

C Does Digital Entrepreneurship Education Affect Students' Interest in Digital Entrepreneurship?

Tri Lestari Wahyuning Utami^{1*}

¹Universitas Islam Indonesia, Indonesia

*Corresponding Author: trilestari.utami@uii.ac.id

ABSTRACT

The rapid development of technology has become a major force in transforming traditional business models into digital ones. As businesses adapt to the demands of the digital era, the education sector is also undergoing significant changes, particularly through the introduction of digital entrepreneurial education. The design of digital entrepreneurship education integrates business knowledge with digital skills. This form of education aims to equip students with digital entrepreneurial knowledge that prepares them to face both the challenges and opportunities in the digital business. However, an important question arises: Does digital entrepreneurial knowledge encourage digital entrepreneurial intention among students? This study is conducted to analyze the relationship between digital entrepreneurial knowledge and digital entrepreneurial intention. Digital entrepreneurial knowledge can enhance students' intention to start a digital business. The knowledge also strengthens their interest in digital business through digital self-efficacy. Digital self-efficacy refers to students' belief in their ability to successfully apply digital skills and knowledge. It plays a crucial role in shaping students' motivation and readiness to engage in digital entrepreneurship. By analyzing these relationships, this study contributes to a deeper understanding of how digital entrepreneurship education can stimulate entrepreneurial intention in the digital economy.

Keywords: Digital Entrepreneurship Education, Digital Entrepreneurial Intention, Digital Entrepreneurial Knowledge, Digital Self-Efficacy

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INTRODUCTION

Developing technology has changed business by adopting technology to increase productivity, reduce costs, and innovate (Ulas, 2019). The transformation of businesses towards digital businesses open technology-based business opportunities such as e-commerce, digital startups, and application-based services. These opportunities need to be seen by business actors, both experienced and younger generation that still has minimal experience and knowledge. For this reason, the digital transformation in business is important to be supported by education for its success (Clemente-Almendros et al., 2024).

Industry forces educational sector to open up digital business education that implement digital business curriculum. The goal is to be able to produce ready-to-use workers for technology-based industries. Education is an important role in increasing individual interest in running a business (Astiana et al., 2022). Through entrepreneurship education, individuals gain knowledge and support. Adequate quality facilities can also increase creativity and innovativeness to form digital entrepreneurial intentions (Sahrah et al., 2023). Education also produces knowledge and experience that can later give rise to digital entrepreneurs.

Digital business education certainly leads to how to be able to produce human resources who are able to play a role in digital business. Through digital entrepreneurship education, human resources in the future will be able to become actors who play in digital business, especially the younger generation. Digital entrepreneurship education can form digital entrepreneurial knowledge (Wibowo et al., 2023). The knowledge gained during education increases motivation and the ability to start a business (Tomy & Pardede, 2020). Entrepreneurship education can influence personality attitudes on entrepreneurial intentions (Bhatti et al., 2021). This is reflected in how someone who has knowledge can increase creativity in generating ideas. In addition, education will increase a person's skills so that they are able to tolerate uncertain conditions.

Digital entrepreneurial knowledge encourages individuals to start businesses, especially digital businesses. This knowledge provides the impetus to build a digital business (Ediagbonya et al., 2024). Individuals with digital entrepreneurial knowledge will better understand the opportunities and conditions that exist. This will stimulate their creativity (Shi et al., 2020) to start a business. The knowledge gained from education can also enable a person to see a broader perspective and this is beneficial for business development (Jena, 2020).

Digital knowledge can create confidence in a person. An individual with a good digital literacy contributes to digital self-efficacy (Prior et al., 2016). Individuals who have digital entrepreneurial knowledge tend to have an influence on their digital self-efficacy. A person is more confident because they have digital knowledge. Self-confidence in the digital entrepreneurial knowledge they have makes individuals have confidence in their digital competence. This competence is a driver of individual confidence that gives rise to digital self-efficacy (Ulfert-Blank & Schmidt, 2022). Individuals who have knowledge are encouraged to have confidence in themselves which can ultimately give rise to their interest in establishing a digital business.

By focusing on knowledge in digital entrepreneurship and individual efficacy in digital abilities, this study emphasizes more on testing the relationship between digital entrepreneurial knowledge, digital self-efficacy, and digital entrepreneurial intention. The studies that have existed so far have focused on testing several factors that are predicted to influence digital entrepreneurship intention (Akhter et al., 2022; Bachmann et al., 2024; Sitaridis & Kitsios, 2024). Several studies believe that digital entrepreneurial knowledge has an influence on digital entrepreneurial intention (Ediagbonya et al., 2024; Purwandari & Sidek, 2024).

However, Alzougool (2024) who tested students in Kuwait found that the level of knowledge at moderate did not have a significant effect on digital entrepreneurial intention. Other studies show that digital literacy possessed by individuals has an indirect effect on digital entrepreneurial intention (Alkhalaileh et al., 2023). Therefore, what is still questionable is whether education can force students to start their digital business. The purpose of this study is to test the effect of digital entrepreneurial knowledge gained by students during their studies on digital entrepreneurial intention. This study also aims to test the role of digital self-efficacy which is predicted to emerge due to digital knowledge.

LITERATURE REVIEW

Digital Entrepreneurial Intention

Digital entrepreneurship is defined as a business activity that is carried out with digital principles. With the development of the digital world, businesses have begun to transform into digital by adopting digital technology in their business processes (Farahani, 2024). Digital technology offers opportunities for individuals to become digital entrepreneurs (Akhter et al., 2022). Digital entrepreneurs do not only involve those who are experienced in digital business but also the younger generation with minimal experience. These actors began with their interest in digital business.

Digital entrepreneurship is divided into three core scopes, namely those related to business actors, entrepreneurial processes, and ecosystems (Sahrah et al., 2023). In this case, digital entrepreneurial intention focuses on business actors. Digital entrepreneurial intention is developed from entrepreneurial intention where the focus is on individual interest in digital business. Entrepreneurial intention is defined as an individual's interest in starting a business called entrepreneurial intention (Krueger & Carsrud, 1993). Entrepreneurial intention is the foundation for understanding an individual's decision to become an entrepreneur. Meanwhile, digital entrepreneurship intention is defined as an individual's interest in establishing a digital business. The digital business that is carried out is reflected in businesses that involve digital platforms such as start-ups.

Digital Entrepreneurial Knowledge and Digital Entrepreneurial Intention

Entrepreneurship education has an influence on students' interest in running a business (Bhatti et al., 2021). In general, education provides students with knowledge on how to start a business. In line with current technological developments, businesses have also begun to carry out digital transformation (Loonam et al., 2018). This is responded to by starting to digital business program in educational institution. This education plays a role in encouraging students to have an interest in digital business (Alkhalaileh, 2021; Sitaridis & Kitsios, 2024).

Entrepreneurship education provides a person with experience on how to interact with consumers, suppliers, and how the real business world is (Bhatti et al., 2021). Appropriate entrepreneurship education materials and learning methods will increase a person's understanding of entrepreneurship and stimulate their creativity (Shi et al., 2020). Education will give someone a different perspective in developing their business (Jena, 2020).

Digital entrepreneurial knowledge influences digital entrepreneurial intention (Ediagbonya et al., 2024). Individuals with this knowledge have a tendency to run digital businesses. Digital entrepreneurial knowledge helps individuals recognize technology-based business opportunities and form innovative and adaptive mindsets towards digital change. Therefore, the higher the quality and intensity of digital entrepreneurship education received by a person, the greater the likelihood that the individual will be a digital entrepreneur (Pham et al., 2023).

Hypothesis 1: *Digital entrepreneurial knowledge has a positive effect on digital entrepreneurial intention.*

Digital Entrepreneurial Knowledge and Digital Self-Efficacy

Digital knowledge shapes a person's perception of their ability to use technology effectively. This knowledge emphasizes how to use digital systems, how they function, and what skills are needed, including how to share digital content (Ulfert-Blank & Schmidt, 2022). Digital knowledge can also be defined as competencies about information literacy, communication, content creation, and problem solving skills (González-Prida et al., 2024). In more detail, digital knowledge refers to the extent to which a person understands and masters digital concepts, tools, and technologies, including an understanding of social media, e-commerce, cybersecurity, digital business applications, and the latest technology

trends. The higher an individual's knowledge of digital technology, the higher their self-confidence (González-Prida et al., 2024) in applying the technology in the context of digital entrepreneurship.

Bandura (1977) explains that self-efficacy is an individual's belief in the existence of resources that will influence their perception of what they are facing. Education can provide comfort for individuals which means increasing self-efficacy to become entrepreneurs (Arijanto, 2023). From a digital perspective, digital self-efficacy is defined as an individual's belief in their own ability to effectively use digital technology in completing tasks or achieving certain goals (Paredes-Aguirre et al., 2024; Szöke-Milinte, 2024). Increasing digital knowledge will strengthen digital self-efficacy. This means that the more a person has extensive and in-depth digital knowledge, the greater their self-confidence in using digital technology for productive purposes. Knowledge gained from education, training, or practical experience becomes the foundation that strengthens an individual's perception of their ability to succeed in a digital context.

Hypothesis 2: *Digital entrepreneurial knowledge has a positive influence on digital self-efficacy.*

Digital Self-Efficacy and Digital Entrepreneurial Intention

Self-efficacy in the context of entrepreneurship can influence how individuals are able to navigate uncertainty, secure resources, and manage risks (Tripopsakul, 2025). In the digital context, digital self-efficacy is defined as an individual's perception of their success in carrying out tasks related to digital systems (Ulfert-Blank & Schmidt, 2022) including in the context of digital entrepreneurship. Self-efficacy influences digital entrepreneurial intention (Alkhalaileh, 2021). Self-efficacy supports someone to be interested in business, especially in digital business by becoming a navigator to face uncertain business and increasingly complex technology (Tennakoon et al., 2024). Digital self-efficacy can be a key psychological factor that drives individuals to become digital entrepreneurs.

Individuals with high levels of digital self-efficacy are also more likely to show proactive behavior, namely the initiative to pursue new opportunities and explore the digital world. The digital self-efficacy can improve academic performance (Rezai et al., 2024). They are more confident in utilizing technologies such as e-commerce, artificial intelligence, social media, and various other digital platforms as a means to build and develop businesses. Digital self-efficacy not only affects individual technical ability, but also has a significant influence on internal motivation and psychological readiness to become a digital entrepreneur.

Hypothesis 3: *Digital self-efficacy has a positive influence on digital entrepreneurial intention.*

Digital Entrepreneurial Knowledge, Digital Self-Efficacy, and Digital Entrepreneurial Intention

Digital entrepreneurial knowledge can be a motivation for individuals to engage in technology-based entrepreneurship. This knowledge includes an understanding of digital devices, e-commerce platforms, social media, digital security, and technology-based business trends and opportunities. However, knowledge alone is not enough to form a strong intention to start a digital business (digital entrepreneurial intention). Although mastery of digital technology is important, there must be something else that bridges its influence on digital entrepreneurial intention (Alkhalaileh et al., 2023). The knowledge possessed by individuals is important to support a person's psychological factors to have an interest in digital entrepreneurship (Triyono et al., 2023). In this case, digital self-efficacy has an important role as a mediator connecting digital entrepreneurial knowledge and digital entrepreneurial intention (Tennakoon et al., 2024).

Bandura's Social Cognitive Theory (1977) explains that self-efficacy is the main psychological factor that directs how knowledge is transformed into action. In this context, digital self-efficacy is an individual's belief in their ability to use digital technology effectively to achieve certain goals (Ulfert-Blank & Schmidt, 2022), including establishing and running a digital business. When an individual has a level of digital competence, they have a strong cognitive foundation regarding how digital technology

works and how it can be utilized in a business context. However, this knowledge will be more impactful if the individual also has digital self-efficacy (Rezai et al., 2024), which is the belief that they are able to apply this knowledge practically in the real world.

Thus, digital self-efficacy acts as a mediator between an individual's digital knowledge and competence and their interest in digital business. The higher a person's digital knowledge, the higher the likelihood of forming an intention to start a digital business, especially if the individual has strong digital self-efficacy.

Hypothesis 4: *Digital self-efficacy mediates the effect of digital entrepreneurial knowledge on digital entrepreneurial intention.*

Method

Using a quantitative approach, this research aims to test causal relationships of the mediating effect of digital self-efficacy on the relation of digital entrepreneurial knowledge and digital entrepreneurial intention. The target population is students of study programs/majors based on management and digital business. The sampling technique was carried out using non-probability sampling, namely purposive sampling and snowball sampling. Purposive sampling was chosen with the aim that the sample used was in accordance with the research objectives. The criteria used in purposive sampling in this study were that the students surveyed were active students of study programs/majors based on digital business. This criterion was chosen because digital business students are a suitable target sample to test how digital business education can encourage students to have an interest in running a digital business. Furthermore, this study also uses the snowball sampling method to increase the response from respondents, but still meets the given criteria. The survey was conducted with a questionnaire distributed online in a google form.

To measure all variables, this study adopted indicators from previous studies. Digital entrepreneurial knowledge is measured by 5 statement items from Wibowo et al. (2023). Furthermore, digital entrepreneurial intention is measured by 7 statement items adopted from Vejayaratnam et al. (2019) and Wibowo et al. (2023). Digital self-efficacy has 5 dimensions: information and data literacy (3 statement items), communication and collaboration (9 statement items), digital content creation (4 statement items), problem solving (5 statement items), and safety (5 statement items), which refer to Ulfert-Blank & Schmidt (2022). The five dimensions of digital self-efficacy use a formative model.

To test with this model, this study uses a disjoint two-stage approach to test higher order constructs (see Sarstedt et al., 2019) using SmartPLS3. Before testing the hypothesis, the measurement model is tested in two stages: first-order stage and second-order stage. First-order stage is tested the dimensions of digital self-efficacy. The latent variable scores of the dimensions of digital self-efficacy: information and data literacy, communication and collaboration, digital content creation, problem-solving, and safety generated from the first-order are used in the second-order. Then, structural model is used to test the hypotheses.

RESULTS

The data in this study were collected in approximately one month. The questionnaire was distributed in the form of a google form that shared through messenger groups and social media. The data collected was 207 respondent data. As many as 51.7% of respondents are male and 48.3% of respondents are female. When viewed from their work experience, 20.8% of respondents were working while studying and 47.3% had work experience even though they were not currently working. In addition, the background of 66.2% of respondents was having parents with professions as entrepreneurs. Of these respondents, 77.4% wanted to continue their parents' business.

Validity and Reliability

Validity and reliability of measurement are tested by two-stages approaches because the model of the research uses higher-order constructs.

First-order Stage

At the first-order stage, the measurement model test is carried out by conducting a construct validity test. Construct validity is tested using Confirmatory Factor Analysis (CFA) and Average Variance Extracted (AVE). Based on CFA, the items are valid if the outer loading score must higher than 0.7 (Hair et al., 2019). The result is that the indicator items CC2, CC8 and SS4 must be deleted. Furthermore, from the AVE value ≥ 0.50 it is found that all indicator items are valid. The VIF indicates no multicollinearity. The discriminant validity tested by Fornell-Larcker Criterion shows that it confirmed the requirements.

Table 1. First-order Construct

		Outer Loadings	Cronbach's Alpha	AVE	VIF
Digital Entrepreneurial Intention					
DEI1		0.701	0.898	0.584	1.754
DEI2		0.780			2.510
DEI3		0.734			1.974
DEI4		0.716			1.990
DEI5		0.828			2.973
DEI6		0.781			2.080
DEI7		0.763			1.896
DEI8		0.804			2.306
Digital Entrepreneurial Knowledge					
DK1		0.865	0.911	0.738	2.588
DK2		0.829			2.349
DK3		0.876			2.901
DK4		0.868			2.662
DK5		0.857			2.562
Digital Self-efficacy					
Information and Data Literacy	IDL1	0.803	0.773	0.686	1.348
	IDL2	0.853			1.975
	IDL3	0.830			1.877
Communication and Collaboration	CC1	0.753	0.895	0.615	1.969
	CC3	0.752			2.026
	CC4	0.763			2.030
	CC5	0.777			2.278
	CC6	0.828			2.322
	CC7	0.819			2.449
	CC9	0.792			2.138
Digital Content Creation	DCC1	0.828	0.824	0.656	2.853
	DCC2	0.873			3.282
	DCC3	0.806			1.606
	DCC4	0.725			1.405
Problem-Solving	PS1	0.872	0.913	0.742	2.924
	PS2	0.887			3.442
	PS3	0.907			3.768
	PS4	0.828			2.305
	PS5	0.811			1.979

		Outer Loadings	Cronbach's Alpha	AVE	VIF
Safety	SS1	0.878	0.852	0.698	2.925
	SS2	0.873			2.826
	SS3	0.876			2.377
	SS5	0.701			1.395

After validity and reliability test in the first-order stage, the second-order tests the latent variables of information and data literacy, communication and collaboration, digital content creation, problem-solving, and safety are used as indicators of digital self-efficacy. The digital self-efficacy indicator is a formative form so that this research model is more directed at reflective-formative Type II (Becker et al., 2012). Testing the measurement of digital entrepreneurial intention and digital entrepreneurial knowledge is analyzed by assessing construct and discriminant validity, namely assessing outer loading, AVE, and Fornell-Larcker Criterion. For digital self-efficacy, it is analyzed by assessing the significance of outer weight and outer loading from bootstrapping results.

Second-order Stage

In the second-order stage, construct validity testing shows that DEI1 should be removed because it is < 0.7. Furthermore, the AVE score indicates that every latent variable is valid. The Fornell-Larcker Criterion is used to show discriminant validity and the results confirmed it. Reliability shows a Cronbach's alpha value > 0.7 which means that the measurement of digital entrepreneurial intention and digital entrepreneurial knowledge is reliable.

Table 2. Second-order for Reflective Latent Variable

	Outer Loadings	Cronbach's Alpha	AVE	VIF
DEI2	0.757	0.892	0.607	2.242
DEI3	0.762			1.972
DEI4	0.734			1.989
DEI5	0.823			2.971
DEI6	0.786			2.052
DEI7	0.785			1.896
DEI8	0.803			2.219
DK1	0.864	0.911	0.738	2.588
DK2	0.830			2.349
DK3	0.877			2.901
DK4	0.868			2.662
DK5	0.855			2.562

Testing of digital self-efficacy which is a formative construct is carried out by bootstrapping. The bootstrapping results show that the outer weight on all dimensions is significant except safety. However, the outer loading on all dimensions shows significant results and the indicators have contributed to the measurement. According to Garson (2016), this is still acceptable so that safety is not removed from the model.

Table 3. Second-order for Formative Latent Variable

	Outer Weight		Outer Loading	
	T Statistics	P Values	T Statistics	P Values
Information and Data Literacy -> Digital Self-Efficacy	3.890	0.000	23.086	0.000
Communication and Collaboration -> Digital Self-Efficacy	3.560	0.000	23.158	0.000

	Outer Weight		Outer Loading	
	T Statistics	P Values	T Statistics	P Values
Digital Content Creation -> Digital Self-Efficacy	2.377	0.018	7.358	0.000
Problem-Solving -> Digital Self-Efficacy	2.641	0.009	24.613	0.000
Safety -> Digital Self-Efficacy	0.542	0.588	10.219	0.000

Structural Model and Hypothesis Testing

Structural model testing is done by testing the hypothesis. From the entire model, R Square Adjusted shows a value of 0.523. It indicates that digital entrepreneurial knowledge and digital self-efficacy explain digital entrepreneurial intentions by 52.3%, and the rest ($100 - 52.3 = 47.7\%$) is determined by other variables outside the research model.

Model fit is used by assessing the Standardized Root Mean Square Residual (SRMR), which is 0.064 (< 0.1). It means that the model is accepted. Furthermore, the Normed Fit Index (NFI) score is 0.879 or close to 1 which means the model fit is worth considering. It indicates that the data conforms to the hypothesized research model.

Table 4. Hypothesis Testing Result

	t Statistics	P Values	Result
H1: Digital Entrepreneurial Knowledge -> Digital Entrepreneurial Intention	4.154	0.000	Supported
H2: Digital Entrepreneurial Knowledge -> Digital Self-Efficacy	24.488	0.000	Supported
H3: Digital Self-Efficacy -> Digital Entrepreneurial Intention	6.349	0.000	Supported
H4: Digital Entrepreneurial Knowledge -> Digital Self-Efficacy -> Digital Entrepreneurial Intention	5.830	0.000	Supported

Table 4 shows that all hypotheses in this study are supported. Digital entrepreneurial knowledge significantly positive influence on digital entrepreneurship intention ($t=4.154$; $p<0.05$), which means hypothesis 1 is supported. Furthermore, hypothesis 2 is also supported, where digital entrepreneurial knowledge has a significant positive effect on digital self-efficacy ($t=6.349$; $p<0.05$). In addition, digital self-efficacy also has a significant positive effect on digital entrepreneurship intention ($t=6.349$; $p<0.05$). Hypothesis 3 is supported. In the indirect effect ($t=5.830$; $p<0.05$), this research found that digital self-efficacy is confirmed to be a mediator in the relation of digital entrepreneurial knowledge and digital entrepreneurial intention (hypothesis 4 is supported).

Discussion

Digital entrepreneurship education plays a role in the emergence of digital business actors. Education provides knowledge through learning and experience. Through this education, individuals gain knowledge, skills, and practical understanding of how to utilize digital technology to create, manage, and develop digital-based businesses. Digital entrepreneurship requires individuals' ability to use digital technology (Bachmann et al., 2024). The ability to master this technology is obtained through digital entrepreneurial knowledge. Digital entrepreneurial knowledge is the output of digital entrepreneurial education that individuals have taken. In this case, entrepreneurial education is defined as higher education that focuses on digital business learning.

Digital entrepreneurial knowledge obtained through education has a positive effect on digital entrepreneurial intention. Individuals who have good digital literacy will be able to increase their interest in establishing a digital business (Akhter et al., 2022). This knowledge is more related to digital entrepreneurship than knowledge of information technology (Sitaridis & Kitsios, 2024). Individuals who have this knowledge are able to understand every opportunity from digital business and are trained to create strategies in entering the digital business industry, such as start-ups. Digital entrepreneurship

education is not only related to knowledge of how to develop digital platforms. This knowledge also provides essential skills to build a digital business that supports self-development into a digital entrepreneur (Duong et al., 2024). The knowledge of digital entrepreneurship gained by individuals makes them interested in becoming digital entrepreneurs.

Knowledge also has an influence on an individual's confidence in running something. Individuals with digital entrepreneurial knowledge will feel comfortable with their capacity to run a digital business (Duong et al., 2024). Knowledge is a force that gives rise to confidence in their abilities in technology and digitalization. The belief reflected in digital self-efficacy is the belief that the individual is able to operate and even develop digital devices, increasing their interest in digital business. Knowledge provides the power to convince them that the individual is able to succeed in running their business.

An individual's ability in digital technology does not have a direct impact on an individual's interest in establishing a digital business (Alkhalaileh et al., 2023). This study found that the role of digital self-efficacy as a mediator. Digital entrepreneurial knowledge plays a role as a driver of digital entrepreneurial intention mediated by digital self-efficacy. The knowledge gained by individuals from their education gives confidence that the individual is able to do and succeed in doing business in the digital field. The higher the knowledge an individual has, the more confident they will be and of course this will increase their interest in digital business.

CONCLUSION

Digital entrepreneurial knowledge can be a driving factor for starting a digital business. The results of this study indicate that knowledge of digital entrepreneurship can increase a person's interest in becoming a digital business entrepreneur. This knowledge can be obtained from the education that has been taken by the individual. Knowledge of digital entrepreneurship provides understanding and skills to be able to read market opportunities, create digital platforms, and utilize information technology to build a business. The knowledge gained by the individual will also make the individual comfortable with himself and have confidence that he is able to establish a digital business. Confidence in his digital abilities or known as self-efficacy can be a mediator of the influence of knowledge of digital entrepreneurship on digital entrepreneurial intentions.

Recommendations

Further research can conduct further testing to determine whether the digital entrepreneurial intention possessed by students will continue to the commitment to realize their business. In addition, further research can also analyze the challenges and obstacles in the implementation of digital entrepreneurship.

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