

ASEAN Startup Landscape

Policy Roundtable, GECS 2017
December 13, 2017

ASEAN Snapshot

- + 7th largest economy worldwide, combined GDP of USD2.5 trillion and poised to become the 4th largest by 2030. 6 major economies of Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam all expected to cross the USD 3,000/capita barrier
- + 70% of the population is younger than the age of 40 years
- + 4th largest and the fastest growing internet market in the world, with more than 3.8 million going online every month
- 150 million population of 25+ years is unbanked. 100 million+ in Indonesia, Philippines, and Vietnam alone
- Internet speeds are slower than global average for all countries except Singapore
- There is a lack of talent especially senior engineers and at CxO levels, lack of access to funding capital, and nascent M&A scene.

Population
630mil

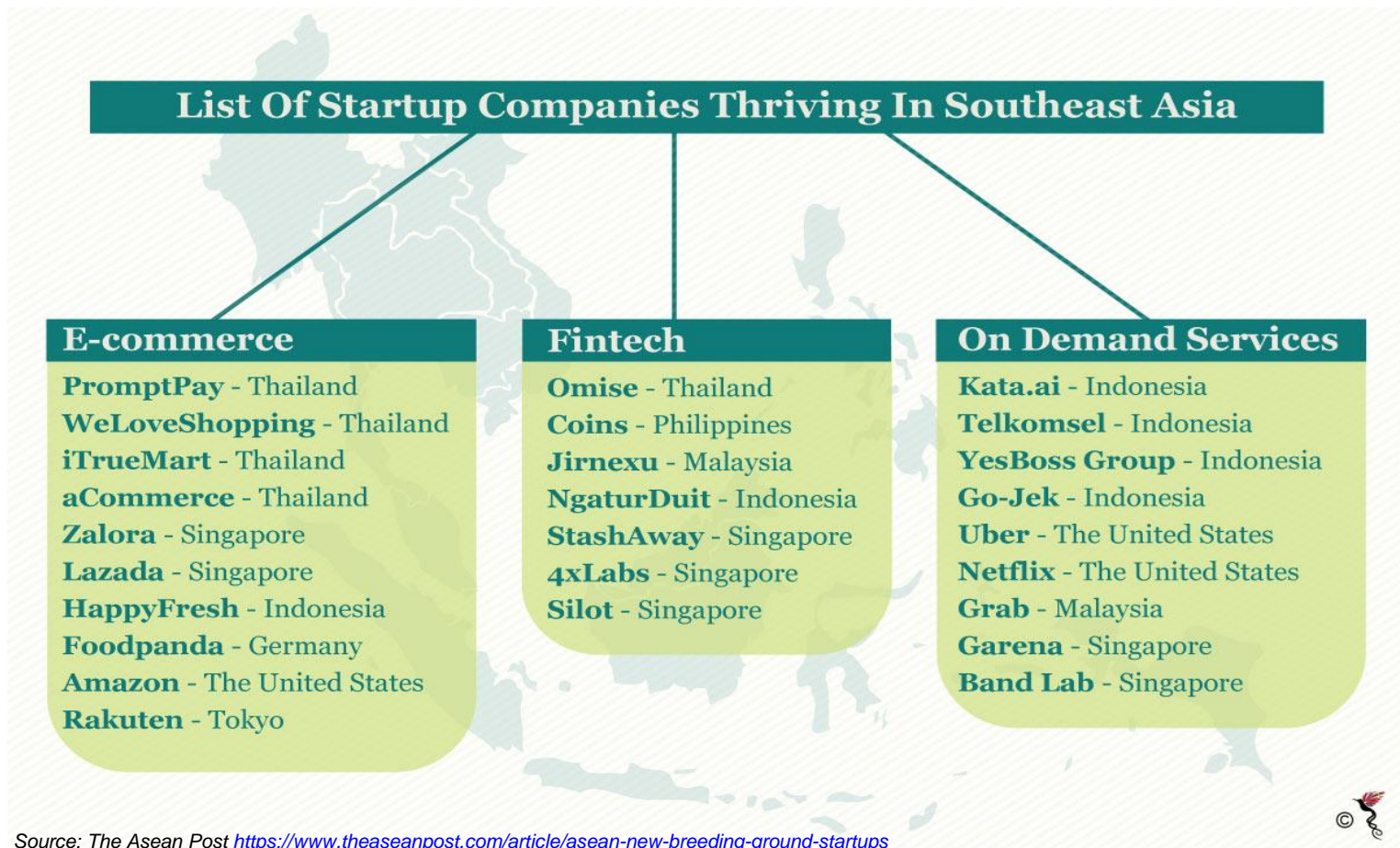
Aged 15-34
60%

Top
economies
**> 5.3%
growth**

260mil
internet users
700mil
mobile connections

ASEAN Startup Ecosystem

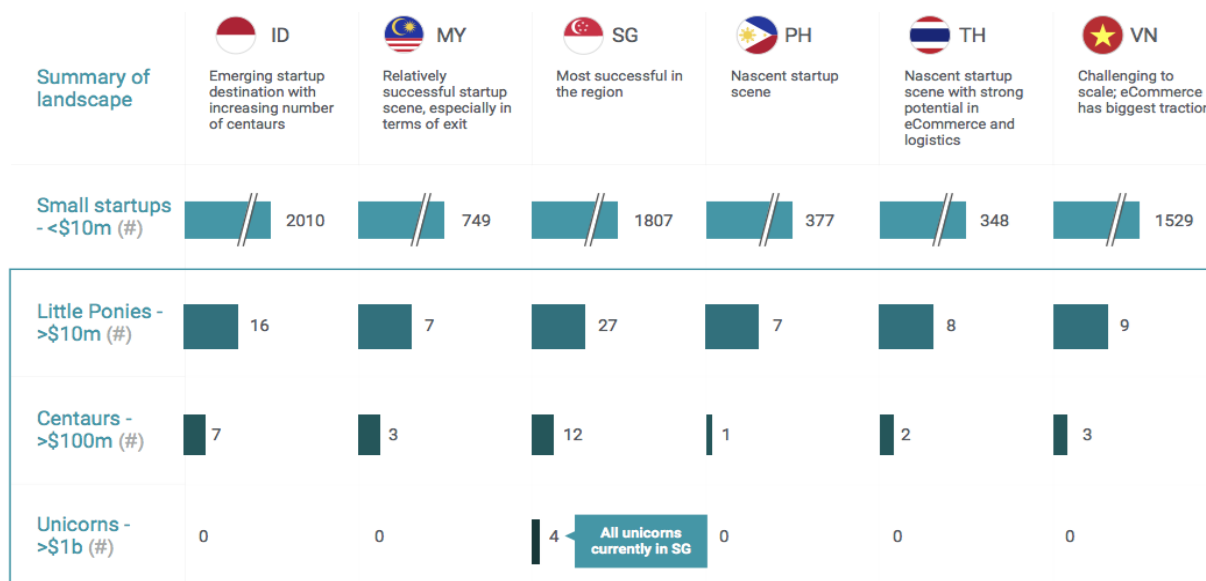
The Ecosystem is largely dominated by E-commerce, Fintech, and On-Demand services. There are positive signs for HealthTech too. MaGIC's Global Accelerator Program (GAP) has seen a near three folds increase in the number of applications from Fintech and HealthTech ventures in 2017.



There are an estimated 7,000 startups in South East Asia. Some 1,000 have received funding and only half of these have received funding beyond seed. However, between 2016 and Q3 2017, Southeast Asian internet companies were able to raise more than \$12B of capital, up from just \$1B in 2015 indicative of the growing focus on the region.

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2 SG currently most active country for VC; ID and VN have potential to drive significant value creation with appropriate investments



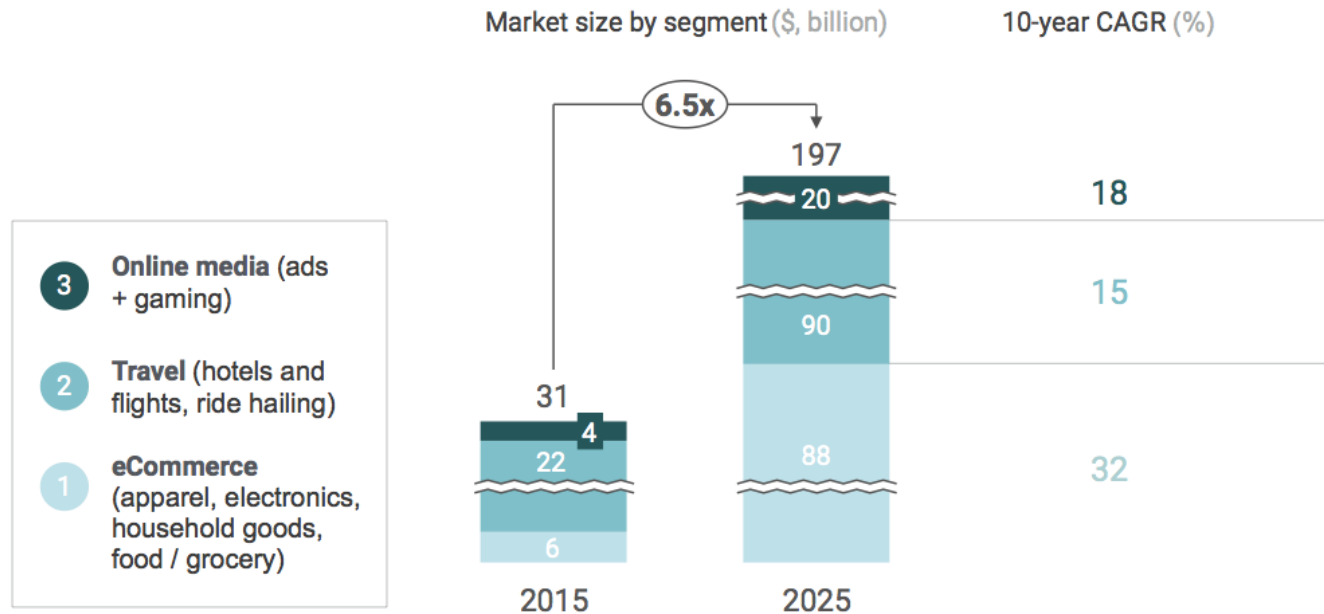
Only ~106 startups (~1.5% of total) have reached a valuation of >\$10mn

Internet Economy is ready to take-off

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The internet economy in SEA is expected to reach ~
\$200 billion by 2025 (6.5x increase over 10 years)

eCommerce and Travel to make up >90% of total online retail spend in 2025



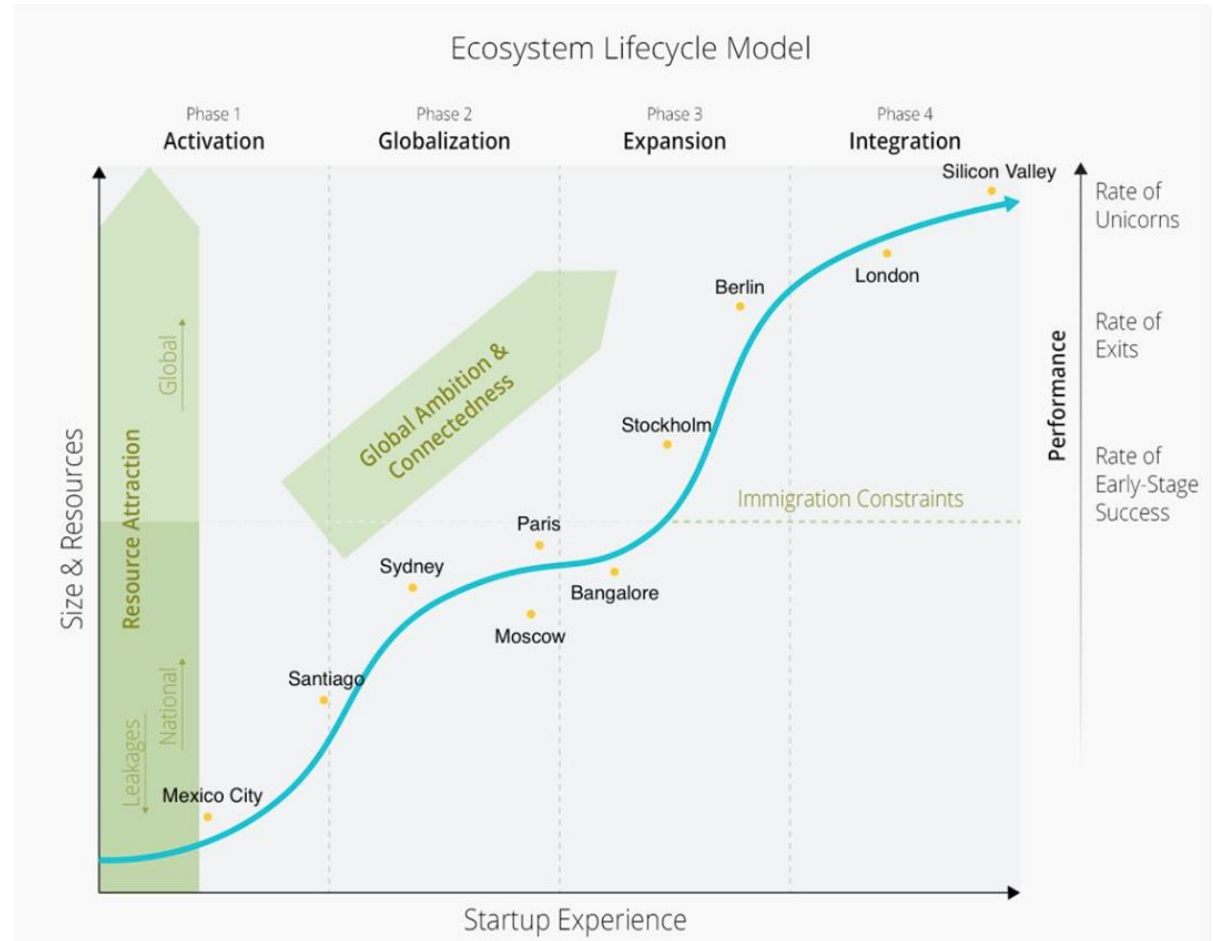
Ecosystem Reports

1. Startup Genome
2. Global Entrepreneurship Monitor (GEM)
3. Global Entrepreneurship Index (GEI)

Ecosystem Lifecycle Model



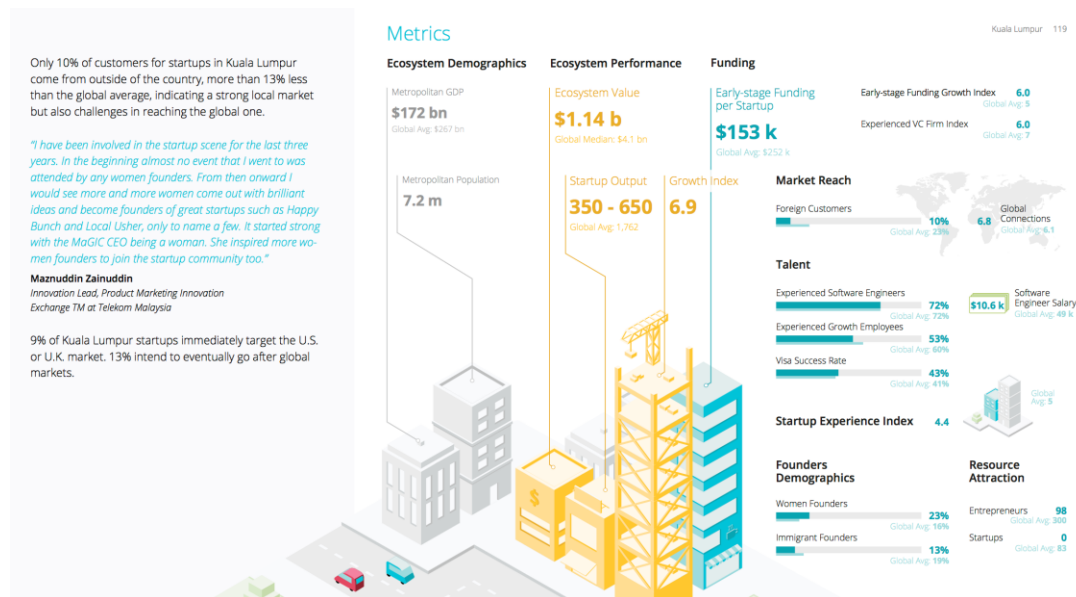
As an ecosystem grows, it goes through the following four phases, distinct in their characteristics such as size, strengths and challenges and what triggers them to the next phase.



Startup Genome 2017: Kuala Lumpur

- **Kuala Lumpur ranks in the Activation phase and is home to some 350 - 650 startups.** It's startup growth index is the third highest globally.
- **The city has an Ecosystem Value of \$1.14 billion dollars.** On this measure of startup valuations and exits, Kuala Lumpur's ecosystem is the 7th fastest growing globally.
- **Kuala Lumpur's Global Connectedness ranked higher than other city ecosystems in the same phase of development,** ranking well higher than the global median on both inbound and outbound International relationships.
- **Global Connectedness quantifies the valuable international relationships that exist between startup leaders.** The factor is highly correlated with the percentage of foreign customers, and is also highly correlated with Global Resource Attraction. Ecosystems that see a large flow of startups and entrepreneurs move into it benefit from this flow, capitalizing on it through global relationships which enhances the ability to "go global."

Whilst not all ASEAN ecosystems participate in the Startup Genome report, MaGIC's own research through it's ASEAN Centre of Entrepreneurship (ACE) shows that the region performs well on factors of Global Connectedness, Women Entrepreneurship, and Talent Access and Cost.



Source: <https://startupgenome.com/report2017/>

Startup Genome 2017: Singapore

Singapore has the 6th highest Percentage of Immigrant Founders in the world at 35%. It also has the 3rd highest level of Global Connectedness of all top 20 ecosystems outperforming even Silicon Valley.

"Singapore is an open society and welcomes entrepreneurs around the world to create the next big thing here."

James Tan
Managing Partner at Quest Ventures

Founders based in Singapore are the youngest in the world, with a median of 28 years. Only 27% of Singapore teams have 2-3 founders, the lowest rate in the world, and 20% lower than the next closest ecosystem. Our past research showed that startups with 2-3 founders significantly outperform other founder number combinations.

"The Singapore startup ecosystem is a fast growing, albeit young one. While progress is encouraging it is not without challenges. For one, exit options remain limited, thus restricting capital/talent liquidity circulating back into the ecosystem. I remain confident that this will be solved in time."

Tiang Lim Foo
Operating Partner at SeedPlus

Metrics

Ecosystem Demographics

Metropolitan GDP
\$264 bn
Global Avg: \$267 bn

Metropolitan Population
5.5 m

Ecosystem Performance

Ecosystem Value
\$11 bn
Global Median: \$4.1 bn

Startup Output
1.6 - 2.4 k
Global Avg: 1,762

Growth Index
4.6

Funding

Early-stage Funding per Startup
\$276 k
Global Avg: \$252 k

Early-stage Funding Growth Index
4.6
Global Avg: 5

Experienced VC Firm Index
8.2
Global Avg: 7

Market Reach

Foreign Customers
25%
Global Avg: 23%

Global Connections
11.4
Global Avg: 6.1

Talent

Experienced Software Engineers
80%
Global Avg: 72%

Experienced Growth Employees
74%
Global Avg: 60%

Visa Success Rate
25%
Global Avg: 41%

Software Engineer Salary
\$35 k
Global Avg: 49 k

Startup Experience Index
4.8

Global Avg: 5

Founders Demographics

Women Founders
12%
Global Avg: 16%

Immigrant Founders
35%
Global Avg: 19%

Resource Attraction

Entrepreneurs
463
Global Avg: 300

Startups
40
Global Avg: 83

Points to focus on from Startup Genome assessment:

Foundation Issues:

- *Entrepreneurial Spirit* of the population and how it manifests into Entrepreneurial Activity
- *Mindset* of the entrepreneur class

Focal Issues:

- *Local Connectedness*: Relationships between entrepreneurs, investors and other ecosystem stakeholders and the resources that are shared
- *Seed-Funding gap*
- *Rhythm of exists over \$100mil*: access to global know-how about how to develop a startup and what global customer needs are so startups effectively tackle globally-relevant problems that are yet to be solved

Total Entrepreneurial Activity

	TEA (%)	Innovation Rate (%)	2016 TEA Rank/65
Indonesia	14.1	17.7	20
Malaysia	4.7	3.5	63
Philippines	17.2	31.8	16
Thailand	17.2	17.1	11
Singapore	11 <small>(2014)</small>	20.5 <small>(2014)</small>	-
Vietnam	13.7	16.5	20
Burkina Faso	33.5	22.5	1
Ecuador	31.8	16.4	2
Belize	28.8	48.2	3



GEM reports on Total Early-stage Entrepreneurial Activity (TEA)

Most ASEAN ecosystems have low rates of Innovation in their entrepreneurial activity.

GEM 2016/17: Malaysia (Example)

- Malaysia ranks 62/65 on TEA
- Malaysia ranks 65/65 on Innovation-driven Entrepreneurship
- Ranks 18/65 on Government Entrepreneurship Programs and 16/65 on Government Policies that Support the ecosystem
- GEM covers one of the widest surveys to prepare it's ecosystem report. Every year typically 65-70 economies are covered through a survey reaching over 200,000 of the adult population in the various economies. Other ASEAN ecosystem pages can be found in the source below.

MALAYSIA



Population: 31.0 million (2015)
GDP: \$296.2 billion (2015)
GDP per capita: \$9557 (2015)
SME contribution to GDP: 35.9% (2014)
World Bank Doing Business Rating (2015): 78/100; Rank: 23/190
World Bank Starting a Business Rating (2015): N/A; Rank: 112/190
World Economic Forum Global Competitiveness Rating (2015): 5.2/7; Rank: 25/138
Economic Development Phase: Efficiency-Driven

COUNTRY PROFILES

Self-Perceptions About Entrepreneurship		
	Value %	Rank/64
Perceived opportunities	25.4	58
Perceived capabilities	28.3	63
Undeterred by fear of failure	36.7	33
Entrepreneurial intentions	4.9	63

Activity		
	Value %	Rank/64
Total Early-stage Entrepreneurial Activity (TEA)		
TEA 2016	4.7	62
TEA 2015	2.9	59
TEA 2014	5.9	N/A
Established business ownership rate	4.7	49
Entrepreneurial Employee Activity - EEA	0.3	63

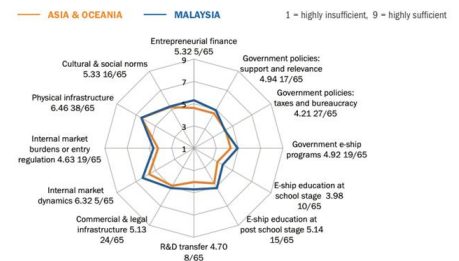
Motivational Index		
	Value	Rank/64
Improvement-Driven Opportunity/Necessity Motive	3.7	177

Gender Equality		
	Value	Rank/64
Female/Male TEA Ratio	0.92	37
Female/Male Opportunity Ratio	1.14	3

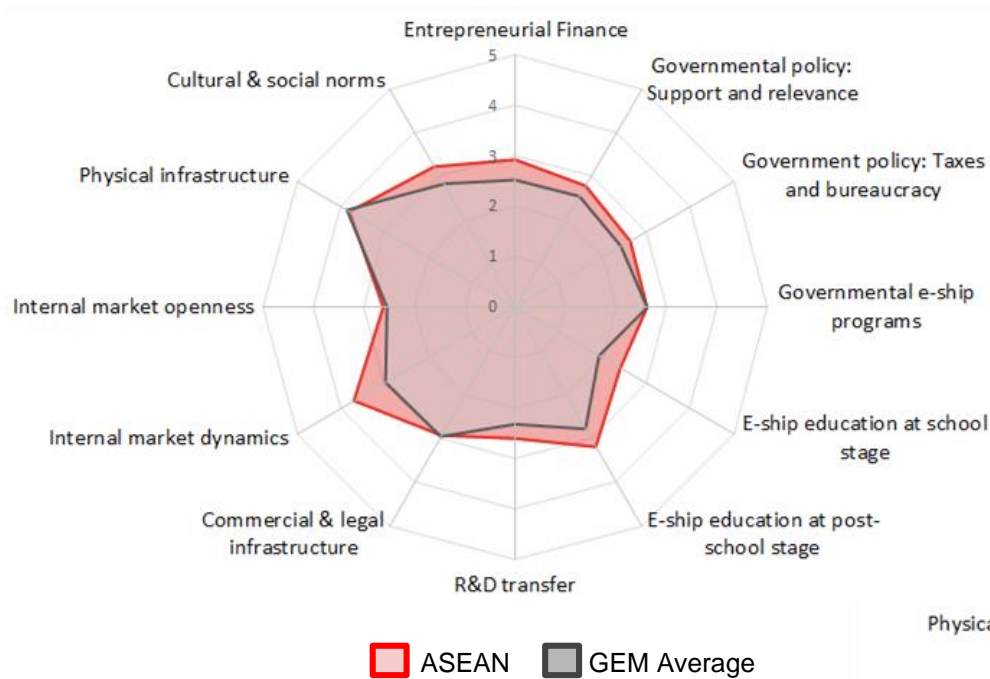
Entrepreneurship Impact		
	Value %	Rank/64
Job expectations (6+)	8.2	55
Innovation	3.5	64
Industry (% in Business Services Sector)	6	52

Societal Value About Entrepreneurship		
	Value %	Rank/61
High status to entrepreneurs	50.3	58
Entrepreneurship a good career choice	44.1	57

Expert Ratings of the Entrepreneurial Eco-system (ranked out of 65)



GEM 2016/17: Ecosystems Compared



Expert Ratings: 1 = highly insufficient, 5 = highly sufficient

Relation between E-ship and Innovation

“Entrepreneurship, in its broadest sense, is the capacity to create and develop new business ventures. But definitions used can be hard to follow and quantify. The OECD defines entrepreneurship as ‘the phenomenon associated with entrepreneurial activity as the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets (UNCTAD 2015).

Pioneers of economic thinking on entrepreneurship argued that it is synonymous with innovation – the introduction of new products or processes or the opening up of new markets that replace the old in a process of ‘creative destruction’ (Schumpeter 1911). This suggests that **existing firms that launch new product lines or expand businesses in new markets or adopt new technological processes could also be called entrepreneurs. And it is not enough to set up a new business; the business needs to be *innovative for it to be counted as an entrepreneurial venture.***”

Why Innovation matters?

GEM doesn't produce an index. It ranks economies on various entrepreneurship related factors. The scores end up showing the quantity of entrepreneurship, and not necessarily the quality.

GEM's TEA is made up of both necessity-driven entrepreneurship and opportunity-driven entrepreneurship. In most of the factor-driven economies and poor economies of the world, necessity-driven entrepreneurship is high as people have no option but to self-sustain themselves through entrepreneurship. However this doesn't necessarily mean their entrepreneurship ecosystems are well developed – TEA does not indicate the quality of these ecosystems.

“While many think of the output of ecosystems as more startups, like GEM, this is wrong and misleading. The dual service created by entrepreneurial ecosystems is (1) resource allocation towards productive uses and (2) the innovative, high-growth ventures that drive this process.”

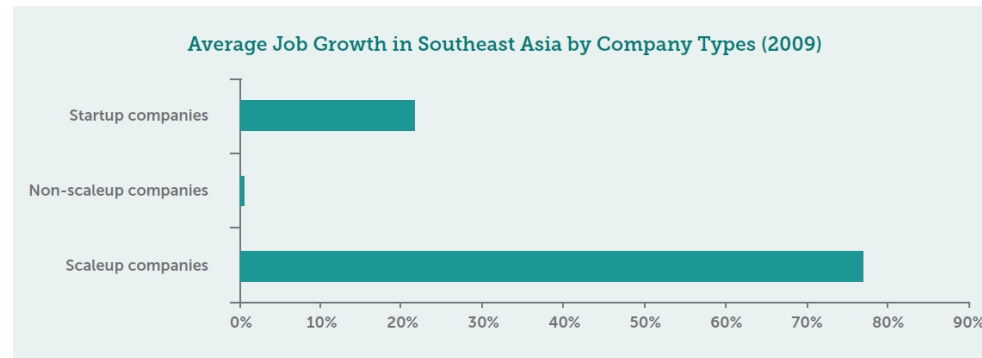
Source: The Global Entrepreneurship Index 2017 Report, <https://thegei.org>

Focus on Scaleups

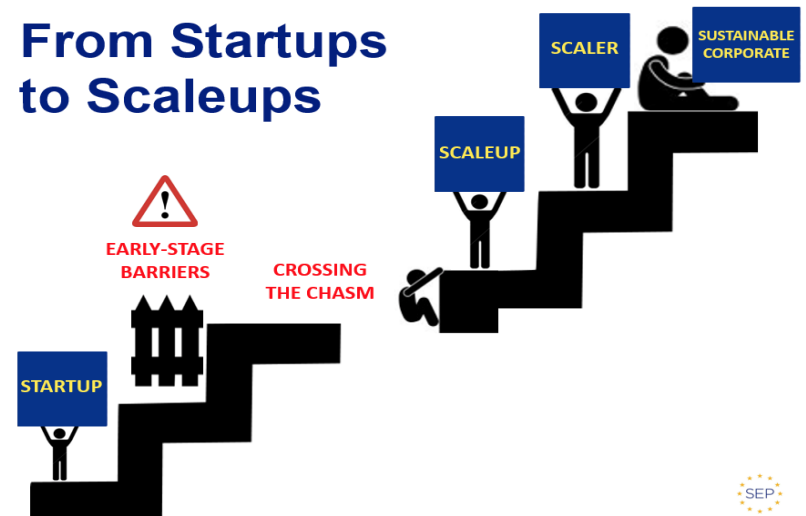
Data from World Bank analyzed by Endeavor Insight shows that scaleups in SEA account for only 14% of all companies but create 77% of the net new jobs.

A scaleup (company) is a company who has an average annualized return of at least 20% in the past 3 years with at least 10 employees in the beginning of the period (OECD, 2007)

The importance of scaleups and the rise of their terminology can be found in the study of the World Economic Forum which found that not all start-ups make it big, but the ones that do greatly impact society by means of new technology, services and increased employment.



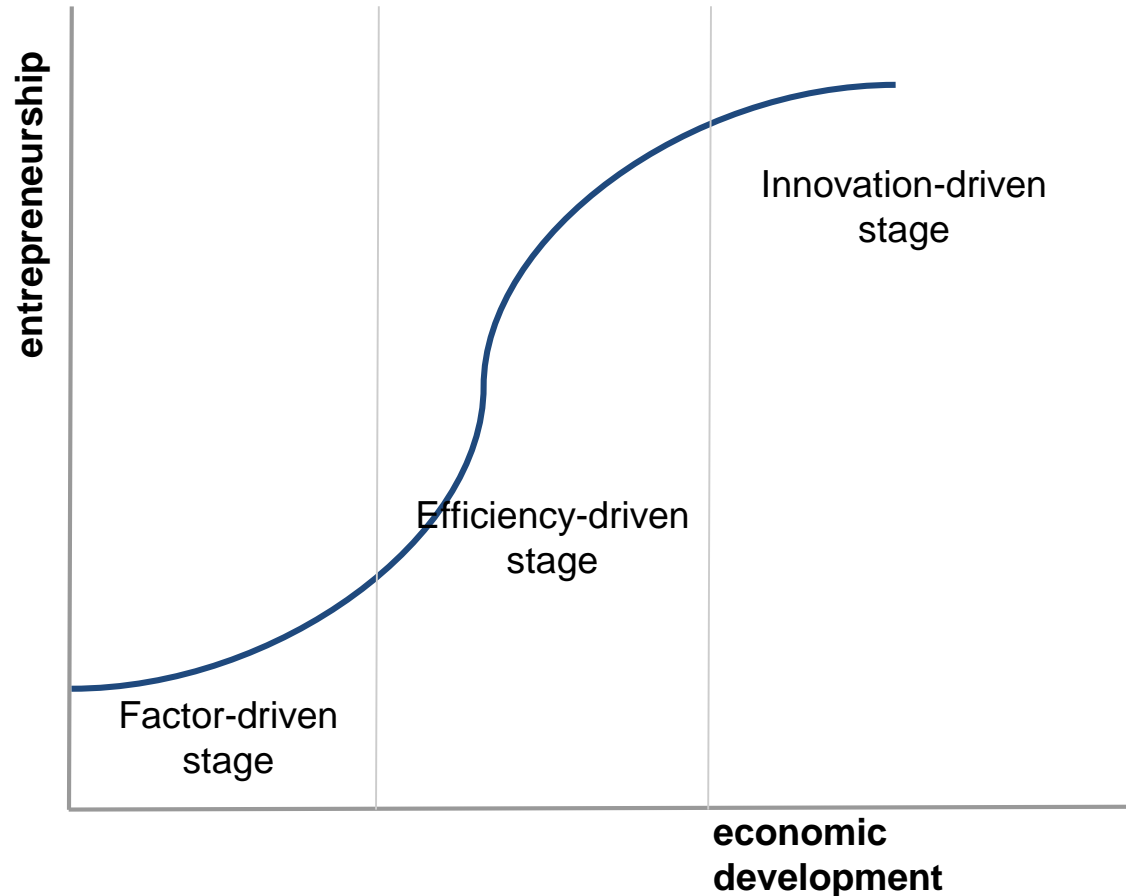
From Startups to Scaleups



Relation between GDP and E-ship

“Countries that have low necessity entrepreneurship are more developed and countries that have a high level of necessity entrepreneurship have a low level of development. **The relationship between Entrepreneurship and Economic development is positive (S-shaped curve) when only opportunity-driven entrepreneurship is considered.**”

Innovation accounts for only 5% of economic activity in factor-driven and 10% of economic activity in efficiency driven.



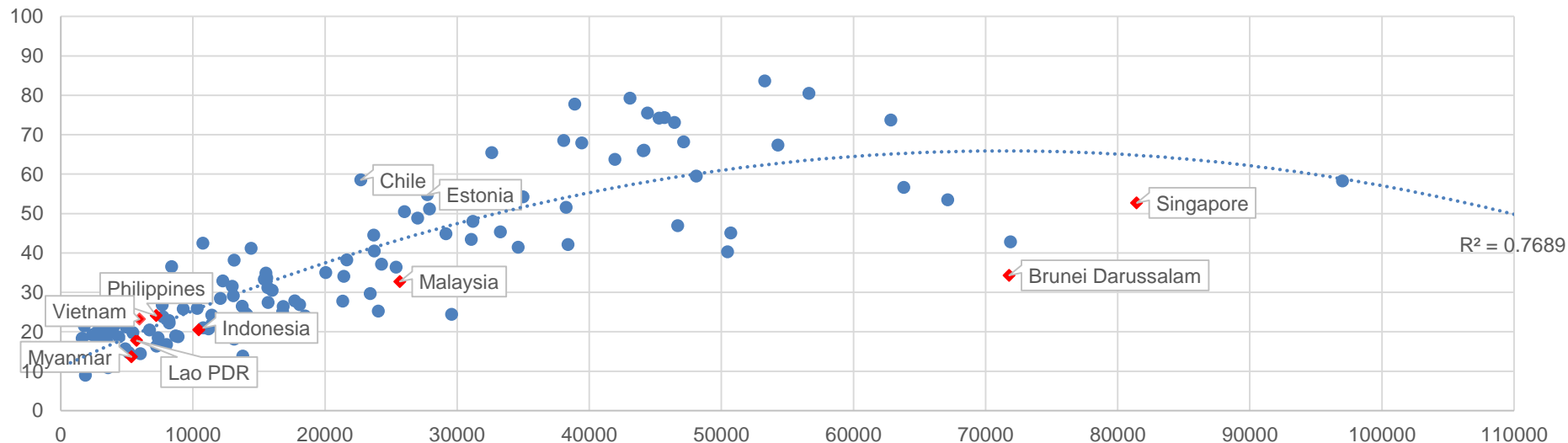
Global Entrepreneurship Index



	GEI 2018 (Rank)	Economic Impact (\$bil)
Brunei	34.3 (53)	1.43
Cambodia	17.6 (113)	25.38
Indonesia	20.7 (94)	534.70
Loas	17.8 (112)	12.91
Malaysia	32.7 (58)	100.96

	GEI 2018 (Rank)	Economic Impact (\$bil)
Myanmar	13.6 (127)	84.06
Philippines	24.1 (84)	241.09
Singapore	52.7 (27)	28.55
Thailand	27.4 (71)	181.86
Vietnam	23.2 (87)	200

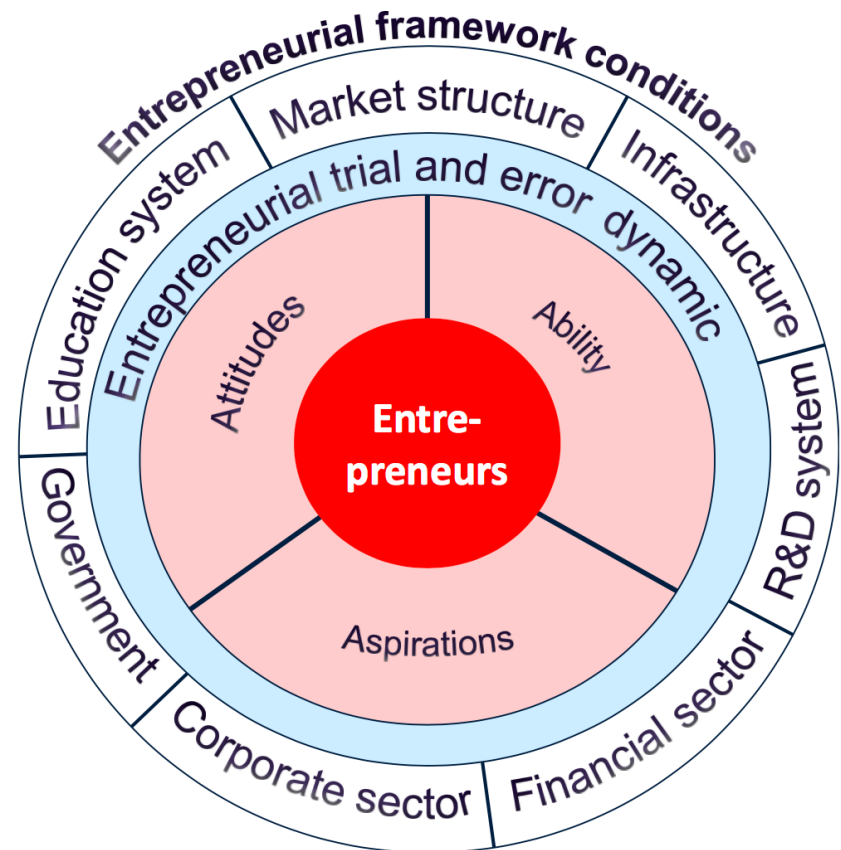
GEI 2018 vs GDP Per Capita (PPP)



Global Entrepreneurship Index

GEDI defines entrepreneurial ecosystems as “...**dynamic institutionally embedded interaction between entrepreneurial attitudes, abilities and aspirations**, by individuals, which drives the allocation of resources through the creation and operation of new ventures.”

- It measures include 14 pillars across the three dimensions of Attitude, Ability, and Aspiration.
- The measures include both individual-level and institutional/environment variables. The individual-level variables are from the GEM survey, whilst institutions variables are from other sources.
- It uses the Penalty of Bottleneck algorithm, to penalize the higher performing pillar values and adjusts these to the weakest performing pillar value.

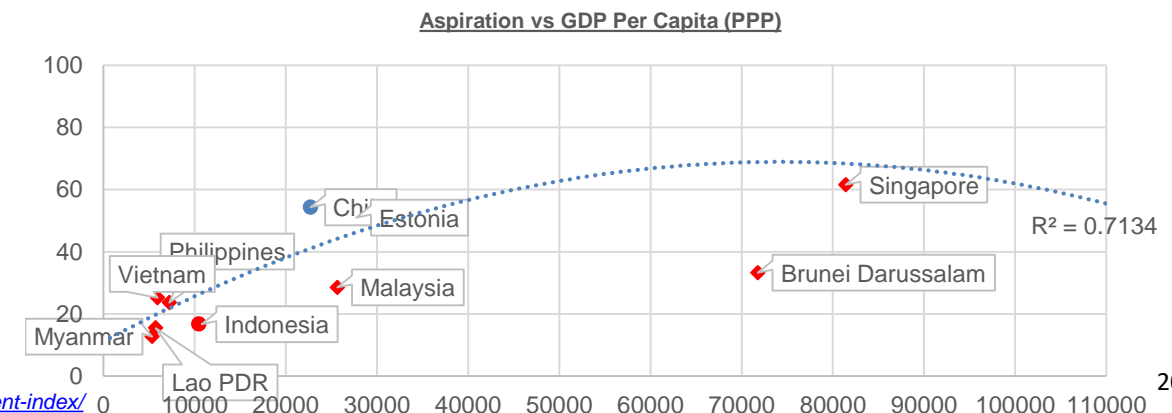
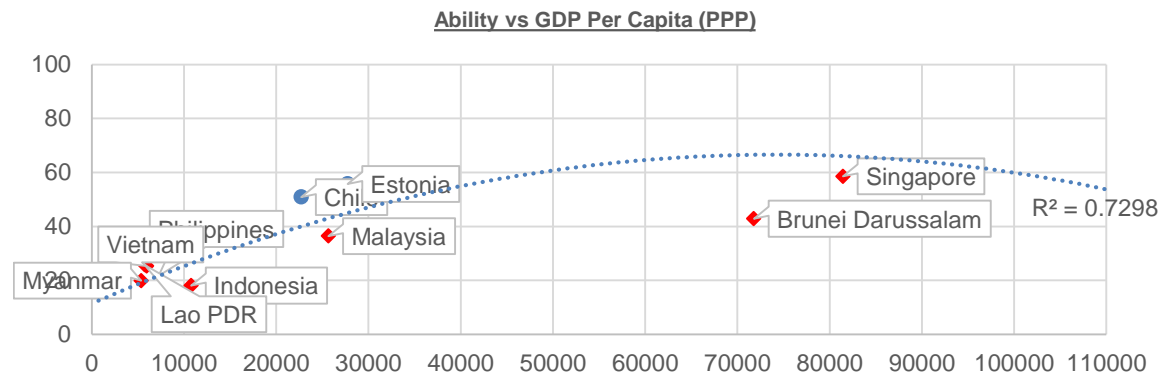
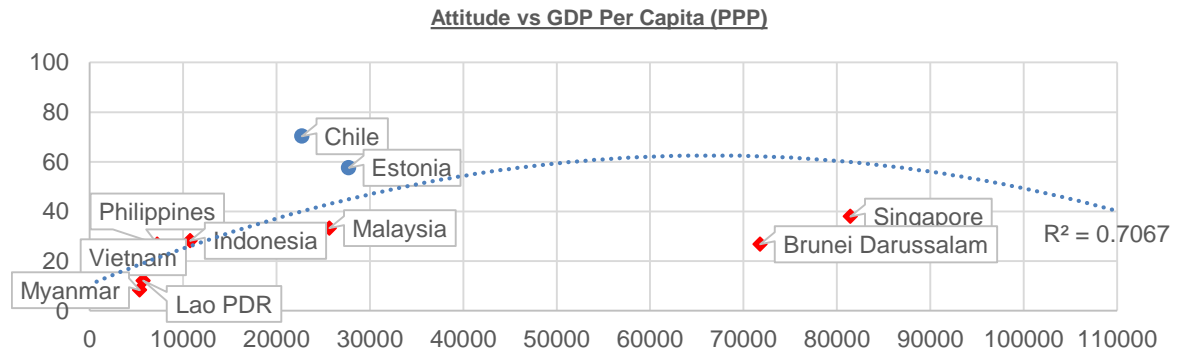


Source: <http://thegedi.org/global-entrepreneurship-and-development-index/>

GEI 2018: Attitude, Ability, Aspiration

For ASEAN countries, the scores for Attitude and Aspiration impact overall GEI score more than the scores for Ability.

Hence, as per the Penalty of Bottleneck Algorithm, the way to improve the overall GEI scores is to focus more on the Attitude and Aspiration pillars. This relates to the findings from Startup Genome too where Talent access was not seen as a stumbling issue.



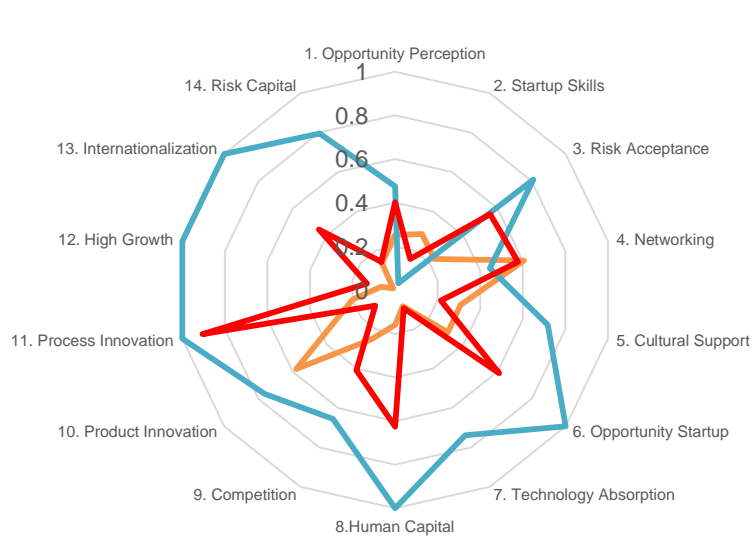
GEI Innovation Driven Economies

When compared to other economies transitioning to becoming Innovation-driven, Malaysia ranks low on individual-level scores for Startup skills, Career Status, Technology level, Product Innovation, High Growth, and Risk Capital.

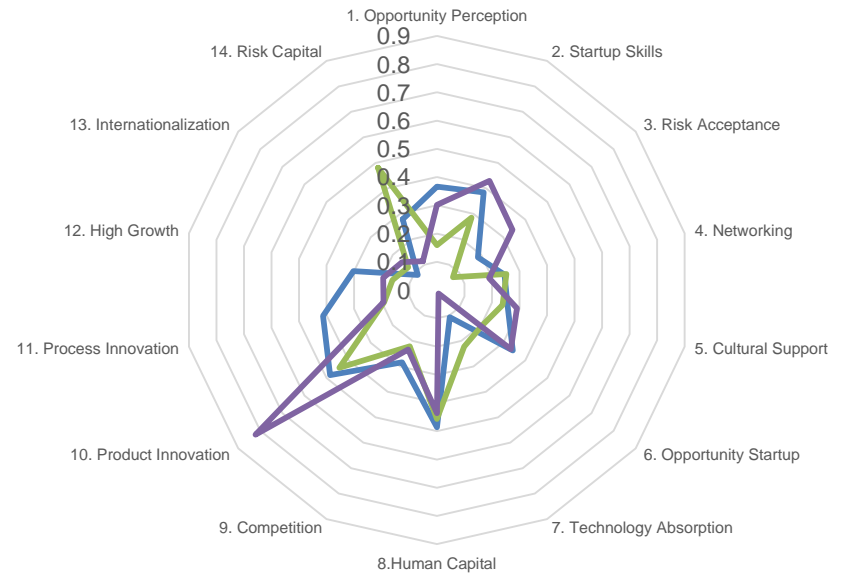
Most of the above also applies across ASEAN countries including Singapore. The Institutional variable scores are mostly stronger than individual scores, which are lowest on the Attitude and Aspiration pillars.

PILLARS			#	INSTITUTIONAL VARIABLES			#	INDIVIDUAL VARIABLES			#
Opportunity Perception	0.40		8	Freedom	0.69	2	Opportunity Recognition	0.55	11		
Start-up Skills	0.16		17	Tertiary Education	0.62	9	Skill Perception	0.38	17		
Risk Acceptance	0.56		3	Country Risk	0.61	3	Risk Perception	0.73	4		
Networking	0.58		6	Agglomeration	0.76	1	Known Entrepreneurs	0.63	8		
Cultural Support	0.22		15	Corruption	0.56	9	Career Status	0.25	18		
Entrepreneurial Attitudes	0.33		10								
Opportunity Startup	0.61		5	Governance	0.67	4	Opportunity Motivation	0.93	1		
Technology Absorption	0.09		18	Tech Absorption	0.77	1	Technology Level	0.00	18		
Human Capital	0.63		4	Labor Market	0.89	1	Educational Level	0.89	3		
Competition	0.41		2	Market Dominance	0.81	1	Competitors	0.48	15		
Entrepreneurial Abilities	0.36		7								
Product Innovation	0.12		18	Technology Transfer	0.82	1	New Product	0.34	18		
Process Innovation	0.90		1	Science GERD	0.69	2	New Tech	0.88	4		
High Growth	0.13		17	Finance and Strategy	1.00	1	Gazelle	0.10	18		
Internationalization	0.45		8	Globalization	0.71	4	Export	0.52	12		
Risk Capital	0.14		15	Depth of Capital Market	0.93	1	Informal Investment	0.35	15		
Entrepreneurial Aspirations	0.29		13								
GEI	0.33		12	INSTITUTIONAL	0.74	1	INDIVIDUAL	0.47	16		
Bottom quartile											
Lower middle quartile											
Higher middle quartile											
Top quartile											
# Malaysia's ranking for the variable is indicated next to its pillar value											
Countries included in the comparison are: Argentina, Brazil, Chile, Costa Rica, Croatia, Hungary, Latvia, Lebanon, Lithuania, Malaysia, Mexico, Oman, Panama, Poland, Romania, Russia, Turkey, and Uruguay. Seychelles and Mauritius data is not available.											

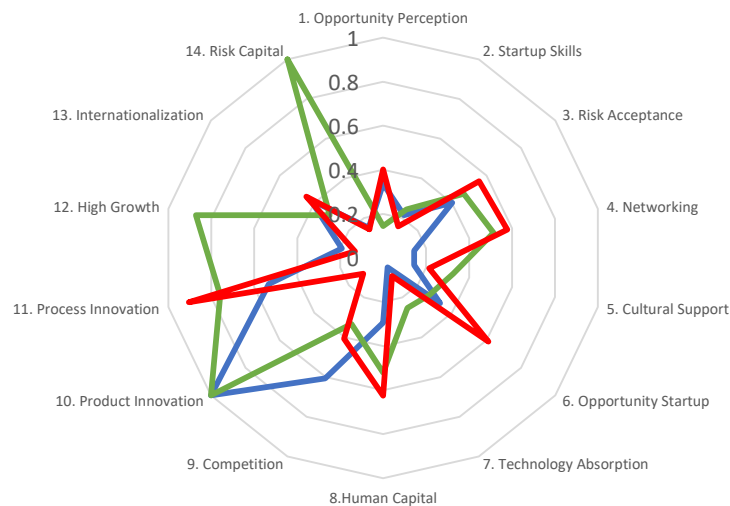
GEI 2018: Comparisons



Indonesia Singapore Malaysia



Thailand Vietnam Philippines

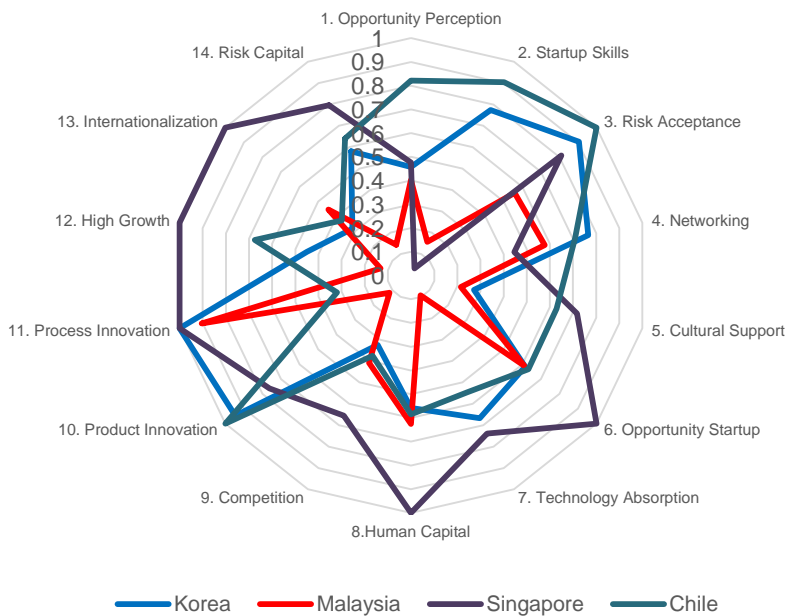


India China Malaysia

% of Effort on GEI

A 10% increase in GEI scores for all ASEAN economies could add USD1.4trillion to the ASEAN economy.

Chart below applies to Malaysia, showing the percentage of total effort that needs to go into increasing Malaysia's GEI score by 10 points.

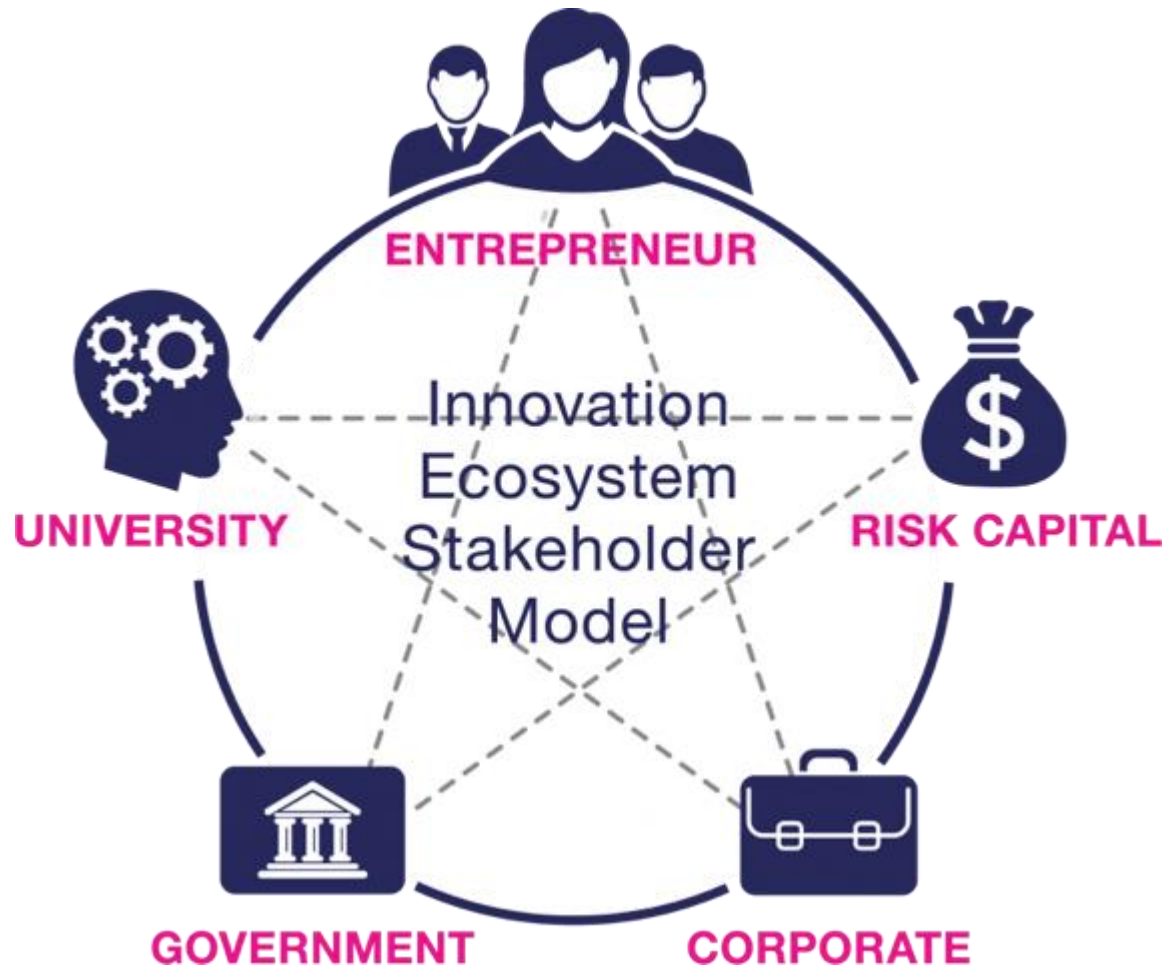


Pillar	Required Increase in Pillar	Percentage of total new effort
Opportunity Perception	0.00	0%
Startup Skills	0.00	0%
Risk Acceptance	0.00	0%
Networking	0.00	0%
Cultural Support	0.02	4%
Opportunity Startup	0.00	0%
Technology Absorption	0.25	51%
Human Capital	0.00	0%
Competition	0.00	0%
Product Innovation	0.02	4%
Process Innovation	0.00	0%
High Growth	0.18	37%
Internationalization	0.00	0%
Risk Capital	0.02	4%

Entrepreneurial Ecosystem Shifts

1. **Demographics:** Changing demographics (e.g., ageing population) will affect the pipeline of entrepreneurs and impact entrepreneurial dynamism.
2. **New Nature of entrepreneurship:** Traditionally entrepreneurial companies create jobs. However the rate of job growth today lags behind revenue thanks to technology. At the same time, platforms lower barriers to entry and open more entrepreneurial opportunities (think Airbnb, Uber etc.) - micro-entrepreneurship is on the rise.
3. **Third wave of Innovation:** puts corporates at an advantage. This is because the third wave mostly involves products and services that are much more costly to create. Hence ecosystem development needs to match corporates that are keen on innovation with startups and entrepreneurs that have new business model ideas but may not have access to resource and markets.
4. **Collaborative economy is here to stay:** Ownerships is reducing, and other ways to share, borrow, rent are on the rise. The five main sharing economy sectors (collaborative finance, peer-to-peer accommodation, peer-to-peer transportation, on-demand household services and on-demand professional services) are poised to generate \$335 billion by 2025¹. Platforms that enable the sharing economy are already some of the biggest corporations in the world.

Ecosystem Stakeholder Model



This is the generally accepted stakeholder model.

The future though is a collaborative economy where our citizens play a crucial role – not only are they beneficiaries of innovation but they have an important participatory role to play in the ecosystem. The ASEAN stakeholder model needs to be and will be different.

Platforms such as MaGIC's Actyvate (<http://actyvate.my/>) are examples of how the collaborative economy is shaping up in ASEAN.

1. Startup Genome = Ecosystem Lifecycle Model

Global Entrepreneurship Monitor = Total Early-stage Entrepreneurial Activity

Global Entrepreneurship and Development Institute = Entrepreneurship Index

2. ASEAN countries need to focus their entrepreneurship programs on mindset change, and on supporting not just startups but also scaleups.
3. Collaborative economy needs to include platforms, such as crowdsourcing and crowdfunding platforms, that involve citizens at large, unlocking collective creative and innovation capabilities. Additionally data from these platforms will help in measuring the impact of this innovation to the economy and will help shape ASEAN's Social Enterprise future at the same time.

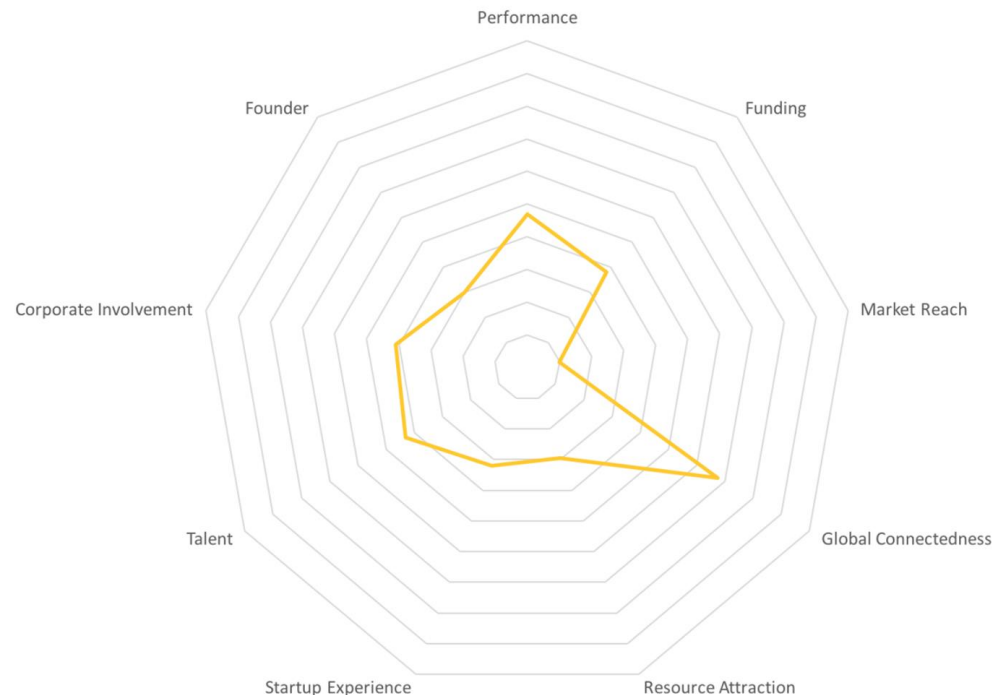
[@magiccyberjaya](https://mymagic.my)

Aditya Tuli, VP Tech and Innovation, @adityatuli

Appendix

Startup Genome 2016-2017 Global report placed Kuala Lumpur at the earliest stage of ecosystem development viz., Activation stage. The main factors determining this position are KL's Startup Output of 350-650 startups and its Startup Experience, with very few large exists (>\$100mil) over the last few years.

Kuala Lumpur Factor Ranks



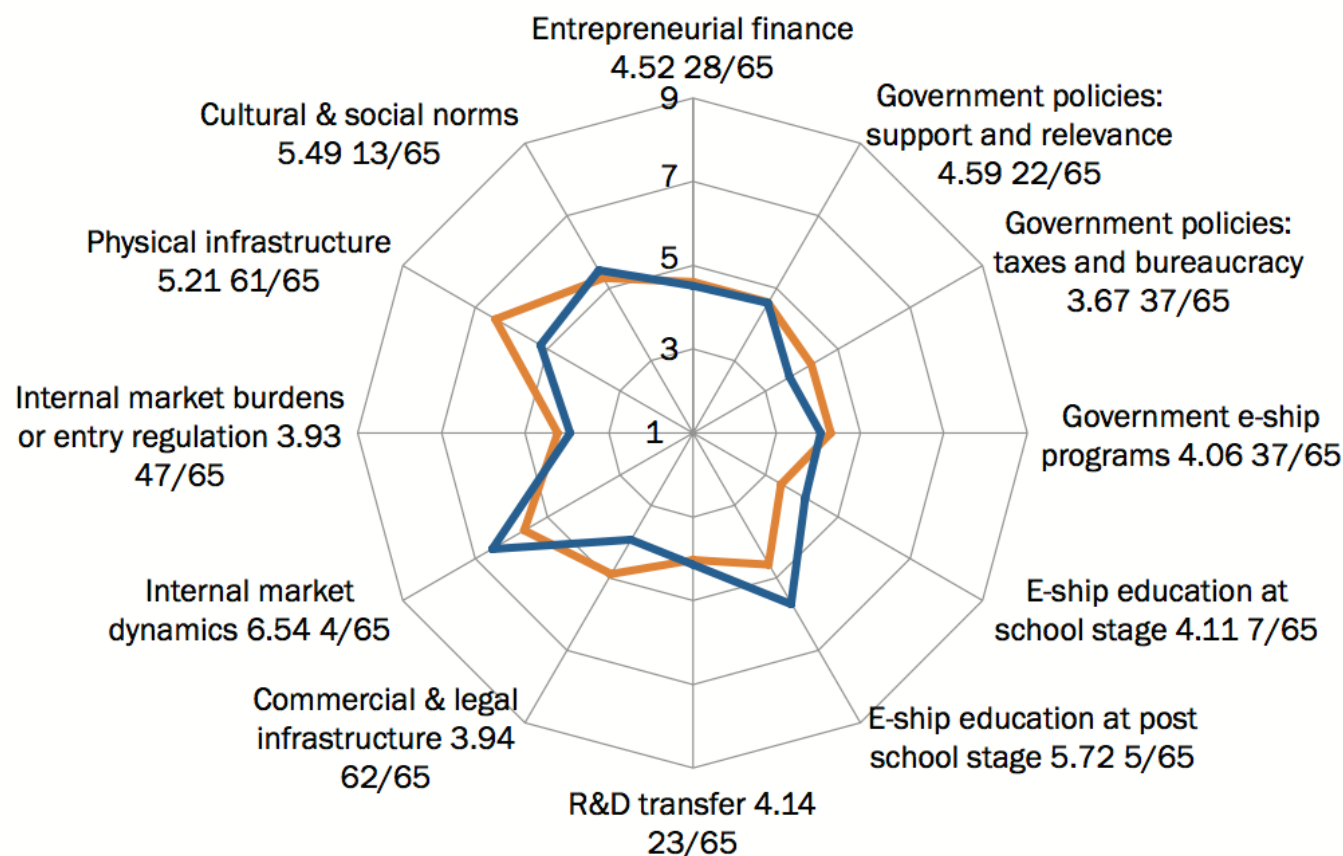
GEM 2016/17: Indonesia

Expert Ratings of the Entrepreneurial Eco-system (ranked out of 65)

— ASIA & OCEANIA

— INDONESIA

1 = highly insufficient, 9 = highly sufficient



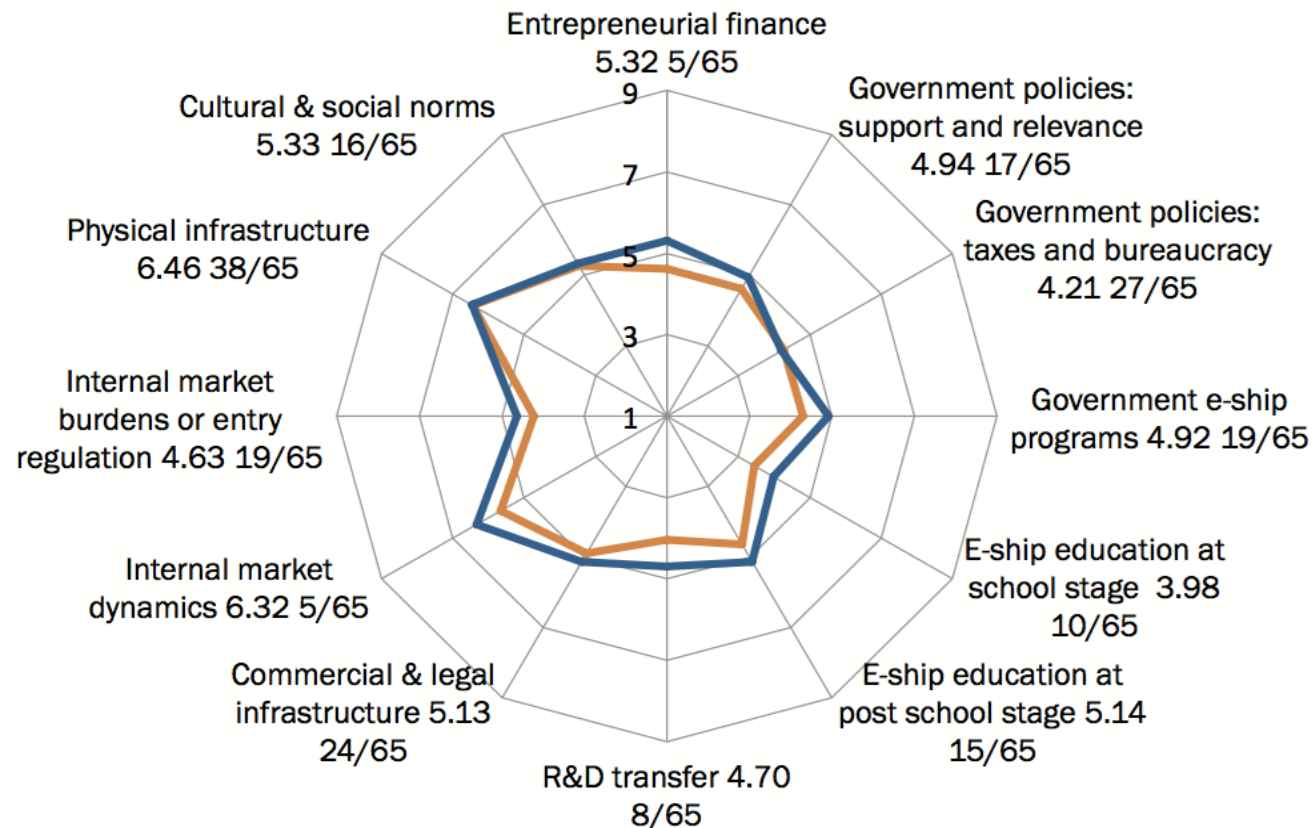
GEM 2016/17: Malaysia

Expert Ratings of the Entrepreneurial Eco-system (ranked out of 65)

— ASIA & OCEANIA

— MALAYSIA

1 = highly insufficient, 9 = highly sufficient



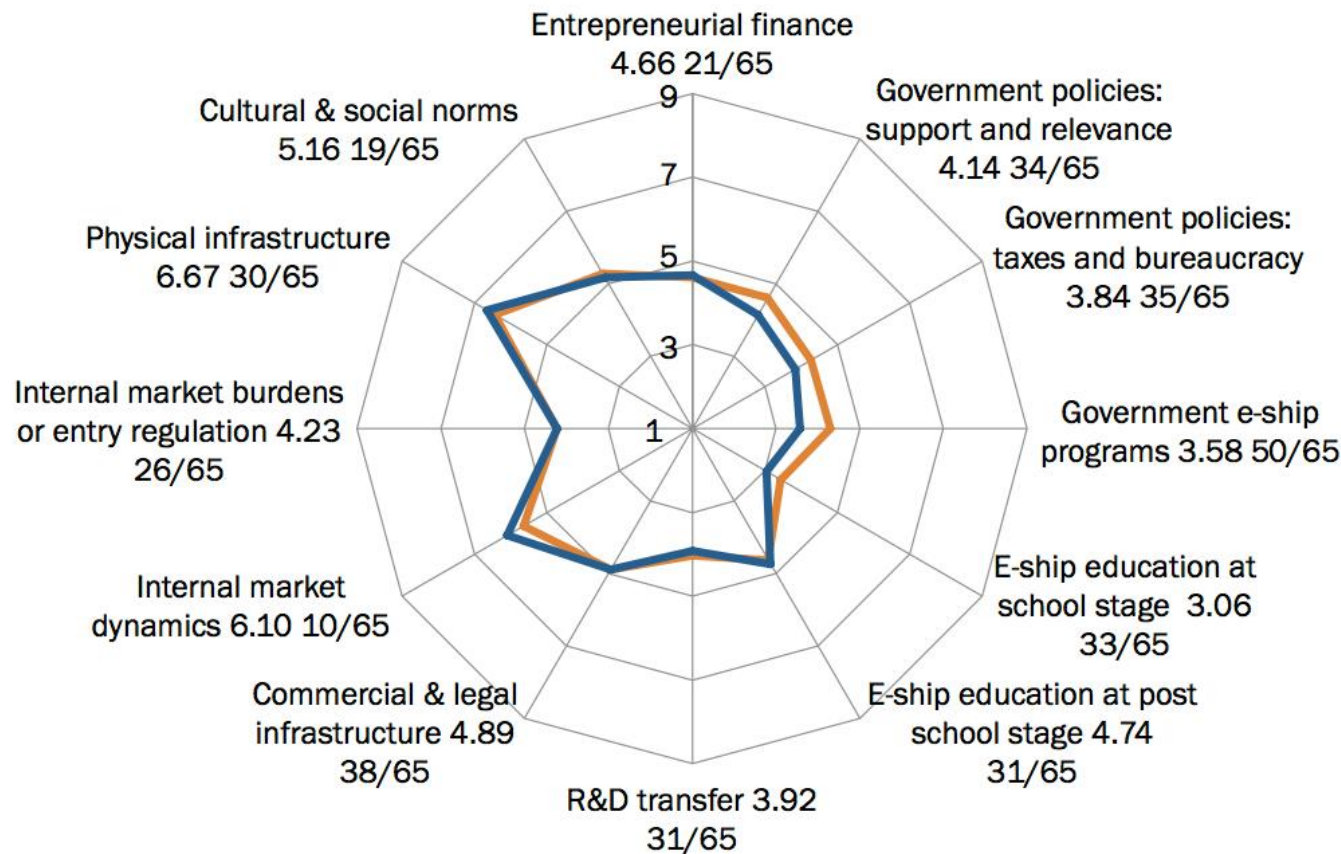
GEM 2016/17: Thailand

Expert Ratings of the Entrepreneurial Eco-system (ranked out of 65)

— ASIA & OCEANIA

— THAILAND

1 = highly insufficient, 9 = highly sufficient



GEDI 2018

Brunei Darussalam

Global Rank:
53 of 137

Strongest area:
Human Capital

Weakest area:
Process Innovation

Overall GEI score:

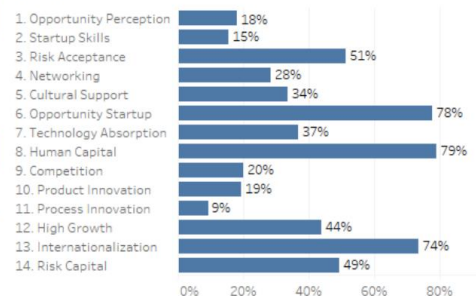


Individual score:
entrepreneurial qualities of
the people in the ecosystem

Institutional score:
quality of the institutions
that support
entrepreneurship



Component scores



Cambodia

Global Rank:
113 of 137

Strongest area:
Product Innovation

Weakest area:
Risk Acceptance

Overall GEI score:

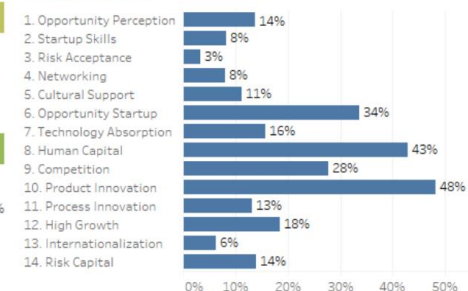


Individual score:
entrepreneurial qualities of
the people in the ecosystem

Institutional score:
quality of the institutions
that support
entrepreneurship



Component scores



Indonesia

Global Rank:
94 of 137

Strongest area:
Networking

Weakest area:
Internationalization

Overall GEI score:

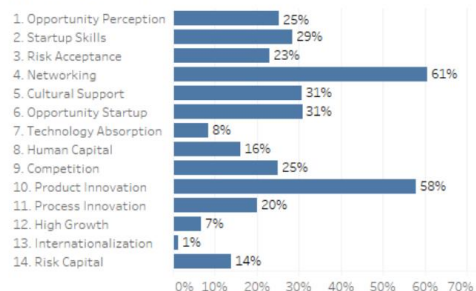


Individual score:
entrepreneurial qualities of
the people in the ecosystem

Institutional score:
quality of the institutions
that support
entrepreneurship



Component scores



Lao PDR

Global Rank:
112 of 137

Strongest area:
Human Capital

Weakest area:
Risk Acceptance

Overall GEI score:

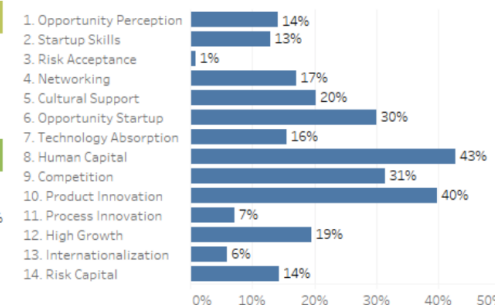


Individual score:
entrepreneurial qualities of
the people in the ecosystem

Institutional score:
quality of the institutions
that support
entrepreneurship



Component scores



GEI 2018 (contd.)

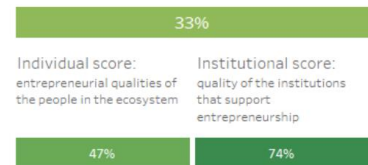
Malaysia

Global Rank:
58 of 137

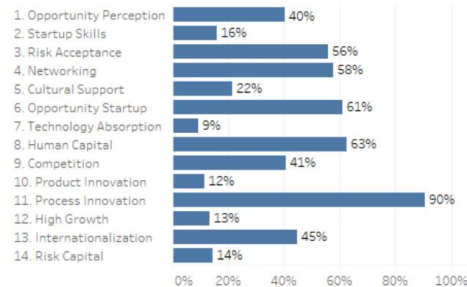
Strongest area:
Process Innovation

Weakest area:
Technology Absorption

Overall GEI score:



Component scores



Myanmar

Global Rank:
127 of 137

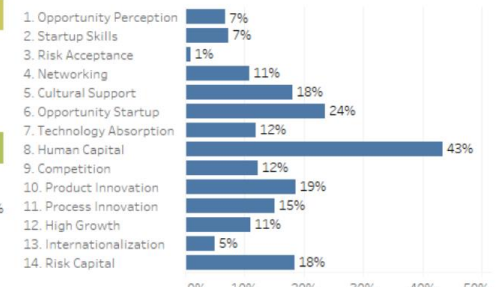
Strongest area:
Human Capital

Weakest area:
Risk Acceptance

Overall GEI score:



Component scores



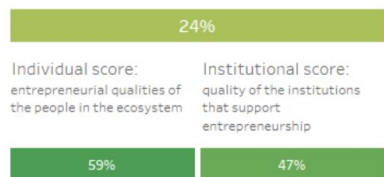
Philippines

Global Rank:
84 of 137

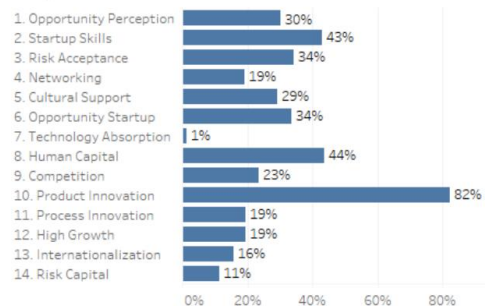
Strongest area:
Product Innovation

Weakest area:
Technology Absorption

Overall GEI score:



Component scores



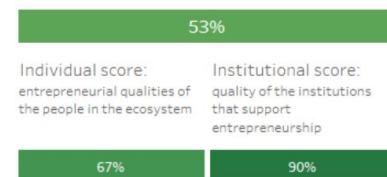
Singapore

Global Rank:
27 of 137

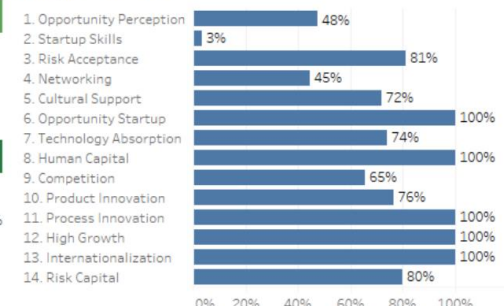
Strongest area:
Opportunity Startup; Human Capital; Process
Innovation; High Growth; Internationalization

Weakest area:
Startup Skills

Overall GEI score:



Component scores



GEI 2018 (contd.)

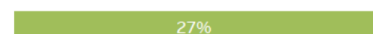
Thailand

Global Rank:
71 of 137

Strongest area:
Human Capital

Weakest area:
Internationalization

Overall GEI score:

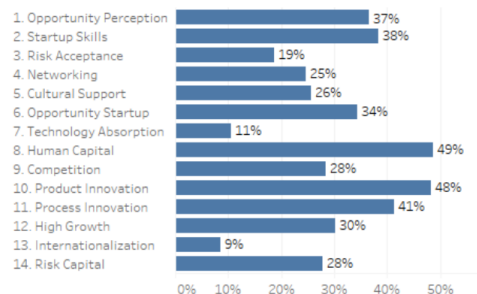


Individual score:
entrepreneurial qualities of
the people in the ecosystem

Institutional score:
quality of the institutions
that support
entrepreneurship



Component scores



Vietnam

Global Rank:
87 of 137

Strongest area:
Risk Capital

Weakest area:
Risk Acceptance

Overall GEI score:

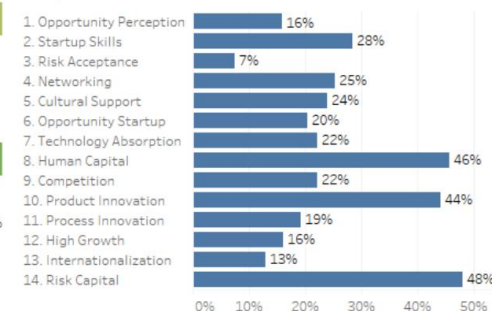


Individual score:
entrepreneurial qualities of
the people in the ecosystem

Institutional score:
quality of the institutions
that support
entrepreneurship



Component scores



Note: Data for some ASEAN economies is approximated in GEI. The last available GEM data for the major 6 economies of Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam is considered. And for the remaining ASEAN countries, data is approximated based on the average of their neighbors where this data is available from the GEM survey.

GEI Pillars: Focus Pillars explained

Pillar 2: *Startup Skills*. Launching a successful venture requires the potential entrepreneur to have the necessary startup skills. **Skill Perception measures the percentage of the population who believe they have adequate startup skills.** Most people in developing countries think they have the skills needed to start a business, but their skills were usually acquired through workplace trial and error in relatively simple business activities. In developed countries, business formation, operation, management, etc., require skills that are acquired through formal education and training. Hence education, especially post-secondary education, plays a vital role in teaching and developing entrepreneurial skills. Today there are 150 million students enrolled in some kind of education beyond high school, a 53 percent increase in less than a decade. People all over the world see education as a pathway out of poverty.

Pillar 5: *Cultural Support*. This pillar is a combined measure of how a country's inhabitants view entrepreneurs in terms of status and career choice, and how the level of corruption in that country affects this view. Without strong cultural support, the best and brightest do not want to be responsible entrepreneurs, and they decide to enter a traditional profession. **Career Status is the average percentage of the population age 18-64 who say that entrepreneurship is a good career choice and enjoys high status.** The associated institutional variable measures the level of corruption. High levels of corruption can undermine the high status and steady career paths of legitimate entrepreneurs.

GEI Pillars: Focus Pillars explained

Pillar 7: Technology Absorption. In the modern knowledge economy, information and communication technologies (ICT) play a crucial role in economic development. Not all sectors provide the same chances for businesses to survive and or their potential for growth. **The Technology Level variable is a measure of the businesses that are in technology sectors.** The institutional variable, Tech Absorption, is a measure of a country's capacity for firm-level technology absorption, as reported by the World Economic Forum. The diffusion of new technology, and the capability to absorb it, is vital for innovative firms with high growth potential.

Pillar 10: Product Innovation. New products play a crucial role in the economy of all countries. While countries were once the source of most new products, today developing countries are producing products that are dramatically cheaper than their Western equivalents. **New Product is a measure of a country's potential to generate new products and to adopt or imitate existing products.** In order to quantify the potential for new product innovation, an institutional variable related to technology and innovation transfer seems to be relevant. Technology Transfer is a complex measure of whether a business environment allows the application of innovations for developing new products.

GEI Pillars: Focus Pillars explained

Pillar 12: *High Growth*. High Growth is a combined measure of the percentage of high-growth businesses that intend to employ at least 10 people and plan to grow more than 50 percent in five years (**Gazelle variable**) with business strategy sophistication (Business Strategy variable) and venture capital financing possibility (Venture Capital). It might be argued that a shortcoming of the Gazelle variable is that growth is not an actual but an expected rate. However, a measure of expected growth is in fact a more appropriate measure of aspiration than a measure of realized growth. Business Strategy refers to “the ability of companies to pursue distinctive strategies, which involves differentiated positioning and innovative means of production and service delivery.” High Growth combines high growth potential with a sophisticated strategy and growth specific venture capital finance.

Pillar 14: *Risk Capital*. The availability of risk finance, particularly equity rather than debt, is an essential precondition for fulfilling entrepreneurial aspirations that are beyond an individual entrepreneur’s personal financial resources. Here we combine two kinds of finance, the informal investment (Informal Investment) and the institutional depth of capital market (DCM). **Informal Investment is defined as the percentage of informal investors in the population age 18-64, multiplied by the average size of individuals’ investment in other people’s new businesses.** While the rate of informal investment is high in factor-driven economies, the amount of informal investment is considerably larger in efficiency- and innovation-driven countries; combining them balances these two effects. Our institutional variable here is DCM, one of the six sub-indices of the Venture Capital and Private Equity Index. This variable is a complex measure of the size and liquidity of the stock market, level of IPO, M&A, and debt and credit market activity, which encompass seven aspects of a country’s debt and capital market.