

# The Influence of Digital Entrepreneurship Education on Vocational Students' Digital Entrepreneurial Intention: The Mediating Role of Digital Entrepreneurial Knowledge and Skills

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# ABSTRACT

In the digital age, China has launched major reform projects in order to strengthen youth entrepreneurship. It is important to identify factors contributing to enhanced youth entrepreneurship intention. Based on the theory of entrepreneurial human capital, this study employs questionnaires from 382 vocational school students to explore the status quo of digital entrepreneurship education and the influence of digital entrepreneurship education, digital entrepreneurial knowledge and skills on digital entrepreneurial intention. Data were collected using a face-to-face questionnaire from management students who had completed a program in digital entrepreneurship. The data analysis design incorporates both exploratory (PCA using IBM SPSS Statistics 26) and confirmatory factor analysis (PLS-SEM using SmartPLS 3). The study results prove the following. First, the participation rate of entrepreneurship education in vocational schools is much higher than in their counterpart (academic schools), with more than half of vocational students reporting having received entrepreneurship education of diverse types. Second, students evaluated themselves with relatively high entrepreneurial skills and intention, although they answered ''unclear'' to entrepreneurial knowledge and entrepreneurship education. Third, motivation and leadership, as well as enterprise knowledge, play mediating roles through which digital entrepreneurship education affects digital entrepreneurial intention, and represent two types of entrepreneurial human capital-entrepreneurial knowledge and skills. The implications of effective educational implementation are discussed.

**Key words:** Digital entrepreneurship education; Digital Entrepreneurial skills; Digital Entrepreneurial knowledge; Digital Entrepreneurial intention; Vocational students

# INTRODUCTION

Digital entrepreneurship education (DEE) plays a crucial role in fostering digital entrepreneurial intentions among students in vocational higher education(Duong, Nguyen, Chu, Pham, & Do, 2024). Since 2016, the Chinese Ministry of Education has mandated that all higher education institutions provide foundational entrepreneurship courses, marking an unprecedented emphasis on entrepreneurship education in the vocational education sector(Hagger & Hamilton, 2022). This policy shift not only reflects a comprehensive focus on traditional entrepreneurship education but also signifies the urgent need to develop professionals with digital entrepreneurship skills in a digital economy context(Hagger & Hamilton, 2022). Although this focus initially concentrated on higher education, research indicates that it is particularly critical to cultivate digital entrepreneurial spirit and skills in the vocational higher education stage, which is the early stage of vocational education following secondary education(Abdelfattah, Al Halbusi, & Al-Brwani, 2022). In vocational higher education, the importance of entrepreneurship knowledge and skills in developing students' digital entrepreneurial intentions has become increasingly pressing.

Despite the growing demand for entrepreneurship education, there remains a notable gap in research regarding its impact on digital entrepreneurial intentions among vocational higher education students(Anwar, Ahmad, Saleem, & Yasin, 2023). This study aims to address this shortfall by exploring how entrepreneurship education can enhance digital entrepreneurial knowledge and skills among these students, thereby boosting their entrepreneurial intentions(Donaldson, Huertas González-Serrano, & Calabuig Moreno, 2023). Based on a survey



of 382 vocational higher education students, the research employs the Entrepreneurial Human Capital Theory to delve into the influence of entrepreneurship education, digital entrepreneurial knowledge, and skills on digital entrepreneurial intentions(Hagger & Hamilton, 2022). A novel aspect of this study is its in-depth analysis of the relationship between entrepreneurship education and digital entrepreneurial intentions, highlighting the mediating role of digital entrepreneurial knowledge and skills.

This study offers a new perspective and empirical foundation for the development of entrepreneurship education within vocational higher education, playing a significant role in understanding and improving entrepreneurial education strategies in this context(Jayasuriya, Azam, Khatibi, & Dharmaratne, 2018). It not only responds to the urgent demands of government policies and student needs for entrepreneurship education but also provides valuable guidance for nurturing entrepreneurial talent capable of adapting to the rapidly evolving digital economy(Larose, Mastro, & Eastin, 2001). Moreover, the study underscores the importance of integrating entrepreneurial learning with vocational fields, positing that the incorporation of entrepreneurship education across various domains of vocational education is a key strategy to address the challenges posed by the dynamic digital economy and labor market.

# THEORETICAL AND HYPOTHESIS DEVELOPMENT

#### 2.1 Digital entrepreneurship education and Digital entrepreneurship intention

Research indicates that DEE has a positive impact on vocational students' digital entrepreneurial intentions(Mombelli et al., 2024). By integrating digital tools and methods, DEE enables students to effectively recognize emerging entrepreneurial opportunities and equips them with essential skills for initiating and managing digital ventures (Nowinski et al., 2019; Ratten & Usmanij, 2021). This educational approach focuses not just on the dissemination of theoretical knowledge but importantly encourages students to apply their learning in real-world settings, thus better adapting to the challenges of entrepreneurship in the digital age(Shinnar, Hsu, & Powell, 2014).

The diversified methods employed in DEE also play a critical role in enhancing students' digital entrepreneurial intentions(Abdelfattah et al., 2022). These methods include the use of interactive digital tools, case studies, practical projects, and simulations, all aimed at enhancing students' understanding and adaptability to the digital entrepreneurship environment (Kickul et al., 2018; Ferreira et al., 2018). Additionally, DEE underscores the importance of considering cultural differences in education, ensuring that the content and methods are adaptable to the diverse needs and backgrounds of students (Bandera et al., 2018; Mukhtar et al., 2021).

Thus, it is evident that Digital Entrepreneurship Education is crucial for vocational students. It not only provides the necessary knowledge and skills but also ignites digital entrepreneurial intentions, enabling students to adapt and succeed in the digital business landscape. This mode of education empowers students with the capability to understand and utilize digital technology, thereby gaining a competitive edge in the increasingly competitive business world. Thus, we propose our first hypothesis as below:

Hypothesis 1 DEE has a positive influence on vocational students' DEI.

#### 2.2 Theory of Entrepreneurial Human Capital (EHC)

Entrepreneurial human capital (EHC) constitutes specialized, high-level entrepreneurship-specific competence and knowledge, which is crucial, e.g., in selling, negotiating, product development, and risk judgment (Shane 2003). EHC theory reckons that people with a high level of educational attainment are more likely to become self-employed (i.e., digital entrepreneurs) (Congregado 2008). These potential entrepreneurs combine various types of knowledge and skills for developing a good product or service to meet unsatisfied market demand or bring in some changes for mobilizing resources better, and this series of specific knowledge and skills can be regarded as two kinds of entrepreneurial human capitals (Congregado 2008). As for the influencing mechanism, EHC affects digital business performance by empowering entrepreneur's skills in which it plays the mediational role (Wang et al. 2012).



Digital entrepreneurial skills refer to the composite ability required by entrepreneurs to successfully perform in a digital entrepreneurial role. This concept adapts and expands upon Mitchelmore and Rowley's (2010) definition of traditional entrepreneurial competencies, incorporating not only personal traits and fundamental abilities but also proficiency in digital tools and platforms such as e-commerce systems, social media marketing strategies, online market analysis, and cybersecurity measures. According to studies by RezaeiZadeh et al. (2017) and Arranz et al. (2017), an individual's digital entrepreneurial skills can be significantly enhanced through digital entrepreneurship education and have a substantial impact on digital entrepreneurial intention (DEI), business creation, and entrepreneurial performance. Compared to traditional entrepreneurial skills, digital entrepreneurial skills place greater emphasis on understanding and applying emerging digital technologies, as well as adapting and innovating in the rapidly changing digital market environment.

Digital entrepreneurial knowledge encompasses information pertinent to digital entrepreneurial activities, such as identifying digital entrepreneurial opportunities, establishing digital enterprises, executing digital marketing, managing digital finances, and organizational management. This knowledge can be acquired through courses and activities tailored for vocational college students, like participating in the 'Internet+ Entrepreneurship Competition.' In these activities, vocational students have the opportunity to deeply learn and apply digital entrepreneurial knowledge, including digital market analysis, online marketing strategies, e-commerce, and data management. Engaging in such competitions and projects not only allows students to theoretically grasp digital entrepreneurial knowledge but also to strengthen the application of this knowledge in practice, thereby comprehensively developing their digital entrepreneurial skills.

Hypothesis2 Digital Entrepreneurship education has a positive influence on vocational students' digital entrepreneurial skills (H2a) and digital entrepreneurial knowledge (H2b).

### 2.3 Digital Entrepreneurship Knowledge, Digital entrepreneurship Skills and intention

Digital Entrepreneurship Knowledge (DEK) and Digital Entrepreneurship Skills are seen as key elements in fostering students' intentions towards entrepreneurship. DEK encompasses a comprehensive understanding of digital technologies, market dynamics, and digital business models, whereas Digital Entrepreneurship Skills involve the application of this knowledge in effective market analysis, product innovation, and implementation of business strategies. This distinction is supported by the research of Roxas (2014) and Younis et al. (2020), who underscored the importance of DEI in kindling the entrepreneurial spirit in students.

Simultaneously, the theory of Entrepreneurial Human Capital (EHC) emphasizes that knowledge and skills obtained from entrepreneurship education are crucial for shaping students' entrepreneurial intentions. The study by Karyaningsih et al. (2020) further validates the role of educational content in developing an entrepreneurial mindset. Additionally, as described by Xie et al. (2018) and Shane & Nicolaou (2013), ample DEK and skills are essential for entrepreneurs in digital entrepreneurship environments, especially in product development and market adaptation.

The implementation of DEI through diverse teaching methods, as emphasized by Ferreira et al. (2018), provides students with opportunities to learn and apply DEK and skills. These methods enhance students' adaptability to digital platforms and foster their openness and flexibility towards change, as noted by Kickul et al. (2018). Ratten and Usmanij (2021) highlight the use of innovative technologies in DEI, such as AI, robotics, and automation, which significantly increase students' interest in learning digital entrepreneurship knowledge and their ability to apply these skills. Furthermore, the application of big data, mobile technologies, and the Internet of Things (IoT) in DEI, as mentioned by Kickul et al. (2018), not only expands students' capacity to acquire knowledge but also enhances their skills in analyzing and utilizing this data in a digital context.

Jena (2020) explicitly states that DEI has a significant positive impact on students' entrepreneurial intentions, particularly in enhancing digital entrepreneurship skills. These skills include but are not limited to digital market analysis, online marketing strategies, and effective utilization of digital resources for entrepreneurial activities. The studies by Ho et al. (2018) and Jena (2020) further reveal how DEI influences entrepreneurs' overall performance by enhancing their profitability, entrepreneurial spirit, and survival opportunities. However, as Bischoff et al. (2018) and Ahmed et al. (2020) have pointed out, there is still a deficiency in educational policies



and initiatives aimed at enhancing students' entrepreneurial attitudes, intentions, and activities, despite universities' efforts to optimize entrepreneurship education. Therefore, this study hypothesizes to explore how DEI, by enhancing vocational students' digital entrepreneurship knowledge and skills, impacts their entrepreneurial intentions, thereby providing new insights into entrepreneurship education in the digital era. Thus, according to EHC and the previous research in this area, we propose our third and forth hypothesis as below:

Hypothesis 3 Digital Entrepreneurial skills (H3a) and digital entrepreneurial knowledge (H3b) have a significant influence on vocational students' DEI.

Hypothesis4 Digital Entrepreneurial skills (H4a) and digital entrepreneurial knowledge (H4b) are mediating variables when digital entrepreneurship education affects Chinese vocational students' DEI.

#### 2.4 Theoretical framework

Digital entrepreneurship education may exert influence on China vocational students' DEI, as the current literature indicates. Furthermore, although digital entrepreneurial knowledge and digital entrepreneurial skills may also influence DEI, their roles are more likely to be that of mediators. Thus, the e the research design and relationship between research variables, we proposed a theoretical model of factors influencing DEI of vocational students (Fig.1). In addition to exploring the influencing mechanism, this study also aims to elucidate effective interventions that promote digital entrepreneurship education for vocational students.





# METHOD

### 3.1 Design

This research used a cross-sectional survey with a quantitative approach to deal with the hypothesis formulated earlier through structural equation modeling (PLS-SEM). In more precise, this study attempts to confirm how DEE directly affects DEI, and also indirectly through DES and DEK as moderating variables.

#### 3.1. Sample and procedure

The study sample consisted of business management students selected from one polytechnics in Hebei province.



The total population is 748. The study's sample size (n = 254) was determined following Krejcie and Morgan's (1970) Population and Sample Size Table. The study adopted a simple random sampling technique to select the study participants from the lists of students obtained from the school. The number of participants selected from the school depended on the school's population (i.e., proportionate sampling).

The participants (boys, girls) consisted of 254 (23.7%) grade one, 250 (34.2%) grade two, and 307 (42.1%) grade three students. Among these participants, 47.5% believed that entrepreneurial skills can be nurtured by educational means, while 11.6% did not and 40.8% remained neutral. Other demographics are as follows: academic performance (top, 204, 27.9%; middle, 391,53.6%; bottom, 135, 18.5%); the presence of siblings (only child, 401, 54.9%; with siblings, 329, 45.1%); place of residence (rural, 489, 67%; urban, 241, 33%); student leadership role (leaders, 203, 27.8%; nonleader, 527, 72.2%); and close family members with entrepreneurial experience (some, 322, 44.1%; none, 408, 55.9%). All the participants were informed about the anonymity and voluntary nature of the participation.

#### 3.2 Variables

Digital entrepreneurship education (DEE)

- DEE1 DEE is mostly provided by university or schools in the nations
- DEE2 The university has a high concern in digital entrepreneurial education
- DEE3 The university presents the required knowledge and information related to digital entrepreneurship
- DEE4 The university enhances students' skills linked to digital entrepreneurship
- DEE5 The university allows students about digital entrepreneurship and how to initiate a digital entrepreneurship
- Digital entrepreneurial intention (DEI)
- DEI 1 I have an aspiration to be a successful in digital-entrepreneur
- DEI2 I wish to be a business owner
- DEI3 I believe that I can have online business in the near future
- DEI4 I aspire to possess a business
- DEI5 I will be a digital entrepreneur in next of 5-year after graduation
- DEI6 I regularly updated information on how to be successful digital entrepreneurs
- Digital entrepreneurial knowledge (DEK)
- DEK1 I have adequate knowledge of the legal necessity to initiate a digital entrepreneurship
- DEK 2 I can find the resources (e.g., financial, economic) to initiate a digital entrepreneurship
- DEK 3 I have adequate knowledge to manage a digital entrepreneurship
- DEK 4 I have adequate knowledge in digital marketing a product/service
- DEK 5 I have adequate knowledge in commercializing a digital business idea
- Digital entrepreneurial skills (DES)
- DES 1 I am familiar with and can apply relevant digital technologies to entrepreneurial projects
- DES 2 I can understand market demands and formulate business strategies based on them



DES 3 I possess project management and teamwork skills

### RESULTS

#### **Descriptive and Correlation Results**

Table 1 Mean, SD, and correlation coefficients for each variable

| Name                               | Mean  | SD    | DEE        | DEI        | DEK       | DES    |
|------------------------------------|-------|-------|------------|------------|-----------|--------|
| Digital entrepreneurship education | 3.634 | 0.925 | 1(***)     |            |           |        |
| Digital entrepreneurship intention | 3.917 | 0.942 | 0.528(***) | 1(***)     |           |        |
| Digital entrepreneurship Knowledge | 3.555 | 1.074 | 0.348(***) | 0.483(***) | 1(***)    |        |
| Digital entrepreneurship skills    | 3.724 | 0.753 | 0.382(***) | 0.58(***)  | 0.73(***) | 1(***) |

Through descriptive statistics and Pearson correlation analysis, we obtained the mean value, standard deviation and correlation coefficient between each pair (Table 1). Between the two options of "unclear" and "high", students' evaluation of their digital entrepreneurship education was relatively high (M = 3.634, SD = 0.925), students' evaluation of their digital entrepreneurial willingness is relatively high (M = 3.917, SD = 0.942), students' evaluation of their digital entrepreneurial knowledge is relatively high (M = 3.555, SD = 1.074), and students' evaluation of their digital entrepreneurial skills is relatively high (M = 3.724, SD = 0.942). SD = 0.753). And through correlation analysis, it can be seen that there is a moderately strong positive correlation between digital entrepreneurship intention and digital entrepreneurship education (r = 0.528, p < 0.05). There was a moderately strong positive correlation between digital entrepreneurial intention and digital entrepreneurial knowledge (r = 0.483, p < 0.05). There was a strong positive correlation between digital entrepreneurial and digital entrepreneurial skills (r = 0.58, p < 0.05).

#### **Demographic Differences**

In order to further analyze the relationship between variables, this paper studies whether there are significant differences in their performance in four dimensions based on demographic variables, and the results are shown in Table 2.

 Table 2 Demographic differences for each variable

| Name                                | Gender/t-test | Grade/F       |
|-------------------------------------|---------------|---------------|
| Digital entrepreneurship education  | No difference | No difference |
| Digital entrepreneur ship intention | No difference | One>three**   |
| Digital entrepreneurship Knowledge  | No difference | One>two**     |
| Digital entrepreneurship skills     | No difference | One>three**   |

When comparing the results, gender showed no significant differences between digital entrepreneurship education, willingness, knowledge, and skills. In terms of grade level, there are significant differences in the willingness, knowledge and skills of digital entrepreneurship between different grades. Specifically, first-year students are significantly higher than third-year students in terms of digital entrepreneurial willingness, digital entrepreneurial skills.



#### Measurement model

Table 3 Measurement model

|      | Outer loading |       |       | Cronbach Alpha | CR    | AVE   |       |
|------|---------------|-------|-------|----------------|-------|-------|-------|
|      | DEE           | DEI   | DEK   | DES            |       |       |       |
| DEE1 | 0.796         |       |       |                | 0.892 | 0.92  | 0.696 |
| DEE2 | 0.865         |       |       |                |       |       |       |
| DEE3 | 0.85          |       |       |                |       |       |       |
| DEE4 | 0.84          |       |       |                |       |       |       |
| DEE5 | 0.818         |       |       |                |       |       |       |
| DEI1 |               | 0.848 |       |                | 0.922 | 0.939 | 0.719 |
| DEI2 |               | 0.87  |       |                |       |       |       |
| DEI3 |               | 0.807 |       |                |       |       |       |
| DEI4 |               | 0.867 |       |                |       |       |       |
| DEI5 |               | 0.867 |       |                |       |       |       |
| DEI6 |               | 0.828 |       |                |       |       |       |
| DEK1 |               |       | 0.855 |                | 0.911 | 0.937 | 0.787 |
| DEK2 |               |       | 0.907 |                |       |       |       |
| DEK3 |               |       | 0.884 |                |       |       |       |
| DEK4 |               |       | 0.902 |                |       |       |       |
| DES1 |               |       |       | 0.845          | 0.787 | 0.875 | 0.701 |
| DES2 |               |       |       | 0.831          |       |       |       |
| DES3 |               |       |       | 0.835          |       |       |       |

Table 4 HTMT ratio

|                                    | DEE   | DEI   | DEK   | DES |
|------------------------------------|-------|-------|-------|-----|
| Digital entrepreneurship education |       |       |       |     |
| Digital entrepreneurship intention | 0.573 |       |       |     |
| Digital entrepreneurship Knowledge | 0.365 | 0.526 |       |     |
| Digital entrepreneurship skills    | 0.279 | 0.499 | 0.262 |     |

It can be seen from the measurement model that the load coefficient of the problems contained in each dimension is greater than 0.7, indicating that the original information is well extracted. Moreover, it can be seen from



Cronbach Alpha coefficient that the value of each dimension is greater than 0.7, indicating that the reliability of the model is good. According to the AVE coefficient, the value of each dimension is greater than 0.5, indicating that the validity of the model is good. As can be seen from the HTMT coefficient table in Table 4, the values of each dimension are far less than 0.9, indicating that the differentiation effect between dimensions is good, and the differentiation validity test is passed.

#### Path Analysis

Table 5 Path coefficient result table

|   | $Coefficient(\beta)$ | Standard  | T-        | P-    |
|---|----------------------|-----------|-----------|-------|
|   |                      | deviation | statistic | value |
| Digital entrepreneurship Knowledge -> Digital entrepreneurship intention  | 0.422                | 0.043     | 9.847     | 0     |
| Digital entrepreneurship Knowledge -> Digital entrepreneurship skills   | 0.164                | 0.061     | 2.674     | 0.008 |
| Digital entrepreneurship education -> Digital entrepreneurship Knowledge  | 0.348                | 0.047     | 7.386     | 0     |
| Digital entrepreneurship education -> Digital entrepreneurship skills   | 0.183                | 0.052     | 3.509     | 0     |
| Digital entrepreneurship skills -> Digital entrepreneurship intention   | 0.331                | 0.045     | 7.377     | 0     |
| Digital entrepreneurship education -> Digital<br>entrepreneurship skills -> Digital entrepreneurship intention  | 0.06                 | 0.021     | 2.856     | 0.004 |
| Digital entrepreneurship education -> Digital<br>entrepreneurship Knowledge -> Digital entrepreneurship<br>skills                                       | 0.057                | 0.024     | 2.406     | 0.016 |
| Digital entrepreneurship education -> Digital<br>entrepreneurship Knowledge -> Digital entrepreneurship<br>intention                                    | 0.147                | 0.029     | 4.977     | 0     |
| Digital entrepreneurship Knowledge -> Digital entrepreneurship skills -> Digital entrepreneurship intention   | 0.054                | 0.021     | 2.633     | 0.008 |
| Digital entrepreneurship education -> Digital<br>entrepreneurship Knowledge -> Digital entrepreneurship<br>skills -> Digital entrepreneurship intention | 0.019                | 0.008     | 2.379     | 0.017 |

According to the path result table, digital entrepreneurship knowledge has a significant positive impact on digital entrepreneurship intention ( $\beta = 0.422$ , p <0.05). In addition, digital entrepreneurship knowledge also had a significant positive impact on digital entrepreneurship skills ( $\beta = 0.164$ , p <0.05). Digital entrepreneurship education also had a significant positive impact on digital entrepreneurship knowledge ( $\beta = 0.348$ , p <0.05), and digital entrepreneurship education also had a significant positive impact on digital entrepreneurship knowledge ( $\beta = 0.348$ , p <0.05), and digital entrepreneurship education also had a significant positive impact on digital entrepreneurship skills ( $\beta = 0.183$ , p <0.05). Digital entrepreneurial skills also had a significant positive impact on digital entrepreneurial intentions ( $\beta = 0.331$ , p <0.05).

In addition, the mediating effect of digital entrepreneurship skills on digital entrepreneurship education and



digital entrepreneurship willingness is significant. Specifically, digital entrepreneurship education has a significant positive prediction effect on digital entrepreneurship intention through digital entrepreneurship skills intermediary ( $\beta = 0.06$ , p <0.05) and digital entrepreneurship knowledge intermediary ( $\beta = 0.057$ , p <0.05). The prediction effect of digital entrepreneurship education on digital entrepreneurship intention was also significant through the mediating effect of digital entrepreneurship knowledge and skills ( $\beta = 0.147$ , p <0.05). Digital entrepreneurial knowledge had a significant positive predictive effect on digital entrepreneurial intention through the intermediary effect of digital entrepreneurial skills ( $\beta = 0.054$ , p <0.05). Finally, digital entrepreneurship education has a significant positive prediction effect on digital entrepreneurship willingness through the intermediary effect of digital entrepreneurship knowledge, digital entrepreneurship skills and digital entrepreneurship willingness ( $\beta = 0.019$ , p <0.05).

#### **Theoretical Contributions**

This study advances the understanding of the Entrepreneurial Human Capital Theory (EHC) in the context of digital entrepreneurship education (DEE). It reveals how DEE influences digital entrepreneurial intention (DEI) through the mediating roles of digital entrepreneurial knowledge (DEK) and digital entrepreneurial skills (DES). Digital entrepreneurial knowledge serves as a foundational element, equipping students with critical insights into digital markets, strategies, and operational nuances. Digital entrepreneurial skills, on the other hand, enhance students' abilities to apply theoretical knowledge, adapt to dynamic environments, and innovate in the digital economy. Additionally, this research aligns with the Theory of Planned Behavior (TPB) by demonstrating that DEK corresponds to attitudes toward entrepreneurship, while DES reflects perceived behavioral control. Together, these factors foster entrepreneurial intentions among vocational students.

#### **Practical Implications**

The findings underscore the importance of incorporating DEE into vocational education through a curriculum that emphasizes experiential learning. Institutions should adopt practical applications such as case studies, simulations, and real-world projects to engage students and develop their entrepreneurial skills. Policymakers should focus on creating supportive ecosystems that provide resources for educators and students, ensuring accessibility and effectiveness in digital entrepreneurship training. Furthermore, tailored training programs designed for specific demographics, such as first-year vocational students, can bridge gaps in digital entrepreneurial readiness. The integration of advanced technologies, including artificial intelligence (AI), the Internet of Things (IoT), and big data analytics, into DEE frameworks can further enhance students' adaptability and innovation in digital environments.

#### **Limitations and Future Research Directions**

While this study provides valuable insights, it has certain limitations that present opportunities for future research. First, the sample was drawn from vocational students in Hebei Province, which may restrict the generalizability of the findings. Expanding the geographical scope to include diverse educational contexts would strengthen the applicability of the results. Second, the cross-sectional design does not capture the long-term impacts of DEE on DEI. A longitudinal approach could provide a more comprehensive understanding of the developmental trajectory of students' entrepreneurial intentions. Finally, future studies could explore additional mediators, such as entrepreneurial motivation or self-efficacy, to develop a more robust theoretical framework for understanding the mechanisms through which DEE influences DEI.

### CONCLUSION

This research highlights the transformative potential of digital entrepreneurship education in shaping the entrepreneurial intentions of vocational students. By fostering digital entrepreneurial knowledge and skills, educational institutions and policymakers can cultivate a digitally adept entrepreneurial workforce capable of thriving in the fast-changing digital economy. The theoretical framework proposed in this study offers valuable guidance for future research and practical strategies aimed at enhancing entrepreneurship education within vocational settings.



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