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The impact of FinTech literacy on digital entrepreneurial intentions: Exploring crowdfunding, blockchain, and AI through a social cognitive career theory lens

Sy Long Pham, Anh Duc Do, Dieu Linh Ha, Mai Van Trinh, Anh Duc Le, Thi Phuong Hien Tran

ABSTRACT

Objective: The objective of the article is to investigate the association between FinTech literacy and the intention to become digital entrepreneurs utilizing the social cognitive career theory (SCCT). Specifically, it sheds light on how three aspects of FinTech literacy (crowdfunding, blockchain, and artificial intelligence) influence individuals' digital entrepreneurial self-efficacy and outcome expectations. Additionally, it examines the separate and sequential mediation roles of digital entrepreneurial self-efficacy and outcome expectations in the connection between literacy in crowdfunding, blockchain, and AI and digital entrepreneurial intention.

Research Design & Methods: The conceptual model was analysed using structural equation modelling with the bootstrapping method based on data from a sample of 978 university students in Vietnam.

Findings: Our results revealed significant direct impacts of FinTech literacy dimensions on individuals' self-efficacy and outcome expectations regarding digital entrepreneurship. Moreover, the mediation analysis uncovered distinct and sequential mediation roles of self-efficacy and outcome expectations in the correlation between the three components of FinTech literacy and the intention to establish digital start-ups, offering new insights into how crowdfunding, blockchain, and AI literacy drive the intention to launch digital ventures.

Implications & Recommendations: This study emphasizes the importance of FinTech literacy for digital entrepreneurship. Academic programs should provide practical FinTech training, and policymakers must support FinTech literacy through policies and resources. Incubators and accelerators can integrate FinTech training to prepare entrepreneurs for the digital economy better.

Contribution & Value Added: In this study, we explore the SCCT framework, offering novel theoretical insights into the psychological drivers of digital entrepreneurship. The study significantly advances the field by highlighting the importance of FinTech literacy and sets a new agenda for future research. These findings expand our theoretical understanding and provide actionable recommendations for educational institutions, policymakers, and the entrepreneurial ecosystem.

Article type:	research article
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INTRODUCTION

The landscape of entrepreneurial endeavours is experiencing major changes as a result of digital technology development (Hassan *et al*., 2021; Nambisan, 2017; Truong *et al*., 2022; Do *et al.*, 2024). The emergence of digital technology brings about significant changes in entrepreneurial methods and their

resulting impacts, thus underscoring digital entrepreneurship (DE) as a revolutionary approach to addressing societal issues (George *et al*., 2021). Digital entrepreneurship involves starting new businesses using technology (Sitaridis & Kitsios, 2023) and plays a significant role in a country's economic development through job creation, technological advancement, and economic prosperity (Singh & Dwivedi, 2022). Despite the extensive research on traditional entrepreneurship, DE remains underexplored in academic literature (Mir *et al.*, 2022; Vu *et al.*, 2024).

In parallel, the emergence of Financial Technologies (FinTech) has revolutionized the way businesses operate, offering innovative solutions for financial transactions, fundraising, and data analytics (Wang *et al*., 2022). As the digital economy grows, FinTech literacy – the knowledge and skills to effectively use FinTech tools – has become crucial for entrepreneurial success in the digital age (Nguyen *et al*., 2024). Studies highlight the essential role of technical knowledge in helping entrepreneurs adapt to technological shifts and seize emerging opportunities (Festa *et al*., 2022; Sitaridis & Kitsios, 2023). While scholars have scrutinised traditional entrepreneurial skills, the influence of FinTech literacy on the intention to pursue DE has received relatively little attention and warrants further investigation.

To address these gaps, we employed the social cognitive career theory (SCCT) to examine the individual and combined effects of three key components of FinTech literacy, *i.e.*, crowdfunding, blockchain, and artificial intelligence (AI), on the intention to engage in digital start-ups. Specifically, we explored how FinTech literacy enhances digital entrepreneurial self-efficacy (DESE) and outcome expectations (DEOE), two psychological factors that drive entrepreneurial intention (Lent *et al*., 1994). Sequential mediation analysis was central to this study, as it revealed how FinTech literacy impacts digital entrepreneurial intention (DEI) through these mediating factors in a step-by-step process. This analysis provides a more nuanced understanding of how, individually and collectively, crowdfunding, blockchain, and AI influence DEIs.

Our investigation endeavours to bridge the current gaps in digital entrepreneurial intention by addressing three pivotal questions:

RQ1: How does FinTech literacy (crowdfunding, blockchain, and AI literature) influence DESE and DEOE?

RQ2: How do DESE and DEOE mediate the effect of FinTech literacy on DEIs?

RQ3: Do DESE and DEOE co-play serial mediate the effect of FinTech literacy on DEIs?

By integrating SCCT with FinTech literacy, this study provides both theoretical and practical contributions. This study is the first to use the SCCT framework to explore how FinTech literacy affects the intention to engage in DE. By highlighting the distinct and sequential mediation roles of DESE and DEOE in this process, this study provided a deeper understanding of how crowdfunding, blockchain, and artificial intelligence translate into DEIs. The findings also help policymakers promote FinTech education and foster supportive ecosystems to cultivate the next generation of digital entrepreneurs.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Digital Entrepreneurship

Digital entrepreneurship (DE) involves using digital technologies and online platforms to create and expand new business ventures, products, or services, which significantly impact entrepreneurial activity (Nguyen *et al*., 2024; Do, 2021). Numerous scholars have suggested definitions for DE. Singh and Dwivedi (2022) suggest that we may describe DE as a business model that emerges as a venture using technology, digital tools, or media. Paul *et al*. (2023) defined DE as a sub-category of entrepreneurship where certain or all elements of traditional business are digitalized. Meanwhile, Sitaridis, and Kitsios (2023) argued that digital involves human-driven efforts to transform business concepts into concrete products or services, while also establishing the essential procedures for success by leveraging digital technology as a key component.

The rise of DE has brought about profound transformations in innovation and business, fuelled by robust and cutting-edge digital technologies, platforms, and infrastructures (Paul *et al*., 2023; Wibowo *et al*., 2023; Do & Le, 2022). The proliferation of digital platforms and associated entrepre-

neurial ecosystems gave rise to a multitude of opportunities, including e-commerce ventures, online marketplaces, and software offerings (Aloulou *et al*., 2023; Nguyen & Nguyen, 2024). Entrepreneurs leverage information and insights to understand customer preferences and actions, which enables them to create forward-thinking strategies.

FinTech Literacy

FinTech refers to the use of advanced technologies aimed at enhancing and streamlining the delivery and utilization of financial services (Puschmann, 2017). Recent literature has widely recognized FinTech as a pivotal catalyst driving entrepreneurship (Festa *et al*., 2022; Nguyen *et al*., 2024). FinTech enables entrepreneurs to streamline operations, manage resources efficiently, and access broader markets through digital channels (Almansour, 2023). The successful use of FinTech depends on a thorough understanding of data-driven algorithms (Tian *et al.*, 2021). Therefore, individuals must possess specific knowledge and skills to leverage FinTech successfully (Almansour, 2023; Nguyen *et al*., 2024). FinTech literacy refers to individuals' understanding, mindset, and competence in using digital tools, software, and applications for accessing, managing, and analysing financial resources, transactions, and data (Nguyen *et al.*, 2024). In the fast-changing digital business environment, this literacy is paramount for entrepreneurs to fully harness their potential and remain competitive.

As scholars indicate, the predominant applications of FinTech, including crowdfunding, blockchain, and AI, exhibit significant potential for modern entrepreneurs (Festa *et al*., 2022; Ulrich *et al*., 2023; Troise *et al*., 2022; Hidayat-ur-Rehman & Hossain, 2024; Sitaridis & Kitsios, 2023). These applications provide broader access to capital (Troise *et al*., 2022), offer new opportunities for financial transactions and asset management (Ulrich *et al*., 2023), and help improve decision-making and customer experiences for entrepreneurs (Kumar *et al*., 2023).

Although DE is a rapidly growing field, research on the specific impact of FinTech literacy on DEI remains scarce (Nguyen *et al*., 2024). For instance, Festa *et al*. (2022) explored FinTech literacy's influence on entrepreneurial intentions but focused on general entrepreneurial behaviour without delving into the unique DE dynamics. Similarly, Tran *et al*. (2024) examined how FinTech literacy shapes entrepreneurial intentions specifically within the FinTech sector, but their scope was limited to FinTech-related ventures rather than the broader context of DE. Nguyen *et al*. (2024) investigated FinTech literacy's role in influencing DEI, but their research did not fully capture the complex ways in which FinTech literacy enhances both technical expertise and psychological factors like self-efficacy and outcome expectations. This gap highlights the need for more research into how FinTech literacy drives the technical competence and confidence required for digital entrepreneurial success.

Social Cognitive Career Theory

Building on Bandura's social cognitive theory (1991) and the concept of self-efficacy, Lent *et al.* (1994) explain how individuals form career interests, set goals, and make choices through two key mechanisms: self-efficacy beliefs, which reflect one's confidence in performing tasks, and outcome expectations, which refer to anticipated results. It also accounts for personal and environmental influences on these processes, making it a robust framework for understanding career-related decisions (Lent & Brown, 2019; Liguori *et al.*, 2017).

Researchers have widely applied SCCT to understand career development across various fields, such as academic (Li *et al*., 2024), computing disciplines (Lent *et al*., 2008), and engineering (Saifuddin *et al.*, 2013). In entrepreneurship research, scholars have rigorously validated SCCT as an effective framework for comprehending entrepreneurial behaviour and intention, given that entrepreneurship is a chosen career path (Liguori *et al.*, 2017; Pham & Le, 2023). However, its application to DE, specifically through the lens of FinTech literacy, remains novel.

We employed the SCCT framework to investigate the impact of FinTech literacy on the intention to pursue digital start-ups (refer to Figure 1). Drawing on SCCT, the study posits that FinTech literacy, which acts as a personal attribute, affects self-efficacy and outcome expectations, subsequently impacting the intention to engage in DE. The SCCT is highly appropriate for this study for several reasons. Firstly, while the theory of planned behaviour (TPB) and the entrepreneurial event model (EEM) are

widely used to predict entrepreneurial intention by focusing on beliefs and motivations, SCCT offers a promising alternative by addressing external influences such as knowledge. The SCCT incorporates critical components of the entrepreneurial intention models and provides a comprehensive theoretical framework for understanding how personal capabilities and perceptions influence career-related decisions and behaviours (Liguori *et al.*, 2017; Anh Do *et al.*, 2023). Furthermore, SCCT emphasizes the interplay between self-efficacy and outcome expectations, making it an ideal framework for examining the role of FinTech literacy in shaping DEIs. Therefore, expanding SCCT to include the impact of knowledge in emerging technologies such as crowdfunding, blockchain, and AI on entrepreneurs' technical abilities and psychological readiness uniquely contributes to the DE field.

Digital Entrepreneurial Self-efficacy, Outcome Expectations and Digital Entrepreneurial Intention

Digital entrepreneurial self-efficacy (DESE) refers to the confidence an individual has in their ability to effectively handle the challenges of being a successful digital entrepreneur (Xin & Ma, 2023). It involves the belief in one's ability to utilize digital tools and technologies, innovate, adjust to the constantly changing digital environment, and achieve success in the field of DE (Vu *et al*., 2024). Meanwhile, digital entrepreneurial outcome expectations (DEOE) refer to individuals' anticipated outcomes of engaging in DE.

According to SCCT, self-efficacy and outcome expectations are two determinants of behavioural intention (Lent *et al*., 1994). Previous research has reported that entrepreneurial self-efficacy is essential for engaging in entrepreneurial activities and is linked to having positive intentions toward entrepreneurship (Munir *et al*., 2024; Pham & Le, 2023). People with strong entrepreneurial self-efficacy are more inclined to invest effort in overcoming complex tasks and exhibit greater adaptability, resulting in an increased likelihood of wanting to start a business (Pham & Le, 2023). Similarly, several research studies have also shown a direct correlation between entrepreneurial intention and outcome expectations (Duong *et al*., 2023; Liguori *et al*., 2019). When individuals hold optimistic expectations about their future entrepreneurial outcomes, such as favourable financial gains, widespread public acknowledgement, and personal autonomy, they are more inclined to pursue starting their businesses (Santos & Liguori, 2020). Therefore, we hypothesised that individuals' DESE and DEOE positively impact their DEIs.

H1: (a) Digital entrepreneurial self-efficacy and (b) digital entrepreneurial outcome expectations positively affect digital entrepreneurial intention.

As suggested by SCCT, individuals' perceived self-efficacy influences their outcome expectations (Lent *et al*., 1994). Those with elevated levels of entrepreneurial self-efficacy tend to hold more positive expectations about the outcomes of their entrepreneurial endeavours due to their confidence in successfully executing the required tasks (Liguori *et al*., 2019; Santos & Liguori, 2020). Conversely, individuals with lower entrepreneurial self-efficacy are more likely to have less optimistic DEOE. Previous research has confirmed the positive correlation between entrepreneurial self-efficacy and outcome expectations (Duong *et al*., 2023; Santos & Liguori, 2020). Hence, we posited a similar correlation between DESE and DEOE.

H2: Digital entrepreneurial self-efficacy positively affects digital entrepreneurial outcome expectations.

The Role of FinTech Literacy

Crowdfunding is an online solicitation aimed at collecting resources from dispersed and unidentified contributors (Yacoub *et al*., 2022). This technology has quickly emerged as a vital financial option for supporting entrepreneurship. Crowdfunding is distinct from conventional financing because it involves a group of inexperienced investors with diverse motivations for contributing, limited financial resources and little formal investment training (Kumar & Agrawal, 2023). Scholars see crowdfunding as a promising platform that can have a significant influence on the launch of digital businesses, especially in developing economies (Phung, 2023). Digital entrepreneurs utilize crowdfunding platforms to boost user engagement and expand their operations (Liu *et al*., 2023). These platforms enable them to connect with potential customers and investors worldwide to obtain a range of resources (Nambisan, 2017). Therefore, crowdfunding plays a crucial role in DE.

We suggest that individuals who know about crowdfunding are likely to improve their DESE and develop positive DEOE. Crowdfunding opens new possibilities for entrepreneurs by giving them access to unconventional funding sources (Kumar & Agrawal, 2023), motivating individuals to become entrepreneurs (Parhankangas & Colbourne, 2023). By understanding the mechanisms and strategies involved in successful crowdfunding campaigns, digital entrepreneurs become more confident in raising the necessary funds (Yu & Fleming, 2022), validating their business ideas, and engaging with a broader audience (Nguyen *et al*., 2024). This knowledge helps them navigate the complexities of crowdfunding platforms and fosters a sense of competence and control over their entrepreneurial ventures. Moreover, being familiar with crowdfunding increases entrepreneurs' expectations of successful outcomes as they become skilled at using these platforms to secure financial resources, gain market validation, and build a community of early supporters (Kumar & Agrawal, 2023). Consequently, crowdfunding literacy directly contributes to higher self-efficacy and optimistic outcome expectations, essential for sustained entrepreneurial motivation and success in the digital landscape.

H3: Crowdfunding literacy positively affects (a) digital entrepreneurial self-efficacy and (b) digital entrepreneurial outcome expectations.

Blockchain is a technology that securely stores and transmits information in a decentralized, transparent manner through interconnected blocks containing verified data (Ulrich *et al*., 2023). In the digital economy, blockchain is pivotal for entrepreneurship as it offers a secure and transparent framework that enhances trust among stakeholders by ensuring that transactions are immutable and verifiable, thereby reducing fraud and errors (Wang *et al.*, 2022). Empirical studies show that blockchain literacy is closely linked to entrepreneurial behaviour. For example, entrepreneurs proficient in blockchain technology are more likely to implement smart contracts, which automate agreements and reduce operational costs (Chen & Bellavitis, 2020). These technologies not only streamline processes but also foster innovation by allowing entrepreneurs to launch initial coin offerings (ICOs) and security token offerings (STOs), providing greater access to capital and democratizing fundraising (Ulrich *et al*., 2023).

We propose that blockchain literacy can increase individuals' DESE and DEOE. Awareness of blockchain technology equips potential entrepreneurs with the knowledge to interact more effectively with this innovative tool and thus allows them to make informed and strategic decisions that support their digital ventures. This heightened understanding enables entrepreneurs to identify and capitalize on emerging opportunities within the digital landscape, fostering a sense of confidence and competence (Elia *et al*., 2020). Furthermore, individuals familiar with blockchain's benefits – such as increased security, transparency, and operational efficiency – tend to set higher expectations for the success of their ventures (Festa *et al*., 2022). Studies show that entrepreneurs with blockchain literacy are better equipped to identify emerging opportunities, make strategic decisions, and enhance trust with customers and partners, ultimately improving their business outcomes (Nguyen *et al*., 2024). Therefore, blockchain literacy can shape an entrepreneur's expectations regarding the outcomes of their digital ventures.

H4: Blockchain literacy positively affects (a) digital entrepreneurial self-efficacy and (b) digital entrepreneurial outcome expectations.

Artificial intelligence can execute intricate tasks that typically require human intelligence and often outperforms human abilities in certain areas (Kumar *et al*., 2023). This study argues that AI literacy shapes both DESE and DEOE. First, AI literacy equips entrepreneurs with the technical knowledge and skills necessary to effectively use AI-driven tools and solutions, which enhances their confidence in managing AI-powered business processes. AI has been proven to support long-term business success by optimizing tasks such as customer interactions, market research, and fraud detection (Nguyen *et al*., 2024), entrepreneurs who understand these capabilities feel more confident in their ability to implement AI within their ventures.

Furthermore, AI literacy positively influences DEOE by providing a clearer understanding of AI's potential benefits. Entrepreneurs with AI expertise can better anticipate AI's advantages, such as enhanced efficiency, innovation, and competitiveness in the market (Chalmers *et al*., 2021). Moreover, AI enables entrepreneurs to analyse vast data and uncover insights that support data-driven decision-making and strategic planning. It enhances human capabilities and creates avenues for progress and

expansion in the competitive technological environment. When individuals have realistic yet ambitious expectations of how AI can transform their business operations and outcomes, they are more likely to set higher goals and expect positive results. This understanding shapes outcome expectations, as entrepreneurs who are proficient in AI can foresee the impact of advanced analytics, automation, and smart product development on their business success (Almansour, 2023; Dabbous & Boustani, 2023).

H5: AI literacy positively affects (a) digital entrepreneurial self-efficacy and (b) digital entrepreneurial outcome expectations.

The Mediate Role of Digital Entrepreneurial Self-efficacy and Outcome Expectations

Within the SCCT framework, self-efficacy and outcome expectations serve as mediators between personal factors and intention (Duong *et al*., 2023; Liguori *et al*., 2019). Therefore, our extension of this model includes the impact of FinTech literacy on the intention to pursue DE, with DESE and DEOE serving as mediators.

H6: Digital entrepreneurial self-efficacy mediates the effect of (a) crowdfunding, (b) blockchain, and (c) AI on digital entrepreneurial intention.

H7: Digital entrepreneurial outcome expectations mediate the effect of (a) crowdfunding, (b) blockchain, and (c) AI on digital entrepreneurial intention.

Moreover, the SCCT model posits that self-efficacy mediates the relationship between personal factors and outcome expectations (Liguori *et al*., 2019). Thus, it is plausible to suggest that DESE and DEOE act as serial mediators in the link between FinTech literacy and DEI.

H8: Digital entrepreneurial self-efficacy and digital entrepreneurial outcome expectations co-play a serial mediating role in the relationship between (a) crowdfunding, (b) blockchain, and (c) AI and digital entrepreneurial intention.

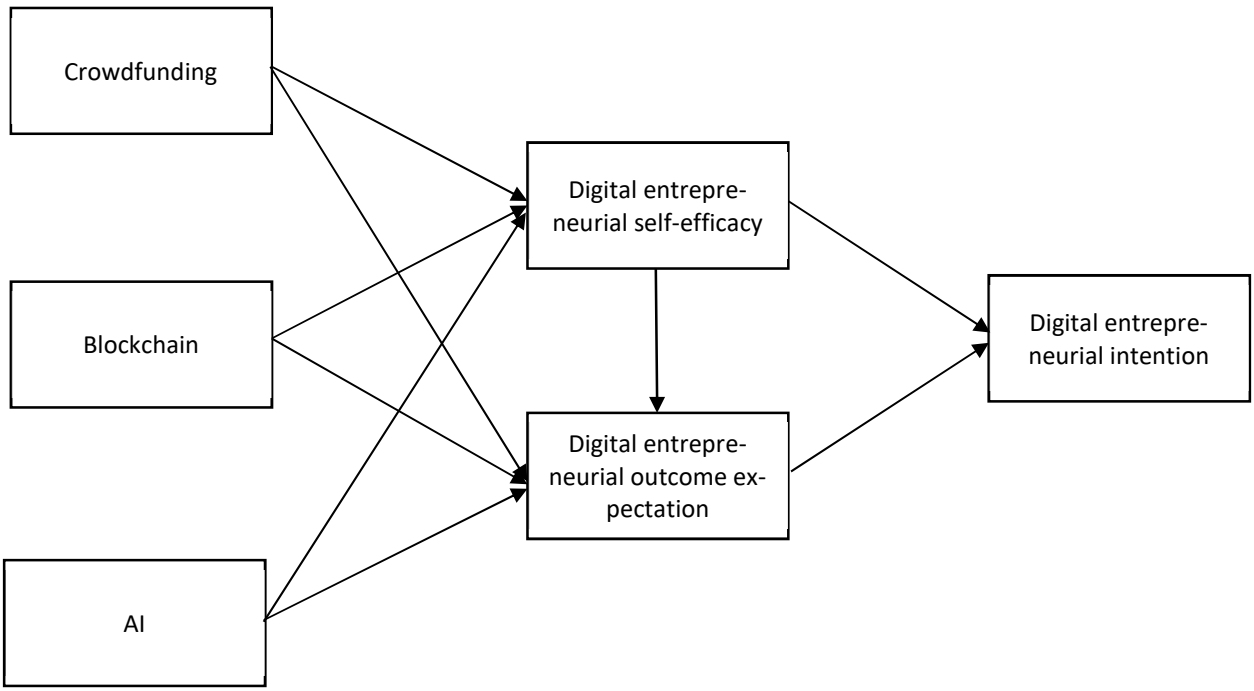

Figure 1. The research model
Source: own elaboration.

RESEARCH METHODOLOGY

Data Collection and Sample

We collected data through a quota convenience sampling method. The need to ensure a balanced representation of respondents across key demographic characteristics, such as study major and gender justified the use of quota convenience sampling. This method aligns with prior studies on entrepreneurial intentions and technology literacy, which often use convenience sampling to address practical constraints when targeting university students (*e.g.*, Nguyen *et al*., 2024; Festa *et al*., 2022). The survey targeted higher education students in Ha Noi, known for its high concentration of universities in Northern Vietnam. We used paper forms to distribute the questionnaire to students offline. We briefed all participants on the research's objectives, and participation in the survey was entirely up to the individual.

Over one month, we distributed a total of 1218 hard copies of questionnaires directly to students. Of the distributed questionnaires, we collected an impressive 1006, resulting in a response rate of 82.6%. Following the collection, we excluded 28 questionnaires, because they contained incomplete data, leaving a final sample of 978 responses for analysis. Within the final sample, male participants constituted 54.5%. Regarding academic majors, 59% specialized in economics and business administration, while 41% were in engineering or other fields. Notably, 73.1% of respondents claimed no enrolment in entrepreneurship courses.

Measures

We measured the constructs in our model using established scales from previous research, chosen for their validity and relevance to the DE context.

We derived the six-item scale measuring DEI from Aloulou *et al*. (2023), which has demonstrated its validity, ensuring its appropriateness for assessing intentions within a digital context. We adopted the three-item scale assessing DESE from Xin and Ma (2023), chosen for its proven reliability in measuring confidence in digital entrepreneurial abilities, which is central to the concept of self-efficacy in the DE landscape. We modified the four-item scale for DEOE from the research of Santos and Liguori (2020), whose work extensively validated this measure in entrepreneurial research, making it highly relevant for capturing expectations regarding entrepreneurial success in digital ventures.

We adopted the ten-item scale for crowdfunding literacy and the five-item scale for blockchain literacy from Festa *et al*. (2022). We selected these scales due to their demonstrated reliability and empirical support in measuring literacy in these specific financial technologies (e.g., Nguyen *et al*., 2024; Tran *et al*., 2024), which are pivotal in the DE domain. Lastly, we adjusted the three-item scale measuring AI literacy from the research of Dabbous and Boustani (2023), chosen for its theoretical grounding and validation in assessing knowledge and competence in AI, which is becoming increasingly critical for modern entrepreneurs.

Data Analysis

We processed and analysed data using SPSS 22 and AMOS 24 software. Initially, we assessed reliability and validity using Cronbach's alpha coefficient. Next, we used confirmatory factor analysis (CFA) to assess the measurement model by examining the convergent and discriminant validity of the measurement scales. Lastly, we utilised structural equation modelling (SEM) to investigate the research hypotheses. More distinctively, to investigate the indirect and serial mediation effects within the research model, we applied an indirect effect plugin with 5 000 bootstrapped samples.

RESULTS AND DISCUSSION

Measure Assessment

As presented in Table 1, the Skewness and Kurtosis values fell within acceptable ranges (from -2 to 2), confirming the normality of the constructs (Pham & Le, 2023). Table 1 also provides the inter-correlation between the six constructs of the research model.

After confirming the variables' normality, we calculated Cronbach's alpha coefficient to assess internal consistency. As reported in Table 2, Cronbach's alpha coefficients for all variables were higher than 0.7. This indicates that the scales were highly reliable and statistically significant (Hair *et al*., 2010).

Table 1. Descriptive characteristics and Pearson correlation

Variables	Mean	S.D	Skewness	Kurtosis	Inter-construct correlations					
					1	2	3	4	5	6
1. DEI	4.9293	1.36992	-0.819	0.179	–					
2. DESE	5.1554	1.35017	-1.094	0.963	0.646**	–				
3. DEOE	5.2582	1.17824	-1.185	1.771	0.529**	0.513**	–			
4. CF	4.4724	1.39071	-0.451	-0.631	0.206**	0.224**	0.291**	–		
5. BC	5.1164	1.20375	-1.053	1.317	0.419**	0.452**	0.574**	0.282**	–	
6. AI	4.6714	1.46516	-0.602	-0.285	0.238**	0.277**	0.369**	0.052	0.479**	–

Notes. N=978, ** significance was at 0.01 level.
Source: own study.

Table 2. The results of convergent validity and reliability assessment

Variables	Code	α	CR	AVE	Factor loading
Digital entrepreneurial intention – DEI	DEI1	**0.946**	**0.946**	**0.745**	0.828
	DEI2				0.870
	DEI3				0.858
	DEI4				0.881
	DEI5				0.854
	DEI6				0.887
Digital entrepreneurial self-efficacy – DESE	DESE1	**0.925**	**0.926**	**0.807**	0.862
	DESE2				0.916
	DESE3				0.916
Digital entrepreneurial outcome expectation – DEOE	DEOE1	**0.836**	**0.858**	**0.609**	0.870
	DEOE2				0.870
	DEOE3				0.812
	DEOE4				0.515
Crowdfunding – CF	CF1	**0.953**	**0.953**	**0.672**	0.732
	CF2				0.777
	CF3				0.791
	CF4				0.862
	CF5				0.876
	CF6				0.867
	CF7				0.839
	CF8				0.850
	CF9				0.831
	CF10				0.760
Blockchain – BC	BC1	**0.913**	**0.916**	**0.686**	0.826
	BC2				0.882
	BC3				0.868
	BC4				0.848
	BC5				0.704
Artificial intelligence – AI	AI1	**0.931**	**0.932**	**0.819**	0.905
	AI2				0.926
	AI3				0.885

Notes. α: Cronbach's alpha.
Source: own study.

We evaluated the convergent and discriminant validity of the measurement scales by performing CFA. The measurement model showed a good fit, as indicated by the following indices CMIN/df = 6.625, CFI =

0.914 > 0.9, SRMR = 0.041 < 0.08, and RMSEA = 0.076 < 0.08 (Hu & Bentler, 1999). Table 2 also presents all variables' average variance extracted (AVE) and composite reliability (CR) reached acceptable levels. All constructs had CR values that went beyond the recommended minimum of 0.6, and the AVE values for all variables were higher than 0.5, indicating satisfactory convergent validity (Hair *et al*., 2010). Furthermore, the factor loadings of all items, which vary from 0.515 to 0.926, demonstrated robust associations between the items and their corresponding constructs.

Given that we used self-report scales to measure the variables in this study, there was a potential for common method variance. To mitigate this concern, we conducted Harman's single-factor test, as suggested by Podsakoff *et al*. (2003), to statistically assess the presence of common method bias. According to the results, the maximum variance explained by a single factor was 35.497%, which was well below the threshold of 50%. Therefore, common method bias was unlikely to be a significant issue in this study.

Model Validation and Hypotheses Testing

The analysis results from the SEM showed that the models achieved a high level of fit, with CMIN/df = 6.581, CFI = 0.914 > 0.9, SRMR = 0.041 < 0.08, and RMSEA = 0.076 < 0.08 (Hu & Bentler, 1999).

As presented in Table 3, the SEM results showed that DEI was positively influenced by DESE (β = 0.575, p <0.001) and DEOE (β = 0.449, p <0.001). Hypotheses H1a and H1b were supported. This finding aligns with the core principles of SCCT, which asserts that self-efficacy and outcome expectations are key determinants of intention (Lent *et al*., 1994). Furthermore, these results are consistent with previous research in the entrepreneurial field, such as Pham and Le (2023), Liguori *et al*. (2017), which emphasise the significant role of self-efficacy and outcome expectations in shaping entrepreneurial intentions. The current research reinforces the notion that individuals' confidence in their digital entrepreneurial abilities and their expectations of favourable outcomes are pivotal in fostering DEI.

Moreover, DESE significantly and positively impacted DEOE (β = 0.223, p <0.001). Thus, hypothesis H2 was supported. This observation is consistent with the SCCT and previous studies in the entrepreneurial context, which have shown that self-efficacy can improve an individual's outcome expectations (Duong *et al*., 2023; Liguori *et al*., 2019; Santos & Liguori, 2020). This relationship highlights the importance of self-confidence in shaping expectations and motivations.

Regarding the direct effects of FinTech literacy, the results showed that individuals' DESE was positively influenced by crowdfunding (β = 0.125, p <0.001), blockchain (β = 0.463, p <0.001), and AI literacy (β = 0.073, p = 0.029), lending support H3a, H4a, and H5a. Similarly, DEOE was also positively affected by crowdfunding (β = 0.058, p = 0.004), blockchain (β = 0.282, p <0.001), and AI literacy (β = 0.067, p <0.001). Thus, we confirmed H3b, H4b, and H5b. These findings lend strong support to the ideas presented in SCCT, which posits that personal inputs, such as specific skills and knowledge, can be pivotal sources of an individual's self-efficacy and outcome expectations (Lent *et al.*, 1994). While prior research has explored the direct impact of FinTech literacy on DEI (*e.g.*, Nguyen *et al*., 2024; Festa *et al*., 2022), these studies have largely overlooked the FinTech literacy influence on intermediate factors such as DESE and DEOE. This study is the first to bridge this gap by examining how FinTech literacy enhances DEI and the underlying psychological mechanisms of self-efficacy and outcome expectations, offering a more nuanced understanding of its role in DE.

Regarding the indirect effects of FinTech literacy, the findings presented in Table 4 demonstrate that FinTech literacy (crowdfunding, blockchain and AI literacy) displays indirect effects on DEI via DESE and DEOE. Specifically, crowdfunding, blockchain, and AI literacy significantly and positively affected individuals' intentions to engage in DE through their DESE ($\beta_{CF\text{-}DESE\text{-}DEI}$ = 0.059, p <0.01; $\beta_{BC\text{-}DESE\text{-}DEI}$ = 0.217, p <0.01; $\beta_{AI\text{-}DESE\text{-}DEI}$ = 0.043, p <0.05). Therefore, H6a, H6b, and H6c were supported. Similarly, crowdfunding, blockchain and AI literacy significantly and positively influenced individuals' DEIs via DEOE ($\beta_{CF\text{-}DEOE\text{-}DEI}$ = 0.022, p <0.01; $\beta_{BC\text{-}DEOE\text{-}DEI}$ = 0.103, p <0.01; $\beta_{AI\text{-}DEOE\text{-}DEI}$ = 0.031, p <0.001). Hence, H7a, H7b, and H7c were supported. These findings indicate that knowledge of crowdfunding, blockchain, and AI boosts individuals' confidence in their digital entrepreneurial skills, leading them to be more inclined to start a digital business. Similarly, this knowledge also helps create positive expectations about the outcomes of their future ventures, further strengthening their intention to start a digital business. These findings are in line with the SCCT that self-

efficacy and outcome expectations can be mediators in the relationships between individual attributes and intentions (Lent *et al*., 1994; Liguori *et al*., 2019)

Table 3. The direct effects results

Hypothesis		Estimate	P-value	Description
H1a	DESE -> DEI	0.575***	0.000	Supported
H1b	DEOE -> DEI	0.449***	0.000	Supported
H2	DESE -> DEOE	0.223***	0.000	Supported
H3a	CF -> DESE	0.125***	0.000	Supported
H3b	CF -> DEOE	0.058**	0.004	Supported
H4a	BC -> DESE	0.463***	0.000	Supported
H4b	BC -> DEOE	0.282***	0.000	Supported
H5a	AI -> DESE	0.073*	0.029	Supported
H5b	AI -> DEOE	0.067***	0.000	Supported

Notes. *** p < 0.001, ** p < 0.01, * p < 0.05.
Source: own study.

Interestingly, the indirect analysis also indicated that crowdfunding, blockchain, and AI literacy had indirect effects on individuals' DEI via a serial mediating mechanism of DESE and DEOE ($\beta_{CF\text{-}DESE\text{-}DEOE\text{-}DEI}$ = 0.038, p <0.01; $\beta_{BC\text{-}DESE\text{-}DEOE\text{-}DEI}$ = 0.140, p <0.001; $\beta_{AI\text{-}DESE\text{-}OE\text{-}DEI}$ = 0.028, p <0.05), lending support H8a, H8b, and H8c. This finding highlights a stepwise process where FinTech literacy first enhances DESE, which in turn positively influences DEOE, ultimately strengthening the intention to pursue DE. This sequential mediation underscores the interconnectedness of knowledge, confidence, and expectations in shaping DEIs. It also illustrates how proficiency in financial technologies can progressively build self-efficacy and foster optimistic outcome expectations, which together drive stronger DEIs.

Table 4. The indirect effects results

Hypothesis		Lower	Upper	Estimate	Description
H6a	CF -> DESE -> DEI	0.028	0.115	0.059**	Supported
H6b	BC -> DESE -> DEI	0.208	0.333	0.217**	Supported
H6c	AI - > DESE -> DEI	0.008	0.080	0.043*	Supported
H7a	CF -> DEOE -> DEI	0.009	0.048	0.022**	Supported
H7b	BC -> DEOE -> DEI	0.092	0.171	0.103**	Supported
H7c	AI - > DEOE -> DEI	0.017	0.047	0.031***	Supported
H8a	CF -> DESE -> DEOE -> DEI	0.006	0.033	0.038**	Supported
H8b	BC -> DESE -> DEOE -> DEI	0.031	0.068	0.140***	Supported
H8c	AI -> DESE -> DEOE -> DEI	0.002	0.015	0.028*	Supported

Notes. *** p < 0.001, ** p < 0.01, * p < 0.05.
Source: own study.

CONCLUSIONS

Building upon the SCCT, we expanded the framework by examining the influence of FinTech literacy – encompassing knowledge of crowdfunding, blockchain, and AI – on DEI. Specifically, we explored how literacy in these financial technologies impacts individuals' confidence in their DESE and DEOE. We also investigated the separate and serial mediating roles of DESE and DEOE in the relationship between FinTech literacy and DEI.

The findings demonstrated that both DESE and DEOE significantly and positively influenced DEI. Furthermore, FinTech literacy, including crowdfunding, blockchain, and AI knowledge, positively affected DESE and DEOE. Notably, blockchain literacy had the strongest impact on both DESE and DEOE. Among the three components, blockchain literacy exerted the strongest influence on both DESE and DEOE, while AI literacy had the weakest effect on DEOE, and crowdfunding literacy had the weakest impact on DESE. Moreover, both DESE and DEOE significantly drove DEI, acting as individual and serial

mediators, as FinTech literacy enhances DESE, which boosts DEOE, ultimately strengthening DEI. These results highlight the interplay of technical knowledge, self-confidence, and outcome expectations in shaping DEI, reinforcing SCCT's core principles.

Theoretical Contributions

The study offers several key contributions to the field of DE. To the best of our knowledge, this is the first study to apply the SCCT framework to examine the influence of FinTech literacy – encompassing knowledge of crowdfunding, blockchain, and AI – on the intention to engage in DE. By extending SCCT to include FinTech literacy, we provided a novel theoretical perspective on how proficiency in emerging financial technologies impacts individuals' confidence (DESE) and expectations of success (DEOE) in the digital entrepreneurial landscape. This extension of SCCT enhances the theory by demonstrating how specific technological literacies act as personal inputs that shape self-efficacy and outcome expectations, offering a more comprehensive understanding of the psychological processes underlying DE.

Furthermore, by examining the distinct and sequential mediation effects of DESE and DEOE, we clarified how FinTech literacy translates into DEI. This nuanced approach adds granularity to SCCT and deepens our understanding of the psychological drivers behind DE. By identifying these mediating pathways, we underscored the importance of psychological factors in fostering DEIs and provided a framework for future research exploring how other personal or contextual factors may influence DE. The findings suggest that enhancing FinTech literacy, specifically in areas like crowdfunding, blockchain, and AI, could constitute a key strategy for building entrepreneurial self-confidence and shaping positive outcome expectations, which are critical for entrepreneurial success.

Practical Implications

The current study emphasizes the crucial role of FinTech literacy in fostering DEI. This finding holds practical implications for various stakeholders.

Firstly, academic administrators and educators can enhance FinTech literacy among aspiring entrepreneurs by designing targeted programs combining practical training and foundational knowledge. These programs could include partnerships with FinTech companies to offer workshops, internships, and hackathons, providing real-world experience in using crowdfunding platforms, blockchain technology, and AI tools for entrepreneurial applications. Furthermore, integrating FinTech literacy into entrepreneurship curricula through project-based learning, such as managing crowdfunding campaigns or exploring blockchain-based business solutions, can build students' confidence, boost their self-efficacy, and foster positive expectations about their ventures. Ultimately, this can increase their likelihood of engaging in DEI.

Furthermore, policymakers can advance FinTech literacy through initiatives such as national strategies that allocate funding to universities and vocational schools for developing FinTech programs and establishing public-private partnerships to ensure training aligns with industry standards. Governments can also incentivize startups to adopt innovative financial technologies by offering tax breaks or subsidies and thus foster a FinTech-savvy entrepreneurial ecosystem. Moreover, dedicated FinTech literacy campaigns can raise awareness and provide resources and training to budding entrepreneurs, particularly in underrepresented regions or demographics, ensuring broader access to knowledge and skills essential for engaging in DE.

Furthermore, organizations supporting entrepreneurs, such as incubators and accelerators, should integrate FinTech literacy into their programs by offering modules on crowdfunding, blockchain applications, and AI-driven entrepreneurship. They can host workshops on launching blockchain businesses and partner with AI startups for mentoring on AI-enabled models. Collaborating with FinTech experts ensures up-to-date training, Moreover, thanks to it, mentors can build DESE and foster optimistic yet realistic DEOE through one-on-one guidance and feedback on FinTech-based projects, boosting entrepreneurs' confidence, and success potential.

Limitations and Future Research Directions

The study offers important insights into the connection between FinTech literacy and the intention to engage in DE. However, there are some limitations to it. Firstly, the cross-sectional design constrains the ability to determine causal relationships, highlighting the need for longitudinal studies that could provide a more in-depth understanding of how FinTech literacy, DESE, and DEOE evolve. Secondly, the study focused on specific aspects of FinTech literacy – crowdfunding, blockchain, and AI – while overlooking other important elements like cryptocurrency and digital payments. Future research could explore these additional areas to offer a broader understanding of FinTech's impact on DEI. Finally, the study's sample of university students may limit generalizability. Future studies could examine more diverse populations, such as seasoned entrepreneurs or individuals in different cultural and economic contexts and investigate how FinTech literacy influences entrepreneurial outcomes over extended periods.

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Authors

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Sy Long Pham

PhD in Economics at National Economics University, Vietnam. His research interests include entrepreneurship and international business.

Correspondence to: Sy Long Pham, National Economics University, 207 Giai Phong, Hai Ba Trung, Hanoi, Vietnam. e-mail: longps@neu.edu.vn

ORCID https://orcid.org/0000-0002-0502-0401

Anh Duc Do (corresponding author)

Associate Professor of School of Trade and International Economics, National Economics University, Vietnam. His research interests include innovation, knowledge management, and society from the perspective of innovation and economics.

Correspondence to: Anh Duc Do, National Economics University, 207 Giai Phong, Hai Ba Trung, Hanoi, Vietnam. e-mail: ducda@neu.edu.vn

ORCID https://orcid.org/0000-0002-5421-259X

Dieu Linh Ha

PhD in Business Administration, Faculty of Economics and Human Resource Management, National Economics University, Vietnam. Her research interests include economics management, human behaviour and intention.

Correspondence to: Dieu Linh Ha, National Economics University, 207 Giai Phong, Hai Ba Trung, Hanoi, Vietnam. e-mail: linhhd@neu.edu.vn

ORCID https://orcid.org/0000-0002-6978-7409

Mai Van Trinh

PhD in Ecnomics at National Ecnomics University, Vietnam. His research interests include economics management, diversity management and inclusion and their impact on business innovation and efficiency.

Correspondence to: Mai Van Trinh, National Economics University, 207 Giai Phong, Hai Ba Trung, Hanoi, Vietnam. e-mail: trinhmaivan@neu.edu.vn

ORCID https://orcid.org/0000-0001-8312-6538

Anh Duc Le

PhD in Economics at National Economics University, Vietnam. His research interests include business innovation and economics.

Correspondence to: Anh Duc Le, National Economics University, 207 Giai Phong, Hai Ba Trung, Hanoi, Vietnam. e-mail: ducla@neu.edu.vn

ORCID https://orcid.org/0000-0002-2881-2049

Thi Phuong Hien Tran
PhD Student at National Economics University, Vietnam. Her research interests include innovation, fintech, and AI.
Correspondence to: Thi Phuong Hien Tran, National Economics University, 207 Giai Phong, Hai Ba Trung, Hanoi, Vietnam. e-mail: hienttp@neu.edu.vn
ORCID https://orcid.org/0009-0003-8892-9526

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