Research article

# Predicting entrepreneurial intention and economic development: A cross-national study of its policy implications for six ASEAN economies

Thanaphol Virasa, Krisakorn Sukavejworakit [*], Triyuth Promsiri

*College of Management, Mahidol University, Bangkok, Thailand*

A B S T R A C T

In this study, entrepreneurial intentions (EI) among individuals in six ASEAN (Association of Southeast Asian Nations) countries (Vietnam, the Philippines, Indonesia, Thailand, Malaysia, and Singapore) were investigated by applying the theory of planned behavior (TPB) to understand the underlying predictors of EI among three different stages of economic development. To investigate the predictors of EI according to TPB, the datasets of 13,358 respondents from the Global Entrepreneurship Monitor (GEM) national teams were analyzed using a binary logistic regression (BLR) model for each country, which was then grouped concerning the status of national economic development to compare the differences. The GEM datasets showed that attitude towards behavior (ATB) was highest in the Philippines (ATB1 = 81.8, ATB2 = 78.1), the *subjective norm* (SN) was highest in Vietnam (SN1 = 86.8), and Indonesia (SN2 = 69.2), the *perceived behavioral control* (PBC) was highest in the Philippines (PBC1 = 66.2) and Thailand (PBC2 = 47.3), which predicted that the Philippines, Indonesia, Thailand, and Vietnam have the highest EI amongst this group of six ASEAN nations. Furthermore, the analysis used multi-variables to predict EI, showing that the predictors influencing EI in *factor-driven economies* (Vietnam and Philippines) are only *subjective norms* (SNs) and PBC. However, predictors which influence the EI in *efficiency-driven economies* (Indonesia, Thailand, and Malaysia) and *innovation-driven economies* (Singapore) are ATB and SNs. The results strongly support that PBC can be the best predictor of EI for ASEAN adult populations (ages 18–64). These findings potentially give government and private sectors an advantage in policy management for new business creation concerning each stage of economic development for each respective nation.

## 1. Introduction

A global chorus of individual scholars and international reports has recognized the growing importance of how entrepreneurship provides job creation, increased national productivity, international competitiveness, quality of life improvement, and the achievement of community goals (Jena, 2020). Also, this perception is an essential driver of many nations' economic prosperity (Reynolds et al., 2005) and an established goal for student aspirations (Malaysian Education Development Plan, 2015).

Furthermore, economic development and new venture creation go hand-in-hand in many ways, as together jobs and wealth are created, and innovation is promoted, leading to increased consumer choices and export growth. A new business venture needs time for planning, consideration, and cognitive processing (Kirkley, 2016). Failure in any of these steps of the entrepreneurial process might lead to failure in business venturing. As such, the government in many countries has widely

recognized the importance of entrepreneurship to improve the country's economic situation and supported mechanisms for stimulating national entrepreneurship.

In recent years, numerous cross-national studies of *entrepreneurial intentions* (EI) have been conducted (Iakovleva and Kolvereid, 2009; Kaya et al., 2019; Moriano et al., 2012; Rieger et al., 2021; Solesvik, 2017, 2019; Ward et al., 2019). While these studies have explored cross-border EI differences, few scholars have investigated how these differences affect the type of development status each nation utilizes (Reynolds, 2017). Therefore, we adopted research from the *Global Entrepreneurship Monitor* (GEM) to identify which ASEAN nation is using *factor-driven*, *efficiency-driven*, or *innovation-driven* EI development processes (Iakovleva and Kolvereid, 2009; Iakovleva et al., 2011; Reynolds et al., 2005; Singer et al., 2014, 2015, 2018).

In addition, the environmental context differs significantly among the stages of economic development. One might anticipate these country

differences to be reflected in EI and their antecedents among nations experiencing different economic development stages.

Moreover, ASEAN economies are known for their vibrant and growing economic activities, creating new opportunities for many nascent entrepreneurs. Since the ASEAN Economic Community (AEC) introduction in 2015 and the execution of the AEC Blueprint 2025 (Itakura, 2017), better economic integration has emerged, stimulating intra-regional trade. Ever-increasing investments amongst these emerging economies, such as Indonesia and Vietnam, have contributed significantly to regional economic growth. Therefore, new business creation has been addressed as a policy agenda for stimulating economic growth.

Interestingly, a recent GEM report from 2018/2019 showed that entrepreneurial activities indicated by *total early-stage entrepreneurial activity* (TEA) ranged from 14.1% to 19.7% of the adult populations (ages 18–64) in the efficiency-driven economies such of Indonesia and Thailand (Bosma and Kelley, 2019). However, entrepreneurial activities in the ASEAN context are influenced by different social and cultural norms and institutional factors and conditions (Xavier et al., 2016). It requires an understanding of the underlying predictors of EI under different stages of economic development. Moreover, more research is needed to understand better factors and conditions associated with how entrepreneurial individuals intend to create and open a new business.

Heeding the call for comparative EI research, we investigated EI among individual entrepreneurs across six ASEAN member economies of Vietnam, the Philippines, Indonesia, Thailand, Malaysia, and Singapore. Our study investigates the differences or similarities in intentions and their antecedents. In so doing, we applied the *Theory of Planned Behavior* (TPB) (Ajzen, 1991, 2001, 2002; Soran et al., 2019; Tornikoski and Maalaoui, 2019), which theorizes that attitudes towards behavior, subjective norms, and perceived behavioral control determine intentions. Finally, the study focuses on investigating the underlying predictors of EI among the three different stages of economic development in the ASEAN context. This potentially can lead to policy implications for new business creation concerning each stage of economic development.

Therefore, the remaining structure of this paper entails a literature review about EI predictors, TPB applications at the national level, and multiple cross-country GEM research reports. After that, we formulate the hypotheses. Next, in the methodology section, we describe the measures and the sample datasets used in the analyses. Third, we lay out the details of the research design with supporting theory. Fourth, the presentation of key findings is presented from which the policy implications are highlighted.

## 2. Literature review

### 2.1. Entrepreneurial intention (EI) and its predictors

*Various scholars have defined Entrepreneurial Intention* in different ways, with one common precept being that EI is one's willingness to start a business or become self-employed (García-Rodríguez et al., 2015; Krueger et al., 2000; Reynolds et al., 2005). Also, some individuals prefer hiring staff to run their start-up or purchase an existing business and its associated staff and thereby become a business owner. Ajzen (1991) has noted that intentions to behave were an estimate of one's motivation to behave, with various social-psychological studies assuming that intention is the best predictor of actual behavior. Therefore, once EI formation happens, actual entrepreneurial behavior can be predicted.

Also, the *Theory of Planned Behavior* (TPB) can be a valuable tool to entrepreneurs for multiple reasons. Firstly, entrepreneurship is typically viewed as a planned behavior that does not happen spontaneously (Krueger et al., 2000; Walker et al., 2013). Secondly, TPB includes the roles of informal institutions through subjective norms inclusion. Spencer and Gomez (2004) have also suggested that subjective norms can be a good indicator of societal impressions concerning entrepreneurial activity. Thirdly, TPB has been proven effective across several behaviors

(Ajzen, 2001; Krueger et al., 2000). Finally, it has also been suggested that entrepreneurship be combined with institutional or environmental factors and existing entrepreneurial TPB models (Lortie and Castogiovanni, 2015).

Furthermore, TPB intentions have been identified with three antecedents, including the *attitude towards behavior* (ATB), *subjective norms* (SN), and *perceived behavioral control* (PBC). ATB measures how attractive the behavior is to the individual, SN is the perceived social acceptance and support for the behavior, while PBC refers to an individual's perceived ability to perform a behavior. TPB also implies that intentions can exist with either one or all three antecedents, but the stronger the combined strength, the stronger the intention (Ajzen, 1991).

Iakovleva et al. (2011) has also used the TPB model to compare and predict EI and its antecedents amongst 2,225 students in nine developed countries and five developing countries. The results indicated that the surveyed participants from developing countries had stronger EI than individuals in developed countries. It was also noteworthy that the developing countries' respondents also scored higher on TPB's EI antecedents than respondents from developed countries.

In Thailand, Yukongdi and Lopa (2017) investigated eight EI determinants on a university sample of students and determined that three personality characteristics (tendency to take a risk, job security, and achievement) significantly influenced EI and were more influential than situational factors. Personality and situational factors affect EI, personal achievement, and social welfare (Kim and Park, 2019). In Vietnam, Dao et al. (2021) extended the TPB model by investigating antecedents of predicting factors of EI such as expected value, normative belief, perceived risks, and perceived self-efficacy and tested the extended model with the Vietnamese students.

Recently, longitudinal setting studies have been explored to link antecedents and EI to the start-up behavior of nascent entrepreneurs (Jordaan, 2014). One such study from Delanoë-Gueguen and Liñán (2019) revealed that career motivation might directly impact the likelihood that EI is transformed into an honest endeavor and entrepreneurial action. Also, the results from Joensuu-Salo et al. (2020) indicate that over time, both high and low levels of EI remain a stable construct. Role models also significantly influence in the prediction of entrepreneurial behavior.

### 2.2. Economic development and entrepreneurship

The role of entrepreneurship in small and growing firms and its contribution to job creation and economic development has been recognized since the provocative findings of David Birch's research in 1979, 1981, and 1987 (Neumark et al., 2011). Since then, many scholars have started exploring the effects of entrepreneurship on job creation and economic development (Verheul et al., 2001; Wennekers and Thurik, 1999). However, empirical studies are limited, especially those delving into the econometric link between national economic growth and new firm start-up entrepreneurship. Also, further research is encountered due to the multi-dimensional concept of entrepreneurship and the complexity of gathering and measuring national-level entrepreneurship data. Entrepreneurship macro measurement needs to operationalize entrepreneurship as multi-dimensional concepts from methodologies conceptualized at the micro-level.

However, Wennekers and Thurik (1999) constructed an operational framework connecting economic growth and entrepreneurship at different levels with a myriad of effects. The authors then highlighted the entrepreneur's multiple roles beyond that of the innovator and outlined how an entrepreneur's general innovation role includes the implementation of new inventions and new start-ups and entries into new markets.

Wong et al. (2005) has also added from their analysis of the GEM 2002 data that only entrepreneurship with high growth potential had a significant effect on economic growth, as new and fast-growing developing country *small and medium enterprises* (SMEs) represented the majority of that nation's ability to create new jobs. Teixeira et al. (2018) also

used the GEM data to analyze EI and entrepreneurship in 22 countries of the European Union and found that perceived capacity is the primary determinant of EI.

As we have seen thus far, multiple researchers over multiple decades have used data from the GEM research program as a foundation in their studies. Reasons for this are that GEM collects longitudinal data on entrepreneurial activity and related variables in various countries. Moreover, *entrepreneurial planned behavior* is signified by the three types of entrepreneurial activity, including *total entrepreneurial activity* (TEA), *opportunity-based entrepreneurial activity*, and *necessity-based entrepreneurial activity* (Reynolds et al., 2005).

Moreover, GEM research produces an economic growth conceptual model in each nation it targets and a national-level dataset divided into three levels of stages of economic development. These include the *factor-driven stage*, the *efficiency-driven stage*, and the *innovation-driven stage*.

The GEM studies also show that EI differs widely across different stages of economic development, with individuals' EI tending to be higher within a factor-driven economy. Speculation is that there are fewer attractive job alternatives and more necessity-based entrepreneurs than opportunity-based entrepreneurs. Meanwhile, in innovation-driven and efficiency-driven national economies, individuals' intention seems to be typically lower.

Another study using GEM data was conducted by Walker et al. (2013), in which the authors attempted to evaluate the relationships between country-level entrepreneurial activity and an individual's perceived abilities, their SN, and their intention to pursue entrepreneurship. Also, Walker et al. (2013) applied the theory of planned behavior (TPB) in the GEM conceptual model with the EI data from 43 countries. The results confirmed that the antecedents of TPB indeed impact the EI, which also affects the country-level entrepreneurial activity.

## 3. Research design

Initially, we set out to answer two research questions. They were:

1) Are there any EI predictors among the three different stages of economic development in the ASEAN context?
2) What should policymakers consider in encouraging new business creation concerning each stage of economic development?

To address the first issue, we applied Ajzen's (1991) TPB model, operationalized with variables from the GEM research to predict EI. In the TPB model of this research, EI is acting as the *dependent variable*, which is further defined as the *intention to start a new business*. According to the TPB model, EI is predicted by three *independent variables*. These include *attitude towards behavior* (ATB), *subjective norms* (SN), and *perceived behavioral control* (PBC).

### 3.1. Ethics statement

During this study, no humans were involved in field or lab experiments at any time. The primary data used in the analysis of this research were obtained from public sources with the permission of the GEM global team and participating national teams. *Adult Population Survey* (APS) datasets and *Entrepreneurial Framework Conditions* (EFCs) were downloaded from the GEM website available at https://tinyurl.com/ynzzhz4p.

### 3.2. Attitude towards behavior (ATB)

A good definition of an entrepreneur is someone who creates, manages, and takes responsibility for an organization or business. An entrepreneur is an innovator and an opportunist because of their willingness to attempt things that have not previously been explored (Bonnett and Furnham, 1991). A unique characteristic of being an entrepreneur is taking personal financial risks while pursuing direct benefits from potential business success. Entrepreneurs take challenges and risks, while

most individuals prefer to be employees instead (Iyigun and Owen, 1997). According to de Pillis and Reardon (2007), risk-taking entrepreneurs do so for the chance of gaining wealth, independence, and a feeling of accomplishment.

Based on the cognitive model, attitudes and beliefs predict intentions and behaviors, with personal perceptions of entrepreneurship affecting an individual's consideration in opening a business. Interest affects individuals' intention towards specific activities and influences their behavioral tendencies and skills. Therefore, it is likely that interest will be a significant predictor of career-related behaviors, including entrepreneurship (Kelley et al., 2016).

Also, complex activities, such as starting a new enterprise, results from an individual's cognitive processes. Individuals also need to consider how their entrepreneurship endeavor will affect their future and decide if the risks are worth the perceived rewards. Therefore, as Segal et al. (2005), it is unreasonable to expect individuals to pursue outcomes that they perceive as unfeasible or undesirable.

Furthermore, social psychologists have argued that perception influences behavior since perception can guide actual behavior. When an individual perceives information, it leads to the social knowledge activation that corresponds to behavior, which is shaped and guided by their knowledge being activated by perception (Ferguson and Bargh, 2004). Entrepreneurs are also individuals who exhibit high needs for achievement because of entrepreneurial jobs (Miner et al., 1994). Entrepreneurs believe that the need for achievement produces greater satisfaction than is achievable in other kinds of jobs (de Pillis and Reardon, 2007).

Therefore, attitude towards behavior (ATB) as a predictor of EI is interpreted in this research as the '*attractiveness*' of performing a behavior, with the *attractiveness* of becoming an entrepreneur and creating a new enterprise operationalized through the perception that being an entrepreneur is a desirable career choice (ATB1) and the perception that successful entrepreneurs have high status (ATB2). ATB1 is measured by the *nbgoodc* variable in the GEM national dataset that indicates whether being an entrepreneur is a desirable career choice, while ATB2 is measured by the *nbstatus* variable in the GEM national dataset that gauges whether being a successful entrepreneur bestows high status and respect.

### 3.3. Subjective norms (SN)

Mass media communication has been recognized as a major influential factor in various attitudes and behavior. However, in the entrepreneurship literature, media's effects on social behavior have been almost wholly neglected (Levie et al., 2010). However, mass media communications influence entrepreneurial actions through the values embedded in different cultures. For example, TV business reality programs influence EI directly, with the success stories conveyed in the mass media affecting entrepreneurship participation rates through subjective norms (Klyver and Hindle, 2007).

Furthermore, media communications affect behavior by reinforcing individuals' existing desires and values rather than creating different or new values. It can also provide helpful information about the entrepreneurship-friendly culture. However, its effect on entrepreneurial action is considerably lower than family, friends, or even education and training (Levie et al., 2010). Thus, media in forms such as reality TV can play an essential part in raising awareness, desirability, and future intention to become an entrepreneur.

The relationship between media communication and EI has also been different outcomes within different cultures. One example can be found in research from de Pillis and Reardon (2007), who determined that the relationship between media attention and EI is positive in the US, but not in Ireland. In conclusion, mass media communications can reinforce the audience's existing values and shape or change those values and choose to perform a behavior (de Pillis and Reardon, 2007).

Past studies have also shown that personally knowing other entrepreneurs can play an essential role in shaping individuals' attitudes

towards entrepreneurship (Lafuente and Driga, 2007). This evidence is supported by the finding that role models can induce entrepreneurial competencies (Baron, 2000), as acquaintances and friends can instill the willingness to explore new ideas, research information, and strategies in order to find new business opportunities (Aaboen et al., 2013; Veciana et al., 2005). Thus, role models strongly influence new entrepreneurs by observing their actions and learning how they use their resources in starting new businesses (Fornahl, 2003).

Kirkman et al. (2004) observed that the *theory of social learning* and *role identification* is involved with three interrelated functions. They are (i) providing learning, (ii) motivation and inspiration, and (iii) helping others to define their self-concept vision. Also, role models can provide support and guidance for others (Nauta and Kokaly, 2001), as personally knowing other entrepreneurs can generate a positive attitude towards behavior (Hoang and Yi, 2015).

Moreover, entrepreneurial role models (ERMs) significantly influence EI (Karimi et al., 2016), with ERMs being the essential socio-cultural factor in entrepreneurship (Fornahl, 2003). Thus, ERMs are an excellent resource for entrepreneurial learning and entrepreneurial inspiration.

Therefore, *Subjective norms* (SN) as a predictor of EI has been referred to as the *perceived societal pressure, including family and relatives*, to perform a behavior operationalized through seeing media exposure of successful entrepreneurs (SN1) and the perception of knowing other entrepreneurs (SN2). The GEM research project measures the pressure from society through the *nbmedia* variable and the *knowent* variable. *Nbmedia* is a measurement that gauges the influence from the media, while *knowent* measures the influence from other entrepreneurs.

### 3.4. Perceived behavioral control (PBC)

An individual must be competent and have various abilities to play managerial and non-managerial roles in creating a firm (Lazear, 2004). The importance of having the skill to create a new business reflects the perception that each individual has control of their behavior (Ajzen, 2002), with personal skills affecting EI. Therefore, people who feel they have greater entrepreneurial skills are more likely to create a company (Chen et al., 1998), with possessing entrepreneurial skills boosts an individual's confidence in starting a firm (Lazear, 2004).

Previous studies have also reported that individuals with high entrepreneurial self-efficacy view more opportunities than risks due to their belief that they can achieve their goals (Carver and Scheier, 1982). Also, efficacy is associated with a person's belief in utilizing resources and executing crucial entrepreneurial activities (Ballout, 2009). In short, having specific skills and abilities related to entrepreneurship affects individuals' confidence in new firm creation.

Opportunities are also an environmental aspect that is viewed from a particular perspective and is crucial for securing profit-making activities (Lazear, 2004). Therefore, in business creation, entrepreneurs need to identify potentially profitable opportunities. Prior studies have also shown that two theories are often discussed concerning opportunity identification. They are the *discovery* and *creation theori*es (Alvarez and Barney, 2007), with both approaches occurring in entrepreneurial practice. Moreover, identifying opportunities is one factor that distinguishes an entrepreneur from a manager. Empirically, the mechanism for exploiting an opportunity is most often initiated in an entrepreneur's mind, not a manager's mind.

Opportunity-identification skills identify ideas that can be transformed into a valuable business ideas. Previous studies have found that identifying opportunities can influence entrepreneurial behavior, which is also an initial step in the entrepreneurial process (Karimi et al., 2016), with it fully determining the process of decision making regarding becoming an entrepreneur. Finally, an entrepreneur has to have the ability to perceive and exploit opportunities that are often overlooked (Herron and Sapienza, 1992).

Therefore, *Perceived Behavioral Control* (PBC) as a predictor of EI refers to the *'ability to control behavior'* operationalized through the perception of having the required entrepreneurial knowledge and skill to start a business (PBC1) and the perception of having the ability to identify opportunities in the environment (PBC2). The GEM research project measures the ability to control behavior through the *suskills* variable and the *opport* variable in the GEM national dataset. *Suskills* measure whether an individual has the required skill to run a new business, while *opport* measures whether an individual can see opportunities.

### 3.5. Entrepreneurial intention (EI)

Entrepreneurial intention (EI) is the intention to create a new business, with GEM studies measuring EI as an individual's expectation of creating a new enterprise over the next three years, which is operationalized by the *futsup* variable in the GEM national dataset, with the definition excluding those who already have a business. The GEM also reports that EI differs widely across different stages of economic development.

As such, an individuals' EI tends to be higher within a *factor-driven* economy and *efficiency-driven* economy, in which there are fewer attractive job alternatives and a higher percentage of necessity-based entrepreneurs than opportunity-based entrepreneurs. Also, a lower percentage of EI is observed in *innovation-driven* economies.

Finally, the following hypotheses were conceptualized from the combination of the literature review and the study's design process.

Attitude towards behavior (ATB) positively influences EI in six ASEAN economies.

**Hypothesis ATB1**. The perception that an entrepreneur is a desirable career choice positively influences EI (*nbgoodc)*.

**Hypothesis ATB2**. The perception that successful entrepreneurs have high status and respect positively influences EI (*nbstatus)*.

Subjective norms (SN) positively influence EI in six ASEAN economies.

**Hypothesis SN1**. Frequently seeing media exposure of successful entrepreneurs positively Influences EI (*nbmedia*).

**Hypothesis SN2**. The perception of personally knowing other entrepreneurs positively influences EI (*knowent*).

Perceived behavioral control positively influences EI in each of six ASEAN economies (PBC).

**Hypothesis PBC1**. The perception of having the required entrepreneurial knowledge and skill to start a business positively influences EI (*suskill*).

**Hypothesis PBC2**. The perception of having the ability to identify opportunities in the environment positively influences EI (*opport*).

### 3.6. Variables and their descriptive weights

The empirical study identified essential factors that can help estimate an individual's likelihood of intending to open a business venture within three years (potential entrepreneurs) (Krueger and Brazeal, 1994) (Table 1).

### 3.7. Population and data

In this study, due to the fortunate accessibility of a large dataset, we focused on the six countries in the ASEAN economies of Vietnam, the Philippines, Indonesia, Thailand, Malaysia, and Singapore (Table 2).

Moreover, using the *gross domestic product* (GDP) per capita dataset in the GEM 2014 Global report, the six countries can be classified into three different stages of economic development. These are the *factor-driven* economies of the Philippines and Vietnam, the *efficiency-driven*

**Table 1.** Variables and their descriptions and descriptive weights.

| Constructs | Variables | Description |
|---|---|---|
| Entrepreneurial intention (EI) | *futsup* | Do you intend to start a business in the next three years? (0 = No, 1 = Yes) |
| Attitude towards behavior (ATB) | *nbgoodc* | Do most people in the country feel that entrepreneurship is a desirable career choice? (0 = No, 1 = Yes) |
| | *nbstatus* | Do most people in the country feel that successful entrepreneurs enjoy high status? (0 = No, 1 = Yes) |
| Subjective norm (SN) | *nbmedia* | Does one often find stories in the media about successful entrepreneurs? (0 = No, 1 = Yes) |
| | *knowent* | Are you familiar with anyone who has started a business in the past two years? (0 = No, 1 = Yes) |
| Perceived behavioral control (PBC) | *suskil* | Do you believe you have the knowledge, skills, and experience to act entrepreneurially? (0 = No, 1 = Yes) |
| | *opport* | Do you believe that there will be good entrepreneurial opportunities in your area over the next six months? (0 = No, 1 = Yes) |

Source: Adapted from Reynolds et al. (2005).

economies of Indonesia, Malaysia, and Thailand, and the *innovation-driven* economy of Singapore (Singer et al., 2014, 2015).

These six economies vary in size and economic conditions. According to the GEM 2018 Global report (Singer et al., 2018), Vietnam is still in the factor-driven stage, Indonesia has the largest population as well as the largest land area and a high level of SMEs contribution to GDP, and Thailand has the lowest population growth and is attempting to move away from an efficiency-driven phase. Moreover, Malaysia was determined to be making a transition from an efficiency-driven economy to an innovation-driven economy, with support from foreign investments and global linkages driving the national economy. Furthermore, Singapore has the highest GDP per capita, excelling in performance within the public sector. Despite an excellent business environment and infrastructure, the WEF Global Competitiveness Report in 2019 somewhat

surprisingly reported that Singapore continues to lag behind the world's most innovative powerhouses and requires sufficient capacity to innovate (Schwab, 2019).

From the data of the GEM research in 2013 (Singer et al., 2014) and 2017 (Herrington and Kew, 2017), EIs and individuals' attitudes in the six ASEAN countries were measured by the percentage of the population 18–64 years of age. In 2013, the Philippines reported the highest level of EI among six ASEAN economies, with 42.8% of the population 18–64 years of age intending to open a new enterprise within the next three years. In the efficiency-driven phase economies such as Indonesia, Thailand, and Malaysia, EI showed an increasing trend from 2013 to 2017 (Figure 1). However, Singapore, which posits an innovation-driven phase of economic development, showed the lowest level of EI among the six ASEAN economies.

**Table 2.** Economic profiles of the study's six ASEAN economies.

| | Vietnam | Philippines | Indonesia | Thailand | Malaysia | Singapore |
|---|---|---|---|---|---|---|
| Population (million) | 91.7 | 99.4 | 257.6 | 68.0 | 30.3 | 5.6 |
| GDP (billion US dollars) | 191.5 | 284.9 | 859.0 | 395.0 | 296.2 | 297.0 |
| GDP per capita (US dollars) | 1,980 | 2,865 | 3,440 | 5,620 | 10,570 | 52,961 |
| SMEs contribution to GDP (%) | 40.0 | 30.0 | 57.0 | 37.4 | 35.9 | 48.0 |
| World Bank ease of doing business rank | 82/190 | 60/100 | 91/190 | 46/190 | 23/190 | 2/190 |
| WEF competitiveness rank | 60/138 | 47/140 | 41/138 | 34/138 | 25/138 | 3/138 |
| 2014 Economic phase | Factor driven | Factor driven | Efficiency driven | Efficiency driven | Efficiency driven | Innovation-driven |

*Sources.* The data for Vietnam, Indonesia, Thailand, and Malaysia were collected from country profiles in Singer et al. (2018) on pages 66, 78, 95, 100. The data for the 2014 Economic Phase came from Singer et al. (2014) page 11. The data of the Philippines were collected from Kelley et al. (2016) page 96.
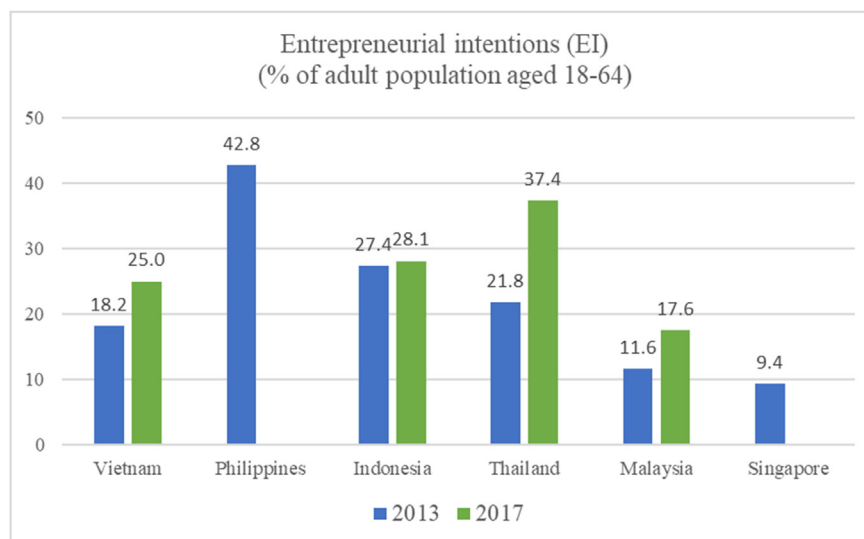


**Figure 1.** EI among six ASEAN economies in 2013 and 2017. *Note.* All data in igures 1, 2, 3, 4, and 5 can be selected and obtained at https://tinyurl.com/2p9d3avj. Sources (Kelley et al., 2016; Singer et al., 2014, 2018).
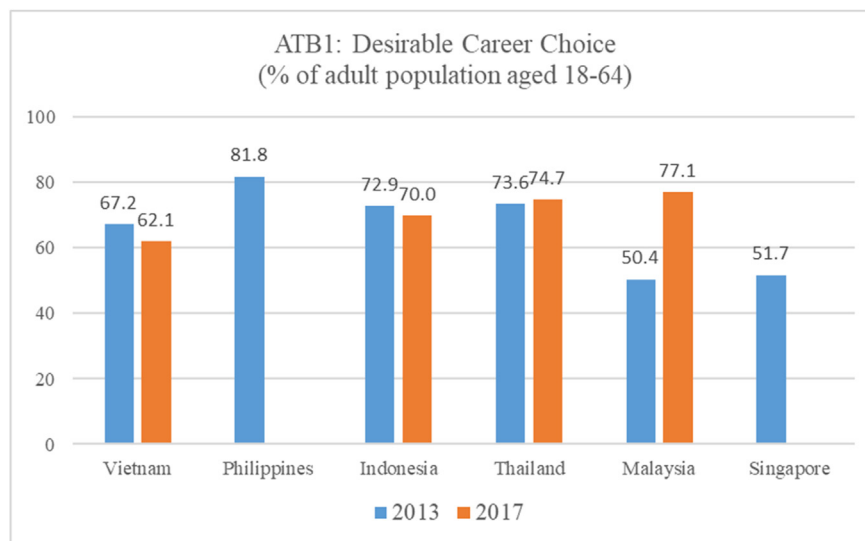
**Figure 2.** ATB1 among six ASEAN economies. *Note.* All data in igures 1, 2, 3, 4, and 5 can be selected and obtained at https://tinyurl.com/2p9d3avj. Sources (Kelley et al., 2016; Singer et al., 2014, 2018).
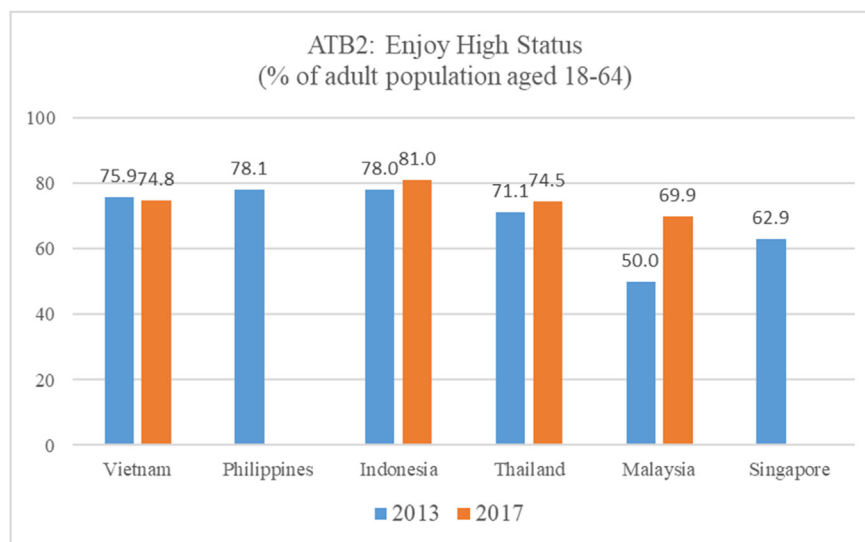


**Figure 3.** ATB2 among six ASEAN economies. *Note.* All data in igures 1, 2, 3, 4, and 5 can be selected and obtained at https://tinyurl.com/2p9d3avj. Sources (Kelley et al., 2016; Singer et al., 2014, 2018).

Moreover, *attitude toward behavior* (ATB1 and ATB2) showed higher levels in the Philippines, Vietnam, Indonesia, and Thailand than Malaysia and Singapore (Figure 2 and Figure 3). Subjective norms (SN1) showed very high levels of a social support environment in all countries except Malaysia, which was moderate (Figure 4). *Perceived behavioral control* (PBC1) also showed moderate levels, which decreased over time (from 2013 to 2017), except in Malaysia (Figure 5).

Also, we determined that most of the adults surveyed (70–80%) in the six ASEAN economies had a good attitude toward entrepreneurial activities and high social support in engaging in entrepreneurial activities. However, 20–30% of the adult population perceived no knowledge, skills, or acting experience. Interestingly, PBC1 does not increase over time, implying that basic national infrastructure, such as training and education and other EFCs in the GEM conceptual model, has not affected adult people's entrepreneurial capacity in the six ASEAN economies.

The data used for the analysis of predicting factors of entrepreneurial intention was obtained from the GEM national team datasets in 2013, which is the total number of individual datasets from six selected ASEAN economies. As such, we used the datasets from the GEM website concerning the APS data at the individual level for the year 2013, which included a total of 15,363 observations. Furthermore, observation factors that had missing data were eliminated during the purification process, and any existing entrepreneurs already participated in any entrepreneurial activity stage.

After cleaning the datasets, the final size of the population for our research was 13,358 individuals. Broken out by country, this included 1,736 in Vietnam, 1,901 in the Philippines, 4,414 in Indonesia, 2,216 in Thailand, 1,816 in Malaysia, 1,275 in Singapore. Since the outcome is a categorical variable with only two outcomes (yes, I intend to start a business, or no, I do not intend to start a business), we used *binary logistic regression* to test the hypotheses by putting the dependent variable in the dependent box and all the other independent variables (including dummy variables) into the covariates box. The omnibus test of model coefficients uses the chi-square test to evaluate the improvement of the
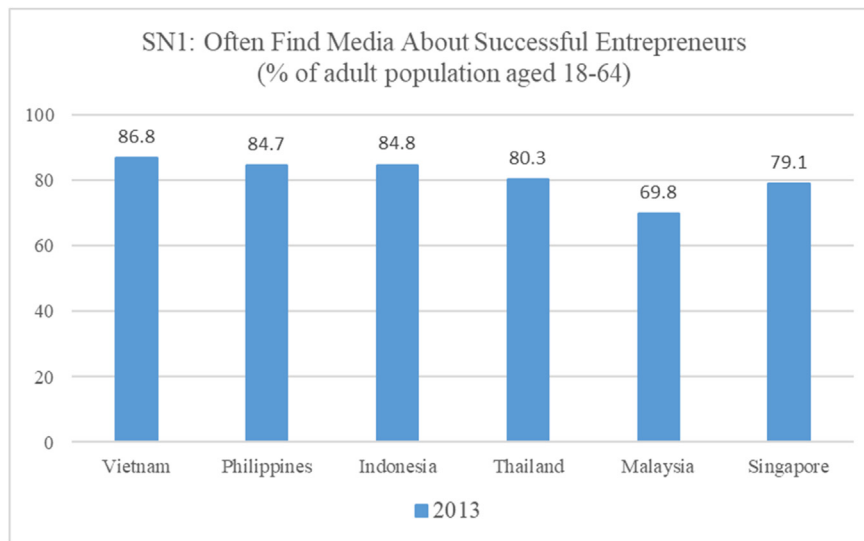
**Figure 4.** SN1 among six ASEAN economies. *Note.* All data in igures 1, 2, 3, 4, and 5 can be selected and obtained at https://tinyurl.com/2p9d3avj. Sources (Kelley et al., 2016; Singer et al., 2014, 2018).
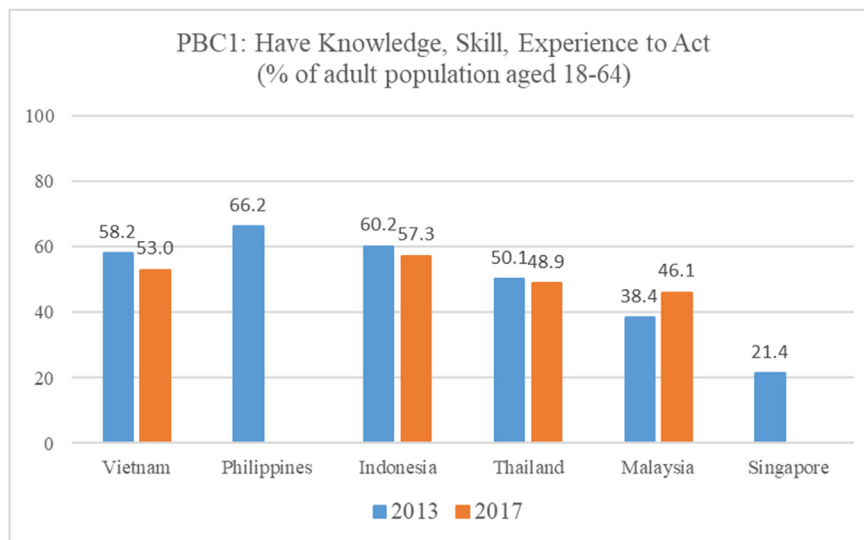


**Figure 5.** PBC1 among six ASEAN economies. *Note.* All data in igures 1, 2, 3, 4, and 5 can be selected and obtained at https://tinyurl.com/2p9d3avj. Sources (Kelley et al., 2016; Singer et al., 2014, 2018).

new model (with explanatory variables included) over the baseline model. If $p \leq 0.05$, then the new model explained more of the variance in the outcome, which is an improvement.

The pseudo-$R^2$ values for the entire model report approximately how the model explains many variations in the outcome. In this research, we used Nagelkerke's (1991) coefficient of determination $R^2$, which suggested that the model explains 13.2% for the Philippines, 18.2% for Vietnam, 19.4% for Indonesia, 14.9% for Thailand, 18.6% for Malaysia, and 18.7% for Singapore of the variation in the outcome.

## 4. Results and discussion

The GEM research measured EI as a person's expectation of opening a new enterprise within the next three years, with the EI variable captured by the item label *futsup*. *Attitude towards behavior* (*ATB*) reflects a person's perception of the desirability or attractiveness of becoming an entrepreneur and refers to the reason or motivational roles to form an intention to act that leads to valued outcomes. Moreover, ATB reflects an individual's awareness of a favorable or unfavorable evaluation of performing a behavior, which is operationalized through the two-item measurements of *nbgoodc* and *nbstatus*. As such, *nbgoodc* is a variable that measures whether being an entrepreneur is a desirable career choice, while *nbstatus* is a variable that measures whether being a successful entrepreneur involves high status and respect.

*Subjective norms* (*SNs*) represent a person's perception of social pressure to perform or behavior avoidance. SN also refers to the perception that references people, such as family members, relatives, or the society, which approve an individual to become an entrepreneur (Ajzen, 1991). In other words, SNs act as a mechanism to either encourage or discourage EI. In this research, SNs are operationalized through two measurements, including *nbmedia* and *knowent*. Therefore, *nbmedia* is used to measure the perception of individuals often seeing media exposure of successful entrepreneurs, while *Knowent* is used to measure whether the respondents know other entrepreneurs personally.

*Perceived behavioral control* (*PBC*) measures the perception of having the skills and ability to control behavior. PBC is operationalized through

**Table 3.** Predictors of EI in the factor-driven economy (Vietnam and the Philippines).

| Predictors | Variables | Vietnam | | | Philippines | | |
|---|---|---|---|---|---|---|---|
| | | β | S.E. | Sig. | β | S.E. | Sig. |
| ATB | ATB1 (nbgoodc) | .087 | .122 | .475 | -.011 | .142 | .936 |
| | ATB2 (nbstatus) | .168 | .153 | .272 | .006 | .122 | .959 |
| SN | SN1 (nbmedia) | .361 | .163 | .027* | .381 | .154 | .013* |
| | SN2 (knowent) | .628 | .130 | .000* | .482 | .104 | .000* |
| PBC | PBC1 (suskill) | .482 | .124 | .000* | .989 | .126 | .000* |
| | PBC2 (opport) | .365 | .119 | .002* | .330 | .107 | .002* |
| | Constant | -.307 | .501 | .540 | -2.090 | 1.035 | .044 |

**Notes.** β = probability of Type II error in the hypothesis test, S. E. = standard error, Sig. = significant at *$p \leq 0.05$.

two measurement items, including *suskill* and *opport*, with *subskill* used to measure whether the survey's participants have the knowledge, skill, and experience to start a new business. In contrast, *opport* measures whether the respondents can see future opportunities.

### 4.1. Survey results

To investigate the predictors of EI according to TPB, a binary logistic regression model of each country was conducted and grouped concerning the status of national economic development. Table 3 shows the binary logistic regression models of predictors and EI in the factor-driven economies of Vietnam and the Philippines. In Vietnam and the Philippines models, when a significance factor of $p \leq 0.05$ was used, the hypotheses concerning attitude toward ATB1 and ATB2 were not supported. Therefore, it can be interpreted that ATB is not a good predictor of EI in factor-driven ASEAN economies. However, the hypotheses concerning SN and PBC as predictors of EI were supported in both countries, with SN and PBC determined to be good predictors of EI in factor-driven ASEAN economies.

The BLR testing of the efficiency-driven economies of Indonesia, Thailand, and Malaysia is shown in Table 4. All hypotheses are supported at the 0.05 significance level except SN1 in Indonesia. In Thailand and Malaysia, the hypotheses of ATB1 and ATB2 are not supported as the ATB is not a good predictor of EI in Thailand and Malaysia. All hypotheses of SNs and PBC are supported in both countries except SN2. Thus, PBC can be a good predictor of EI in all three economies in an efficiency-driven phase.

In the innovation-driven economy of Singapore, the hypotheses of ATB1, SN2, and PBC are supported (Table 5). Only the hypotheses of ATB2 and SN1 are not supported. Like other ASEAN economies, PBC can be a good predictor of EI in Singapore.

Overall results for the hypotheses testing in each national economy are presented in Table 6. In factor-driven economies in ASEAN such as Vietnam and the Philippines, the result shows that ATB is not a good predictor of EI, while SNs and PBC are good predictors of EI. In the efficiency-driven economies of Thailand and Malaysia, there are similar results but slightly different from Indonesia's results. Furthermore, in Thailand and Malaysia, SN1, PBC are good predictors of EI. People who frequently see media publications of successful entrepreneurs are more likely to start a new business in Thailand and Malaysia than those who do not. In Singapore, ATB1, SN2, PBC elucidate the prediction of EI. Finally, the overall findings reveal that PBC can predict the EI of adult populations between 18-64 in all six ASEAN economies.

To explain the findings from the hypothesis testing, the entrepreneurial context in all six economies was investigated using the GEM's entrepreneurial framework conditions (EFCs). The contextual factors are represented by a set of EFCs comprising financial conditions, government policies and programs support, the availability and effectiveness of educational services for prospective entrepreneurs, and the efficiency and predictability of the commercial and legal infrastructure for new

businesses. The EFCs also include open access to local markets for new entrants, the availability and reliability of the physical infrastructure supports for new businesses, and the positive cultural and social norms (Minniti et al., 2005). Also, the relationships between EFCs and EI and economic development have been conceptualized in the GEM research. The research assumes that recognizing entrepreneurial opportunities and developing the entrepreneurial capacity to exploit these opportunities are influenced by contextual factors or EFCs (Reynolds, 2017). The GEM's EFCs impact opportunity recognitions and entrepreneurial capacity, thereby influencing EI. The level of EI impacts entrepreneurial actions, thereby creating economic benefits (Minniti et al., 2005; Valliere, 2010).

The data were obtained from the GEM national reports from Thailand (Guelich, 2020), from Vietnam (Huan, 2018), from Malaysia (Xavier et al., 2010), from Singapore (Chernyshenko et al., 2015), from the Philippines (Velasco et al., 2017), and Indonesia (Iskandarsjah, 2016) in order to evaluate the effects of the national and EFCs in each economy (Table 7).

The EFCs are evaluated throughout a *National Experts Survey* (NES) in each country, which uses a minimum of 36 experts from different disciplines and expertise. In this process, a semi-structured and structured questionnaire is used. The NES survey provides insights into whether the EFCs constrain or foster the entrepreneurial climate, activities, and SME developments.

Results from each country's NES determined that in factor-driven economies, government policies and supports, education and training, research and development (R&D), and technology transfer are perceived to be non-favorable conditions of entrepreneurial activities.

However, in efficiency-driven economies, the perceptions of the NES were different. In Indonesia, for instance, government policies and physical infrastructure were viewed as favorable conditions, which differs from Thailand and Malaysia in which the NES viewed education and training, the government supports, and R&D transfers as non-favorable conditions.

Also, in the innovation-driven economy of Singapore, the NES believed that the government sector and its financial support played a positive role in supporting entrepreneurial activities. Finally, the six-nation NES analysis concluded that physical infrastructure and services access is favorable in all economies, except for the Philippines.

The analysis of results of EFCs in factor-driven economies such as Vietnam and the Philippines and efficiency-driven economies such as Thailand and Malaysia show that government policies and support, education and training, research, and technology transfer are non-favorable conditions of opportunity recognitions and entrepreneurial capacity.

It results from a significant concern for entrepreneurial activity due to a lack of interaction between governments and growing businesses and different mindsets between entrepreneurs and public officials (Valliere, 2010). Moreover, the entrepreneurial process underlying entrepreneurial behavior is complex in nature and unpredictable. Also, R&D transfer exhibits two different dimensions to be managed: the openness to spill-over and sharing knowledge in the local environment, which takes time

**Table 4.** Predictors of EI in the efficiency-driven economies of Indonesia, Thailand, and Malaysia.

| Predictors | Variables | Indonesia | | | Thailand | | | Malaysia | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | β | S.E. | Sig. | β | S.E. | Sig. | β | S.E. | Sig. |
| ATB | ATB1 (*nbgoodc*) | .433 | .076 | .000* | .201 | .143 | .160 | .189 | .190 | .319 |
| | ATB2 (*nbstatus*) | -.303 | .086 | .000* | .000 | .148 | .998 | -.054 | .187 | .774 |
| SN | SN1 (*nbmedia*) | -.126 | .081 | .120 | .493 | .161 | .002* | .850 | .230 | .000* |
| | SN2 (*knowent*) | .212 | .081 | .009* | .186 | .117 | .112 | .297 | .188 | .113 |
| PBC | PBC1 (*suskill*) | .930 | .079 | .000* | .821 | .116 | .000* | .897 | .179 | .000* |
| | PBC2 (*opport*) | .846 | .071 | .000* | .318 | .116 | .006* | .578 | .174 | .001* |
| | Constant | -2.450 | .751 | .001 | -2.078 | .441 | .000 | -3.597 | .921 | .000 |

**Notes.** β = probability of Type II error in the hypothesis test, S. E. = standard error, Sig. = significant at *p ≤ 0.05.

**Table 5.** Predictors of EI in the innovation-driven economy of Singapore.

| Predictors | Variables | β | S.E. | Wald | df | Sig. | Exp(B) | 95% CI for EXP(B) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Lower | Upper |
| ATB | ATB1 (*nbgoodc*) | .483 | .150 | 10.408 | 1 | .001* | 1.620 | 1.209 | 2.172 |
| | ATB2 (*nbstatus*) | .021 | .153 | .020 | 1 | .888 | 1.022 | .757 | 1.379 |
| SN | SN1 (*nbmedia*) | .057 | .182 | .099 | 1 | .753 | 1.059 | .741 | 1.514 |
| | SN2 (*knowent*) | .665 | .176 | 14.260 | 1 | .000* | 1.944 | 1.377 | 2.745 |
| PBC | PBC1 (*suskill*) | .875 | .163 | 28.824 | 1 | .000* | 2.399 | 1.743 | 3.302 |
| | PBC2 (*opport*) | .748 | .160 | 21.797 | 1 | .000* | 2.112 | 1.543 | 2.891 |
| | Constant | -2.722 | .406 | 45.030 | 1 | .000 | .066 | | |

**Notes.** β = probability of Type II error in the hypothesis test, S. E. = standard error, Wald. = Wald chi-square test, df = degrees of freedom for the Wald chi-square test, Sig. = significant at *p ≤ 0.05, Exp(B) = exponentiation of the B coefficient, which is an odds ratio, B = Coefficient for the constant (also called the "intercept") in the null model.

**Table 6.** A summary of hypotheses testing for the study's six ASEAN economies.

| Hypotheses | | Vietnam | Philippines | Indonesia | Thailand | Malaysia | Singapore |
|---|---|---|---|---|---|---|---|
| ATB | ATB1 | Not Supp. | Not Supp. | Supp. | Not Supp. | Not Supp. | Supp. |
| | ATB2 | Not Supp. | Not Supp. | Supp. | Not Supp. | Not Supp. | Not Supp. |
| SN | SN1 | Supp. | Supp. | Not Supp. | Supp. | Supp. | Not Supp. |
| | SN2 | Supp. | Supp. | Supp. | Not Supp. | Not Supp. | Supp. |
| PBC | PBC1 | Supp. | Supp. | Supp. | Supp. | Supp. | Supp. |
| | PBC2 | Supp. | Supp. | Supp. | Supp. | Supp. | Supp. |

**Notes.** The data were obtained from Xavier et al. (2015) table 4.5 and table 4.6 on page 73, and Singer et al. (2018) table 11 on pages 126–127, Sipp. = supported.

**Table 7.** Entrepreneurial framework conditions in the study's six ASEAN economies.

| Entrepreneurial Framework Conditions (EFC) | Vietnam | Philippines | Indonesia | Thailand | Malaysia | Singapore |
|---|---|---|---|---|---|---|
| Financial Support | -ve | | | | | +ve |
| Government Policies: priority and support | | -ve | +ve | | | +ve |
| Government Policies: bureaucracy & taxes | | -ve | | | | +ve |
| Government Programs | -ve | -ve | | -ve | | +ve |
| Education and training: primary & secondary | -ve | | | -ve | -ve | |
| Education and Training: vocational, college, university | | | | | | |
| R&D level transfer | -ve | -ve | | | -ve | |
| Professional and commercial infrastructure access | | | | | | |
| Internal market dynamics | +ve | | | | +ve | |
| Internal market burdens | | | | | | |
| Physical infrastructure and services access | +ve | | +ve | +ve | +ve | +ve |

**Note.** -ve = non-favourable condition, +ve = favourable condition.
Sources: Please see Singer et al. (2018), table 11 and pages 126–127 and Xavier et al. (2015), table 4.5 and table 4.6 on page 73.

and efforts to develop in the context of developing economies (Minniti, 2006). In Table 7, it can be observed that once these non-favorable conditions turn into favorable conditions in the case of Singapore, they can stimulate entrepreneurship and innovation activity and economic transition to innovation-driven economies.

This finding is consistent with other scholars and government ministries who are pushing forward the critical importance of innovation education to a nation's sustainability within a global and highly competitive environment (English, 2017; Hsiao and Su, 2021; Malaysian Education Development Plan, 2015; Taylor, 2016; Wannapiroon and Pimdee, 2021). This can be summarized best by Malaysia's educational blueprint in which it is stated that their students should aspire to have strong communication skills, be entrepreneurial, resilient, leaders, and can work in teams.

## 5. Conclusion

This study applied the theory of planned behavior (TPB) and the variables of the Global Entrepreneurship Monitor (GEM) research to explain the differences and similarities of predictors of EI in six ASEAN economies. The results confirmed that the antecedents of TPB impact entrepreneurial intention (EI), which also affects the country-level entrepreneurial activity. Also, the estimation of variables that influence EI at the regional level was determined to improve entrepreneurial ecosystems. This provided feedback to policymakers and pointed out what needs to be considered in building EI in the region to move up the ladder of economic development.

From the analysis of this study, it was determined that the predictors that influence an adult's intention to participate in entrepreneurial activities in factor-driven economies are subjective norms (SNs) and perceived behavior control (PBC). However, their attitude towards behavior (ATB) did not affect factor-driven economies.

Predictors which influence the intention to participate in entrepreneurial activities in efficiency-driven and innovation-driven economies were ATB through ATB1 and SNs through knowing someone personally who had started a new business (SN2).

In all stages of economic development, there were strong relationships between the perception of having knowledge and skills to run a new business and EI, with PBC significantly affecting adult EI in the six ASEAN economies studied. Also, individuals who thought they had the required knowledge and skill to run a business and see opportunities are more likely to start a new business than those who do not.

Furthermore, TPB can be applied to the EI model even though the predictors are different in different stages of economic development. This is supported by past studies which have illustrated the differences in EI from cross-cultural and cross-country perspectives, such as in Taiwan, Europe's Danube region, and Spain (Liñá n and Chen, 2006). Thus, our study contributes to reinstating the definition of entrepreneurial capabilities and demonstrating how factors shape ASEAN's overall entrepreneurship process.

From the overall results of the ASEAN-6 region, policy implications can be pursued (Afzal et al., 2018). Policy issues that can affect the critical determinants of EI should consider entrepreneurial capability building and exploration for opportunity recognition and evaluation of nascent entrepreneurs to create new ideas and a new value of product or service offerings and stimulate economic transitions.

## 6. Potential study limitations

Lack of time series data and availability of recent datasets in selected ASEAN economies are the limitations of this study. However, the method and findings of this study can provide a deeper understanding of EI in ASEAN economies. This study can be replicated in the case of other regional blocks. Future researchers can apply the research framework to investigate EI predictors in other regional blocks such as MENA or compare EI predictors between ASEAN and other regional blocks.

## 7. Contribution to the research

This study addresses the importance of EI and its relationship with entrepreneurial activities and national economies in the ASEAN region. GEM data provides standardized data collection from 18 - 65 years of age for national comparisons among ASEAN countries. We investigated the predicting factors of EI and their effects on EI in each selected economy to analyze the similarity or difference within groups of countries at the same stage of economic development and the different stages of economic development. The findings reveal differences in EI predictors among the three different stages of economic development in the ASEAN context.

The paper also links the analysis of results to the entrepreneurial framework conditions of each economy. This provides a better understanding and explanation of the differences in EI predictors in the ASEAN context. This study suggests that the national entrepreneurship policy must consider entrepreneurial capacity building and opportunity recognition and evaluation.

## Declarations

### Author contribution statement

Thanaphol Virasa: Conceived and designed the experiments; Performed the experiments; Wrote the paper.

Krisakorn Sukavejworakit: Analyzed and interpreted the data; Wrote the paper.

Triyuth Promsiri: Contributed reagents, materials, analysis tools or data.

### Data availability statement

Data included in article/supplementary material/referenced in article.

### Declaration of interests statement

The authors declare no conflict of interest.

### Additional information

No additional information is available for this paper.

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