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# Identification of factors influencing entrepreneurial behavior: unveiling start-up business initiatives in Indonesia

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This study aims to identify the factors influencing the intention of people to launch business in Indonesia, using theory of planned behavior (TPB). The implemented methods included binomial logistic regression, classification and regression tree, and structural equation modeling. To examine this issue, data were obtained through Global Entrepreneurship Monitor (GEM) from 2015–2018. The results demonstrated that TPB construct was relevant to the launch initiative of business. This emphasized the significant functions of self-efficacy, business opportunity, and role models in the plans of people, regarding the establishment of an enterprise. Therefore, this study advanced the understanding of the factors influencing entrepreneurial behavior concerning the establishment of business, as well as provided strategies and plans for its development in Indonesia.

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## Introduction

Small-and-medium-size enterprises (SMEs) are rapidly developing in Indonesia, establishing and providing jobs for workforces. According to Al-Azzam & Al-Mizeed (2021), SMEs positively impacted the economic growth of a country. SMEs or entrepreneurship are also part of the approaches for developing the economy of a state under globalization (Keat et al., 2011). From this context, stakeholders such as governments and entrepreneurs often believe that enterprises contribute toward industrial development (Hébert & Link, 2009). In addition, SMEs are considered research topics by scholars and academia because of their contribution as a popular choice for new business launches (Keat et al., 2011).

Several studies have found that the ecosystem factors in SMEs are capable of impacting behavior of entrepreneurs. Based on Ali et al. (2010), many variables negatively affecting entrepreneurial intention in Pakistan were emphasized, such as the weakness of policymakers or governance mechanisms, political factors, regulations, and corruption. To globally measure the conditions of entrepreneurial framework, Global Entrepreneurship Monitor (GEM) has identified some key variables. This explains that governments, international organizations, and academics around the world are using GEM framework to benchmark entrepreneurial conditions. The literature has also used the framework to evaluate the extent to which aspects of entrepreneurial ecosystem play crucial roles in fostering business intentions among individuals. These aspects include access to capital, physical infrastructure, government policies, support, and regulations for new and growing business, entrepreneurship education and training, as well as social and cultural factors.

From this description, behavior is considered a central process in understanding business and start-up ventures (Astorga, Yáñez, 2014). According to Krueger & Carsrud (1993), identifying business opportunities was an intentional behavioral process. This indicates that intention is a key element in an entire start-up process and serves as a fundamental predictor of SMEs' behavior. Personal competence, traits, and interaction are also capable of initiating entrepreneurial activity, to comprehend the starting point of business and idea materialization (Al Mamun et al., 2016). Furthermore, various groups use technological advancements to launch new business, expanding into sectors such as commerce, education, and finance. This start-up are occasionally established by small family or community groups. Based on the existing literature in Indonesia, a start-up business was emphasized, including entrepreneurial intentions among students (Utami, 2017) and e-commerce establishments (Pramono et al., 2021). The limited studies relying on data from Global Entrepreneurship Monitor Adult Population Survey (GEM APS) also examined a start-up business, especially in Indonesia. This led to the need for subsequent clarification, regarding the variables affecting a start-up business in the generation of the state. Therefore, this study aims to investigate the factors influencing a start-up business initiative on the people or citizens of Indonesia. These influential factors are unable to be solely analyzed by using objective variables, such as age, gender, income, etc (Bakar et al., 2017). From this vantage perspective, subjectivity, such as individual motivation and perceptions of culture, politics, demography, and the environment, should be considered in decision-making (Audretsch, 2002; Liñán et al., 2011). This study subsequently aims to analyze the influential variables of a start-up business initiative launch from 2015 to 2018 in Indonesia.

The several features used to assess individual attitudes, perceptions, and personal characteristics are also consistent with various previous studies (Bakar et al., 2017; Arenius & Minniti, 2005; Camelo-Ordaz et al., 2016), where demographic variables are combined with entrepreneurial perspectives. In this present

study, the development of (Tsai et al., 2016) is adopted regarding the employment of entrepreneurial perspective as a proxy for business personality and competence. The importance of social factors is also emphasized in influencing entrepreneurial decisions of people in Indonesia. By considering some socioeconomic constraints, such as youth unemployment and long lines at company doors, starting business is likely the only viable resolution option. Based on the results obtained, both theoretical and practical contributions are considered. Firstly, this study theoretically enriches the entrepreneur literature emphasizing theory of planned behavior (TPB) framework using GEM data. This is due to the proposition of a strategy by Indonesian government, "Create a Job through Entrepreneur", enabling easy and practical evaluation of the patterns by which the entrepreneur environment influences business phenomena in the state. Secondly, a theoretical foundation is established to assist authorities in developing strategies and plans to increase entrepreneur development in Indonesia.

Indonesia is analyzed and considered an intriguing case for several reasons. Firstly, the country boasts the sixteenth-largest economy and the fourth-largest population globally. As a middle-income state, it also benefits from a substantial supply of young individuals and potential market opportunities, fostering an environment conducive to new business ventures (Nurmalia et al., 2020). Secondly, entrepreneurs have reportedly experienced a significant increase over the previous decade, according to data from the Statistics Bureau of Indonesia (BPS). This is due to the increase from 22.7–26.7 billion between 2006 and 2016, respectively (Nurmalia et al., 2020). Based on information from Bank Indonesia, SMEs also contributed 60.3% to the gross domestic product (GDP) in 2016 (Nurmalia et al., 2020). Thirdly, entrepreneurship has emerged as a key driver of Indonesian economic growth, leading the government to shift its focus from quantity to quality of entrepreneurs. This is because the impact of a skilled entrepreneur is indisputable on the development of a country.

The following section outlines the theoretical background for this study and develops hypotheses about the decision to become an entrepreneur. This is accompanied by the methodology, results, conclusions, as well as recommendation and implication sections, where future practice and research are provided.

## Theoretical research framework and hypotheses development.

This study is analyzed by applying TPB to examine entrepreneurial intentions in starting new ventures in Indonesia. This theory is selected as the underlying framework to analyze entrepreneurial behavior and business launch. According to Ajzen (1991), TPB was renowned for its ability to predict and explain human behavior, especially focusing on the intentions of people to engage in specific attitudes. The following section of the literature provides a detailed explanation of TPB. Besides reviewing relevant theory and supporting literature, a new independent variable is also introduced regarding the analyses of previous reports, namely entrepreneurial social image, as identified by Leković et al. (2018) or Middermann et al. (2020). This variable is considered the visibility of the social business, with gender/education and age being incorporated as moderating and control variables, respectively.

**Theory of planned behavior (TPB).** TPB was developed by Ajzen (1991) to understand the intention of people. This emphasized the change in their behavior and was applied in entrepreneurship (Ajzen, 1991) and other fields. The theory also formed a starting point for entrepreneurial intention and was considered a prediction component for business behavior (Ajzen, 2002).

Furthermore, TPB was extended from the theory of reasoned action by Ajzen & Fishbein (1980) and frequently used in studies of entrepreneurial intention. This theory was the accumulation of conscious intention, formed by three components, namely personal attitude, subjective norm, and perceived behavioral control (Mustafa et al., 2016; Roxas et al., 2008). In detecting the determinants of individual initiative for a new start-up in Indonesia, TPB was considered and implemented. From this context, the components of the theory are presented in related initiative.

#### **Entrepreneurial intention (initiative to launch a new business).**

Entrepreneurial intention is considered the commitment and desire of people to establish a new business venture. This serves as the initial step in entrepreneurial process, forming the foundation for various activities, such as planning and implementing business idea (Gupta & Bhawe, 2007; Moriano et al., 2012). The concept of entrepreneurial intention also revolves around the aspirations of people to initiate a new business (Bird, 1988). According to Bird (1988), intention was subsequently categorized into several aspects, including concentration, experience, and individual behavior, which were crucial in developing a new business (Bird, 1988; Krueger & Carsrud, 1993). Summers (1998) also found a correlation between intention and behavior, indicating that people with similar mindsets were inclined toward specific objectives.

In entrepreneurship studies, the significance of entrepreneurial intentions depends on the potential to reflect actual behavior and serve as predictors of attitude (Kaijun & Ichwatus Sholihah, 2015). Regarding TPB, several factors, such as attitude and subjective norm, shaped the subjectiveness of people and directly influenced their attitudes (Ajzen & Fishbein, 1977). This indicated that the understanding of entrepreneurial intention provided insights into the likelihood of people starting business (Jenkins & Johnson, 1997).

**Attitude toward behavior.** In TPB constructs, the concept of attitude is considered the personal assessment of positive or negative behavior (Ajzen, 2001; Perugini & Bagozzi, 2001). This concept pertains to entrepreneurial behavior, where personal attitude encompasses the subjective perception of people about their abilities and level of interest in entrepreneurship (Liñán & Chen, 2009). In this case, people with positive personal attitudes are more likely to possess higher entrepreneurial intentions, compared to those with a negative perception (Phuong et al., 2021). Positive or negative attitudes are also influenced by various factors, including individual personalities, skills, competencies, demographics, as well as the social and external environment (Krueger et al., 2000).

The stigma of failure in starting a new business is often focused on people (Arenius & Minniti, 2005; Martins & Perez, 2020; Stuetzer et al., 2014). According to Simmons et al. (2014), business failure stigma was observed due to social norms and had implications for the perception of risk at the level of entrepreneurial activity. This indicates that the navigation of business world requires a brave mental attitude often varying between founder and non-founder (Begley, 1995; Entrialgo et al., 2000; Mueller & Thomas, 2001). In this case, the potential of entrepreneurial mentality is tested.

Based on Arenius & Minniti (2005), competence was capable of influencing individual decisions in starting business. Using self-efficacy, this factor was also tested by Ballout (2009), where the belief in opportunities emphasized the ability of people to encourage one another to start a new business. In this business establishment process, behavior was considered the product of an

intuitive and rational system, according to Kahnemann (2003). From these descriptions, the following hypotheses are presented,

*Hypothesis 1:* A negative relationship is observed between the failure fear of an individual and initiative to launch a start-up business in Indonesia.

*Hypothesis 2:* A positive relationship is found between business opportunity perception of an individual and initiative to launch a start-up business in Indonesia.

**Subjective norms.** The second indicator among TPB constructs is the subjective norm, a personal concept in the social context emphasizing decision-making processes within behavior principle (Ajzen & Kruglanski, 2019; Guerin & Toland, 2020). This indicator prioritizes the belief of social groups, such as family, friends, and others, regarding the engagement levels of people in entrepreneurship activities (Kautonen et al., 2015). In addition, the subjective norm is considered the pressure from a social group to agree or disagree toward having entrepreneurial behavior (Ajzen, 2002).

In this study, the subjective norm is known as the social business visibility, which was previously used by Leković et al., (2018) and Middermann et al., (2020) as a form of public responsibility. This shows that social entrepreneurs focus more on public goals or values (Hulgard, 2010; Mair et al., 2006). The variable is also based on a model stating that personal intention is privately mediated not directly influenced by antecedent indicators. In addition, a sustainable business model provides an innovative approach and is implemented to develop social value (Boons & Lüdeke-Freund, 2013).

From this description, the influence of the antecedent variables on the dependent factor is impacted by social responsibility, leading to the presentation of the following hypotheses,

*Hypothesis 3:* In Indonesia, the knowledge role model increases initiative to launch a start-up business.

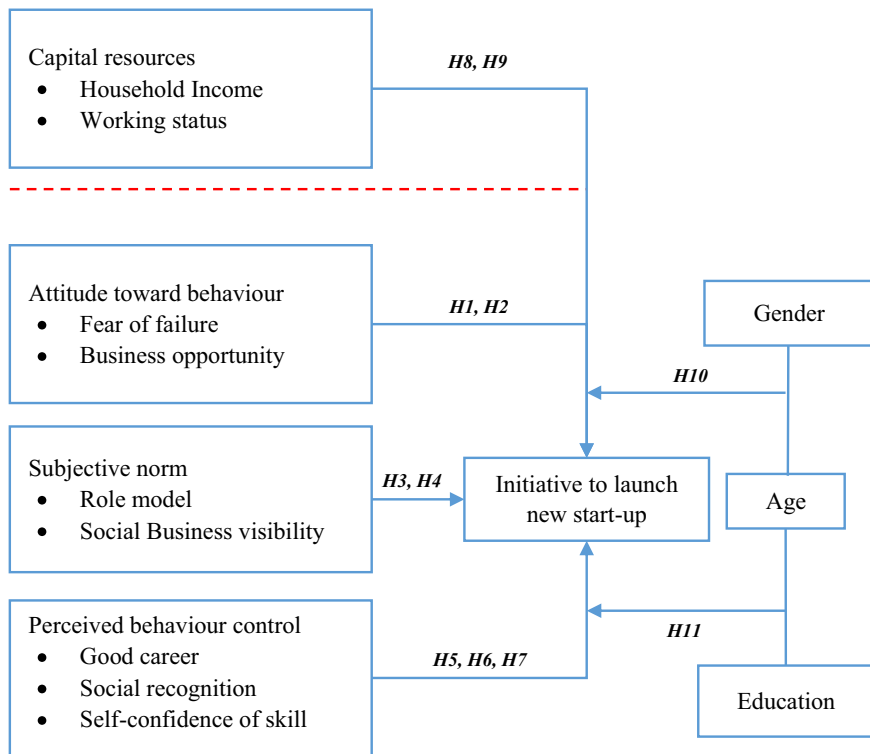
*Hypothesis 4:* A positive relationship is observed between business visibility perception of an individual and initiative to launch a start-up business in Indonesia.

**Perceived behavior control.** Perceived behavior control is known as a personal belief emphasizing the ease or difficulty in conducting entrepreneurial activities (Ajzen, 2002). This explains that people need to overcome adverse and challenging situations during the early stages of company establishment. In this case, the people with higher perceived behavioral control prioritized the ease to handle the situations, leading to greater entrepreneurial intention (Maheshwari, 2021).

In this study, cultural and sociological variables are adopted (Liñán et al., 2011), where the description emphasized by Bakar et al. (2017), namely "Is starting business the right career choice?". According to Ajzen (1991), social recognition or contextual issues influenced the intention to become an entrepreneur through behavior. This was in line with several related reports, such as Carr & Sequeira (2007), Iakovleva et al. (2011), Nanda & Sørensen (2010), and Ahmad et al. (2014).

The perception of the skills possessed by people is also based on their confidence level concerning the intention to start a new business. This proves that the establishment of business was impossible without identifying the skills possessed. In this case, the identification of personal abilities and skills need to be initially identified (Hsieh et al., 2017; Lazear, 2004). Based on these descriptions, the following hypotheses are presented,

*Hypothesis 5:* A positive relationship is found between the good career perception of people and initiative to launch a start-up business in Indonesia.



**Fig. 1 Conceptual framework.** H1-H11 relates to the all of hypotheses.

*Hypothesis 6:* A positive relationship is observed between the social recognition perception of people and initiative to launch a start-up business in Indonesia.

*Hypothesis 7:* A positive relationship is found between the self-confidence perception of people and initiative to launch a start-up business in Indonesia.

**Financial resources**

*Household income.* Any business concept is expected to require capital, with Bygrave (2003) stating that a start-up business founders often sacrificed personal savings to initially operate their enterprises. This shows that the use of personal savings is more inclined to prioritize the financial ability of people. Kim et al. (2006) also demonstrated that household income (personal wealth) encouraged the sustainability of a start-up business without involving credit-lending institutions.

*Working status.* Working-class people are commonly found to exhibit a higher passion for establishing a start-up business. Based on Arenius & Minniti (2005), unemployed people preferred to be passive in attempting a start-up business than those employed and earning income. From these descriptions, the following hypotheses are formulated,

*Hypothesis 8:* The higher household income of people leads to a greater initiative for a start-up business in Indonesia.

*Hypothesis 9:* Employment status positively correlates with a start-up business initiative in Indonesia.

*Moderating variable.* Several previous studies were responsible for stating that gender indirectly affected business initiative (de Morais Santos et al., 2022; Al-Dajani et al., 2014; Díaz-García & Jiménez-Moreno, 2010; Klapper & Parker, 2011). In this present study, gender role is then considered a moderator (Bakar et al., 2017; Feder & Nițu-Antonie, 2017; Karimi et al., 2013), leading to the presentation of the following hypothesis,

*Hypothesis 10:* The positive effect of independent variables on initiative to launch a start-up business is stronger among men than women.

Regarding other reports, people having a higher level of education had a greater opportunity to open a new business (Bates, 1990). In Indonesia, this situation was quite relevant due to the observation of an increasing number of university graduates. Therefore, the application of their knowledge to business sector was considered more than waiting for a new job. From this description, the following hypothesis is proposed,

*Hypothesis 11:* The positive effect of the independent variables on initiative to launch a start-up business is stronger among higher-level education.

*Control variable.* As part of entrepreneurship, the most popular component in analyzing individual profiles is age (Szivas, 2001). This is because the age of the people carrying out entrepreneurial activities is very diverse, from 25 to 50 years (Ahmad et al., 2014). According to Kelley et al. (2015), the age of entrepreneurs was relatively young, roughly from 25 to 35 years old. From this context, the present study used the age variable to control the relationship between the above variables. Figure 1 outlines the form of the relationship between predictors and moderating variables on initiative to launch a start-up business in Indonesia.

**Methodology**

**Data collection and sample.** In this study, two objectives were emphasized, with the first purpose prioritizing GEM APS 2017 and 2018 survey data. Meanwhile, the second purpose focused on the data from 2015, 2016, and 2017 GEM APS. From GEM APS sample in Indonesia, 5620, 3480, 2500, and 300 samples were observed in 2015, 2016, 2017, and 2018, respectively. Table 1 shows the variables used in the first, second, or third objectives of this study.

**Table 1 Data and research variables.**

Name	Type	GEM source	Definition
Dependent variable			
Initiative to begin a start-up	Dummy	FUTSUPpy	0 = no initiative to begin a start-up, 1 = existence of initiative to begin a start-up
Financial resources			
Household income	Categorical	GEMHHINC	1 = lowest 33%, 2 = middle 33%, 3 = upper 33%.
Working status	Dummy	GEMWORKS3	0 = not working, 1 = working
Attitude toward behavior			
Fear of failure	Dummy	FEARFAIL	0 = fear of failure does not prevent starting business, 1 = otherwise
Business opportunity	Dummy	OPPORT	0 = absence of a good opportunity to start business in the area within the next six months
Subjective norm			
Role model	Dummy	KNOWENT	0 = does not personally identify someone that started business in the last 2 years, 1 = otherwise.
Social business visibility	Dummy	NBSOCENT	0 = did not often identify business that is primarily aimed at solving social problems, 1 = otherwise
Perceived control behavior			
Good career	Dummy	NBGOODC	0 = most people consider starting a new business is not a desirable career choice, 1 = otherwise
Social recognition	Dummy	NBSTATUS	0 = those successful at starting a new business do not have a high level of status and respect, 1 = otherwise
Self-confidence	Dummy	SUSKILL	0 = does not have the knowledge, skill, and experience required to start a new business, 1 = otherwise
Moderating variable			
Gender	Dummy	GENDER	0 = male, 1 = female
Education	Categorical	GEMEDUC	0 = no education, 1 = some degree, 2 = higher education
Control variable			
Age	Categorical	Age7c	1 = 18-25, 2 = 25-35, 3 = 34-45, 4 = 45-55, 5 = 55-65

**Data analysis.** In this study, several analyses were helpful in investigating the factors influencing the launch of a start-up business in Indonesia. For the first objective, a binomial logistic regression and structural equation model partial least square (SEM-PLS) methods were implemented to investigate the factors, by considering the data characteristics. To analyze the parameters of each model, statistical software SPSS 26 was also used, toward building a function for a GLM (generalized linear model) capable of setting up a binomial family with logit transformation. Moreover, Wald *z*-statistics helped to determine the significance of the parameters, with maximum likelihood estimations detecting the logit coefficients representing changes in the log odds of the dependent variable. The correlations of the independent variable were also evaluated and considered unproblematic. In this case, the final models were then selected through the following, (1) the stepwise regression function drop, (2) the Nagelkerke information Criterion, (3) the log-likelihood ratio function, and (4) the Chi-square goodness of fit test. By using the Hosmer and Lemeshow goodness of fit test, the final models were compared to the actual observations, with their analytical suitability subsequently observed.

SEM-PLS was also used to examine the hypothesis through Smart-PLS software (4.0 version), due to its ability to incorporate latent variables and complicated path models (factors) (Quan et al., 2022). This method was more appropriate for the system of interactions between constructs than a dependent factor with a collection of independent variables (Quan et al., 2022). SEM-PLS was also considered a method to minimize the residual variance of the endogenous variable (Hair et al., 2019). Furthermore, a partial least square was selected due to its potential to explain the theory and prediction of human behavior (Hair et al., 2019). This approach was used in wide sampling and replicative variables and did not require a normal distribution of data (Hair et al., 2019). In this analysis, only 300 samples were used to analyze the data, using GEM APS 2018 dataset and modifying the scale to Likert. The data were also examined using the SEM-PLS approach.

Based on the second objective, a fault isolation method was proposed via the Classification and Regression Tree (CART) binary tree (Breiman et al., 2017), which was divided into three parts, namely (1) tree growing, (2) tree pruning, and (3) optimal-tree selection (Breiman et al., 2017). This CART method constructed binary decision trees by iteratively subdividing a provided training dataset into many subsets. The entire input space was also partitioned into mutually exclusive rectangular sections. Moreover, terminal nodes (i.e., external or leaf nodes) were often observed in the trees developed without any child intersections, representing a partition of all the training samples. In this case, the other nodes, except the terminal intersections, were considered internal phenomena containing two child points. From this context, the nodes at the top of the trees were known as the in-root intersections. Regarding the classification trees, each terminal node was found to obtain only one label from a set of class labels.

The benefits of the CART algorithm were summarized as follows (Breiman et al., 2017; Han et al., 2011). Firstly, classifiers were constructed without prior domain knowledge, using only input-output training datasets. This indicated that the multi-variate data obtained from complex target systems were efficiently handled through its divide-and-conquer approach. Secondly, due to the non-parametric nature of the target data, the analysis of the CART algorithm attributes in advance was not required (linear or non-linear). Thirdly, the method was resistant to statistical outliers and incorrectly classified training data. Therefore, the final tree structures and the extracted if-then rules precisely reflected the prediction principles of target issues, leading to a quick grasp of the patterns by which the trees executed categorization operations. In this context, the CART method was applied due to the experimental data.

**Result of estimation and discussion**

**Binomial logistic regression estimation.** In this study, the number of samples in 2017 was 2,500, with the missing data test showing that most of the variables had a percentage below 15%.

**Table 2 Descriptive statistics.**

Variable	N	Min	Max	Mean	SD	Percentage missing
Initiative to launch a start-up	2381	0	1	0.27	0.445	4.8
Income	2367	1	3	2.16	0.736	5.3
Working status	2330	0	1	0.78	0.409	6.8
Fear of failure	2425	0	1	0.55	0.498	3.0
Business opportunity	2197	0	1	0.53	0.499	12.1
Role model	2445	0	1	0.70	0.456	2.2
Social business visibility	2291	0	1	0.76	0.427	8.4
Good career	2340	0	1	0.73	0.446	6.4
Social recognition	2390	0	1	0.81	0.389	4.4
Self-confidence of skill	2427	0	1	0.62	0.486	2.9
Gender	2500	0	1	0.50	0.500	0
Education	2500	1	3	0.78	0.409	0
Age	2500	2	6	3.54	1.276	0

SD is the standard deviation.

**Table 3 Multicollinearity.**

Variable	Tolerance	VIF
Income	0.905	1.105
Working status	0.894	1.118
Fear of failure	0.953	1.049
Business opportunity	0.768	1.302
Role model	0.845	1.183
Social business Visibility	0.907	1.102
Good career	0.897	1.115
Social recognition	0.896	1.116
Self-confidence of skill	0.755	1.325
Gender	0.949	1.054
Education	0.912	1.960
Age	0.983	1.017

Source: Author's data analysis output.

**Table 5 Classification table.**

Observed		Predicted		Percentage correct
		Initiative to launch business		
		No	Yes	
Original data	Initiative to launch business	No	957 38	96.20
		Yes	363 45	11.00
Overall percentage				71.40
Imputation	Initiative to launch business	No	1255 53	95.90
		Yes	428 68	13.70
Overall percentage				73.30

Source: Author's data analysis output.

**Table 4 Goodness of fit test.**

	Final model	
	Original data	Imputation
Omnibus test (sig. level)	0.000	0.000
-2 log-likelihood	1581.854	1952.868
Cox and Snell's pseudo-R-Squared	0.075	0.088
Nagelkerke pseudo R-Squared	0.107	0.129
Hosmer-Lemeshow test (sig. level)	0.274	0.552
Percentage correct	71.40	73.30

Source: Author's data analysis output.

From these results, only one variable had a missing data value of 12%, while the others were below 10%. The average age of the participants was also in the productive category 3, ranging from 25–34 years old. Meanwhile, category 4 had an age range of 35–44 years old, as shown in Table 2.

The binomial logistic regression method was also used because one measure of the dependent variable was binary. However, the multicollinearity test was initially carried out before conducting the binomial analysis. Based on the results, eight independent, three moderating, and one control variables did not contain multicollinearity, with a tolerance value > 0.1 and a variance inflation factor (VIF) < 10, as exhibited in Table 3.

The model's fit was then evaluated using the Omnibus test (significant level), Cox & Snell and Nagelkerke pseudo-R-Squared, Hosmer-Lemeshow analysis (significant level), and the correct classification level. After processing the imputation, the analytical results were obtained and presented in Table 4.

Based on the Omnibus test, significant outputs were obtained ( $p$ -value < 0.01), indicating that the beta coefficient was different from zero and the hypothesis was supported. It also affirmed that the overall model performance was good, although the implemented variables only explained a small part of initiative to launch a new business (pseudo-R-Squared). Regarding the Hosmer-Lemeshow test, the model had a very good fit and was reliable because its value was greater than 0.05. The model developed to determine initiative to launch a start-up business was also quite important, according to the value of Cox & Snell's and Nagelkerke's pseudo-R-Squared.

Table 5 showed the classification representation, which was helpful in presenting the accuracy of the predictor variables on the opportunities of the participants to launch a start-up business or not. In the imputed data column, 1832 (73.30%) of 2500 people were able to be accurately predicted.

In Table 6, the binomial regression illustrated that the household income variables had a positive and insignificant relationship, leading to the rejection of  $H_0$ . However, the second variable from the source of financing, namely current work

capital, had a positive and significant association ( $p$ -value  $< 0.05$ ) with initiative to launch business, proving that  $H_1$  was supported.

Based on the results, the attitude toward behavior tests led to the acceptance of failure fear ( $p < 0.01$ ) and business opportunity ( $p < 0.01$ ). The subjective norm analysis also showed that the role model and social business visibility variables were significant at  $p < 0.01$  and  $p < 0.10$ , respectively. From the aspect of perceived control behavior, only self-confidence of skill was significant at  $p < 0.01$ , while the other two variables, good career and social recognition, were insignificant. For the moderating variable, only education level category 1 (no education) had a positive and significant relationship ( $p < 0.05$ ) with initiative to launch

business in Indonesia. Meanwhile, the control variable had a negative significant association ( $p < 0.05$ ).

**Structural equation model estimation.** According to the SEM-PLS analysis, several processes were implemented to examine the hypothesis through the validity and reliability tests. Some measurements were also observed in SEM, such as Internal consistency and indicator reliabilities, as well as convergent and discriminant validities. For internal consistency, the value of Cronbach's alpha was used in assessing the items of the construct. In this case, various scholars stated that the threshold and acceptable value for Cronbach's alpha was 0.6 (Hair et al., 2021). Besides this, some measurements also required clarification. According to Vătămănescu et al. (2018), the values of various measurements were suggested, namely  $\rho_A > 0.7$ , composite reliability (CR)  $> 0.8$ , and average variance extracted (AVE)  $> 0.50$ . However, Fornell & Larcker (1981) suggested the following analytical values, CR  $> 0.7$  and AVE  $> 0.36$ . Based on these criteria, the constructs of attitude, capital resources, perceived behavioral control, and subjective norm were acceptable for the values of Cronbach's alpha, composite reliability, and AVE, which exceeded the standard coefficients (Table 7).

From the results, discriminant validity was evaluated by comparing the AVE square root for each construct against the inter-construct correlation. In Table 8, all the diagonal elements (square root of AVE) exceeded the inter-construct correlation, and the discriminant validity was acceptable.

To test the significance level, the path relationship of the analysis was tested through the regression coefficient value ( $\beta$ ). This indicated that the significance of the regression coefficient was obtained through the value of  $t$ -statistic or  $p$ -value, by using the bootstrapping process in software. Based on the value of the  $t$ -statistic, the hypothetical outputs were obtained and presented in Table 9. In this case, a hypothesis was supported when the significance was at least at a 95% level.

According to Table 9, capital resource ( $\beta = -0.359$ ,  $t = 3.969$ ), attitude ( $\beta = 0.466$ ,  $t = 5.649$ ), and subjective norm ( $\beta = 0.576$ ,  $t = 4.865$ ) were significant, indicating that the hypotheses were supported. Meanwhile, PBC ( $\beta = -0.052$ ,  $t = 1.102$ ) was insignificant, emphasizing the rejection of the hypotheses. From these

**Table 6 Binomial logistic regression.**

Variable	Final model			Decision (hypothesis)
	$\beta$ (SE)	Wald	Exp (B)	
Capital resources				
Income		0.260		
Income (1)	0.073 (0.152)	0.227	1.075	Rejected
Income (2)	0.031 (0.162)	0.360	1.031	Rejected
Work status	0.293* (0.148)	3.896	1.340	Accepted
Attitude toward behavior				
Fear of failure	-0.239* (0.113)	4.426	0.788	Accepted
Business opportunity	0.445*** (0.128)	12.057	1.561	Accepted
Subjective norm				
Role model	0.446** (0.144)	9.607	1.561	Accepted
Social business visibility	-0.698*** (0.134)	26.972	0.498	Accepted
Perceived control behavior				
Good career	-0.051 (0.132)	0.152	0.950	Rejected
Social recognition	0.130 (0.149)	0.759	1.139	Rejected
Self-confidence of skill	0.755*** (0.137)	30.566	2.128	Accepted
Moderating				
Gender	-0.752 (0.408)	3.394	0.471	Rejected
Level education				
Lev. educ		6.385*		Accepted
Lev. educ. (1)	-0.803 (0.662)	1.474	0.448	Rejected
Lev. educ. (2)	0.265 (0.753)	0.124	1.304	Rejected
Gender*lev. educ		4.983		
Gender*lev. educ (1)	0.685 (0.427)	2.574	1.983	
Gender*lev. educ (2)	0.166 (0.486)	0.117	1.181	
Control				
Age	-0.097* (0.046)	4.525	0.907	Accepted
Constant	-0.491*** (0.691)	0.506	0.612	

SE is standard error. Levels of significance are \*\*\* ( $p < 0.01$ ), \*\* ( $p < 0.05$ ), and \* ( $p < 0.10$ ).

**Table 8 Discriminant validity.**

	Attitude	Capital resources	Initiative	PBC	Subjective norm
Attitude	0.913				
Capital resources	0.585	0.900			
Initiative	0.594	0.398	1.000		
PBC	0.263	0.253	0.143	0.898	
Subjective norm	0.611	0.863	0.536	0.284	0.920

Source: Author's data analysis output.

**Table 7 Validity and reliability.**

	Cronbach's Alpha	$\rho_A$	Composite reliability	Average variance extracted
Capital resources	0.778	0.913	0.895	0.811
Attitude	0.800	0.809	0.909	0.833
Subjective norm	0.821	0.854	0.917	0.846
PBC	0.761	0.764	0.893	0.807

Source: Author's data analysis output.

**Table 9 Path coefficients and results of hypotheses.**

	Path coefficient ( $\beta$ )	Standard deviation	t-statistics	p-value	Decision
Capital resources → Initiative	-0.359	0.090	3.969	0.000	Accepted
Attitude → Initiative	0.466	0.083	5.649	0.000	Accepted
Subjective norm → Initiative	0.576	0.118	4.865	0.000	Accepted
PBC → Initiative	-0.052	0.047	1.102	0.271	Rejected

Source: Author's data analysis output.

**Table 10 Summary of Indonesia CRT developed, 2015–2017.**

Level	2017	2016	2015
1st splitter	OPPORT	OPPORT	OPPORT
2nd splitter	SUSKILL/EDUCATION	SUSKILL	SUSKILL
3rd splitter	NBSOCENT	EDUCATION	KNOWENT

Note: See Appendix 1, CRT decision tree.

results, the path coefficient and SEM-PLS analyses are presented in Appendix 2.

**CRT estimation.** Based on the results, the classification of CRT was observed in the tree diagram (Appendix 1), with the answer of the targeted participant being “Yes”, as shown in Table 10.

In Table 10, several factors influencing business decisions of Indonesians from 2015 to 2017 were observed. This showed that the most important factor was OPPORT in 2015 and 2017, with business opportunities quite strong toward motivating people to start a new business.

Based on the classification tree having three depths (deliberately limited) each year, the variables forming the optimal representation for both the Yes and No categories were determined and presented in Table 11.

The accuracy of the optimal classification tree was also obtained from the CART test and exhibited in Table 12.

According to Table 9, the highest and lowest total accuracy values were observed in 2016 and 2015, respectively. However, the level of specification was higher in 2015 than in other years.

**Discussion**

This study aimed to examine the modeled variables influencing initiative of people to launch a start-up business. Based on the results, people willingly adopted initiative to a start-up a new business due to the following, (1) being employed and earning income, (2) having a fear of failure, (3) assuming the existence of entrepreneurial opportunities in the future, (4) possessing a role model, (5) exhibiting a social contribution, and (6) being self-confident toward portraying business abilities.

According to a poll study from Gallup, 68% of entrepreneurs assumed that one of the barriers to a new business initiative launch was insufficient personal savings (Badal & Ott, 2015). Lingelbach et al. (2011) also showed that the main source of financing to launch business originated from personal pockets. In Bygrave (2003), 87% of the decisions to a start-up a new business originated from the closest sources in developing countries, such as relatives and friends. In Indonesia, most people often depended on the income set aside from their place of work. Regarding the status of being a worker, the participants in this present study were better prepared to operate a new business by capitalizing on their work savings.

Based on attitude toward behavior, the effect of failure risks in launching a new business was very strong and negative. This

indicated that the higher perception of people about failure fear led to a stronger urge to not establish business. These results aligned with (Bakar et al., 2017; Liñán et al., 2011; Thomas & Mueller, 2000; Weber & Milliman, 1997). Furthermore, the ability to read the good market opportunities motivating people toward launching a new business was quite reasonable. This reason influenced initiative of the participants to establish an enterprise. From these results, both variables under the attitude toward behavior affected business establishment decisions of Indonesians, compared to the experience in Saudi Arabia (Bakar et al., 2017).

In Indonesia, role models were highly considered in generating initiative to launch a start-up business. This demonstrated that many large-scale entrepreneurial media were presently operated by the young generation, such as Gojek, Bukalapak, Tokopedia, etc. These results were consistent with the facts in Indonesia, where role model was a reason to enter business world. Moreover, social business visibility influenced initiative of people in starting a new business. This was in line with Leković et al. (2018) on several Southeast European countries. In Indonesia, high unemployment at a young age was a reason most participants observed social sensitivity, to contribute or absorb productive workers searching for work.

Based on the results, starting a new business was challenging for many Indonesians, due to a prevailing perception persisting until the present. This led to the continuous aspirations of most undergraduates, as primary goals, to pursue careers as civil servants or employees in state-owned enterprises (SOEs). From this context, the results obtained validated the phenomenon dwelling among Indonesians. The high environmental recognition or respect for success also caused a high desire to launch a new business, as evidenced in the study hypothesis. However, recognition was no longer valid in the case of Indonesia. This result was quite different from Liñán et al. (2011) and was supported by Bakar et al. (2017), Ali & Jabeen (2022), and Al-Mamary & Alraja (2022).

According to perceived behavioral control, only self-confidence of skill significantly impacted initiative to launch business. This indicated the necessity of identifying personal potential, including the assessment of skills and determination of their related business toward effective application. The possession of relevant experience and expertise aligning with the interests of the selected business was also crucial in expediting success. These results were supported by Bakar et al. (2017), Leković et al. (2018), and Shabir & Ali (2021). Furthermore, the decision tree diagram showed that business opportunity greatly influenced the decision to launch a start-up business in the next three years, namely 2015, 2016, and 2017. These situations were observed in the previous few years, with Indonesian SMEs experiencing significant growth. In productive ages, the average entrepreneur was also mushrooming in various cities within the country. This aided the suspicions that the 2015–2017 high business opportunity motivated initiative of the participants to launch a start-up business in the future.

In the second layer of the decision tree, self-efficacy was a determinant for individual decisions in starting a new business in the future. Despite this, self-confidence in personal abilities was



**Table 11 Independent variable importance.**

2015		2016		2017	
Variable	Score (%)	Variable	Score (%)	Variable	Score (%)
OPPORT	100	OPPORT	100	SUSKILL	100
SUSKILL	92.4	SUSKILL	99.4	OPPORT	85.3
KNOWENT	41.4	KNOWENT	65.2	KNOWENT	71.1
FEARFAIL	16.4	EDUCATION	24.3	NBSOCENT	23.6
WORKSTATUS	10.2	NBSOCENT	20.2	EDUCATION	20.5
NBGOODC	6.9	NBGOODC	13.6	FEARFAIL	11.9
EDUCATION	3.8	FEARFAIL	12.0	NBGOODC	0.5
HOUSE_INCOME	2.0			NBSTATUS	0.0
NBSOCENT	1.1				
NBSTATUS	0.8				
AGE	0.6				
GENDER	0.5				

Source: Author's data analysis output.

**Table 12 Optimal-tree classification.**

Observed		Predicted		Total
		Initiative to launch business		
		No	Yes	
2015 Initiative to launch business	No	5096	1932	7028
	Yes	1369	1979	3348
The total error rate				31.8%
The total level of accuracy				68.2%
Sensitivity				72.5%
Specificity				59.1%
2016 Initiative to launch business	No	4657	117	4774
	Yes	1627	157	1784
The total error rate				26.6%
The total level of accuracy				73.4%
Sensitivity				97.5%
Specificity				8.8%
2017 Initiative to launch business	No	2323	64	2387
	Yes	811	81	892
The total error rate				26.7%
The total level of accuracy				73.3%
Sensitivity				97.3%
Specificity				9.1%

Source: Author's data analysis output.

still a determinant of young people decisions in Indonesia. This proved that the analyzed experience and skills did not necessarily require perfect exposure and abilities. From these results, most of the participants depended on the experience obtained during training and as employees in previous workplaces. Therefore, their existing experience and skills encouraged the launch of a start-up business in the country.

Based on the structural equation modeling analysis, several hypotheses were supported. This indicated that TPB framework, such as subjective norms and attitude, was significant toward initiative to launch a start-up business, leading to the acceptance of the proposed hypothesis. Meanwhile, perceived behavioral control was rejected in the establishment of a new enterprise. These results aligned with Al-Mamary & Alraja (2022) and Ali & Jabeen (2022), where the construct of TPB (attitude, subjective norm, and perceived behavioral control) successfully predicted entrepreneurship intention in the young generation. In this study, perceived behavior control was also insignificant, implying that locus control, or the ability to exert stability over behavior of Indonesians, required effort and challenges during the early stages of establishing a company.

From these results, the COVID-19 pandemic subsequently spurred SMEs to reconsider their core strengths, explore new possibilities, as well as intensely and promptly redefine

sustainable business models. During this period, the strategic ambidexterity in shorter cycles, measuring balance, and building innovation emphasis was not only confined to SMEs. This indicated that in using innovative technology within business models, the development of new capabilities and knowledge, as well as professional experience expansion were critical long-term regional improvement necessities. Since SMEs had survived this difficult period and other crises, their potential to adopt new technology and possess more competitive development was presently possible.

**Conclusion and limitation**

Based on the results, a start-up business in emerging economies generally encountered challenges capable of affecting their operations during this period (Salamzadeh & Kesim, 2017). This indicated that several crises, including the COVID-19 pandemic, presented both challenges and opportunities for business sector and SMEs (OECD, 2020). In this case, a start-up should prioritize various aspects of their operations to effectively engage with business environment. Specific challenges, business opportunities, and self-efficacy should also be encountered during several crises, such as the COVID-19 pandemic (Popkova et al., 2022). Therefore, this study identified the factors influencing the decision to launch a start-up business in Indonesia. The results obtained were also valuable for the people seeking to initiate a start-up business in the country, considering the challenges and opportunities arising in uncertain conditions such as the pandemic outbreak.

From these results, several variables, such as household income, attractive career, social recognition, and education level, were irrelevant to initiative of launching a start-up business in Indonesia. Meanwhile, most TPB-related variables exhibited entrepreneurial relevance toward business establishment. Even in the CART analysis, various determinants were observed, such as business opportunities, self-efficacy, and role models. The success of these determinants significantly determined the individual initiative to launch business in the future. This was confirmed by the odd ratio and important variable in the first and third tests, respectively. However, business opportunity was a variable that became the main consideration when opening a new business in Indonesia, according to the consideration of people.

Based on the study methods, the information only largely obtained from the secondary data or larger national population survey data of GEM was used (Ahmad et al., 2014; Kwon & Arenius, 2010). Therefore, future reports should implement other approaches in analyzing the measurements correlating with the

factors influencing the launch of a start-up in Indonesia. The reports should also address SMEs adoption, as well as the implementation of digital technologies and challenges. From these results, the present situation of the COVID-19 pandemic presented challenges and opportunities to entrepreneurs in the next industrial revolution, accompanied by the maximization of cutting-edge technology roles.

### Data availability

The data can be accessed on this link: <https://doi.org/10.7910/DVN/YV1MH1>. For analysis, that supporting this study's findings are available on request from the corresponding author.

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