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## **ENTREPRENEURIAL ECOSYSTEM PERFORMANCE OF VIETNAM: A STUDY BASED ON THE GLOBAL ENTREPRENEURSHIP INDEX (GEI)**

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### **ABSTRACT**

Although much research has revealed the importance of entrepreneurship, the beneficial impact of entrepreneurship is dependent on its precise definition together with its different measurements. This study aims at providing an in-depth insight into the entrepreneurial ecosystem performance of Vietnam, a potential economy in Asia-Pacific region. To pursue this purpose, the paper adopts the approach of entrepreneurship ecosystem (EE) using Global Entrepreneurship Index (GEI) model, as an analytical lens for the Vietnam's entrepreneurial profile. The findings show that although being healthier than other Asian nations such as Philippines, Indonesia; the entrepreneurial ecosystem (EE) performance of Vietnam has still landed in the moderate quartile of GEI data. Entrepreneurial abilities and aspirations play promising roles in Vietnamese entrepreneurial ecosystem, especially the "human capital" and "risk capital" pillars. Whereas, entrepreneurial attitudes appear as the main disadvantages in forming Vietnamese GEI score. Further, the paper also indicates that: "Risk acceptance", "Technology absorption", "High growth", and "Internationalization" pillars are the weakest aspects of Vietnamese entrepreneurial ecosystem performance. The weakness is especially apparent in terms of its institutional issues. Therefore, the paper is expected to offer theoretical and practical contribution for studies of entrepreneurship of Vietnam.

**KEYWORDS:** Entrepreneurship, entrepreneurial ecosystem (EE), Global Entrepreneurship Index (GEI), economic development, Vietnam

JEL code: D04, M20, M21

### **INTRODUCTION**

Entrepreneurship is seen as an essential tool for promoting economic growth through job creation and innovation. For developing countries (i.e., Vietnam), entrepreneurship becomes an important driving force that facilitates these countries to become rivals of developed countries (Szerb et al., 2020).

Located in Southeast Asia and bordering the Gulf of Thailand, Gulf of Tonkin, South China sea, Laos, China, and Cambodia; Vietnam has many advantages in terms of geography, economy, and politics in



the region. In comparison to the world's nations, Vietnam is ranked at the 67th in terms of area (331,210 square kilometer), and the 16th in terms of population (103,808,319 people) (CIA, 2022). Vietnam's coastline stretches over 3400 kilometers, ranked the 17th out of 157 nations worldwide. This is a prime location for Vietnam's maritime trade due to being close to numerous international shipping routes (Amata, 2021). According to General statistic office of Vietnam (GSO), GDP of Vietnam records 7,02% in 2019, within which the contributions of industry & construction; and service sectors account for 34,5% and 41,6% respectively. GDP per capital is 2,715 USD/person, belonging to group of low-middle income nation. Labor force aged 15-65 records over 50% of total population, within which about 28% are trained, the unemployment rate is 2,17% (GSO, 2019). Therefore, it is said that the dynamics and possibility of Vietnamese labor market is one of the strengths of this nation. However, the system of Vietnamese infrastructure still has many problems. For instance, only 20% of the country's national roads is paved (IVN, 2019). Although 98% of Vietnamese population is covered by 2G,3G,4G in 2017 and it increases at 99,8% in 2020 (Nguyen, 2022), the White Book of Vietnam states that ICT of this nation ranked at the 108th out of 176 nations in 2017, and increases at the 81st in 2018 (MIC, 2020).

(GSO, 2019) states that total acting business in Vietnam increases at 9,0% in 2019, compared to the previous year. In terms of business registration of Vietnam in 2019, there are over 130,000 newly established enterprises, over 39,000 returning-operated enterprises. It implies the potentials for entrepreneurship of Vietnam. According to (World Bank, 2021), the self-employment index of Vietnam records 54,3% in 2018, outperforms the average of Southeast Asian region (45,28%). Especially, this figure is also higher than high-income nations in the region (i.e., Singapore 13,46%; Brunei 8,98%). If following the definition of World Bank about entrepreneurship – activities of an individual or a group to initiate economic enterprises in the formal sector under a legal form of business – Vietnam shows a very health entrepreneurial profile.

By contrast, in the Doing Business report measuring aspects of business regulation and implications for firm establishment and operations, Vietnam records a score of 67,93, ranked the 68th out of 190 nations worldwide. This figure is much lower than Singapore (the 2nd), and Brunei (the 56th) in the ladder (World Bank, 2018). The moderate performance of Vietnam shows the inefficiency in the management and governance of Vietnamese government in facilitate the national entrepreneurship. Or the competitiveness index of Vietnam obtains 58,1 in 2018 (the 77th out of 140 nations), also much lower than Singapore and other high-income nations in the Southeast Asian region (Schwab, 2018). The contradiction in measuring Vietnam's entrepreneurial performance raises a demand for adopting a new approach to comprehensively evaluate entrepreneurial performance in a given country. According to (Szerb and Trumbull, 2018), although much research has revealed the importance of entrepreneurship, the beneficial impact of entrepreneurship is dependent on its precise definition



together with its different measurements. Accordingly, academic literature on entrepreneurship studies entrepreneurship in two major approaches including (1) individual or firm level and (2) country level. Scholars who approach entrepreneurship as an individual or firm phenomenon, often define entrepreneurship as an activity of a new firm creation or self-employment. For instance, according to the World Bank, entrepreneurship was conceived as “the activities of an individual or a group to initiate economic enterprises in the formal sector under a legal form of business” (Acs, Autio and Szerb, 2014, p. 480). However, this approach exists many limitations (e.g., the ignorance of the quality aspect of entrepreneurship and the context factors). By contrast, at the country level, entrepreneurship has been conceived as a systemic phenomenon. This approach also facilitates researchers and policymakers to formulate policies in order to foster and promote entrepreneurship while sustaining economic development (Acs, Autio and Szerb, 2014; Stam, 2015).

The paper aims at analyzing and evaluating Vietnamese entrepreneurial ecosystem (EE) performance using Global Entrepreneurship Index (GEI) methodology, developed scholars from Imperial College London, the LSE, and the University of Pecs (Hungary). Accordingly, Vietnamese EE is evaluated based to three aspects including Entrepreneurial attitude, entrepreneurial ability, and entrepreneurial absorption with 14 building-pillars combined individual and institutional variables. This approach offer a re-examination of Vietnamese entrepreneurial profile and answer the question whether Vietnamese entrepreneurship is healthy or unhealthy. Further, it is to offer useful directions and recommendations for entrepreneurs and policy-makers to enhance the national entrepreneurial ecosystem.

## **LITERATURE REVIEW**

### **1. Entrepreneurial ecosystem**

Scholars have provided a variety of definitions of the entrepreneurial ecosystem (EE). However, two key factors have been mentioned by early definitions including: (1) the interaction between actors and components is a dimension of complexity; and (2) the final goal of the EE is the development of new enterprises (Cavallo, Ghezzi and Balocco, 2019). In the later definitions, the actors and components which are involved in EE have been described in more detail. According to Stam, (2015, p. 1765), EE is described as “a set of interdependent actors and factors coordinated to enable productive entrepreneurship in a given area”. Or in other research, EE is defined as “... the dynamic, institutionally embedded interaction between entrepreneurial attitudes, abilities, and aspiration, by individuals, which drives the allocation of resources through the creation and operation of new ventures” (Szerb, Komlósi and Páger, 2016, p. 5). According to these definitions, there are three differences of EE approach from the traditional approaches. First, EE does not include the traditional statistical indicators such as “self-employment” or “small businesses” into entrepreneurship. Further, the distinction between the small business owner and entrepreneur is also explicitly mentioned.



According to Szerb et al., (2020), an entrepreneur is considered an individual who has not only the vision to see an innovation, but he/she also has ability to bring it to the market. Hereby, a small business owner can run his/her business to create jobs and raise income. However, he/she cannot be an entrepreneur because his/her business is nothing more than replication instead of the innovation. Moreover, entrepreneurs can capture the opportunity and turn visions into a reality. That is why entrepreneurs are regarded as the bridge between invention and commercialization. They literally deliver innovative products from the R&D facility to customers. Second, EE emphasizes the interdependence between actors and factors not as a bundle of independent contextual factors. It is especially emphasized in the entrepreneurship definitions that entrepreneurship must occur in a community of interdependent actors in which the institutional context is considered the element to allow or restrict entrepreneurship (Stam, 2015). Unlike the traditional measures using single – level – activity – related indicators, EE models include the institutional aspects such as culture, regulation, infrastructure, maker, human capital, networking, policy, and finance. Hereby, performance of EE is dependent on the interconnection between individuals, organizations, and institutions (Alvedalen and Boschma, 2017). Finally, Entrepreneurial ecosystem (EE) emphasizes productive entrepreneurship and considers productive entrepreneurship as the output of the ecosystem (Sobel, 2008). Accordingly, productive entrepreneurship is understood as any entrepreneurial activity that promote the growth of aggregate welfare. The entrepreneurial activity is the process to create opportunities for innovation, then lead to new value in society. Therefore, productive entrepreneurship might work as an “intermediary output” of the system (Stam, 2015). Auerswald, (2015) also mentions that productive, unproductive, and destructive entrepreneurship create economic activity. However, the higher returns in productive entrepreneurship, compared to the others, would be able to motivate institutions advance and societies progress. It means that an ecosystem with weak institutions is not able to create a productive entrepreneurship.

## **2. Global Entrepreneurial Index (GEI)**

Global Entrepreneurship Index (GEI) is considered a comprehensive approach to measure the quality and dynamics of entrepreneurial ecosystem in each nation or region. The concept of GEI is based on three important facets including: firstly, entrepreneurship is an action which is undertaken and driven by agencies on the basics of incentives. Secondly, the individual action is influenced by institutional framework conditions. Finally, the structure of the EE is complex and multifaced in which elements interact to create systems performance. The entrepreneurial ecosystem (EE) has also three important components such as agents – the main drives of the ecosystem; institutions – forming the rules and offering incentives for the entrepreneurs; and the system component – working as the connector between the agency and the institutions to assure the coherence of the system (Figure 1).



**Figure 1: Entrepreneurial Ecosystem Configuration – Source (Szerb et al., 2020)**

Accordingly, nascent entrepreneurs are the central elements. The nascent entrepreneurs are also different from each other by their abilities and aspirations. However, the individuals who are selected to become entrepreneurs are affected by the attitudes within the wider population. The process in which entrepreneurs begins their businesses to pursue opportunities, is also called the trial-and-error dynamic due to the unpredictable opportunities. Entrepreneurial framework conditions lay on the outside layer to set up the background for entrepreneurial choices by conditions such as social norms, cultural preferences; and the growth potential of the new venture by conditions such as government, R&D, education, infrastructure, financial and corporate sectors. These scholars also highlight that a healthy EE can facilitate resource allocation in the direction of productive used, which improve job and wealth creation of the nation’s economy (Szerb et al., 2020).

GEI is considered a novel approach in comparison to other models due to the following reasons. First, GEI combines a variety of factors in terms of individuals and institutions. Szerb and Trumbull, (2018) reveal that while Global entrepreneurship monitor (GEM) survey is designed to collect individual measures of population in terms of attitudes, ability and aspirations, GEI has shown a development at higher level by adding the macro-level institutional dimensions such as: regulation, market size, infrastructure and so forth. Second, GEI also can evaluate the performance of the nations or groups of the nations while accounting for economic progress. According to Acs et al., (2014), traditional approach such as Output indicators measure often identifies a negative correlation between entrepreneurship and the GDP per capital. It means that the growth of the whole economy cannot go along with the increase of the country’s entrepreneurship. By contrast, GEI provides a positive correlation to the GDP per capital value. Last but not the least, other approaches show many shortages such as ignoring the contextual factors, providing little data and lack connectivity with practical actions (Acs, Autio and Szerb, 2014). Whereas, GEI identifies strengths and bottleneck of the country’s entrepreneurship relied on a common benchmarking principle. The uniqueness of GEI methodology in comparison to other measures is that GEI applies the Penalty for Bottleneck (PFB)





method. Entrepreneurship is viewed in a systemic perspective, in which the value of the sub-index is determined by the value of the lowest pillars, taking account of the value of the highest pillars. It means that the lowest-value pillars are working as the bottleneck that prevent the others. As a result, the unbalance among the pillars will not create a productive performance and entrepreneurship is also inhibited. The penalty's amount is determined by the degree of the bottleneck: the greater the distance between a certain pillar and the bottleneck pillar, the greater the penalty (Szerb and Trumbull, 2018). As a result, the EE approach using GEI method may facilitate for entrepreneurial policy making to strengthen the entrepreneurial ecosystem.

The GEI measurement exhibits three sub-indices in the structure of 14 pillars to examine entrepreneurial ecosystem (figure 2). Fourteen pillars including individuals and institutions variables are formed into three building blocks – 3 As and correspond to both micro and macro facets of entrepreneurship. Three building blocks comprise (1) entrepreneurial attitudes, (2) entrepreneurial abilities, (3) entrepreneurial aspirations

### 3. Entrepreneurial attitudes

Previous literature reveals the importance of attitude for entrepreneurial activities. Based on the theory of planned behavior – that considers attitude as the precursor of intention and behavior (Ajzen, 1991); entrepreneurship researchers affirm the relationship of attitudes that play motivational or behavioral roles in entrepreneurial intentions or positive attitudes toward entrepreneurship (Shapero and Sokol, 1982; Krueger and Brazeal, 1994). In other research, Beugelsdijk and Noorderhaven, (2004) point out that entrepreneurial attitudes positively affect the regional economic development. In other words, entrepreneurial attitude is considered an explanatory factor for the explanation of growth differentials in 54 European regions. From other aspect, Harris and Gibson, (2008) indicate that entrepreneurial attitude can be improved by training. Accordingly, these scholars support the view that in order to foster entrepreneurial attitude, relevant entrepreneurship education programs play important roles. Hörnqvist and Leffler, (2014) appear to be agreeable with this opinion when showing that clear policy intentions for renewal of schoolwork is essential for more entrepreneurial directions.

In GEI, entrepreneurial attitude (ATT) reflects how the population of the country perceive entrepreneurship. This sub-index is measured by the combination of individual and institutional variables and is concluded from five (5) pillars (Szerb et al., 2020).

1. Opportunity perception captures the ability to perceive opportunity of the population at the individual level and weighted by the situation of the property rights and country's freedom. This pillar includes the individual variable – that measures the number of populations who can identify the opportunity to start a business in their area. However, the value of this opportunity is highly dependent on the freedom of the economy and property rights. Economic freedom

describes the performance of the government's regulatory efficiency toward the entrepreneurial activities, while the property right assesses the ability of individuals to accumulate private property. The property right might allow people to harvest and capture the entrepreneurial opportunities (The Heritage Foundation, 2022).

2. Start-up skills measure the individual's skills in starting a new business and weighted by the education quality. Skill perception measures the number of populations believing that they have enough skills for entrepreneurial activities. According to Acs et al., (2018) there is a difference between skill perception of developing countries and developed countries. Most skills of entrepreneurs in developing nations are results of workplace trial and error. Whereas, in developed nations, these skills are offered through formal education and training. As a result, nation's educational quality plays an important role.
3. Risk acceptance combines the measurement of country risk and captures the inhibitory effect of people's fear of failure on entrepreneurial actions. According to Acs et al., (2018) fear of failure is one of the obstacles for start-ups. Therefore, risk perception describes the ability of start-ups to take risks in doing business. By contrast, country risk relates to transfer and convertibility risks such as the risk a government imposes capital, war, floods, pandemics and so forth.
4. Networking mentions two facets of the networking including: abilities to mobilize opportunities and resources of the active entrepreneurs and their accessibilities to reach each other. The individual variable – Know entrepreneur – describes that ability of start-ups to know each other in the nation. And it is motivated by the connectivity which is measured by the urbanization and infrastructure quality (Szerb et al., 2020).
5. Cultural support takes into account how positively a country's resident view entrepreneurs in term of career selection and how the level of corruption in that country affects that view (Szerb et al., 2020). Career selection mentions to the view of people that entrepreneurship is a good career choice. Whereas, corruption measures the level of public-sector corruption in a country. High corruption level can decrease cultural support and drive the best and brightest to give up their desire of being entrepreneurs (Transparency, 2017).

#### **4. Entrepreneurial abilities**

According to Bayon et al., (2015), ability is also considered another form of capital for long-term benefit in entrepreneurship. Entrepreneurial ability involves characteristics of the entrepreneur to determine the extent to which, a start-up business is potential to grow. The entrepreneurial ability answers the questions "Can you, do it? Or do you have the skills?" (Acs et al., 2018). In GEI, Entrepreneurial ability (ABT) measures which competence needed to become successful entrepreneurs as well as which skills needed to be successful in entrepreneurship. ABT score is computed by four pillars:



6. Opportunity startup measures the predominance of individuals seeking to create potentially better opportunity-based startups, taking into account the cumulative effect of taxation and the quality of public services. According to Acs et al., (2018) opportunity motivation is conceived as the number of Total Entrepreneurial Activity (TEA) that enterprises created to capitalize on a favorable opportunity, enhance income, or achieve personal goals, as opposed to those started by persons who have no other choices for work. These scholars also reveal that opportunity entrepreneurs are thought to be more prepared, have greater talents, and earn more than necessity entrepreneurs. Further, a good governance and taxation from the government play as complementary factors for opportunity startup.
7. Technology absorption is the measure of how much is a country's start-up activity and firm-level technology absorption. This pillar is measured by the combination of technology level as the individual variable, and technology absorption as the institutional variable. Technology level relates to abilities to apply information and communication technologies in business activities. Whereas, technology absorption measures the ability of the nation to absorb new technologies (Schwab, 2017).
8. Human capital assesses the level of human capital in a country by capturing the entrepreneur's education level, taking into account the labor market freedom and staff-training. According to Acs et al., (2018) higher-education entrepreneurs are more capable and eager to develop and run high-growth enterprises. Further, the scale of the labor market as well as the availability of labors also influence on business development, and growth potential.
9. Competition measures the distinctiveness of a product or new market, as well as the market strength of current enterprises and business groupings, as well as the efficacy of competition legislation. Acs et al., (2018) reveal that competitor factor can change the number of firms in a specific business. Further, market entry of new businesses can be hindered by the dominance of incumbent firms and the inefficiency of competition legislation.

## **5. Entrepreneurial aspirations**

Entrepreneurial aspiration describes the unique, qualitative, strategy-related quality of entrepreneurial activity (Acs et al., 2018). In GEI, entrepreneurial aspiration (ASP) captures the intention, vision, and mission of the entrepreneur. This index also includes 5 pillars:

10. The pillar Product innovation represents the proclivity of entrepreneurial enterprises to develop new products, weighted by a country's potential for technology transfer. New product is considered the measure for potential to product new products or imitate existing product in the market. Whereas, technology transfer reveals the ability of the business environment allowing to develop new products based on innovation application (Acs et al., 2018).
11. Process innovation pillar measures how extend start-ups utilize new technology, the Gross



Domestic Expenditure on R&D (GERD) as well as the potential of a country to conduct applied research. New technology measures the number of new businesses which have new technologies less than 5 years old. These new technologies can be created by these new businesses themselves or bought or imitated. Further, science captures the rate of expenditure on R&D of the government for research and invention activities (Acs et al., 2018).

12. High Growth captures three indexes including: the ratio of high-growth enterprises, the venture funding’s availability, and the complexity of business strategy.
13. Internationalization pillar measures how entrepreneurs are internationalized as assessed by the exporting potential of enterprises weighted by the country's level of economic complexity (Acs et al., 2018).
14. Risk capital pillar reflects two financial measures including informal start-up funding and capital market depth for achieving growth goals. The availability of risk finance is essential to fulfill entrepreneurial activities under the lack of individual financial resource. Informal investment is conceived the multiplication of the informal investors and the average size of the investment. Whereas, the Depth of capital market involves the liquidity of stock market, IPO, M&A, debt and credit market activities (Szerb et al., 2020).

Sub-indexes	Pillars	Variables (individual / institutional)
ATTITUDES SUB-INDEX	OPPORTUNITY PERCEPTION	OPPORTUNITY RECOGNITION FREEDOM (ECONOMIC FREEDOM *PROPERTY RIGHTS)
	STARTUP SKILLS	SKILL PERCEPTION EDUCATION (TERTIARY EDUCATION*QUALITY OF EDUCATION)
	RISK ACCEPTANCE	RISK PERCEPTION COUNTRY RISK
	NETWORKING	KNOW ENTREPRENEURS AGGLOMERATION (URBANIZATION*INFRASTRUCTURE )
	CULTURAL SUPPORT	CAREER STATUS CORRUPTION
	ABILITIES SUB-INDEX	OPPORTUNITY STARTUP
TECHNOLOGY ABSORPTION		TECHNOLOGY LEVEL TECHNOLOGY ABSORPTION
HUMAN CAPITAL		EDUCATIONAL LEVEL LABOR MARKET (STAFF TRAINING*LABOUR FREEDOM)
COMPETITION		COMPETITORS COMPETITIVNESS (MARKET DOMINANCE*REGULATION)
ASPIRATION SUB-INDEX	PRODUCT INNOVATION	NEW PRODUCT TECH TRANSFER NEW TECHNOLOGY
	PROCESS INNOVATION	SCIENCE (GERD*(AVERAGEQUALITY OF SCIENTIFICAL INSTITUTIONS +AVAILABILITY OF SCIENTISTS AND ENGINEERS)) GAZELLE
	HIGH GROWTH	FINANCE AND STRATEGY (VENTURE CAPITAL*BUSINESS SOPHISTICATION)
	INTERNATIONALIZATION	EXPORT ECONOMIC COMPLEXITY
	RISK CAPITAL	INFORMAL INVESTMENT DEPTH OF CAPITAL MARKET

**Figure 2: Structure of the new Global Entrepreneurship Index (GEI) – Source Acs et al. (2020)**

### **6. Role of policy and government in Entrepreneurship**

The essential role of government and institutional factor for the development of entrepreneurship draws great attention of the entrepreneurial ecosystem (EE) scholars. According to Isenberg, (2011) six (6) domains of the entrepreneurial ecosystem include policy, finance, culture, support, human capital, and market. This scholar reveals that these six pillars contribute to the presence of such factors as the formal (government & regulatory framework); and informal (culture support) factors in order to promote the national entrepreneurial profile. Or Stam, (2015) reveals that the environment and context in which entrepreneurship occurs, play a critical role for its success. Further, the “Doing business” initiative by the World Bank also highlights the importance of government & regulation. The report indicates that modern businesses will not exist unless there are rules for their establishments and operations. The well-design regulation is able to promote socially optimal and fair outcomes for both employers and employees (World Bank, 2016). Therefore, Doing Business reports focus on the regulations and procedures that must be followed while starting and running a business. It examines those that resolve information asymmetries (for example, credit market rules), those that balance bargaining power imbalances (for example, labor market laws), and those that permit the provision of public goods or services (such as business or property registration) (World Bank, 2016). According to Acs et al., (2018) institutions are the fundamental components of the entrepreneurial ecosystem (EE). Institutions set up the rules of the game and create incentives to allocate entrepreneurial talents to activities with the highest private returns.

### **METHODOLOGY**

This study analyzes the entrepreneurial ecosystem performance of Vietnam using the Global entrepreneurship Index (GEI) as developed by Acs et al., (2018) and the Global entrepreneurship monitor (GEM) data of the World Bank. Based on the GEI framework, the national entrepreneurial ecosystem of Vietnam is evaluated in terms of three sub-indexes including entrepreneurial attitude (ATT), entrepreneurial ability (ABT), and entrepreneurial aspiration (ASP) and 14 pillars. These indicators contain both individual and institutional variables corresponding to the micro and macro-level entrepreneurship. Further, the interdependence among these pillars is also computed by the Penalty for Bottleneck (PFB) method. Accordingly, the weakest link or underperforming pillar would have a negative bearing on the score. As a result, the paper can propose recommendations for the policy-makers to strengthen these pillars and increase the GEI score in the end.

Vietnam’s data is collected from the list of 73 countries in GEI data for the period 2015-2019. There was a process of 8 steps for the data collection as follows. At first, 28 variables including 14 individual



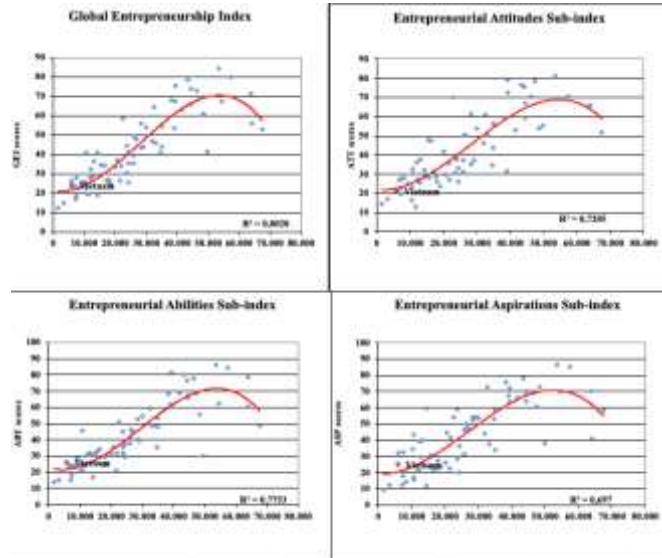
variables and 14 intuitional variables are selected from the countries' sources. Then, the construction of the pillar is created based on the interaction among variables. Thirdly, the distance method is used to moralize the pillars. In the fourth step, the scholars make capping for the variables in which the index-building is relied on benchmarking principles. Then, by equalizing the component's marginal effects on the nation's average pillars, the scholars make average pillar adjustment. The sixth step is penalizing the pillars based on the Penalty for Bottleneck (PFB) method. Seventhly, building sub-indices calculation in terms of 3-As building blocks is conducted. Finally, the GEI index is determined (Acs et al., 2018)

## **RESULTS AND DISCUSSION**

### **1. Analysis of Vietnam's entrepreneurial ecosystem**

The result of the assessment is presented in the following format. At first, we evaluate the correlations between the overall GEI and three sub-indices including entrepreneurial attitude (ATT), entrepreneurial ability (ABT), and entrepreneurial aspiration (APS), and national per capital wealth based on purchasing power parity (PPP) in Vietnam. Then, the building blocks of Vietnam's entrepreneurial ecosystem are assessed. Accordingly, we identify the strengths and weaknesses of Vietnamese entrepreneurial ecosystem. Further, we also compare Vietnamese EE performance with other nations (Indonesia and Philippines) in the same region to highlight the performance of Vietnamese entrepreneurial ecosystem. Finally, the Penalty of Bottleneck (PFB) method is conducted to identify the weakest links in Vietnamese EE, which facilitates policy recommendation.

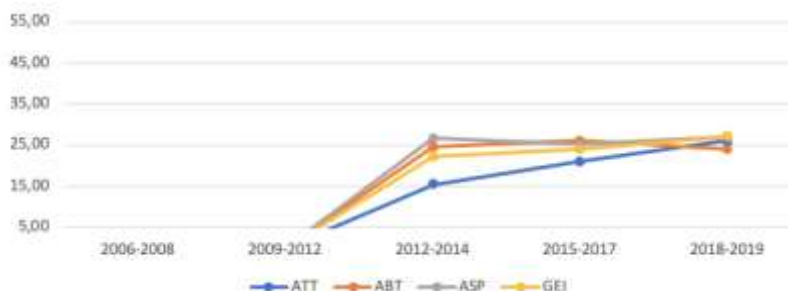
First, in the analysis of the correlation between GEI and PPP, the coefficient determination (R-square) values in all graphs are positive and above 0.6. It means that there are close and strong relationships between entrepreneurship and development in Vietnam (Aljarwan et al., 2019) (figure3). Further, the GEI score and three sub-indices of Vietnam also show that Vietnam has a moderate performance of entrepreneurship. Particularly, although Vietnam's GEI, ABT and ASP scores land over the S-curve; the ATT score is located in a low position under the S-curve. All four scores land in the factor-driven stage where a relatively small amount of entrepreneurial activity is productive. This highlights the high demand for building better institutions and changing the incentive structure of the society in Vietnam (Acs, Szerb and Autio, 2017).



**Figure 3: The three sub-indices in terms of Per capita real GDP of Vietnam – Source GEI data**

Over the time, Vietnam’s overall GEI score and the other sub-index scores have seen significant growths. GEI score increases from 22,23 in 2012-14 to 26,0 in 2018-19 (figure 4). In the period from 2015 to 2017, the overall GEI of Vietnam gains 24,0 – ranked at the 63rd in the list of 73 nation of GEI data, and outperforms some Asian countries such as Philippines and Indonesia in the same period. The ATT and ASP indices also increase significantly over time. By contrast, ABT score lightly decreases in the year of 2018-2019 in comparison to previous years.

**Figure 4: Vietnam’s GEI scores over the time – Source GEI data**



From regional perspective, in 2019 although Vietnam’s GEI obtain at 26,00 – ranked at the 73<sup>rd</sup> in the list of 137 countries, GEI of Vietnam lands in the rank 5th among Southeast Asian countries, and outperforms Indonesia, Philippines, Lao, Myanmar, and Cambodia (table 1). Singapore is the leading country in terms of GEI score in Southeast Asia with a score of 52,40. Whereas, in terms of entrepreneurial attitude, Malaysia is the leading country with ATT score of 41,50. Vietnam is at the rank 7th with the score of 23,90. Again, Singapore has a significant lead on the Ability and Aspiration

performance with scores of 58,10 and 60,50 respectively. Vietnam is one again at the rank 7th in these scores. To sum up, Southeast Asia records an average performance in a range from 26 to 32 on all three sub-indices and GEI score. This is not a good performance but acceptable in the general context. Aspiration performance shows the highest score of 31,03 while Attitude performance shows the lowest score of 26,91

**Table 1: GEI ranking of Southeast Asia countries in 2019– Source: GEI data**

GEI Rank	Country	ATT	ABT	ASP	GEI Score
27	Singapore	38,40	58,10	60,50	52,40
43	Malaysia	41,50	39,20	39,50	40,10
48	Brunei	36,50	35,20	39,40	34,90
54	Thai Lan	28,80	31,80	39,90	33,50
73	Vietnam	23,90	27,00	27,10	26,00
75	Indonesia	32,30	28,40	17,20	26,00
86	Phillipines	27,90	21,60	19,50	23,00
102	Lao	14,60	19,20	23,50	19,10
107	Myanmar	13,90	20,00	20,40	18,10
108	Cambodia	11,30	18,40	23,30	17,70
<b>Average score</b>		26,91	29,89	31,03	29,08

## 2. Strengths and weaknesses of Vietnam’s entrepreneurial ecosystem

Generally, Vietnamese entrepreneurial ecosystem is quite healthy. The overall GEI score obtains 24,00 in 2017 (table 2). Especially, the entrepreneurial ability is the highest performing composite construct while Attitude is the lowest performing composite construct. Further, in a general view, Vietnamese entrepreneurial ecosystem also has a relatively good overall individual variable level score at 0,57 in comparison to the overall institutional variable level score at 0,40. This implies that although doing better in individual perspective, poor rating of Vietnam’s business climate also results from poor institutional factors such as undeveloped infrastructure and deficient policy.

**Table 2: Vietnam’s overall GEI score in 2017**

	PILLARS		INSTITUTIONAL VARIABLES		INDIVIDUAL VARIABLES	
Entrepreneurial Attitudes	Opportunity Perception	0,30	Freedom	0,32	Opportunity Recognition	0,74
	Start-up skills	0,26	Education	0,38	Skill Perception	0,70
	Risk Acceptance	0,08	Country Risk	0,18	Risk Perception	0,31
	Networking	0,25	Connectivity	0,23	Know Entrepreneurs	0,94
	Cultural Support	0,24	Corruption	0,37	Career Status	0,71
	<b>Entrepreneurial Attitudes</b>		<b>20,9</b>			
Entrepreneurial Abilities	Opportunity Startup	0,28	Governance	0,43	Opportunity Motivation	0,55
	Technology Absorption	0,17	Tech Absorption	0,32	Technology Level	0,38
	Human Capital	0,46	Labor Market	0,55	Educational Level	0,67
	Competition	0,23	Competitiveness and Regulation	0,43	Competitors	0,40
	<b>Entrepreneurial Abilities</b>		<b>26,1</b>			
Entrepreneurial Aspirations	Product Innovation	0,34	Technology Transfer	0,46	New Product	0,62
	Process Innovation	0,25	Science	0,40	New Technology	0,74
	High Growth	0,17	Finance and strategy	0,51	Gazelle	0,31
	Internationalization	0,14	Economic complexity	0,32	Export	0,35
	Risk Capital	0,49	Depth of Capital Market	0,70	Informal Investment	0,62
	<b>Entrepreneurial Aspirations</b>		<b>25,1</b>			
	<b>GEI</b>	<b>24,0</b>	<b>Institutional</b>	<b>0,40</b>	<b>Individual</b>	<b>0,57</b>

### 5.1. Entrepreneurial attitude

The score of Vietnamese entrepreneurial attitude obtains 20,9, lowest in all three sub-indices of GEI score. Risk Acceptance, Networking and Cultural support are the worst-performing pillars, which record scores of 0,08; 0,25; and 0,24 respectively. However, Opportunity perception and Start-up skills pillar present better scores of 0,30 and 0,26 perceptively. The individual variables show better scores when almost landing in the high and highest quartiles. Whereas, institutional variables offer a bad performance when mainly landing is the lowest quartiles. In a closer look, the risk acceptance is the worst-performing pillar in total five pillars. It means that the attempts of Vietnamese government in controlling transfer and convertibility risks are inefficient, which make the score of country risk very low at 0,18. Further, Vietnamese entrepreneurs themselves are not risk-takers. The risk perception score of Vietnamese people obtains 0,31 – very low. In a comparison to other nations, Vietnamese people are less willing to take risks relating to health, lifestyle, finance and career





(Dtineews, 2011). In other research of (Lam and Pham, 2018) the capacity of Vietnamese individual investors to endure risks is influenced by such factors as Investment background knowledge, Education and Wealth. Networking and culture support are other pillars with bad-performance. The critical point is that although Vietnamese entrepreneurs are good at connecting to each other and have positive views in developing entrepreneurship as their long-run career (0,94 and 0,71 respectively); the national connectivity and corruption hinder the general performance (0,23 and 0,27 respectively). The truth is that until 2019, only 20% of Vietnamese national roads are paved. Whereas, the significant increase of urbanization has stretched and exceeded the capacity of existing communication networks and utility systems (IVN, 2019). Further, Vietnam is also ranked at the 107th out of 180 in terms of the corruption perception index (CPI), which means that Vietnam lands in the top of nations with high corruption (Transparency, 2017).

By contrast, Vietnamese entrepreneurial ecosystem (EE) shows good performance in opportunity perception and start-up skills pillars. Although the institutional scores for freedom and education are 0,32 and 0,38 respectively – landing in the lowest quartile; these indicators are better than previous years. The economic freedom of Vietnam obtains 52,4 in the global economic freedom ranking in 2017, just barely over the “Moderately free” threshold. Whereas, the property right of Vietnam shows a good performance when increasing from 15,0 to 49,7 in the score (Miller and Kim, 2017). As a result, Vietnamese population can highly identify opportunities to start businesses due to the significant extent of the market size. The opportunity recognition score obtains 0,74 – landing in the high quartiles. Further, the score of Vietnamese education is though not high enough (0,38), the skill perceptions score obtains 0,7 – also landing in the high quartiles. It means that most skills of Vietnamese entrepreneurs are acquired through the workplace trial – and – error in business activities. Generally, although not being a strength in the entrepreneurial ecosystem, Vietnam is doing better in opportunity perception and start-up skills pillars in the entrepreneurial attitude index. However, Networking, and cultural support pillars are both its advantages. Especially, Risk acceptant is the worst-performing pillar.

## 5.2. Entrepreneurial ability

From table 2, it is said that entrepreneurial ability is one of the strengths of Vietnamese entrepreneurial ecosystem, with the score of 26,1. The significant pillar in this sub-index is the Human capital pillar with score of 0,46 – landing in the high quartile of the GEI data. This is the result of possibility of the labor market and high-quality of Vietnamese labor. According to OECD, (2020) only 30% of Vietnamese labor force finish either vocational, university or higher educational programs in 2018. However, the rate entrepreneur skills is high, which increases the quality of Vietnamese labor. Further, the labor market of Vietnam is also dynamic, which increase the capability to hire employees. The evidence is that the unemployment rate of Vietnam in 2017-18 is very low from 1,87 to 1,16%



(O'Neill, 2022b). The opportunity start-up pillar of Vietnam also performs well with score of 0,28 – landing in the moderate quartile of GEI data. The point is that many Vietnamese entrepreneurs consider entrepreneurship is a long-run career, which motivates the opportunity motivation. Further, the low taxation of Vietnam also encourages entrepreneurs to start a new business. For instance, the business license fee costs from 15 USD to 150 USD per year, the corporate tax rate is lower than 20%, or the tax rate of VAT is at 10% (Nguyen, Vu and Hoang, 2018).

By contrast, technology absorption and competition are worst-performing pillars in this sub-index with scores of 0,17 and 0,23 respectively. Vietnamese businesses have many limitations in technology. Meanwhile, the support of the government for the application and popularity of advanced technologies is also limited. They decrease the total score of technology absorption to the lowest level in the GEI data. Further, the ineffectiveness of the regulatory bodies also impact the competitiveness of new businesses, which directly decreases the score of competition pillar.

### 5.3. Entrepreneurial aspiration

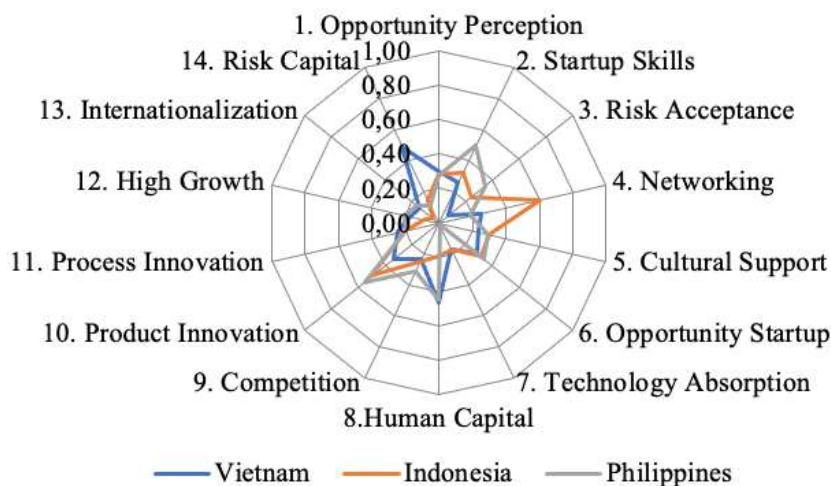
Entrepreneurial aspiration is also the strength of Vietnamese EE, when recording a score of 25,1. Particularly, risk capital is the best-performing pillar in this sub-index with a score of 0,49 – landing in the high quartile of GEI data. Dept of capital market (DCM) variable in this pillar obtains a significant score with 0,7 – the only institutional factor lands in the high quartile of GEI data. This figure also presents the development of Vietnamese financial market in the period of 2017 with many achievements. For instance, VN-Index records 984.24 points – the first in Asia in 2017. Further the Vietnamese stock market's capitalization reached 73 % of the gross domestic product (GDP) (VIR, 2018). The pillars of product innovation and process innovation of Vietnamese EE also perform well with scores of 0,34 and 0,25 respectively. Although the investment of science is still low, other indicators such as new product, new technology and technology transfer of Vietnam record good scores (0,62; 0,74; 0,46 respectively). To encourage technology transfer, the government of Vietnam also enacts Law No.07/2017/QH14 to provide detailed directions such as guidelines for application, tax & tariff, administration process and so forth for these activities.

By contrast, High growth and international pillars are weaknesses of Vietnamese EE. Especially, high growth pillar only obtains a score of 0,17. The reason is that the rate of businesses with aspirations to growth more than 50% in the next five years in Vietnam is low, which decreases the Gazelle variable to 0,31.

### 5.4. Comparison of Vietnamese Entrepreneurial ecosystem to other nations

In this part, a comparison is conducted to show Vietnamese entrepreneurial pillars from other countries' perspectives. It aims at highlighting the strengths and weaknesses of Vietnamese EE when

being put in the regional context. The web chart, presented in the figure 5, shows the entrepreneurial ecosystem performance of Vietnam, Indonesia, and the Philippines. Although being different from Indonesia and the Philippines in terms of geographic characteristics, these three nations still have many commons. For instance, all three nations belong to Asia-pacific region and Association of Southeast Asian Nations (ASEAN). All these three countries used to be colonies of Western nations such as Dutch, Spain, British, and France. The gaps of GDP per capital of three nations are also not too much. Particularly, in 2017, GDP per capital of Vietnam, Indonesia and the Philippines are 2957; 3153; 3885 USD respectively (O’Neill, 2022a). Further, they are also closed in GEI ladder 2017 with the ranks of 63rd, 64th, 65th respectively. From figure 5, the biggest strengths of Vietnamese EE include Risk capital and Human capital pillars. Whereas, Indonesia is the leader in terms of Networking pillar. The Philippines is also leader in terms of start-up skills, Risk acceptance, product innovation. The critical point is that while risk acceptance is the weakness of Vietnam, it is the strength of the Philippines. While risk capital is the strength of Vietnamese EE, it is the weakness for Indonesian, and The Philippines EEs. Especially, all three countries’ entrepreneurial ecosystems have low-performance in terms of entrepreneurial aspiration with Hight growth and Internationalization pillars. They relate to such problems as export, the national openness to international entrepreneurs, the desires to grow at 50% in the next 5 years, and the effective finance and strategies.



**Figure 5: Comparison of EE between Vietnam, Indonesia, and the Philippines – Source: GEI data**

### 6. Policy suggestions using PFB methodology

As shown in previous sections, apart from presenting useful comparison to other nations’ EEs, the

novelty of GEI is to use the Penalty for Bottleneck (PFB) approach that is able to identify the weakest links of the entrepreneurial ecosystem in a given country. By this way, it is beneficial for researchers and policymakers to target on which pillars needed enhancing. In the end, they contribute to promote the overall GEI score of the country. In the case of Vietnam, there are four bottlenecks identified in the table 3. These weakest links include Risk acceptance, Technology absorption, High growth, and Internationalization. According to PFB, these pillars are preventing the performance of better performing pillars in Cameroon’s EE. Accordingly, it is necessary to pay great attention and effort to improve these pillars in terms of policies, so that it can enhance Vietnam’s overall GEI score by 10%. Particularly, total new effort will be in the ratio of 65%-24%-6%-6% corresponding to Risk acceptance, Internationalization, Technology absorption, and High growth. Accordingly, Vietnam needs an increase of 0.17 points in all four pillars to get a 10% increase in the GEI score. Further, based on PFB, the government also identify its priorities for all pillars. Vietnam should highly focus on improving risk acceptance score with 65% of total effort. Then, the next 24% total effort should be put in the Internationalization, and the rest should be put in technology absorption and high growth. Furthermore, in a more detailed analysis of four bottlenecks that Vietnamese EE has to deal with, the major weaknesses within pillars are also mentioned. For instance, the government should concentrate on controlling country risks such as the risk a government imposes capital and exchange, or force majeure (e.g., floods) in Vietnam. Further, it is also important to encourage the openness to international entrepreneurs and export. In general, both institutional and individual factors should be concerned in Vietnamese entrepreneurial ecosystem in order to create a healthier entrepreneurial ecosystem.

**Table 3: Policy intervention – Source: GEI data**

<b>Pillar</b>	<b>Required Increase in Pillar</b>	<b>Percentage of total new effort</b>
<i>Opportunity Perception</i>	0,00	0%
<i>Start-up Skills</i>	0,00	0%
<b><i>Risk Acceptance</i></b>	<b>0,11</b>	<b>65%</b>
<i>Networking</i>	0,00	0%
<i>Cultural Support</i>	0,00	0%
<i>Opportunity Startup</i>	0,00	0%
<b><i>Technology Absorption</i></b>	<b>0,01</b>	<b>6%</b>
<i>Human Capital</i>	0,00	0%
<i>Competition</i>	0,00	0%
<i>Product Innovation</i>	0,00	0%
<i>Process Innovation</i>	0,00	0%
<b><i>High Growth</i></b>	<b>0,01</b>	<b>6%</b>
<b><i>Internationalisation</i></b>	<b>0,04</b>	<b>24%</b>
<i>Risk Capital</i>	0,00	0%
<b><i>Total effort</i></b>	<b>0,17</b>	<b>100%</b>

### 7. Challenges for Vietnam’s entrepreneurship development

Figures 6,7,8 describes the change of 14 pillars in Vietnamese entrepreneurial ecosystem over time. Obviously, most pillars (e.g., opportunity perception, networking, opportunity start-up) are improved and show better-performance. It implies the attempts of Vietnamese government in promoting national entrepreneurial ecosystem. However, the bottlenecks of the entrepreneurial ecosystem (e.g., risk acceptance, technology absorption, high growth and internationalization) as identified, have not seen improvement yet. Particularly, risk acceptance and technology absorption pillars even show worse-performance in the period 2018-19. It implies that the government has not really deal with the worst problem of the entrepreneurial ecosystem in Vietnam.

The truth is that Vietnamese economy is basically the small-and-medium economy with a large number of SMEs firms. Therefore, technology absorption is not a high priority. According to Trinh, (2017) the limitations of Vietnamese enterprises in technology absorption include: the limitation of product links channel, technical work channel, firms’ R&D capability, and the assessment of technology absorption capabilities. Further, many national official magazines also identify the weaknesses of technology absorption including: the underdeveloped market, the lack of intermediary in demand-supply connection, and the ignorance of Vietnamese firms (Thanh, 2018; Pham, 2021). In terms of country risk, Vietnam is considered one of the countries heavily affected by climate change due to its long coastline – 3260 km in length (VUFO, 2014). Therefore, in the last 10 years, natural disasters such as storms, floods, landslides, inundation, drought, saltwater intrusion have caused significant damage, death, and loss of life (e.g., more than 9,500 people are missing, property damage is estimated at 1.5% of GDP/year) (Hong et al., 2021).

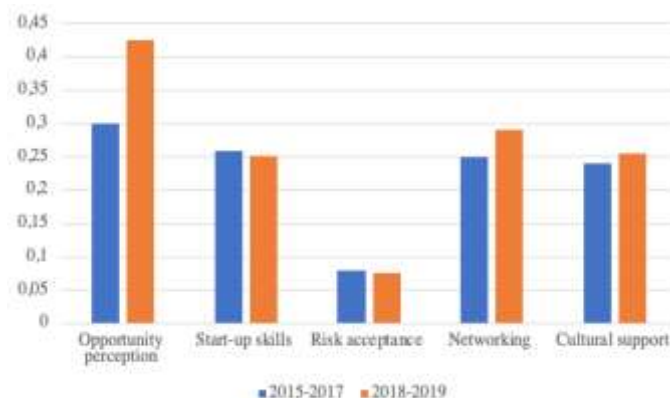
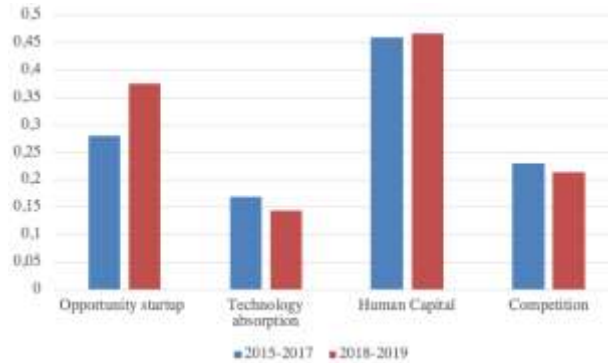
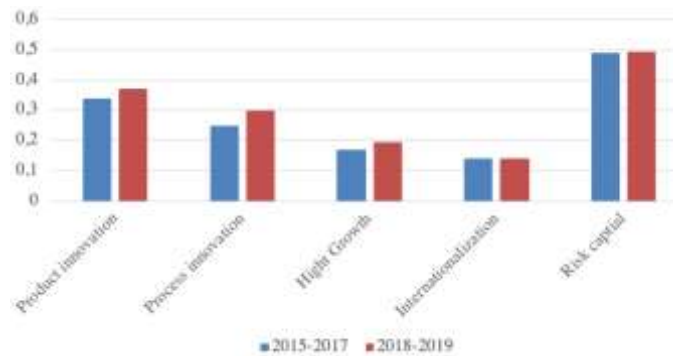


Figure 6: Entrepreneurial attitude of Vietnam 2015-2019 – Source: GEI data



**Figure 7: Entrepreneurial ability of Vietnam 2015-2019 – Source: GEI data**



**Figure 8: Entrepreneurial absorption of Vietnam 2015-2019 – Source: GEI data**

### CONCLUSION

Based on the approach of entrepreneurial ecosystem using Global entrepreneurship index (GEI) methodology, this research offers insights of Vietnamese entrepreneurial ecosystem performance in period 2015-2019. The findings of the paper show that Vietnam is rank at the moderate level of the GEI ladder, which signifies that Vietnamese entrepreneurial ecosystem has not been healthy yet. From a regional perspective, Vietnam is ranked at the 5th among Southeast Asian nations, outperforms Indonesia, The Philippines, Laos, Myanmar, and Cambodia. However, it is too far for Vietnam to keep up with other stronger economies in the region. While entrepreneurial ability is the strength of Vietnamese EE, entrepreneurial attitude is its weakness. Vietnam performs well in terms of Human capital and Risk capital pillars. However, four bottlenecks of the EE in Vietnam are also identified (i.e., Risk acceptance, technology absorption, high growth, and internationalization). Therefore, to improve the total GEI score at 10%, it is essential for Vietnam to focus on these four bottlenecks, especially the risk acceptance and Internationalization pillars.





### 1. Theoretical and Practical implications

This paper reveals some of the theoretical and practical implications. First, regarding theoretical implications, the paper enriches literature on entrepreneurship by improving the diversity of entrepreneurship measurements nowadays. The truth is that GEI model is not a popular method to evaluate national entrepreneurship nowadays due to the complex of building blocks and pillars. However, it offers a comprehensive assessment when involving both the individual and institutional factors. This approach focuses on the concept of productive entrepreneurship as the most important target for policymaking to improve the quality of the entrepreneurial ecosystem, which is ignored by other measurements.

Second, this paper also contributes some practical implications for entrepreneurs and Vietnamese government. For entrepreneurs, the individual scores of the entrepreneurial ecosystem present the strengths and weakness of Vietnamese entrepreneurs. Accordingly, Vietnamese entrepreneurs are good at opportunity recognition, skill perception, and communication. However, they are not risk-takers and they ignore the importance of growth plans and strategies. An explicit presentation can provide road map for them to improve the weaknesses. By contrast, the institutional scores inform the advantages and drawbacks of Vietnamese government in facilitating entrepreneurial ecosystem. Although being good at providing finance and capital equipment, the government also need to focus on controlling country risk, and connectivity to improve the general ecosystem. More important, it is essential to construct a long-living plan with the combination of government, business and individual in Vietnam in order to foster the national entrepreneurial system.

### 2. Limitations and Future research

Like other research, this paper also has some limitations. National data collection is one of the limitations, that influences the updating of the research results. In the future research, it is necessary to update the data of Vietnam entrepreneurship so that it can help to propose policy-recommendations for Vietnamese government. Second, this paper only focuses on analyzing Vietnamese entrepreneurship. So, in the future, it is possible to make comparative research among nations' entrepreneurship from the regional perspective or from the developing-nation perspective. It is able to construct a policy framework for other countries to foster their entrepreneurship ecosystems.

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