of having applied modern scientific and technological achievements to effectively solve the problems they encounter as well as achieve many other benefits in the business process. Students' entrepreneurial intention with the support of technology has become stronger since then, although students' entrepreneurial motivation remains unchanged (Rogers et al., 2014). This is the result that Cheng (2014) tried to prove before but failed when researching the use of electronic devices as a tool to support learning. Therefore, the findings of the study indicate that entrepreneurship educational support plays a vital role in developing and shaping the characteristics of an entrepreneur, such as independence, innovation, creativity, and risk-taking, as well as entrepreneurial motivation (Ertuna & Gurel, 2011; Nga & Shamuganathan, 2010; Solesvik, 2013). Individual innovativeness demonstrates the ability to moderate more effectively in a technology-enabled business-related context, along with the motivation to have expected outcomes more relevant to that context, such as enjoying the feeling of excitement, proving oneself, gaining recognition as well as increasing income (Ooi & Ahmad, 2012).

Conclusions

Theoretical contributions

The study contributed to the evaluation and extension of the theoretical model of entrepreneurship intention research by combining research on technology factors while exploring the role of knowledge in promoting students' motivation to form EEI

(Abdelwahed & Alshaikhmubarak, 2023; Alzamel et al., 2020). Specifically, the technology acceptance model is combined with EEM to explain the impact of external stimuli such as education and experience on EEI. The fact that the need for achievement and the desire for recognition are seen as the main motivating factors of an individual's entrepreneurship also requires the application of theories of entrepreneurial motivation to examine how it shapes EEI (Clark et al., 2018).

This research has confirmed the importance of perceived feasibility and perceived usefulness for enhancing EEI through entrepreneurial motivation, especially when receiving support in terms of knowledge and experience from university or real life. The critical finding of this article is to demonstrate the moderating role of individual technological innovativeness in the relationship between student entrepreneurial motivation and EEI.

Practical contributions

Based on proven hypotheses, several suitable implications are proposed to assist universities and policymakers in focusing on activities that strengthen the capital required of an entrepreneur. First, besides designing the appropriate curriculum, the university should also build a dynamic educational environment that encourages students' creativity with the support of technology devices so that they can learn how to plan and operate a company with an online business model with a spirit of improving knowledge and skills and fostering a confident and open personality. For example, universities can organize extracurricular activities and practical experiences at businesses in many fields, especially companies with many technology applications. They should also invest in managing business activities and competitions with the support of equipment and technological improvements to enhance students' self-establishment, management, and sales skills on the technology platforms. From there, students get the capital needed to become entrepreneurs and increase their perceived feasibility and usefulness of applying technology when starting a digital business.

Second, the university can organize visits to technology exhibitions so that students can observe and listen to explanations about modern scientific and technological achievements to improve their understanding. From here, they perceive these technologies' usefulness more effectively when applied in business. Online business seminars with the participation of guests who are successful businessmen in this field should also be organized so that students have the opportunity to listen to lessons learned, as well as how to operate a business on a digital platform successfully. From there, students begin to motivate themselves to establish a company to achieve the results they expect when they have more positively strengthened their belief in their ability to succeed and realize that modern technology is instrumental in helping students achieve digital business achievements.

Finally, the study suggests that universities should motivate students to have more entrepreneurial desires to enjoy the desired sense of achievement and excitement. In addition, the universities also need to have more material support policies for student start-up projects, such as capital funding or low-interest loan support for creative and feasible business projects, or there are certain rewards and gifts for students who have completed their business projects to enhance the entrepreneurial spirit and increase the level of success when students carry out business projects.

Limitations and future research

The first limitation is that the survey sample is restricted to Vietnam. Therefore, the following studies can test the research hypotheses in countries with different economic and cultural conditions to evaluate this model. Second, the convenience sampling method is used in the survey to collect data due to time and cost limitations. Therefore, future research should use a more representative and appropriate data collection method to obtain more accurate results. Finally, future studies may look more closely at the differences in factors such as gender, spending time on the Internet, and entrepreneurial education background to provide more empirical evidence on the findings of this study.

Studies with cross-sectional data often provide only a snapshot of relationships at a specific time, making precise estimates of cause-and-effect relationships difficult. For example, individuals may not be able to study in an environment with an online entrepreneurship training programme but still have a positive perception of the possibility of success, and the benefits technology brings, which become a driving force for entrepreneurship and increase entrepreneurial intention. In addition, students can be aware of the expected results they can achieve when starting a business, such as increasing income, enjoying enjoyable feelings of being recognized by everyone, and creating a business, into positive perceptions towards e-entrepreneurship.

In addition, common method bias also has the potential to significantly impact the study's empirical results and the interpretations and conclusions drawn from there. Specifically, common method bias can affect the degree of correlation between research variables in the model, leading to erroneous acceptance of proposed hypotheses and wrong research conclusions. Academic and practical knowledge for policymakers is not yet accurate and reliable. Therefore, future researchers should collect and analyse longitudinal data for retesting to examine long-term effects as well as confirm the causality of the impact in this study.

Abbreviations

AVE	Average variance extracted
CR	Composite reliability
EE	Entrepreneurial education
EEI	Electronic entrepreneurial intention
EEM	Entrepreneurial event model
EI	Entrepreneurial intention
EM	Entrepreneurial motivation
HTMT	Heterotrait–monotrait ratio of correlations
PE	Prior experience
PF	Perceived feasibility
PU	Perceived usefulness
TI	Technological innovativeness
VIF	Variance inflation factor

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