Predicting Digital Business Startup Intention in SEA: TPB-PC Model Test
A Case Study of Indonesian Students

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Abstract. Digital business startups are essential engines for innovation and economic growth in Industry 4.0 era and digital civilization. These digital technology-based businesses can grow and develop rapidly when new desires and ideas arise from entrepreneurs to establish digital business ventures. This study tests the intention of the technology entrepreneur (technopreneur) to use the TPB-PC model. The sample was college students in Eastern Indonesia, as many as 200 respondents and analyzed using the RStudio data science programming language application. The results of this study provide the information needed to predict the entrepreneurial behavior of students to establish a digital startup business in the Southeast Asia region.

Keywords: TPB-PC Model · Digital business · Startup · Technology entrepreneur · Intention

1 Introduction

The disruption of digital technology is driving economic growth worldwide, including in the Southeast Asia (SEA) region. SEA with a population of 589 million people, and more than 75% are active internet users, making this region one of the epicenters of the world's digital economy with a digital economy value of US$363 billion in 2025 [1]. In order to support the sustainable growth of the digital economy in the SEA region, massive innovation and commercialization of digital technology-based innovation are needed to develop this digital ecosystem. This ecosystem can be achieved by encouraging the development of digital startup businesses in the region [2].

Indonesia is the largest country in the SEA region, and digital startup business growth is very rapid [3]. According to data from Startup Genome, the number of startup businesses in Indonesia is the largest in SEA and Indonesia has the largest number of Unicorn startups (startups with a valuation of more than US$1 billion [4] in SEA is Indonesia [5]. Problems arise even though Indonesia is number one in startups and Unicorn startups [6]. The distribution of digital startup businesses in Indonesia is still concentrated in several big cities on the island of Java [7]. For this reason, it is necessary to develop digital startup businesses in other regions, such as in the Eastern Indonesia Region (EIR),

W. R. Murhadi et al. (Eds.): INSYMA 2022, AEBMR 223, pp. 378–387, 2023.
https://doi.org/10.2991/978-94-6463-008-4_48

to reduce the inequality of startup economic development in Indonesia [8]. Developing digital startups in the EIR needs to be a follow-up by increasing the number of technology-based entrepreneurs or technopreneurs who can develop a digital business ecosystem in this region. This step can be started by exploring the behavior of starting a digital business, especially from the entrepreneurial intention to establish a digital technology-based startup business [9].

In entrepreneurial activity, the intention is the sole proxy of action to start a new business organization [10]. If we can understand entrepreneurial intentions, predicting people who want to become entrepreneurs will be more explicit and reasonable [11].

Someone with a strong intention to become an entrepreneur will be more successful and tough to start and run a business in the future [12]. One of the models often used by researchers in the entrepreneurship field to predict entrepreneurial intention (EI) behavior is the Theory of Planned Behavior (TPB) [11]. For the SEA region, the TPB model has succeeded in predicting entrepreneurial behavior in various countries, including Indonesia [12].

Although the TPB model has been widely used in various research, this model still has some limitations. Several limitations such as the relationship gap between entrepreneurial attitude (EA), social norm (SN), and perceived behavioral control (PBC) with EI [12]. Also, the TPB model is too static, and the robustness level is still low in predicting entrepreneurial behavior [13]; the TPB model has gaps in predicting actual behavior in the long term [14]. Filling the research gap in the TPB model, the concept of psychological capital (PsyCap) is used, empirically proven to be promising to have a relationship to increasing EI [15].

The study explores the relationships between variables in the TPB model, namely EA, SN, PBC, and PsyCap, to EI of university students in Indonesia, one of the countries in the SEA region. PsyCap is considered a mediation variable in this study, and several things become a novelty in this research. First, this study examines the technopreneur's intention to build a digital startup venture. Research in the context of the technopreneur startup intention is still rarely found. Second, PsyCap as a mediator of proxy variables from EI in the TPB model has not been found by researchers, especially in one complete model; several other studies still link proxies from EI partially [16].

The theory of planned behavior (TPB) is put forward by Ajzen [17]. In TPB, human behavior is driven by considerations of "behavioral beliefs," "normative beliefs", and "control beliefs." The formulation of behavioral beliefs produces liking or disliking attitudes toward the behavior, normative beliefs produce subjective norms, and control beliefs produce perceived behavioral control. The combination of attitudes toward behavior, subjective norms, and perceived behavioral control forms a behavioral intention [17]. In particular, the perception of behavioral control is assumed to influence actual behavior directly and indirectly through behavioral intentions.

Entrepreneurial attitude (EA) is defined as the degree to which an individual views positively or negatively the assessment of becoming an entrepreneur or establishing a new business [18]. Subjective norms are defined as individual perceptions of social pressure to perform or not to perform a behavior [17]. Entrepreneurial social norm (ESN) is defined as the perception of social pressure, namely normative belief and motivation to comply with establishing a new business or entrepreneurship [18]. Ajzen [17] explained the

PBC as a function based on control beliefs, namely individual beliefs about the presence or absence of factors that support or prevent individuals from eliciting a behavior. The EPBC concept is defined as an individual's perception that being an entrepreneur is easy or not easy [18]. PsyCap is defined as a positive psychological development condition of a person [19]. In this study, PsyCap or entrepreneurial psychological capital (EPsyCap) is a positive psychological development condition of an entrepreneur or prospective entrepreneur, characterized by several factors such as [15]: (1) hope, (2) self-efficacy, (3) resilience, and (4) optimism. The concept of EI emerged from social psychology. Two writings underlie the concept of entrepreneurial intention, such as Bird [20], as the center of entrepreneurial behavior, and Katz and Gartner [21], as one of several critical factors related to the emergence of a new business organization or venture.

The relationship between EA and PsyCap has not been widely studied [22]. According to Mahfud et al. [23], the relationship between EA and PsyCap is positive and significant r. The first hypothesis (H1) can be formulated based on this framework that EA is a positive predictor of PsyCap. Many researchers in entrepreneurship studies have studied the relationship between EA and EI. The relationship between the two variables is the most dominant relationship found to have a significant positive effect [24]. The second hypothesis (H2) can be formulated based on this framework: EA is a positive predictor of EI. Research on the relationship between ESN and PsyCap is still rare and relatively new to entrepreneurship. One of them is the research conducted by Ephrem et al. [16]. Based on the results of these previous studies, hypothesis 3 (H3) can be formulated; namely, ESN is a positive predictor of PsyCap. The relationship between ESN and EI has been explored in many studies. In several studies [12], it was found that there was a significant relationship between the two variables in the context of college students. These previous studies formed hypothesis 4 (H4), namely that ESN is a positive predictor of EI. In the relationship between the EPBC and the EPC variable, researchers have only found one empirical study on the relationship between variables, from Margaça et al. [25], who found a positive and significant relationship. These results from hypothesis 5 (H5), namely, EPBC is a positive predictor of PsyCap. Empirical research on EPBC and EI found a positive and significant relationship [24]. Based on the results of these previous studies, hypothesis 6 (H6) can be formulated, EPBC is a positive predictor of EI. The relationship of PsyCap to EI is new to entrepreneurial research. Sebora and Tantiukoskulla [15] were the first researchers to examine the relationship. Based on the results, hypothesis 7 (H7) was formulated, and PsyCap is a positive predictor of EI.

EA, as described above, is a positive predictor of PsyCap; also, EA is a positive predictor of EI, and PsyCap is a positive predictor of EI. Based on this framework, the eighth hypothesis (H8) can be formulated that PsyCap mediates the relationship between EA and EI. ESN is a positive predictor of PsyCap and EI, while PsyCap is a positive predictor of EI. This framework forms the ninth hypothesis (H9), namely the relationship between ESN and EI mediated by PsyCap. The last model is that EPBC is a positive predictor of PsyCap and EPBC is a positive predictor of EI. This relationship forms the tenth hypothesis (H10), namely the relationship between EPBC and EI with PsyCap as a mediator.

2 Research Methods

The population of this research was students in the Eastern Indonesia Region (EIR). The research sample was students from the EIR province of North Sulawesi (NS). NS was chosen because NS is the most developed EIR area and will become Indonesia's Asia Pacific gateway and hub [8]. The survey was conducted online during the Covid-19 from October-November 2020. Respondents were 231 students in the last three years. Samples were taken from the three largest NS state universities: Sam Ratulangi University, Manado State University, and Manado State Polytechnic. The data were analyzed using Structural Equation Modeling (SEM). Tests followed the SEM standard steps and were conducted using R Studio. The Sobel test was used to test the path analysis.

3 Results and Discussion

The detailed descriptions can be seen in Table 1. Table 1 exhibits that most respondents were: female (63.2%), aged less than 20 years (83.1%) and were from the University of Sam Ratulangi (88.7%). Most respondents studied economics and business (94.8%), have experience in entrepreneurship education (73.2%),have never worked before (80.5%), have set up a business before (51.5%), have never done business online (53.7%), have attended training entrepreneurial (61.9%), have a family that does business (52.4%), have known digital startup business (77.9%), and have no startup business experience before (92.6%).

The value of factor loading for all items, including the value for the measurement model, can be seen in Table 2. At the same time, Tables 3 describe the results of testing the ten proposed hypotheses.

Based on Table 2, it can be seen that the loading factor values are all above > 0.30 [25], which is the weakest acceptable loading factor value. The minimum acceptable Cronbach Alpha (CA) value is >0.70 [27]. Based on Table 2, it can be seen that the CA value for all variables is > 0.70. The CR value must be above 0.70, which means that the CR value meets the criteria [26]. Finally, the AVE value that meets the criteria is above 0.5 [26], and in this study, the AVE value has met these criteria.

The highest estimated relationship between variables is EPBC to PsyCap with an estimated value of 0.47, and the lowest is ESN to EI with an estimated value of 0.02. There are seven supported hypotheses for hypothesis testing and three unsupported hypotheses. The not-supported hypotheses involve ESN or social norm variables. In the ESN variable, both the relationship with PsyCap, intention, and ESN mediation on EI mediated by PsyCap show that the hypotheses are not supported, signifying there is no positive or significant impact on ESN on ESN PsyCap and EI either directly or indirectly.

Moreover, based on the previous analysis, we found a significant positive supporting previous research, namely between EA to PsyCap [23], and EA to EI [28]. The authors also found positive and significant results that support previous research, namely EPBC to PsyCap [25], and EPBC to EI [24]. These results support the four main direct impact hypotheses, namely the first (H1), second (H2), fifth (H5), and sixth (H6) hypotheses. Positive and significant effects were also found in the relationship between PsyCap and EI. These results support several previous studies on the positive impact of PsyCap on EI [15].

Table 1. Characteristic of Respondents

Characteristics	Total	
	N = 231	%
Gender		
Male	85	36.8
Female	146	63.2
Ages (Year)		
Less Than 20	192	83.1
21–30	39	16.9
University		
University of Sam Ratulangi	205	88.7
Manado State University	22	9.5
Manado State Polytechnic	4	1.7
Major Study		
Economy and Business	219	94.8
Other Social Science	12	5.2
Entrepreneurship Education Exp.		
Yes	169	73.2
No	62	26.8
Work Exp.		
Yes	45	19.5
No	186	80.5
Business Exp.		
Yes	119	51.5
No	112	48.5
Online Business Exp.		
Yes	107	46.3
No	124	53.7
Entrepreneurship Training Exp.		
Yes	143	61.9
No	88	38.1
Know Digital Startup Business		
Yes	180	77.9
No	51	22.1

(*continued*)

Table 1. (*continued*)

Characteristics	Total	
	N = 231	%
Business Startup Exp.		
Yes	17	7.4
No	214	92.6

Table 2. The Measurement Model

Construct	Item	Factor Loading	CA	CR*	AVE**
Entrepreneurial Attitude (EA)	EA1	0.704	0.806	0.90	0.64
	EA2	0.857			
	EA3	0.725			
	EA4	0.885			
	EA5	0.811			
Entrepreneurial Social Norm (ESN)	ESN1	0.809	0.806	0.94	0.71
	ESN2	0.868			
	ESN3	0.905			
	ESN4	0.825			
	ESN5	0.850			
	ESN6	0.813			
Entrepreneurial Perceived Behavioral Control (EPBC)	EPBC1	0.842	0.807	0.93	0.71
	EPBC2	0.873			
	EPBC3	0.870			
	EPBC4	0.798			
	EPBC5	0.818			
	EPBC6	0.838			
Entrepreneurial Psychological Capital (EPsyCap)	EPC_1	0.909	0.828	0.92	0.74
	EPC_2	0.805			
	EPC_3	0.883			
	EPC_4	0.829			
Technopreneur Entrepreneurial Intention (TEI)	TEI1	0.872	0.812	0.95	0.77
	TEI2	0.846			
	TEI3	0.903			
	TEI4	0.898			
	TEI5	0.904			
	TEI6	0.855			

Table 3. Hypothesis Testing Results

Hypo.	Pathways	Status
Direct Effect		
H_1	EA → PsyCap	Supported
H_2	EA → EI	Supported
H_3	ESN → PsyCap	Not Supported
H_4	ESN → EI	Not Supported
H_5	EPBC → PsyCap	Supported
H_6	EPBC → EI	Supported
H_7	PsyCap → EI	Supported
Mediation Effect		
H_8	EA → PsyCap → EI	Supported
H_9	ESN → PsyCap → EI	Not Supported
H_{10}	EPBC → PsyCap → EI	Supported

The mediation relationship was found to have a significant positive effect on the relationship between EA to EI mediated by PsyCap, and EPBC to EI mediated by PsyCap. These results indicate that PsyCap plays a vital role in mediating the relationship between EA to EI and EPBC to EI. This study confirms that PsyCap could mediate the relationship between EA and EI. These findings support previous research by Baluku et al. [22] and Mahfud et al. [23]. PsyCap has also been confirmed to mediate the relationship between EPBC and EI from the research of Margaca et al. [25].

Different findings were obtained from ESN to PsyCap and ESN to EI. These results do not support previous research, namely, a positive and significant relationship between ESN, both ESN to PsyCap [16] and ESN to EI [29]. The absence of this significant relationship indicates that one's social environment does not positively impact increasing PsyCap and EI. These results were also found in the relationship of ESN to EI mediated by PsyCap, which also had no positive and significant effect.

4 Conclusion

This study explores the TPB-PC model, namely the influence of entrepreneurial attitude (EA), entrepreneurial social norm (ESN), and entrepreneurial perceived behavioral control (EPBC) on entrepreneurial intention (EI) mediated by psychological capital (PsyCap). Based on the study results, it can be summarized that EA has a direct positive effect on PsyCap also EI. Similarly, EPBC and PsyCap affect the intention to become a technology entrepreneur. Furthermore, PsyCap can explain the connectivity between EA to EI and EPBC to EI. PsyCap plays an essential role in the intention to build a new digital startup. Contrary to that finding, ESN does not directly impact PsyCap and EI. PsyCap does not play a role in the relationship between ESN to starting a new digital startup.

This study confirms the TPB-PC model as an alternative to the TPB model to predict entrepreneurial intentions and behavior. Psycap, which consists of hope, self-efficacy, resilience, and optimism, plays a significant role in the relationship between entrepreneurial attitudes, namely positive feelings for entrepreneurship, and control of entrepreneurial behavior, namely feelings of ease to start a new business against entrepreneurial intentions. Attitude and behavioral control particularly impact the intention of technology entrepreneurs or technopreneurs to establish digital startup businesses. These findings can be generalized to the SEA region, namely Indonesia, especially to Eastern Indonesia Region (EIR) students.

These findings verify an alternative exploratory model from TPB with the addition of psychological capital as a mediator of attitude, social norms, and perceived behavioral control with intentions in the entrepreneurship field of study. The TPB-PC model can be an alternative model for predicting entrepreneurial intentions and behavior. These findings are due to psychological capital, as a mediating variable of behavioral intention, having the power to predict future outcomes. PsyCap, as a higher-order construct, plays a central role in helping behavioral models to predict consistent actions in the future.

Some limitations of this research can serve as gaps for future research. First, the data collected was only from North Sulawesi Province, the eastern part of Indonesia, so it cannot be generalized to the whole of Indonesia due to cultural differences between the western and eastern regions of Indonesia [7]. Second, the questionnaire instrument for the PsyCap variable only used 12 of 24 instruments from Luthans et al. [19], so it is necessary to carry out further tests using a complete instrument. Third, this research was made in the context of an entrepreneurial intention to become a technology entrepreneur and establish a digital startup business. Different results may be obtained when testing entrepreneurial intentions to become entrepreneurs in general. Technology entrepreneurs who are different from ordinary entrepreneurs have quite a big difference in needing digital technology-based innovation capabilities. In contrast, traditional entrepreneurs have differences that do not require digital technology-based skills and qualified science skills.

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