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Article

Investigating the development of entrepreneurial behavior among nascent digital entrepreneurs

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MANAGEMENT | RESEARCH ARTICLE

Investigating the development of entrepreneurial behavior among nascent digital entrepreneurs

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Abstract: This study aims to determine the antecedents of digital entrepreneurial behavior based on the mediating role of self-efficacy in mediating risk propensity, digital knowledge, digital competence, and nascent digital entrepreneurs. The population comprises nascent digital entrepreneurs who previously participated in an entrepreneurial skills program in digital technology field to gain digital competence and received digital start-up funds in Central Java (2020). Seventy participants were elected using purposive random sampling. Composite PLS and structural models were used to test the statistical significance of the paths of the coefficients of the six hypotheses. The results showed that risk propensity, digital entrepreneurial knowledge, and digital competence could encourage participants to strengthen



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PUBLIC INTEREST STATEMENT

Digital entrepreneurship is a sub-category of entrepreneurship in which physically active traditional organizations are digitized, so that traditional entrepreneurs are transformed into new forms of business in the digital age. Indonesia has many start-up companies spread across various businesses. This number has increased rapidly so that it ranks fifth in the world. However, many startups fail to develop in the Entrepreneurial Phase Activity. Based on the background, this research tried to develop the antecedents of nascent digital entrepreneurs. It is a necessity to support business development in the digital sector in the near future. The results of this study concluded that risk propensity, digital knowledge entrepreneurship, and digital competence, entrepreneurial self-efficacy can encourage participants to strengthen their skills during digital courses to grow their confidence in realizing digital business. Ultimately, this paper offers appropriate recommendations.

their skills during digital courses to increase their belief in realizing digital business. This study highlights the success of digital entrepreneurial self-efficacy as a mediator of digital entrepreneurial behavior. However, despite the positive effect, the effect of risk propensity on digital entrepreneurial behavior was insignificant. The findings concluded that digital entrepreneurial courses promote digital entrepreneurial behavior, and the government requests that nascent digital entrepreneurs focus on the competence of digital courses to encourage the fourth industrial revolution.

Subjects: Entrepreneurship; Small Business Management;

Keywords: risk propensity; digital entrepreneurial knowledge; digital competence; digital entrepreneurial self-efficacy; digital entrepreneurial behavior

1. Introduction

The emergence of the fourth industrial revolution has the impact that most jobs with medium and low skills will be replaced by digitalization and automation (Sima et al., 2020). This space offers a substantial contribution to business development in the digital sector shortly; therefore, understanding and proper planning are needed to develop digital entrepreneurs in building digital entrepreneurial behavior, manifested by the emergence of new entrepreneurs in the digital business sector.

Digital entrepreneurship is a sub-category of entrepreneurship where traditional organizations that are physically active are digitized so that traditional entrepreneurs change into new forms of business in the digital era (Prendes-Espinosa et al., 2021), both in terms of product, distribution, business location, media, new, and Internet technologies. The advantages of digital entrepreneurship are: digital businesses tend to be new; hence, they are not considered competitive. Digital businesses can access and analyze numerous competitive and potential customer information. Digital businesses are also obsessed with acquiring, disseminating, and analyzing actions through knowledge because they are market-oriented (von Arnim & Mrozewski, 2020).

The efforts to create new entrepreneurs in the digital field in the theory of planned behavior approach are to realize digital entrepreneurial behavior, which is defined as a person's action indicated by an entrepreneurial decision (Li et al., 2020), or in digital business development, as a person's decision to realize digital business establishment. Entrepreneurial behavior is defined as the study of human behavior involved in identifying and exploiting opportunities by creating and developing new businesses. New entrepreneurs of about 3 to 42 months (nascent entrepreneur to owner-manager of a new business) in this case, new digital entrepreneurs (digital startups), or according to Global Entrepreneurship Monitoring, are included in the total early stage Entrepreneurial Phase Activity (TEA), which is in a transition period between establishing the digital business or stopping (discontinuing) it (Bosma et al., 2020).

Digital entrepreneurship is marked by the emergence of various start-up companies and institutions to create innovative products or services (Audrestsch, 2007). In 2018, 992 start-up companies in Indonesia were spread across businesses (Pramono et al., 2021). This number increased rapidly in 2022 to 2,346, the fifth largest in the world (Annur, 2022).

However, many startups fail to develop in the entrepreneurial phase. Some common causes are technological developments, Internet invasion, cessation of funds from investors (Dwirachmayuni, 2019), difficult conditions during the COVID-19 pandemic (Damayanti, 2022), lack of innovation and technology, and the inability to seize business opportunities (Kalam et al., 2022).

Underlying the development of the theory of planned behavior model, several studies have developed the role of background factors, mainly personality aspects, entrepreneurship learning, and environment, in increasing entrepreneurial intentions and behavior (Ajzen, 2005). Risk propensity and knowledge of entrepreneurship are variables representing personality aspects and human capital, which are widely used to test their influence on entrepreneurial behavior. While digital competence is a variable that needs to be studied because it becomes the basis for the specific behavior studied, namely digital entrepreneurial behavior. Several previous studies have examined competence and business performance; nonetheless, very few examined the relationship between digital competence and digital entrepreneurship behavior.

However, the results of previous studies have been inconsistent. Risk propensity was found to have a significant effect on entrepreneurial behavior (Nieß & Biemann, 2014; Sharaf et al., 2018), while in another research, risk propensity does not affect entrepreneurial intention and behavior (Antoncic et al., 2018; Sharaf et al., 2018). Previous studies showed that entrepreneurship knowledge significantly affects entrepreneurial intentions and behavior (Farani et al., 2017; Li et al., 2020; Yasir et al., 2017); however, another study showed that entrepreneurship knowledge has no significant effect on entrepreneurial intentions and behavior (Kusumawardani & Richard, 2020; Putra et al., 2018). Digital competence has proved to significantly affect entrepreneurial behavior (Onjewu et al., 2021; Scuotto & Morellato, 2013), while another research stated that digital competence does not affect entrepreneurial behavior significantly (Sitinjak, 2019).

A research gap exists in previous studies requiring a mediator as a solution playing a role in bridging the influence of personality, human capital, and competence to encourage the formation of digital entrepreneurial behavior. Several previous studies have shown that entrepreneurial self-efficacy can mediate background aspects, such as personality, human capital, and the environment and entrepreneurial behavior (Darmanto & Yuliari, 2018; Onjewu et al., 2021); hence, it is expected to be a solution by playing a mediating role between risk propensity, digital entrepreneurship knowledge, digital competence on digital entrepreneurship behavior.

Entrepreneurial self-efficacy is known as the variable that has the strongest influence in realizing one's desire for entrepreneurship (Pihie & Bagheri, 2011); in previous studies, it has been successfully tested on students, including MBA and entrepreneurial (Darmanto & Yuliari, 2018; Zhao et al., 2005). However, not many studies examine the effect of entrepreneurial self-efficacy applied in the digital field (digital entrepreneurial self-efficacy) on the behavior of digital entrepreneurs.

Understanding and developing the antecedents of digital entrepreneurs based on the theory of planned behavior in building digital entrepreneurial behavior (a person's decision to realize digital business establishment) is necessary to support business development in the digital sector in the near future. Previous studies have found mixed results on the influence of personality, human capital, competence, and entrepreneurial self-efficacy on digital entrepreneurial behavior. Furthermore, research on digital entrepreneurial behavior remains minimal, especially regarding the factors affecting the emergence of new entrepreneurs in the digital business sector. Hence, this study raises two questions: How do risk propensity, entrepreneurial knowledge, and entrepreneurial competence affect entrepreneurial self-efficacy and digital entrepreneurial behavior? Does entrepreneurial self-efficacy support the emergence of digital entrepreneurs?

This research was conducted in Central Java, Indonesia, which has many digital businesses. However, little research exists on digital entrepreneurship. Research carried out by other researchers differs in location, model, object, subject, time, variables, analysis, goals, and/or research objectives; in general, many are conducted abroad, differing in economy and culture from Indonesia. The findings of this study may help stakeholders identify important factors that lead to the emergence of digital entrepreneurs and inform the government or trainers on how to develop more successful digital enterprises.

2. Literature review and hypothesis development

2.1. Risk propensity on digital entrepreneurial self-efficacy

Physiological conditions that affect self-efficacy and entrepreneurial decision-making are manifested in the risk propensity construct (Zhao et al., 2005), which, in the theory of planned behavior (Ajzen, 2014), are located as background factors related to the value factor and personality traits. This tendency to take risks further increases self-efficacy and drives entrepreneurship. Thus, self-efficacy and the courage to take risks are needed to shape entrepreneurial behavior (Krueger & Dickson, 1994). Individuals willing to take risks have self-efficacy in controlling business situations, so individuals who dare to take risks feel optimistic that they can control the situation (Barbosa et al., 2007). A previous study conducted by 420 students of Savannah State University on perceptions of entrepreneurial intentions, risk-taking tendencies, and entrepreneurial self-efficacy concluded that willingness to take risks positively affects entrepreneurial self-efficacy (Brown et al., 2011). A separate study by Elqadri et al. (2017) concluded that individuals with a tendency to risk develop positive self-efficacy. Hence, the first hypothesis is proposed:

H1: Risk propensity significantly influences entrepreneurial self-efficacy.

2.2. Digital entrepreneurial knowledge on digital entrepreneurial self-efficacy

Psychological states, vicarious experiences, social persuasion, and enactive mastery influence self-efficacy as the main construct of the social cognitive theory (Bandura, 1986). Borges's human capital theory states that a person invests in the form of skills and knowledge (Dawson, 2012). Entrepreneurship knowledge is human capital that represents the vicarious experience or experience gained from others, which plays a role in growing cognitive capability and increasing self-efficacy for entrepreneurship (Liñán et al., 2005; Zhao et al., 2005). A study on the effect of education (entrepreneurship knowledge) on entrepreneurial self-efficacy and intentions in Ecuador showed that entrepreneurial knowledge positively affects self-efficacy (Izquierdo & Buelens, 2011). Several other studies have shown that entrepreneurship knowledge in the form of education, courses, and training positively influences self-efficacy (Liñán et al., 2005; Peterman & Kennedy, 2003; Zhao et al., 2005). Hence, the second hypothesis is proposed:

H2: Digital entrepreneurial knowledge positively influences entrepreneurial self-efficacy.

2.3. Digital competence on digital entrepreneurial self-efficacy

Competence has a relationship with efficacy (Talua et al., 2016), and several studies have proved the relationship between digital competence on self-efficacy (Kassim et al., 2020). This means that the ability to master digital technology increases one's confidence in realizing their desire to become a digital entrepreneur. Enactive learning, such as courses or training, will help students achieve digital or computer competence as one of the factors that will improve self-efficacy (Onjewu et al., 2021). The teachers need to be digitally competent to induce high levels of self-efficacy (Nordén et al., 2017). Hence, a third hypothesis is proposed:

H3: Digital competence positively affects entrepreneurial self-efficacy.

2.4. Risk propensity on entrepreneurial behavior

Individuals with a tendency to take risks will tend to be self-employed because they have confidence in the face of business barriers to starting or expanding a business (Elqadri et al., 2017).

Risk propensity is a trait or characteristic of entrepreneurship, whose existence is crucial to make decisions for establishing new businesses for successful entrepreneurship (Antoncic et al., 2018). Experts classify the tendency to take risks (risk propensity) as an inseparable aspect of entrepreneurship. Individuals who dare to take risks tend to be entrepreneurial because they feel confident,

can run and develop a business, and face business failure (Zhao et al., 2005). Risk propensity has a positive and significant effect on the formation of entrepreneurial practitioners (Antoncic et al., 2018) and positively and significantly affects entrepreneurial behavior (Astuti et al., 2019). Digital business requires a strong push in the form of risk propensity, as the individual aspect has the strongest influence in shaping the behavior of digital entrepreneurs embodied in digital start-ups. Hence, a fourth hypothesis is proposed:

H4: Risk propensity positively affects digital entrepreneurial behavior.

2.5. Digital competence on digital entrepreneurial behavior

Competence is conceived from self-determination theory, stating that a work climate meeting the three basic needs (autonomy, competence, and relatedness) will ultimately play a role in improving performance (Gagné & Deci, 2005). In this era, entrepreneurs need to be more competent and skillful, which enables them to compete and survive effectively (Barazandeh et al., 2015). In digital entrepreneurship, digital competence is defined as an entrepreneur's ability to express themselves in building relationships through relational competence establishment, based on the family spirit to create a business network with the business environment (Meutia & Ismail, 2012). This competence positively affects the business performance of small-medium enterprises (Meutia & Meutia, 2013), few studies have examined its effects on the performance of nascent digital entrepreneurs. Referring to the Hisrich view, entrepreneurial behavior depends on market opportunities, entering a new market, and offering new products (Zaenal, et al., 2017) sourced from digital competence. Hence, the fifth hypothesis is proposed:

H5: Digital competence positively affects digital entrepreneurial behavior.

2.6. Digital entrepreneurial self-efficacy on digital entrepreneurial behavior

Self-efficacy is defined as an assessment of one's ability to perform a certain level of performance (a judgment of one's capability to accomplish a certain level of performance), which in the field of entrepreneurship is called entrepreneurial self-efficacy or it implies the perception of an individual's capability to realize success in performing the role as an entrepreneur (Chen et al., 1998). Strong individual commitment is needed to translate entrepreneurial intention into behavior and contributes to entrepreneurial intention and behavior (Darmanto & Yuliari, 2018; Li et al., 2020). Entrepreneurial self-efficacy is the main factor contributing to the successful creation of new businesses (Dessyana & Riyanti, 2017; Prodan & Drnovsek, 2010). Entrepreneurial behavior is defined as individual actions indicated by entrepreneurial decisions (Zampetakis & Moustakis, 2007), or in digital business development, defined as a person's decision to realize the establishment of a digital business. Individuals with high self-efficacy tend to be able to realize the formation of new businesses. The research results of 64 nascent entrepreneurs in Jakarta in 2017 concluded that entrepreneurial self-efficacy positively and significantly affects digital business establishment (Dessyana & Riyanti, 2017). Other studies also support the significant effect of entrepreneurial self-efficacy on entrepreneurial behavior (Li et al., 2020; Onjewu et al., 2021). Hence, the sixth hypothesis is proposed:

H6: Entrepreneurial self-efficacy significantly and positively affects entrepreneurial behavior.

3. Methodology

3.1. Population and sample

The population of this study comprised new entrepreneurs who had previously attended the Indonesian Ministry of Education's Entrepreneurial Skills Education program on digital technology, such as graphic design, computer technical support, digital marketing, web design, and android programming. These participants had digital competence and received startup funding from the government. Based on the data, the number of startup fund recipients throughout Indonesia was 16,616, and in Central Java, there were 485 novice entrepreneurs.

The sample size was calculated using the Yamane approach, which yielded 83 respondents. The sampling technique used is purposive random sampling, namely, selecting new digital entrepreneurs in business for approximately 3 to 42 months (new entrepreneur to new business owner-manager). The researcher visited and examined each respondent directly. Data were collected using a questionnaire, and online and face-to-face interviews were conducted as needed to collect additional data. The survey was conducted between May and August 2021. The survey results yielded 70 answers that warranted analysis.

3.2. Measurement and instrument

This study uses composite-based structural equation modeling to analyze latent variables built with reflective and formative (Becker et al., 2012). The use and estimation of hierarchical-formative latent variable models have been widely used in Partial Least Square Structural Equation Modeling (PLS-SEM) (Sarstedt et al., 2019). Composite mix measurement models applied in the process of confirmatory measurement models (Henseler, 2020). The model built with reflective and formative indicators (Coltman et al., 2008), because indicator cases can be seen as causes, not caused by latent variables (Budziński & Czajkowski, 2022; Cohen et al., 1990). In formative indicators, changes in indicator values result in changes in the underlying latent constructs (John et al., 2023).

Each variable was measured by an instrument previously validated in previous literature. Risk propensity is defined as the tendency to avoid or take risks (Zhao et al., 2005). The indicators of risk propensity were adapted from previous studies, which dared to take business risks, such as trying new things and using new methods at work (Fini et al., 2009; Gaddam, 2008).

Digital entrepreneurial knowledge relates to an individual's capability to absorb data, information, intelligence, and skills during their involvement in digital courses. These indicators are related to how much digital entrepreneurial knowledge can be absorbed by the students during their digital courses. The measurement of digital entrepreneurial knowledge consists of possessing basic common sense and knowledge of electric law, a basic understanding of a website design, formulating a marketing channel strategy for an e-shop, and how to offer the target market products that meet their needs (Wang et al., 2020).

Digital competence is the digital ability of a person after participating in a digital course to pass the digital competence test. The measurement consists five dimensions: information and data literacy, communication and collaboration, digital content creation, safety and security, and problem-solving (Kassim et al., 2020). Furthermore, the measurement of digital competency was adopted Ahsan et al. (2021), which is broken down into 15 items. Digital competence in this study is built with a high order model or involves testing a second order model that contains a two-layer construction structure (Becker et al., 2012). The construct is built with the forth type of higher-order constructs where dimensions and indicators are formative (Crocetta et al., 2021). Adopting several studies, the digital competency construct was applied to a formative measurement model with the consideration of being able to explain the characteristics of the construct (Agila-Palacios et al., 2022; Barboutidis & Stiakakis, 2023; Khan et al., 2021; Szwajlik, 2021).

Digital Entrepreneurial self-efficacy is a process of increasing nascent digital entrepreneurial ability until they have the belief to realize their hope as a digital entrepreneur, based on the ability to identify new digital business opportunities, produce new digital products, develop and commercialize new digital ideas, build an approach with business partners, and the confidence of successfully realizing a digital business (Kassim et al., 2020; Li et al., 2020).

Digital Entrepreneurial behavior is defined as actions and activities of individual practice that autonomically use and generate an innovative combination of resources to identify and reach out to digital business opportunities (Jung et al., 2001; Monsen et al., 2010; Sequeira et al., 2007; Wang et al., 2020). The measurement indicator for the variable consists of ten items, such as I have started product development (Li et al., 2020).

The questionnaire consisted of three parts: respondent identity and closed and open questions. Items related to the five constructs were measured on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

3.3. Non-response bias testing

This study used a non-response bias test to determine whether there were differences in the characteristics of the answers given by the respondents who participated and those who did not participate in the study (Clotney & Benton Jr, 2020; Coon et al., 2020; Podsakoff et al., 2012; Vogel & Jacobsen, 2021). This non-response bias test was conducted by comparing respondents who returned the questionnaire before the return deadline with those who did not return the questionnaire on time. Respondents who answered were represented by questionnaires that arrived earlier (within the specified time limit), while those who did not answer were by questionnaires that arrived in the last period (after the deadline for returning the questionnaire). The t-test showed insignificant results ($p > 0.05$), indicating no significant difference between the two groups. Therefore it can be stated that the research data is free from this bias.

3.4. Technic analysis

This study used a partial least square structural equation modeling approach (PLS-SEM) for inferential analysis. The PLS approach is considered suitable for small sample sizes and is distribution-free (Chin, 1998). Data analysis was carried out in two steps consisting of confirmatory factor analysis (CFA) measurements and full model structural assessment (Hair et al., 2016). The first step involves a first-order confirmatory factor analysis (CFA) for 15 indicators of the digital competency construct and four other constructs to assess the unidimensional indicators. The results of the first-order CFA estimation are then used in testing the second-order CFA model, which is a reflective model of the five latent constructs. The convergent validity of the measurement model was assessed using the three criteria recommended (Hair et al., 2021). *First*, to establish convergent validity, indicators or observable variables must have a significant factor load on their respective latent variables. The standard factor loading size of each indicator must be at least greater than 0.5. *Second*, the CR must be above 0.7. *Third*, the average variance extracted (AVE) must be greater than 0.5 (Kline, 2015). The second step is the inner model, which tests the theoretical relationship as a hypothesis. Model fit was evaluated using the R-square and t-value of the direct-indirect effect (Hair et al., 2021).

4. Results

4.1. Profile of respondents

Descriptive statistics of the respondents are shown in Table 1. Among the 70 respondents, predominantly male (64 %) and female (36 %), aged between 18–35 years old. Their educational backgrounds dominantly by vocational high school (50%), senior high school (30%), diploma (13%), and undergraduates (7 %). Finally, based on business startups, they comprised graphic design (54%), technical support (33%), digital marketing (9%), and web design (4%).

4.2. Confirmatory factor analysis

This study analyzed the measurement model by examining convergent validity, discriminant validity, and construct reliability for each item. Calculations at this stage are carried out using the SmartPLS V.3.2.9 (Ringle et al., 2015). SmartPLS can be used to test formative measurements as well as reflective measurement models (Sarstedt & Cheah, 2019). Data analysis was carried out in two steps consisting of measurement and assessment of the structural model (Hair et al., 2021).

The results first-order of digital competence with formative indicators is presented in Table 2. The results of collinearity calculations obtained the size of the Variance Inflation Factor (VIF) < 2.5 – 3.3 so that it can be concluded that it has estimation stability. The next result shows that the P-value is significant at the 5% level except for the PS1 indicator. Confirmatory Factor Analysis of reflective constructs is presented in Table 3. The data shows that there are five unsatisfactory

Table 1. Descriptive of respondents

Demographic	Category	Frequency	Percentage
Gender	Male	45	64
	Female	25	36
Education	Vocational High School	35	50
	Senior High School	21	30
	Diploma	9	13
	Undergraduate	5	7
Age	Under 26 year	47	70
	26–30 year	14	21
	Above 30 year	6	9
Business Startup	Graphics Design	38	54
	Technical Support	23	33
	Digital Marketing	6	9
	Web Design	3	4

indicators below 0.6, namely DESE5, DEB5, DEB8, and DEB9, so they are excluded from the model. After recalculation, all remaining items met the satisfactory factor loading threshold above 0.6 (Figure 1).

The data in Table 4 shows that all items met the recommended the CR was above 0.7 (Hair et al., 2021). Other results in Table 4 indicate AVE values of digital competence was below the minimum threshold of 0.5; however, referring to previous studies, this is still acceptable because the CR is higher than 0.7, and construct validity is still adequate (Ingle & Mahesh, 2020; Lam, 2012).

In addition, the data were analyzed for discriminant validity using the comparison method, the For the digital competence construct, discriminant validity is partially accepted because it uses a -reflective second order. value of the square root of the AVE, and the correlation between constructs. The results in Table 5 indicate that the model possesses discriminant validity because the square roots of AVE are greater than all correlations (Fornell & Larcker, 1981). Especially for the digital competence construct, discriminant validity is partially accepted because it uses a reflective second order.

4.3. Structural model analysis

This study tested the hypothesis of the relationship between constructs built by bootstrapping using 5000 subsamples (Hair et al., 2017). Figure 1 presents the results of estimates between exogenous and endogenous variables. As shown in Table 6, the r-square (R^2) explains 66.5% of the variance in digital entrepreneurial self-efficacy and 68,2% in digital entrepreneurial behavior, indicating the model is the moderate explanatory power (Chin, 1998).

The results of testing H1, H2, H3, H5, and H6 in Table 6 show a positive relationship (B = positive, CR (t-value) above 1.96, p-values below 0.05). However, other results show that hypothesis 4 of the relationship between risk propensity and digital entrepreneurial behavior is not supported (B = 0.099 CR (t-value) = 0.860 < 1.96, p-values = 0.390 > 0.05).

Complementing the influence between the variables, Table 7 shows the results of testing the indirect effects of risk propensity, digital knowledge, and digital competence on digital entrepreneurial behavior. The results showed a significant effect on the two relationship, so digital entrepreneurial self-efficacy can be a mediating variable on risk propensity and digital entrepreneurship knowledge.

Table 2. First order formative indicators of digital competence

Dimension	Indicator-Items	VIF	t-statistic	p-value
Information and Data Literacy	IDL1- evaluate information that is not paid or open access from the internet	1.153	5.559	0.000
	IDL2- clearly distinguish information from various sources on the internet	1.422	6.702	0.000
	IDL3- link new information with developing knowledge	1.254	3.545	0.000
Communication and Collaboration	CC1- use online business features	1.274	9.034	0.000
	CC2-use several social media and participate actively in it	1.170	9.356	0.000
	CC3- can use the important features of communication tools	1.168	3.934	0.000
Digital Content Creation	DCC1- capable of producing digital content with different formats	1.463	5.806	0.000
	DCC2- apply formatting to digital content products	1.471	6.464	0.000
	DCC3-understand how to use digital Copyright protection	1.078	7.387	0.000
Problem Solving	PS1- solve problems related to digital and computer problems	1.182	1.375	0.169
	PS2- enhance my digital skills	1.267	12.044	0.000
	PS3- trying to improve my digital knowledge;	1.267	7.066	0.000
Safety and Security	SS1- use several different passwords and change them periodically	1.164	16.865	0.000
	SS2-install security programs (Antivirus),	1.650	10.626	0.000
	SS3- understand the impacts of digital technology on the environment.	1.940	13.375	0.000

Table 3. CFA of constructs

Construct, Indicator-Items	Loading factor
Risk Propensity	
RP1- dare to take business risks if I believe profitable	0.758
RP2- trying to develop something new	0.763
RP3- using a new method of work	0.847
Digital Entrepreneurial Knowledge	
DEK1- have basic knowledge of online business regulations	0.757
DEK2- have basic knowledge of website design	0.687
DEK3- have the knowledge how to open a new digital business	0.870
DEK4- have the knowledge of offering digital products that the market needs	0.839
Digital Entrepreneurial Self-Efficacy	
DESE1- have the confidence to realize a digital business	0.610
DESE2- have the ability to take advantage of digital business opportunities	0.857
DESE3- have capabilities in management and digital business applications	0.780
DESE4- has the ability to develop and commercialize new digital ideas	0.736
DESE5- has the ability to develop and commercialize new digital ideas	0.583
Digital Entrepreneurial Behavior	
DEB1- discussing digital business ideas with potential customers	0.628
DEB2- collect information about digital business markets and competitors	0.759
DEB3- have a business plan	0.826
DEB4-starting the development of a digital product or service business	0.779
DEB5- start marketing products or promoting digital products,	0.549
DEB6-buy materials and supplies for digital business	0.612
DEB7- trying to get business funding from outside	0.812
DEB8- owns a patent, copyright or trademark	0.565
DEB9- registering a business with the competent authority	0.562
DEB10- have selling digital products or services	0.628

5. Discussion

This study developed 6 hypotheses, of which 5 were significant, namely risk propensity, digital entrepreneurial knowledge, and digital competence affecting digital entrepreneurial self-efficacy, digital competence, and digital entrepreneurial self-efficacy that significantly affects digital entrepreneurial behavior, but 1 hypothesis is insignificant, namely the effect of risk propensity on digital entrepreneurial behavior.

The effect of risk propensity on digital entrepreneurial self-efficacy shows an empirically significant result, which means that increased risk propensity is more likely to increase motivation. Risk propensity is assessed as a special psychological factor (psychological state), one of the

Figure 1. Output from SmartPLS Estimate.

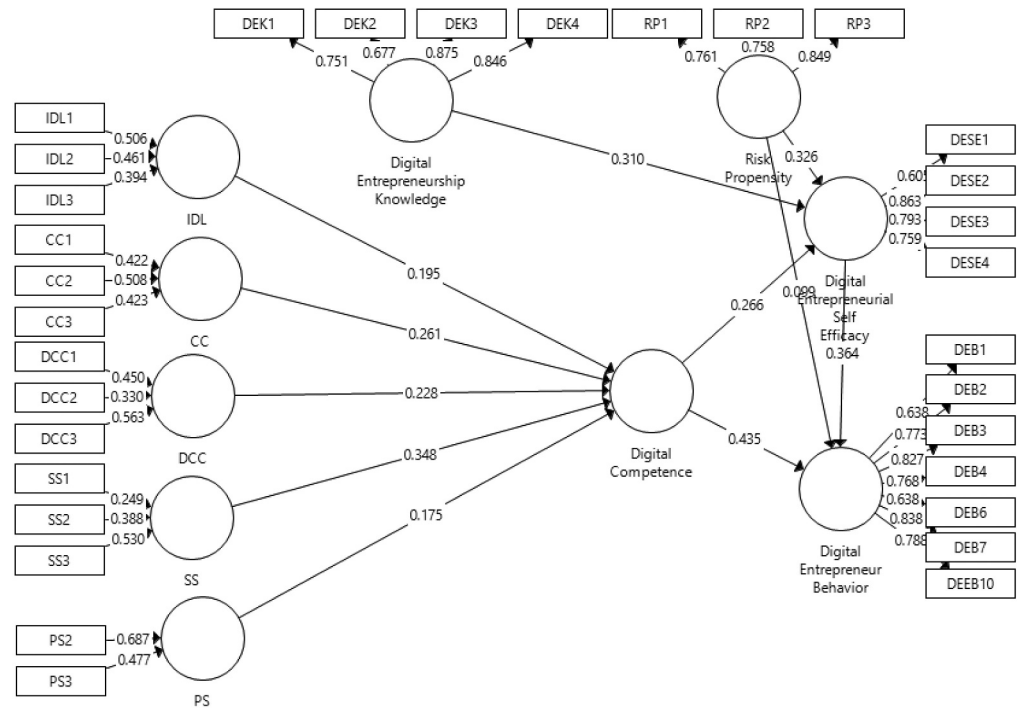


Table 4. Constructs validity and reliability result

Construct	Composite Reliability (CR)	Average Variance Extracted (AVE)
Risk Propensity	0.833	0.625
Digital Entrepreneurial Knowledge	0.816	0.626
Digital Entrepreneurial Self-Efficacy	0.844	0.579
Digital Entrepreneurial Behavior	0.903	0.572

Table 5. Fornell-Larcker-criteria of discriminant validity

	RP	DEK	DESE	DEB
Risk Propensity (RP)	0.791			
Digital Entre. Knowledge (DEK)	0.699	0.791		
Digital Entre. Self Efficacy (DESE)	0.740	0.732	0.761	
Digital Entre. Behavior (DEB)	0.691	0.646	0.757	0.757

Notes: The bold element on the diagonal is the square root of AVE, while the lower the diagonal is the correlation value between the constructs.

factors influencing entrepreneurial self-efficacy per social cognitive theory (Zhao et al., 2005). Those who dare to take high risks are more confident that they can realize the digital business they run. The results of this study support previous research conducted by Brown et al. (2011), which concluded that the propensity to take risks significantly influences entrepreneurial self-efficacy.

Table 6. Direct effect as hypothesis testing

Hypothesis	Effect	Estimate	T-Value	P-Value	R-Square
H1	RP → DESE	0.290	3.063	0.002	0.664
H2	DEK → DESE	0.310	3.063	0.002	
H3	DC → DESE	0.266	2.240	0.025	
H4	RP → DEB	0.099	0.860	0.390	0.682
H5	DC → DEB	0.435	3.787	0.000	
H6	DESE → DEB	0.326	2.614	0.009	

Notes: RP=Risk Propensity, DEK = Digital Entrepreneurship Knowledge, DC = Digital Competence, DESE = Digital Entrepreneurial Self Efficacy, DEB = Digital Entrepreneurship Behavior.

Table 7. Indirect effect as mediation role testing

Effect	Estimate	T-Value	P-Value
RP → DESE → DEB	0.119	2.240	0.025
DEK → DESE → DEB	0.113	2.013	0.044
DC → DESE → DEB	0.097	1.614	0.107

Notes: RP=Risk Propensity, DEK = Digital Entrepreneurship Knowledge, DC = Digital Competence, DESE = Digital Entrepreneurial Self Efficacy, DEB = Digital Entrepreneur Behavior.

However, this study found that risk propensity had an insignificant effect on digital entrepreneurial behavior. Ajzen (2005) added demographic factors such as personal, environmental, social, and information. Risk propensity, as a background factor unable to directly affect behavior should need a mediating factor in digital entrepreneurial behavior. Realizing a digital start-up business is not easy; therefore, self-efficacy is needed as a personality aspect that plays a significant role in the success of digital start-ups (Dessyana & Riyanti, 2017). Risk propensity is the best antecedent toward other entrepreneurial traits but is not necessarily related to entrepreneurial performance (Zhao et al., 2010). The insignificant effect of risk propensity does not significantly affect students' behavioral intentions, also found in Egypt by Sharaf et al. (Sharaf et al., 2018). The result of this study is also related to a previous study by Antoncic et al. (Antoncic et al., 2018), who found no relationship between risk propensity and entrepreneurship in low power distance countries. According to Hofstede, Indonesia is part of Asian culture, which has an uncertainty avoidance culture in which opponents dare to take risks (Elqadri et al., 2017). Even though Indonesian people are multicultural, in a global context such as digital entrepreneurship that adopts immense information technology from the western culture, bicultural individuals are needed to increase the risk propensity to develop entrepreneurial behavior (Al-Shammari & Al Shammari, 2018b).

Digital knowledge obtained through distinctive learning has been shown to affect digital entrepreneurial self-efficacy significantly. The results of this study support those of Wang et al. (2020), who concluded that digital knowledge positively affects Internet entrepreneurial self-efficacy. Knowledge is a construct that represents the experience or formal learning obtained from other people who play a role in growing one's cognitive abilities to increase self-efficacy (Zhao et al., 2005). Individuals with bicultural knowledge are more likely to develop entrepreneurial behavior (Al-Shammari & Al Shammari, 2018a). Previous studies have shown that entrepreneurship knowledge, in the form of education or knowledge, positively affects entrepreneurial self-efficacy (Fayolle et al., 2006; Liñán et al., 2005). In the context of digital entrepreneurship, individuals who gain digital knowledge through education or courses have increased confidence in creating digital businesses (Wang et al., 2020).

The digital competence obtained through digital learning and testing has been shown to positively and significantly affect digital entrepreneurial self-efficacy. This is in line with the opinion

of Talua (Talua et al., 2016), who states that competence is related to efficacy. Underlying social cognitive theory, the digital competencies gained from active learning and the vicarious experiences received during digital courses and exams will enhance the confidence in realizing the desire to become a digital entrepreneur. Moreover, the study results show the direct influence of digital competence on digital entrepreneurial behavior. Based on self-determination theory, competence ultimately plays a role in improving performance (Gagné & Deci, 2005).

Digital entrepreneurs with faith in their skills and abilities to manage the business and develop start-ups are more successful in establishing a digital business (Dessyana & Riyanti, 2017). The significant effect of digital entrepreneurial self-efficacy on digital entrepreneurial behavior contributes to entrepreneurship literature because previous studies found a direct effect of entrepreneurial self-efficacy on entrepreneurial behavior (Li et al., 2020). This research is related to Darmanto and Yuliari (Darmanto & Yuliari, 2018), who, in their prior study, indicated that entrepreneurial self-efficacy leads to entrepreneurial behavior. Although establishing a digital business is difficult, if one already possesses strong entrepreneurial self-efficacy, they will realize digital entrepreneurship behavior as a nascent digital entrepreneurs (Dessyana & Riyanti, 2017).

One of the objectives of this study was to prove the mediating role of entrepreneurial self-efficacy in building digital entrepreneurial behavior. According to Baron and Kenny in Ghozali (Ghozali, 2011), a variable is called an intervening variable if it influences the relationship between the predictor variable (independent) and the criterion variable (dependent). The results of testing the mediating role with the Sobel Test show that entrepreneurial self-efficacy can be an intervening variable between several background factors, namely, willingness to take risks, digital entrepreneurial knowledge, and digital entrepreneurial competence, with digital entrepreneurial behavior at a significant level of 10%. The results of this study support those of previous research, which proves that entrepreneurial self-efficacy has a mediating role in encouraging an increase in personality, learning, and environmental factors on entrepreneurial behavior (Darmanto & Yuliari, 2018).

6. Conclusions

This study developed a research model to analyze the role of risk propensity, digital knowledge, and digital competence on digital entrepreneurship behavior through digital entrepreneurship self-efficacy. This research is significant because of the urgent need for the emergence of new digital entrepreneurs in the era of the Fourth Industrial Revolution, which is processed through learning digital entrepreneurs to have digital competence and confidence to realize themselves as new digital entrepreneurs.

The research model was tested based on questionnaire data collected from 70 respondents, consisting of young digital entrepreneurs who had previously participated in entrepreneurial and digital learning to obtain a digital competency certificate and were able to realize digital businesses at an early stage.

The results of the analysis of the full structural equation model show that by testing the causality relationship proposed by the six hypotheses, significant results are obtained in five hypotheses so that they can be accepted, whereas those that are not significant are found in one hypothesis so that they are rejected. The results also prove that digital entrepreneurial self-efficacy plays a role in mediating personality aspects, learning, and digital competence to realize one's decision to become a digital entrepreneur.

7. Implications

This study underlies the development of the theory of planned behavior as the principal theory by using background factors in the form of personality (risk propensity), human capital (knowledge), and learning (digital competence) for the formation of digital entrepreneurial behavior. The theoretical implication shows that the said theory plays a significant role as an investment to

improve self-efficacy and realize digital entrepreneurial behavior. It is proved that the Theory of Planned Behavior can be applied to almost all planned behavior, including digital entrepreneurship.

The results of this study are expected to provide input to public policyholders that the government plays a prime role in realizing digital entrepreneurship by conducting additional digital learning and competency testing in the community. Universities can play a role in encouraging the improvement of digital entrepreneurs through knowledge, community services, and research in the digital entrepreneurship field. The private sector is expected to contribute to digital entrepreneurs' development through CSR programs and funding.

8. Limitations and recommendation

This study did not examine the role of demographic factors such as age, ethnicity, and gender in depth; hence, it is necessary to research the demographic factors that play a role in increasing digital entrepreneurship behavior. This research is cross-sectional, so it is not possible to see the changes in digital entrepreneurs based on personality and competence; longitudinal research is necessary to analyze the influence of digital entrepreneurial self-efficacy, including the personality influence, learning, and competence on self-efficacy. This research needs to be followed by examining the business success of digital entrepreneurs who have successfully developed businesses after being in a digital business for more than 3.5 years. Further studies should be conducted using more observational cross-cultural or cross-national surveys within various areas of Indonesia, using the biculturalism concept as an important construct in the entrepreneurship field.

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