issue #1: asia | march 2021 — by enpact

empower

Singapore / Jakarta / Bengaluru

startups: from inspired to inspiring

startup friendliness index | making logistics easier & cheaper in Indonesia | how IOT is changing sustainability | policies that shape ecosystems | artificial intelligence in healthcare | size + speed: corporate innovation hubs

enpact REDHILL AsiaBerlin

Editor-in-Chief: Heather Dannyelle Thompson
Concept Design: Heather Dannyelle Thompson
Authors: (alphabetically) Aaron Tan, Abhinay Peddisetty, Anandi Iyer, Andree Susanto, Diksha Dutta, Heather Dannyelle Thompson, Jan Lachenmayer, João Castel-Branco, Michael Bain, Rainer Seder, Sai Ranganathan, Sindhu Gangadharan, Tushar Vashisht
Editorial Support: Anda Yoshina and REDHILL Germany
Design Support: Joan Saló
Print: Flyer Alarm

Publisher:
enpact e.V.
Albrechtstr. 10
10117 Berlin

Contact:
info@enpact.org
www.enpact.org

ISBN: 978-3-96604-012-9
Registration Court: Amtsgericht Charlottenburg (Berlin)
Registration Number: VR 32765 B

Cover photo: Photo by mentatdgt on Pexels

Supported by

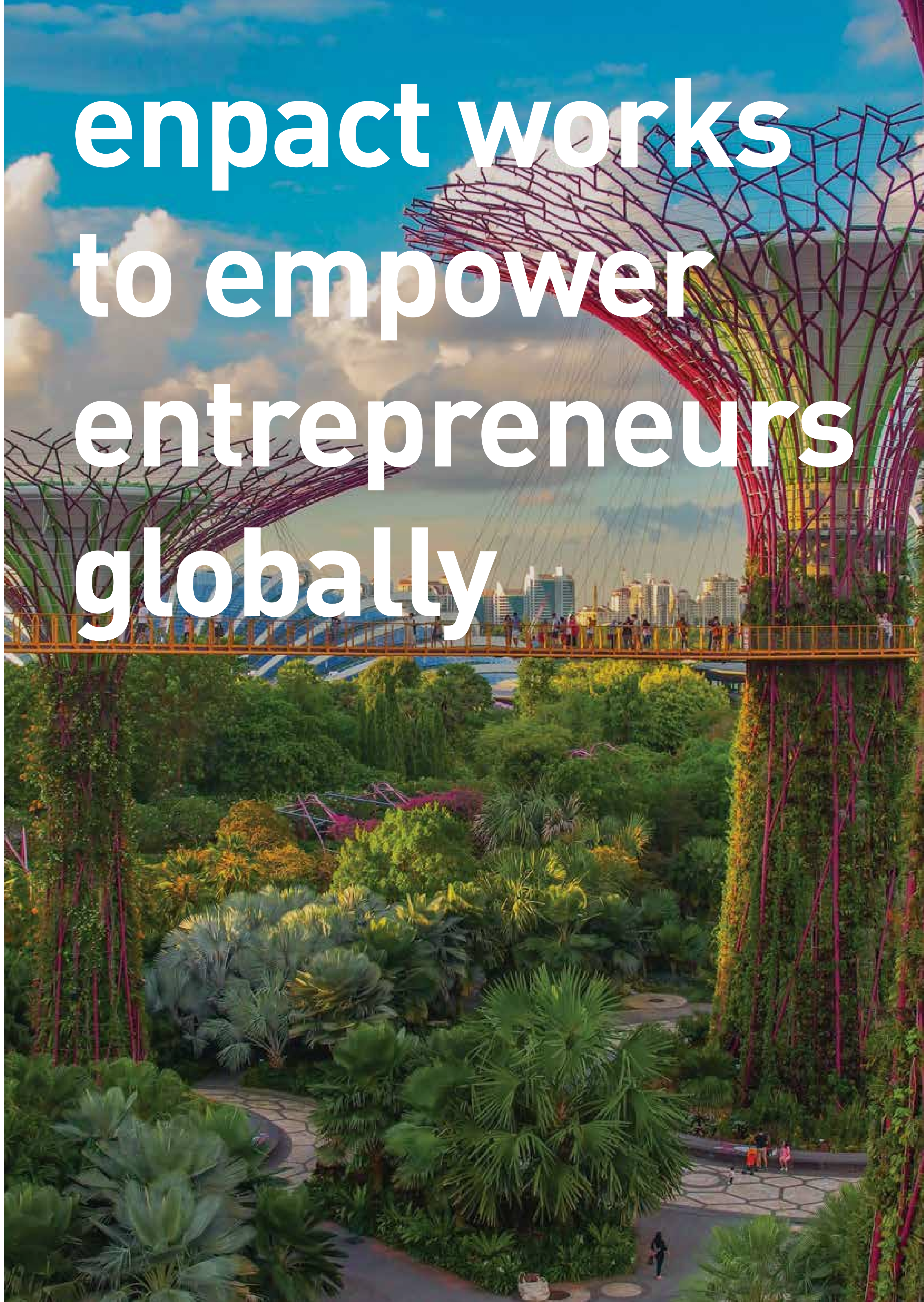


table of contents

foreword

Dr. Rainer Seider
Berlin Senate Department of Economy, Energy and Public Enterprises: Head of International Cooperation

We know that the future of startup ecosystems is global. Asia will play a significant role in this globalized ecosystem due to its sheer size, innovation and growth dynamics. Business growth and development across Asia has already taken off; the number of unicorns in China (122) is bigger than those of 29 other countries combined, including Germany (13), India (21), and the UK (25), according to a report by CB Insights. The speed and scale of development in the startup scenes of India, South Korea, Singapore, and Indonesia are leading to the rapid globalization of the Asian market.

Stemming from this expansion, major investments in Berlin's startups are now led by Asian venture capital firms such as Softbank´s Vision Fund and SBI Holding from Tokyo, Temasek and GIC from Singapore, Horizon Ventures from Hong Kong, or Tencent and Ping An from Shenzhen. Berlin's developing ecosystem is thriving off the influx of investments, talent, and international business ideas from across Asia; it is vital for Berlin to stay connected to these dynamics. AsiaBerlin (AB), jointly produced by enpact e.V. and the Berlin Senate, is the platform that offers this opportunity for connection and collaboration.

The needs and perspectives in Asian ecosystems are not so different from Berlin: they have a similar necessity for internationalization. Having a big home market, as in the cases of India or China, may be even a trap; many startups are looking for opportunities abroad rather late, although they may have the option to scale abroad more successfully

let's bridge the gap between Asian and German startup ecosystems

than at home. However, this requires looking beyond Silicon Valley and the highly competitive US market. This is an opportunity to look to Europe, where Berlin is probably the best place for starting a business thanks to its innovative, young, open minded, and English-speaking ecosystem. 25% of German startups are founded in Berlin, 60% of 2020 investments into the German ecosystem funneled directly into Berlin, and today, the city is the base for 11 unicorns. Together with (French-speaking) Paris, Berlin ranks second among Europe's startup hubs and first in the European Union.

For this reason, we offer an overview of the various opportunities and challenges to connect stakeholders in the ecosystems of both continents with the AB Summit, with AB events, and Delegation Trips. We also rely on powerful cooperation with our professional partners like enpact for the AsiaBerlin Delegation Trips and Events, or Openers for the AsiaBerlin Summit.. Additionally, we rely on the cooperation with dedicated partners in Asian and German startups, corporates, investors, embassies, ministries, and institutions. These close partnerships are essential for the enormous project of building bridges between Germany and Asia.

Now, as we continue to move forward and expand, we are considering the potential in other Chinese, Japanese, Korean, and other ASEAN hubs in addition to our current involvement in China, India and Indonesia. Therefore, the success of our AsiaBerlin activities and the construction of sustainable networks depends highly on the contributions of our partner institutions in Asia. We need their support and their investments.

We need many committed partners in Asia and Germany who are dedicated to the idea of AsiaBerlin to create a relevant impact. We need you!

foreword

leveraging the power of entrepreneurship to change the world from the bottom up

Jan Lachenmayer
Managing Director, enpact e.V.

In my time working with and witnessing entrepreneurs around the world, I've been fascinated by how universal the mindset of an entrepreneur is. No matter where they are in the world, they have more in common with each other than even with their fellow citizens. It matters not their background, culture, or socialization; they have the entrepreneurial mindset.

The entrepreneurial mindset is that of a problem solver. An entrepreneur is one who sees a problem and takes it upon themselves to create a solution. They are then not just business owners, but innovators and drivers of positive change. So, it stands to reason that if you want to bring positive change to society — if you want to create hope, optimism, jobs, growth and prosperity — you should aim to empower these types of high potentials and support them to become successful. What empowers them most is not money, but access to knowledge and international networks. This is what we realized working with them over many years.

Since 2013, enpact e.V. has been working with thousands of entrepreneurs in emerging economies. Its mission is to empower entrepreneurs to drive positive change, create innovative solutions and prosperity in their respective world regions.

From mentoring programs to delegation trips, accelerator programs and founder scholarships, we strive to create arenas that build networks of trust and exchange. Our programs are designed to put the people first. We focus not on developing only their business or their capital growth, but the person themself. In this way, even if the first venture does not succeed, the entrepreneur themself remains changed and remains a lifelong learner.

Many entrepreneurs in the regions we are active in are brilliant and motivated, but they are confined to their local communities and expertise. By creating programs embedded in their ecosystems, enpact gives them access to an international network of experienced mentors and experts. We aim to empower them in becoming successful.

As it often happens, you first begin by helping the individual entrepreneurs; then you begin to understand patterns and wonder how you can impact the environment to enhance the likelihood that other entrepreneurs will become successful. This is when we started to take a systematic approach and look into the framework conditions for entrepreneurship to flourish or hinder — what we call an entrepreneurial ecosystem.

enpact's Data and Research team was founded to do just this: build an understanding of what makes a strong entrepreneurial ecosystem. The core of Data and Research's offering is its ability to quantify the strengths and weaknesses of an entrepreneurial ecosystem and compare one to the other in spite of geographical differences. By understanding the ecosystem, down to specific indicators and policies that affect people in real-time, enpact can lend support to decision-makers at all levels: policymakers, businesses, individuals, and organisations. Most importantly, it can give recommendations and provide action-points for improvement.

The data can describe an ecosystem, but the Data and Research team also works to bring those data-points to life. In qualitative analyzes, research, and storytelling, enpact works to build connections between regions, nations, and people. In sharing insights and highlighting change-makers, enpact works to share insights for learning and growth. This is why we have called our publication, "empower". It is through bold and specific insights, stories, and perspectives that we can empower all of you to make a difference in your community.

introduction to the report

our data helps empower entrepreneurs globally

enpact's Data & Research division began with the vision that, equipped with the right data and analysis, we could understand what factors contribute to a startup ecosystem and from there give informed insights to improve, strengthen, or alter it. And so we compiled that data, and before us stood a mountain of decimals and digits that somehow stood as a viewpoint to a global network of entrepreneurs, investors and policymakers. But we still needed to find a way to communicate the value of what we created.

When I sought to create the concept of this report, I wanted to show our audience why our data could be valuable to them. Here at enpact, we truly find the SFI fascinating; a few minutes scrolling through the columns of digits and I find myself asking questions: What policies have constrained the workforce in Singapore to give it a score of 44.87? How can Mexico City and Jakarta have such similar SFI scores (44.2 and 45.5) and yet their ecosystems are markedly different in their lived experiences? What contributes to those differences and in what ways are they the same? Can one solution work for both places or do we need to be more creative and holistic in the solutions we propose?

All of these questions are ones our reporting attempts to answer. What exactly makes an ecosystem operate the way it does? As Jan mentioned earlier, though ecosystems may differ in their geography and culture, entrepreneurs around the globe have a remarkable amount in common. This is why the SFI normalizes its score, to compare two unlike places and mark them on the same scale. In this way, one ecosystem can be informed by another.

In this report, you will find that we not only worked to bring our SFI to life but also to elevate voices of direct stakeholders in the ecosystems we analyze. Through interviews and guest articles, investors, entrepreneurs, corporations, and government entities speak on why they are excited about their respective ecosystems and, even more importantly, why they are eager to bring more connections to it to show the amount of energy and innovation that is developing. Their contributions paint a picture of what the startup culture is like, where future trends may be, and what opportunities there are to get involved at any level.

Our hope is simply to demystify, make connections, and highlight stories, innovation, and insights that might propel the ecosystems forward. By understanding in frank terms the strengths, weaknesses, and opportunities, we can learn from other ecosystem builders and propose policies, solutions, and perspectives that create real change and empower change-makers.

How to read this report

After a brief introduction to the Startup Friendliness Index, its 6 domains and 17 subdomains, methodology, and how to interpret it, we will dive right into a regional overview, not limited to the three cities we analyze herein. Next, for each city (Singapore, Jakarta and Bengaluru), we will provide an analysis of their SFI scores, an overview of active policies, and guest articles from ecosystem builders. These guest articles function as a deeper look into a particular topic or a first hand account of the ecosystem.

After some conclusions and recommendations, including cross-sectional comparisons between the three cities, you will then find in the index a complete compilation of the SFI data for the three cities. Each subdomain is provided with a description and some important information about how to interpret it. Of course, more data is always available on our website as well, www.enpact.org/data-research.

We hope you leave this report feeling informed, inspired and, most of all, ready to take action.

Sincerely,

Heather Thompson

Heather Dannyelle Thompson
Editor

the AsiaBerlin summit: blending perspectives across ecosystem

By Diksha Dutta, Head of Communication for AsiaBerlin

Since 1997, the AsiaBerlin Summit (formerly Asia-Pacific Week) has offered a unique international platform for interdisciplinary European-Asian dialogue about politics, business, science, research, and culture.

The summit focuses on the internationalization of startups across sectors such as Smart Cities/UrbanTech, HealthTech, FinTech, industry 4.0, AI, and Blockchain. In 2020, we organized our first hybrid AsiaBerlin Summit with a substantial online presence of speakers and an audience from Asia and Europe. This year, we also opened doors to an exclusive investor conference on the third day of the Summit with venture capitalists, family offices, and business angels from Asia and Germany, expanding our stakeholder network.

It is hard to capture the excitement of over 1500 attendees, five days, 175 speakers, 50 + panels/keynotes, and nine stages with just one perspective. So, we will let the numbers speak for themselves: our participants engaged in over 3600 chat messages, and there were around 4300 communications between participants just to arrange one-on-one meetings after the summit. The engagement rates were higher than expected, with users logging in every day to interact; the numbers were almost double those of the previous year, when the event was entirely offline.

The essence of the 2020 AsiaBerlin Summit was well-captured in the opening speech of Ramona Pop, Berlin Mayor and Senator for Economics, Energy and Public Enterprises:

"2020 is the year that turned our plans upside down. A year that once again showed us how interconnected our world is in addition to other tragedies that broke out this year. It shows one thing, how we as a strong community can emerge from a crisis, and how important the mutual exchange in overcoming a crisis is. This crisis acts like an accelerator for digitalization, the way we work together, and how we communicate. I am therefore pleased to be able to welcome everyone at Asia Berlin Summit, one of the rare physical meetings this year connecting Asia to Europe. This event is a great signal — we will go on! "

enpact e.V. archives

Why attend AsiaBerlin Summit?

Corporates, investors and startups all see immense value in the summit from different perspectives. Asian investors are now looking at Europe for increased opportunities. Berlin startups as well as corporates are looking for internationalization into various markets, including Asia. The AsiaBerlin Summit is the place where we connect these dots and make meaningful connections.

Cedrik Neike, Member of the Managing Board of Siemens and CEO Smart Infrastructure stresses the relevance of Asia as an opportunity to Europe:

"Three things are changing the world radically – Technology, the business model behind it and Asia. 60% of the world population is living in Asia. It's young, it wants to grow, and we need to bring Europe and Asia together to help each other. The Asia Berlin Summit is perfect for that. Because even in times of COVID, we have to come closer together to help each other rather than being apart."

Stefani Lu, a consultant for expansion into China talks about her experiences in Berlin and connection to Asia,

"I was not afraid of Berlin because I see the government is doing a lot of things to connect with China. I got a lot of help, and connections here at the AsiaBerlin Summit. I think for China, if you have the right connector and you know the right person — you shouldn't be afraid of it because we're trying to facilitate everything we know about China to help you with the business."

Volker Hofmann, CEO Humboldt-Innovation GmbH summaries why AsiaBerlin Summit is relevant to him:

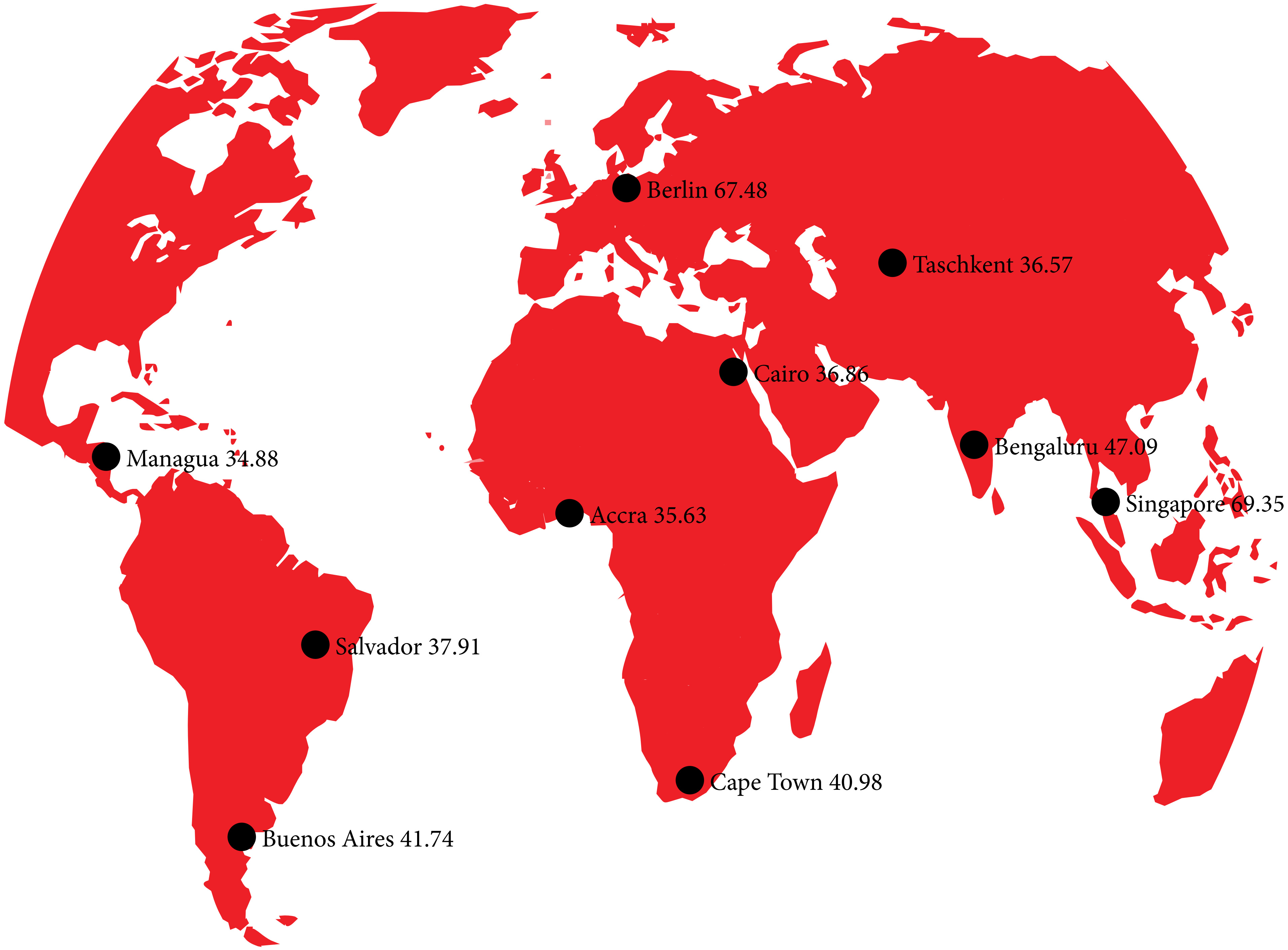
"Coming from the academic startup ecosystem in Berlin, AsiaBerlin Summit was the perfect place to build a network for our internationalisation program. With "Bridge to China" we enable young science-based startups to decode the Chinese Market and get a full understanding of its opportunities and its risks. AsiaBerlin Summit really helped us finding the right partners and mentors who want to join us on that journey."

Apart from this , we invite founders such as Naren Shaam, CEO and Founder, Omio GmbH, to talk about their journey of becoming a unicorn entrepreneur in the city of Berlin as a foreigner and numerous startups like.

Photo by BNA Ignacio / Unsplash.com

the startup friendliness index

the SFI measures how well a city supports entrepreneurship



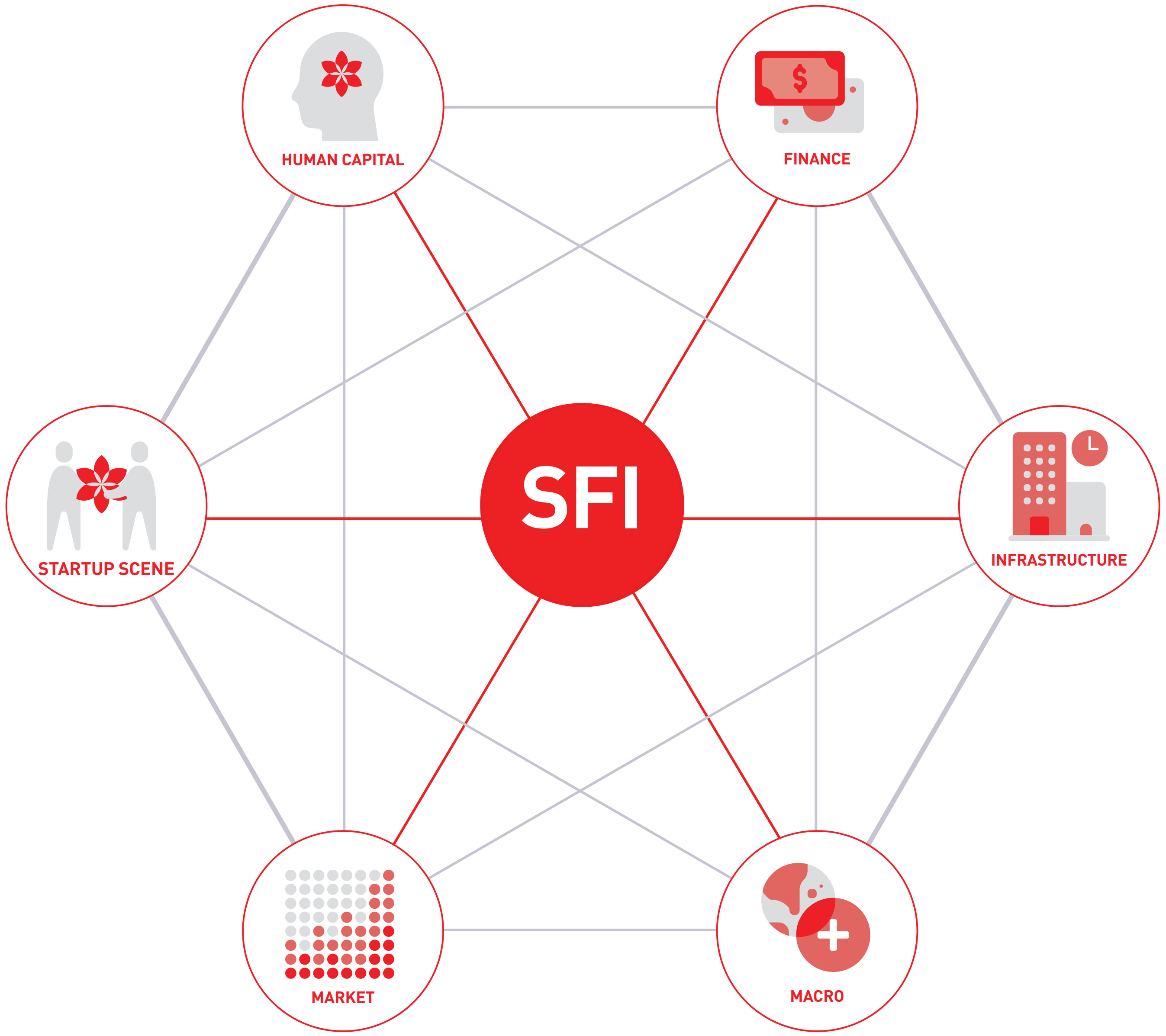
In the field of entrepreneurship, startup ecosystems play an important role. A startup ecosystem is formed by **entrepreneurs**, **startups** in their various stages, and numerous other entities such as universities, **investors**, **accelerators**, co-working spaces, legal and financial service providers, and government agencies. Through the complex interaction of these players, a startup ecosystem has the capacity to empower entrepreneurs to develop new ideas and bring **innovation** to the market.

The composition and maturity level of startup ecosystems are essential components of the success rate for entrepreneurs and new enterprises. By understanding the **strengths and weaknesses** of a startup ecosystem, as well as the cultural context it finds itself in, enpact can offer **targeted solutions** and recommendations to policy makers on strengthening and growing startup ecosystems of their cities.

To achieve this, enpact has developed the Startup Friendliness Index, or SFI. We've designed the SFI to **quantitatively compare ecosystems** across the globe using objective measures of development and maturation. The SFI consists of six major domains.

what is the Startup Friendliness Index?

how does the SFI work?



how does the SFI work?

the SFI scores cities holistically, emphasizing interconnectedness

Each domain is vital for entrepreneurs and no city can support a startup culture without all six elements.

At the city level we measure:
Human Capital measures the quality of and access to educated or talented people to fill the workforce of a startup, to start their own enterprise, or a startup's ability to pay for the right talent. This domain also analyzes the inclusiveness of a city, as the more economic opportunity there is for women and minorities to participate in the economy, the easier it is to find talent.

Access to **Finance** is crucial for the equity and advancement of any startup scene. It is the first hurdle any viable business must face, the pre-requisite for successful exits and the best way to inject more money and attention into an ecosystem.

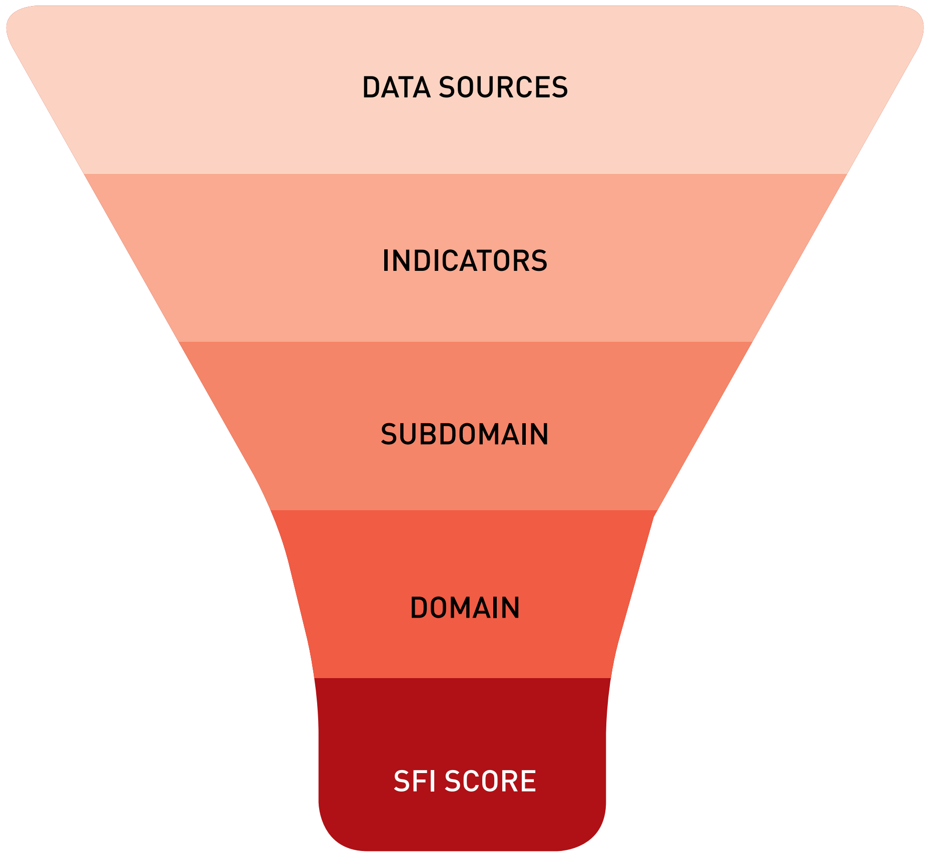
The liveliness of the **Startup Scene** — from the number of hubs to facilitate connections, to the number of events and startups in a city, to the entrepreneurial culture of an ecosystem, each can play a role in encouraging entrepreneurs to dive in and to grow.

The **Infrastructure** of a given city is often a challenge for emerging economies. In the worst scenarios, this means that roads are unpaved or dangerous, internet access is spotty, and people experience shortages to water or electricity that makes it hard to get by, let alone start a business.

On the country level we measure:
The political and legal context of a country, as well as crime and corruption, are measured in the **Macro** domain.

Lastly, the connectedness and performance of an economy's **Market** play a role in a startup's ability to expand both regionally and globally. This domain also looks at how well developed the digital market is, vital for startups whose business models rely on a digitally connected economy.

how the final score is calculated



e.g. CrunchBase, World Economic Forum DoingBusiness.org

e.g. Women's Participation in Entrepreneurship

e.g.Talentpool

e.g.Human Capital

e.g. 48.5 / 100

In this context, this means that Cairo ranks 10th in the MENA region and 45th globally for Human Capital. This score is about average in our index.

how to read the SFI

the SFI compiles normalized indicators into one objective score, regardless of location or culture

Three tips you should know to read our report:

1 There are 91 indicators, divided into 6 domains and 17 subdomains.

Each city receives a score for each indicator. The indicators are then aggregated into a domain score and a final SFI score.

2 The data for the indicators are collected from reputable primary and secondary sources such as the World Bank or World Economic Forum.

3 Each indicator is normalized on a scale from 0 to 100. The best performing city for a single indicator is given a score of 100 *in terms of what is good for startups*.

For example, a score such as the Pollution Index, Singapore has a score of 100, meaning it is best city in this indicator, or the least pollution.

Another example, the Minimum Wage Indicator, awards the highest score to the city with the lowest minimum wage in the index. This is because while high wages are better for workers, they create a barrier for startups to sustain a talented workforce, especially in early phases

In a score such as the Pollution Index, for instance, Singapore is given a score of 100, meaning it has the least pollution of all cities in the index.

In this report, you will see an SFI Target feature. This symbolizes an instant where one of our indicators is applicable. For instance:

"... the city's trade makes it a desirable place to incorporate."

Trade openness: 68.34

This indicates the city's score in our index. For more information, you can turn to our appendix, where the SFI for each city is listed in its entirety.

how the SFI reflects the entrepreneur's journey

To better understand how each element of the SFI can shape the journey of an entrepreneur, let's take a look at each phase of building a startup, from Ideation to Global Expansion, and how external factors (besides the viability of the product or service) may determine a startups' growth. To do this, we will explore through the eyes of Sofia Ong, an entrepreneur in Singapore.

Getting started in Singapore

Singapore is consistently a global leader in our SFI. For that reason, there are many thriving startups and corporations headquartered there.

To begin, there are a few baseline indicators that serve as make-or-break factors in the ability of an ecosystem to support entrepreneurs at any stage. As our index is primarily made of emerging economies, these factors cannot be taken for granted. Of these factors, Infrastructure takes the heaviest toll. In the subdomain of Transport, this means quality of roads, ports, rails, and air pollution. Cities that do not have the most basic functioning infrastructure can not serve entrepreneurs readily.

Infrastructure also has a key part in the second baseline: information and communication technology (ICT). If the internet is unreliable or the penetration is too low, no tech company can get its feet on the ground.

After these basic needs are met, it is important to address three baseline Macro concepts: contract security, corruption, and crime. In order for a startup to develop a product and grow the company around it, they need the basic security of knowing their property rights are protected. They need a baseline of trust in the government to protect them and their interest in the face of crime or corruption. Without these things, there is no incentive for prospective local entrepreneurs to invest their time or energy and no incentive for foreign direct investment.

Luckily for her, all of these factors are well enough in Singapore and it reflects in their scores:

Photo by Alexandra Lammerink / Unsplash.com

Singapore is consistently a global leader in our SFI. For that reason, there are many thriving startups and corporations headquartered there.

Baseline Factor	What it means	SFI Score
SFI Score	Overall startup friendliness	66.09
Regulatory quality	Perception of the ability of the government to implement sound policies	99.30
Corruption Control	How public power is exercised for private gain	100.00
Bribery Depth	Public transactions where a gift or informal payments are requested	100.00
Infrastructure (ICT)	Reflects the overall quality of ICT, such as speed and penetration	46.57
Internet speed	*Average speed of upload*	*56.23*
Internet cost	*Cost of 60 Mbps or more unlimited data*	*53.48*
Infrastructure (Transport)	Overall quality of roads, ports, and air transport in the country	87.27

Now we will take a look at **what differentiates Singapore** from other ecosystems and how Sofia might navigate its ecosystem to build her company.

Photo by Ilham Wicaksono / Unsplash.com

The beginning spark

By many indicators, a budding Singaporean entrepreneur would have ample support to grow a business. In the Ideation phase, where Sofia would develop a product idea and conceptualize a business structure, we see that she would be a product of an environment where nearly 30% of firms have majority women ownership. That score is above the global average of 10.00 and gives Singapore a score of nearly 60.00. She also benefits from a city where more than 51% of the population views entrepreneurship as a good career choice. These factors can heavily affect whether or not an individual, especially women, will attempt to start their own venture.

Stage 1: Ideation

Indicators	Score
Entrepreneurial Culture	*50.11*
Women's participation	*59.78*

The expense of the city is also a two sided coin: while the quality of electricity, water, and internet are high, their costs are likewise high.

Creating a product

As she moves forward to put thought into action (MVP stage), Sofia would need to take steps to formalise her business. She is in luck here — Singapore is widely known for having the legal framework and control on corruption and crime to make it easy for a new business to start. It takes an average of 2.5 days to register a business and an average of 0.5% of the average total income to do it, making the country the global leader. The regulatory quality is also the highest in the index, with perception of the government's ability to create sound policies receiving almost a perfect score and the perception of corruption and bribery also receiving outstanding scores. It is these regulations, and others such as the competitive corporate tax rate, favorable bankruptcy laws, and low informality in the economy that will later make it easier for her company to become a corporation, without fear of high tax rate, full liability for the failure of the company, and a formal economy to target for sales. These factors push Singapore to the front of the index.

Stage 2: MVP

Indicators	Score
Registration time	*100.00*
Registration cost	*99.41*

Stage 3: Seed Stage

Indicators	Score
BUILDING A TEAM	
Universities Score	*61.84*
University students	*3.16*
Average salary	*0.00*
Women's participation	*78.99*
WORK SPACE	
Cost of living	*0.00*
Electricity Quality	*100.00*
SEED FUNDING	
Access to Loans	*100.00*
Pre-Seed and Seed Funded	*42.73*
Funded by Grants	*2.17*
Funding Constraint	*83.56*
Loans rejected	*100.00*
Collaterol Required	*78.23*

Creating a company

As Sofia moves on to the Seed Stage of her company, she will need to build a team, finance a work space for them, and find some seed funding. Here is where we see Singapore's startup ecosystem is less favourable to the average citizen's ability to grow a successful startup. Singapore has a low number of students per 1,000 inhabitants in comparison to the rest of our index. Its score of 3.16 puts it near the bottom.

Part of this is the hazard of being a large city. Berlin is likewise near the bottom of the index. However, Singapore's university score is also not as stellar as it could be. While there are many good universities in the city, it ranks distantly behind Berlin in its university score as ranked by Times Higher Education. The task of finding talented workers is multiplied by Singapore's success in the startup scene world. Competition for good talent is fierce, and it is only expected to get tougher.

When it comes time to hire the right team members, Sofia will find it hard to finance their salaries. While ordinarily, a high starting salary for a new graduate is an indicator of the strength of an economy, in the context of a startup, a high starting salary can be difficult to bear in the seed stage. Singapore's high cost of living and the high average income gives Singapore a score of 0.00 for Average Salary (a score in which low average salaries are more beneficial for startups, thus giving the high earning Singapore a low score).

The expense of the city is also a two sided coin: while the quality of electricity, water, and internet are high, their costs are likewise high. These are difficult burdens for any seed phase company. Singapore has the second highest cost of living in our index (after Hong Kong) and the highest costs for coworking spaces. Coworking spaces are vital to new startups — they serve as the place to generate ideas and tackle problems as a team and grow synergy within the new company. The cost of a coworking space in Singapore is $309 USD per month, where the global average is just above $100 USD.

These hurdles might be easier to tackle if Singapore's ecosystem was more favorable for the average citizen to find seed funding. However, this is the second poorest performing area for the nation city (while they remain the sixth best overall in the index). Our data, pulled from CrunchBase, analyzes how many listed startups are funded by a variety of sources. Singapore's total score in our Finances Sources subdomain is 53.25. The city is the leader in Access to Loans and SME Loan Access, and also performs above average for Series Funding (third best in the index). However, it lags in other areas of funding, bringing its score down. This rings true with our research and interviews with ecosystem builders, who highlight that Singapore is an area that draws a lot of funding for well-tested ideas and high performing startups, but is not the place for new concepts to develop. The other common source of seed funding, friends and family, will of course vary greatly according to the socioeconomic status of Sofia. Lucky for her, our compilation of Gini indices puts Singapore at 45.9, making its economic equality about average.

Stage 4: Series Funding

Indicators	Score
SERIES A FUNDING	
FDI (Foreign Direct Investment) net inflow	*60.40*
VC rounds amount raised	*63.28*
Total VCs / PEs (venture capital and private equity)	*61.74*
Total Business Angels	*100.00*
EXPANDING THE TEAM	
Workforce Constraint	*44.87*
Labor regulation constraint	*0.00*
Average Salary	*0.00*
PARTNERS / CO-FOUNDERS	
Activeness	*47.00*
Entrepreneurial Intentions	*8.18*
Meetup Groups	*50.00*
DIGITAL MARKET	
Bank account penetration	*98.57*
Internet Penetration	*78.28*
Digital market penetration	*71.43*

Scaling up

As Sofia's company progresses she will develop her product, refine it through testing and iterative design, and update and refine her business model. As she works through those steps, she will be ready to approach investors for her Series A funding. With a business underwing, Sofia can now approach business angels and venture capitalists. To her advantage, Singapore scores first in its number of VCs and PEs available to pitch. Our index indicates that many startups found Series Funding, ranking Singapore at 63.28. There is also a wealth of foreign direct investment in the city, ranking at 60.40 in the index, making Singapore the third most attractive economy for foreign investors (by percentage of GDP).

In the Series A stage, Sofia will also need to expand her team to keep up with the growth. Once she has the funding to do so, she will start to hire team members. Here, she might have specific hiring needs that didn't exist before: an expert in SEO and content creation, legal staff that specialize in intellectual property, or a blockchain developer. In Singapore there are some challenges and advantages. 90% of firms identify labour regulation as a constraint to their firms and 43% of firms identify an adequately educated workforce as a constraint. Again, the salary expectations of firms present a problem, with software developers making on average over $3000 USD according to our surveys. She might have trouble finding the labour she needs and will need to hire internationally, likely incurring extra cost.

The activeness of the startup scene too will be a barrier for her, with its score of 47.00 being a low point for Singapore (however this is the third best in the index). This reflects the number of startup scene events and the number of startups in the ecosystem. This will impact her ability to find partners and co-founders to fuel her growth.

Lastly, we consider how developed the digital market is in the ecosystems we evaluate. For internet-based startups, the level of digital penetration is vital, as it defines how large their given market might be. This is not a problem for Singapore, which is also among the leaders in our index. Indeed, even low levels of digital market penetration are not necessarily 'problems'. As we will see later in this report, many times entrepreneurs thrive off of making solutions tailored for their environment, in which case they create innovative solutions to work around digital penetration.

Stages 5 & 6: Go big or get out!

Indicators	Score
MARKET PERFORMANCE	*89.09*
GDP per capita	*100.00*
Trade Balance	*100.00*
MARKET CONNECTEDNESS	*63.34*
Trade Openness	*89.62*

Go big or go home

Finally, Sofia's business is ready to scale up. To envision her business scaling, many previous factors will return in full force here — level of inequality, depth of ICT penetration and transportation infrastructure — but many new ones come into consideration. How wealthy is the country? Can consumers, as a whole, afford to buy her product? Has there been economic growth? What does trade look like? These factors affect her domestic marketplace. To her advantage, Singapore is a top performer here as well with a Market Performance score of 89.09. Singapore is a hub in the region for trade, with its score for trade openness (89.62) almost double the next highest scoring city (many ports and travelers stopover in Singapore before continuing to their final destination). The nation is only out performed by Hong Kong.

That is, until global or regional expansion. At this point, Sofia's company may or may not still be a startup. She may have gone public. As her company expands internationally, the market's connectedness comes into full force into consideration. How open is the country for trade? How much tourism comes in? Again, Singapore is a leader here with a score of 63.34, behind only Hong Kong.

Singapore is a stellar example of how an ecosystem can serve an entrepreneurial culture.

Of course, Singapore is a stellar example of how an ecosystem can serve an entrepreneurial culture. These factors alone, cannot guarantee that a startup will succeed; the founder and product are vital components of the success equation. However, **the right ecosystem factors can contribute to the ability of a startup to start, grow, and thrive**, not just once, but for many founders and many companies. This is what the SFI was built to measure: how successful an ecosystem is in aiding its entrepreneurs.

regional overview

By Heather Dannyelle Thompson

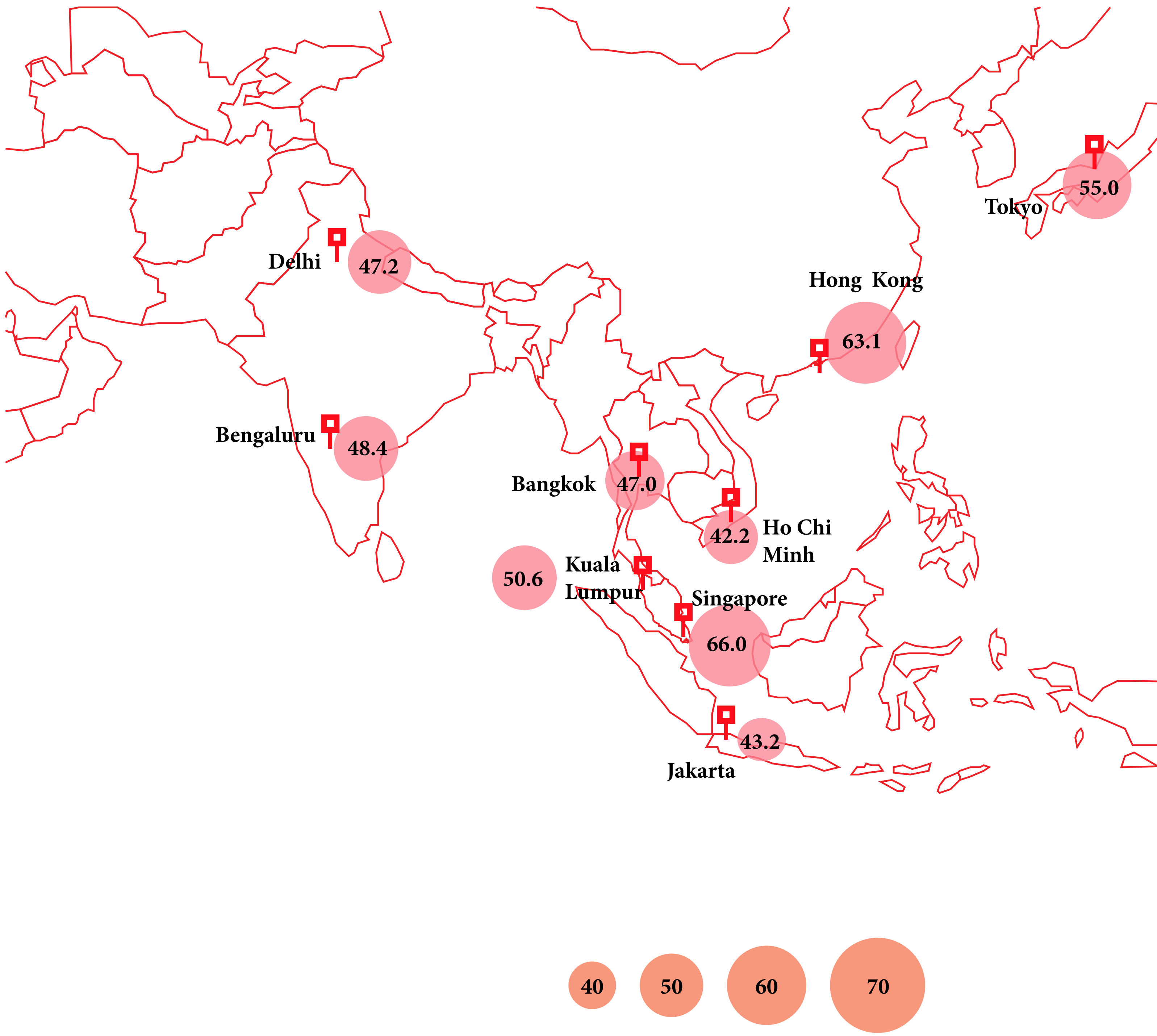
Our SFI analyzes the startup ecosystems of 57 cities globally and compares them to each other. By relying on a wide variety of data sources and placing cities on a comparative scale, we can compare apples to oranges so to speak; regardless of regional, national or local differences we can assign a total score to understand how the ecosystems compare and what insights we may learn from each one. From there, our analysts dig deeper to understand why each city has received its score and what are the motivating factors of each ecosystem.

At a regional glance, we can already see some trends that emerge. Singapore (along with Hong Kong) emerges as not only a regional leader but a global leader, often competing with Berlin. Indeed, Singapore is a regional incorporation hub and is often lauded for its policies and focus on entrepreneurship as a pathway for economic growth. Its ecosystem attempts to partner strategically with neighboring countries such as Vietnam, India, and Indonesia, in which startup ecosystems are somewhat less equipped, but are instead powered by a hunger for entrepreneurship.

We will dive deeper into this pattern in this issue of *empower*. We will also see how many regional Asian ecosystems have begun to move into a new phase: innovating solutions for the region and setting their sites on global expansion sooner.

SFI OVERVIEW

BENGALURU:	48.45
JAKARTA:	43.23
SINGAPORE:	66.09
Tokyo:	55.80
Hong Kong:	63.15
Kuala Lumpur:	50.68
Bangkok:	47.05
Ho Chi Minh City:	42.24
Delhi:	47.25



from investment to a thriving startup ecosystem

By Heather Dannyelle Thompson

By all indications, Singapore is one of the world's leading startup ecosystems. The nation state boasts multiple successful startups, indeed, but is also the regional hub for incorporation, venture capital, and international connections. Within our SFI, Singapore is consistently ranked among the highest (66.09), not only in the Asia region but also globally (Berlin with a score of 67.48 is the highest in our index). There are a great many number of distinct factors that make Singapore compelling, and therefore begs the question: how did Singapore create such imminence as a startup ecosystem?

Most of the success Singapore is seeing in its startup scene is a result of a series of economic policy and cultural designs made by the republic as far back as the 1980s. After a worldwide economic recession, the Singaporean government had a realization that they needed a strategy for growth. As a small nation with relatively few natural resources, they instead pivoted to becoming a hub for trade, incorporation, and investment.In this chapter, we will dive deeper into the defining elements of what makes Singapore unique as a startup ecosystem, starting first with an understanding of its startup scene history, analyzing its SFI score, and taking a look at some of its more influential policies. Lastly, our guest articles will take a look at key sectors that influence the Singaporean startup landscape.

Li Yang Io / Unsplash.com

singapore

startup friendliness performance

Singapore is not only the regional leader in the SFI, but is also among the global leaders, Berlin (67.48) and Hong Kong (63.15). It earns a final **SFI score of 66.09 out of 100**; it's excellent score is mainly driven by its macro political context as a regional hub for Asia, as well as its strong joint public-private partnerships to encourage and invest in innovation and entrepreneurship. The key area that Singapore struggles to compete in? Access to entrepreneurs.

SFI SCORE SINGAPORE

SFI SCORE:	66.09
Human Capital	50.86
Finance	66.95
Startup Scene	50.22
Infrastructure	67.57
Macro	91.07
Market	79.30

I believe innovation and startup culture is the way forward to keep Singapore competitive and, at the same time, lift up developing and emerging nations.

To understand how to read the SFI, see page 20

highlights

highlight 1

Singapore is one of the primary incorporation hubs of Asia

Alongside Hong Kong, it's not uncommon for international and regional businesses to incorporate in Singapore due to its favourable corporate tax laws, stability, and ease of international cash transfers.

highlight 2

The Singaporean government has focused on entrepreneurship as a path to economic growth

As early as the 1980s, the national government began to strategize on how to grow their economy without the natural land resources and bursting population that many of its regional neighbors have. The nation receives a score of 61.18 for R&D expenditure, 99.56 and 99.41 for business registration time and cost, respectively, and 65.45 for its corporate tax. We will dive more into the policies that make Singapore a startup hub in this chapter.

Singapore is a regional hub for startups and corporations.

To better understand the intricacies of Singaporean startup landscape, we turned to Michelle Ng. Michelle works for the leading venture capital firm in Southeast Asia and emerging Asia: Quest Ventures. "I believe innovation and startup culture is the way forward to **keep Singapore competitive** and, at the same time, lift up developing and emerging nations," Michelle says.

Michelle confirmed what our SFI shows: Singapore shines in its concerted public-private efforts to boost entrepreneurship, but it lacks the human capital it needs for a more vibrant startup ecosystem. Contributing to its human capital score is its indicator for University Students, a low 3.16. This is mostly owed to its small geographical size and population in comparison to powerhouses such as Jakarta, and the major entrepreneurial cities in India. It is not surprising for large cities that attract a lot foreign talent, as they tend to attract many people who did not study there. This impacts a startups ability to hire cheap talent. Startups typically look for talent through institutions of higher learning. To account for the high cost of Singaporean talent, the government also helps out: the GRT grant is a government program that encourages startups to hire local talent by subsidizing up to **70% of the intern's wages**.

Compounding the issue could be a cultural fear of failure.

According to Michelle, "Much of the young talent is not comfortable with the entrepreneurial mindset. There is no hunger to start and build something of your own. It cannot be taught in formal education," she laments. "It's one of the remarkable things about the Jakartan startup ecosystem," she continued, highlighting that Singapore is unique in its access to entrepreneurial infrastructure but overall lack of interest. Indeed, our index shows that Singapore's score for Entrepreneurial Culture comes in at 50.11, which in turn pulls down its score for its Startup Scene overall. In our index, Singapore receives a score for just 8.18 for 'entrepreneurial intentions' and ranks first (score of 100) for the trait of risk avoidance.

Michelle Ng works for Quest Ventures in Singapore

HUMAN CAPITAL
50.86

FINANCE
66.95

STARTUP SCENE
50.22

INFRASTRUCTURE
67.57

MACRO
91.07

MARKET
79.30

Recent graduates often get lucrative, high-paid jobs in international corporations and their regional offices. Government jobs are additionally well paid. It is simply less attractive to "take the risk" and found a startup.

This is not an uncommon issue for wealthy countries such as Singapore, where young talent can experience comfortable and secure lives at large corporations. To put it in relevant terms, Singapore has the highest average salaries in our index, about a net average of $3811 USD per month. In contrast, there is hardly a need for a minimum wage. The only mandates that exist are those for custodial and security work, for which the minimum is $802 USD per month, giving Singapore a score of 54.31 in our index.

Ideally the country would like to see more of its own citizens engage in entrepreneurship. "The startup scene is getting more competitive for young talent," Michelle says. "There are more entrepreneurship programs at institutes of higher learning to encourage students to gain exposure to startups," such as NUS' NOC programs and NTU's Overseas Entrepreneurship Programme, where student are sent to large startup hubs abroad, such as in China or the USA, and are encouraged to "attend local entrepreneurship events like hackathons, innovation competition, and fireside chats with local entrepreneurs."

However, the country has also faced pressure to balance its need for entrepreneurial talent with the growing pressure of immigration. In 2019, the country saw 2.16 million immigrants. Many come from neighboring countries seeking jobs and eventual citizenship for a better quality of life. Beginning in January 2018, the government raised the minimum earnings needed to qualify for visas into the country. When asked, Michelle said that most businesses were not too affected by the tighter restrictions: "Many companies and startups hire overseas talent and teams based out of Singapore, and they are typically based in Vietnam and Indonesia." As a policy to curb immigration, it was successful: the nation saw a large drop in foreigners with work visas in 2017 — 32,000 less than the year before.

Indeed, a recent study from International Enterprise Singapore shows that, with encouragement from the government, international Singaporean companies saw 53% of their revenue created abroad, with popular areas for international expansion being China, Myanmar and Vietnam. Of companies who saw a 4.2% increase in overseas revenues, smaller firms lead in earnings.

Still, though finding talent abroad seems popular, our indicators show that Singapore faces the toughest labor regulation constraints in our index: 90% of firms in Singapore indicate that finding and hiring talent was a constraint for their firm.

High tech manufacturing is the future

Singapore is a rich country for rich companies. So their strategy for the future is on its face a bit surprising; a full one fifth of Singapore's economy is from manufacturing. Not driven by large scale consumer manufacturing, Singapore's pivot is towards high tech manufacturing. In 1983, Singapore produced 11.5% total manufacturing in comparison to its 2019 levels, and it was mostly driven by textile and apparel production. Today, manufacturing in Singapore is dominated by chemical manufacturing, pharmaceuticals and biological products, refined petroleum products, and other high tech manufacturing sectors.

It is in this area — DeepTech including high tech manufacturing — that much of Singapore's innovation is centered. Here, startups play a large role in driving innovation forward. Singapore has found unique ways to empower startups to merge with industry to drive unique solutions and become a leading exporter for high tech manufacturing (it is the fourth largest exporter globally). One such solution is the use of a nearby Indonesian island, Batam, which is being built as a technology park to connect Singapore and Indonesia to "test new ideas" and "co-create new solutions".

It can be difficult to drive high tech innovations through startups, as young companies can often struggle to finance new and innovative ideas through the MVP stage in order to scale their businesses up. But our index shows that Singapore fairs well in its funding environment: it ranks the among highest in the index for high equity funding of $5M USD with 5.5% of its startups receiving this level of funding.

The nation-city has a long history of encouraging innovation. In 2011, NUS Enterprise, Media Development Authority, and Singtel Innov8 collaborated to turn Blk 71 into an innovation hub and to attract startups to create an ecosystem. It since was so successful that its been expanded into LaunchPad@one-north with more collaborations in the works.

From the beginning of an entrepreneur's life cycle, Singapore appears well equipped to support startups. What remains to be seen is the depth of its startup's involvement in its overall economy, including manufacturing, and if it can overcome a shallow talent pool that is willing to engage in entrepreneurship.

Singapore for the future

So where is this ecosystem headed for the future and what trends will define the nature of Singapore's startup scene?

Michelle sees a few key trends for the future, among them increased digitalisation, and more corporate involvement in the startup scene. She predicts that there will be more venture capital invested with impact built into the funds as well as corporates looking to partner locally with startups to innovate more, and anticipates "a race to see who will emerge as Southeast Asia's regional champion, [to see] who is going to take the center stage."

GERMAN ENTREPRENEURSHIP ASIA

Organizations, such as German Entrepreneurship Asia, connect the innovation ecosystems of both Europe and Asia. The company specializes in building innovation structures between ecosystem builders with a focus on facilitating market access for German and Asian startups. For more info, visit www.german-entrepreneurship.asia

highlight 3

Access to human capital is Singapore's growth issue

The problem is not access to skilled workers (scored at 98.73), but the lack of entrepreneurs in Singapore who are willing to take the risk of starting their own venture (perception of entrepreneurship as a career path: 42.35). Furthermore, local talent is expensive, especially in comparison to other regional powerhouses.

highlight 4

Relatively easy access to startup financing

The first half of 2020 saw over $100m of investment in Singapore. The nation has a very vibrant venture capital and business angel market with networks and firms focusing on different mandates. Singapore ranks first in our index for total number of business angels, total VCs and loans rejected (best acceptance rate).

Next, we will take a look at what policies have shaped the Singaporean startup scene and conclude with recommendations for further development.

policies in motion

Singapore is widely recognized as one of the corporation hubs of Asia, alongside Hong Kong. This is owed primarily to its favorable and strong corporate laws and protection and the ease of transferring capital in and out.

Startup SG Equity

Mimi Than / Unsplash.com

In 2020, the Singapore government set aside an additional $300million in the Startup SG Equity Initiative to invest in DeepTech sectors and encourage entrepreneurship in those markets such as AI, robotics, biotechnology and others. The Ministry of Finance writes that these funds are intended to "catalyse private sector investments into Singapore-based startups with strong IP and global potential". The policy has received widespread attention. Noted in its approach is that it often takes longer incubation periods to create innovative processes in DeepTech. It is a part of the government's overall push to integrate DeepTech and innovative solutions into an e-commerce heavy industry.

Enterprise Financing Scheme (EFS)

Scott Graham / Unsplash.com

The EFS was formed in October 2019 as an all encompassing programme that combined multiple policy schemes under one policy. The newly centralized EFS was created to support startups and enterprises through "various stages of growth". The scheme also engages in risk sharing for loans of 50%, and up to 70% for younger companies. The useful aspect of these policies is how they create allowances specifically for the special circumstances of a startup. For instance, the Venture Debt Loans, designed to support the growth of "innovative enterprises" are suited for "high growth start-ups that do not have significant assets to be used as collateral under traditional bank lending". This type of policy is a compelling example of how to create solutions to specifically cater to startups.

Global Ready Talent Programme

Mimi Than / Unsplash.com

As mentioned earlier, Singapore's greatest challenge is encouraging young talent to enter the startup scene. One of the ways it tackles this problem is encouraging entrepreneurs through state sponsored programs. The Global Ready Talent Programme again combined several previous schemes in one umbrella: the SME Talent Programme, Young Talent Programme, and Go Southeast Asia Award. The program specifically supports Singapore firms to send Singaporean talent abroad to key markets, such as to China and India, to take up job postings. Through this active engagement, the hope is that the entrepreneurial mindset is more frequently adopted.

impact

Key areas to improve in Singapore's entrepreneurial environment are their human capital, startup scene, and finance scores. The positive news is that, evident by these policies, the government is actively working on those areas. While the power and intention of the government has allowed Singapore to support its entrepreneurs in crucial, big state ways such as the infrastructure and macro political context, there may still be a need for a cultural shift towards entrepreneurship and cooperating more largely with regional powerhouses.

Startup SG Founder

Mimi Than / Unsplash.com

Announced recently in August 2020, Startup SG Founder is a mentorship program and capital grant to "first-time entrepreneurs with innovative business ideas". This policy is perhaps the most direct solution proposed by the Singaporean government to tackle what Michelle mentioned as a difficulty in getting young talent to pursue entrepreneurship in a culture that can view the risk negatively. The policy includes a three-month program called Venture Building Programme and is designed "to groom aspiring entrepreneurs with no business experience to build and scale innovative startups".

how IoT is changing how businesses view sustainability

The advancements and proliferation of the Internet of Things (IoT) over the last few years has made it one of the hottest topics in the technology sphere. IoT makes sustainable technology much more powerful, seamless and easy to adopt, which is a significant advantage in this new eco-conscious era. With IoT, sustainable technology is finally coming into its own as a mainstream business essential capable of catalyzing transformation instead of just being an expensive luxury.

The detail is in the data

IoT technology can help businesses embrace the sustainability agenda through data automation, productivity and predictive maintenance. The ability to seamlessly integrate and connect all data systems creates the potential for more intuitive, accurate automation solutions that can be applied to various internal and external business functions. Being able to plan workflows more efficiently and automate labour-intensive tasks empowers businesses to optimize operational productivity and resource allocation. Meanwhile, IoT also helps them create better, more intelligent products that cater to changing customer needs and trends.

Data integration and being able to easily monitor multiple data points are two other crucial benefits of IoT. These features help businesses develop predictive maintenance and other data-driven operational strategies that can sustain critical assets such as air-conditioners. By monitoring and reporting equipment performance for preemptive management, before a breakdown occurs, we find that businesses can generate savings of up to 40 percent, improve equipment productivity by 25 percent, reduce downtime by 45 percent and breakdowns by up to 75 percent.


Photo by Eugenia Clara / Unsplash.com

Putting the 'smart' in smart sustainable solutions

With IoT being an enabler for big data and seamless connectivity, businesses are now using many IoT-powered smart solutions to monitor and effectively reduce resource consumption such as energy, water and food wastage. Besides lowering operational costs and increasing their bottom line, these solutions also minimise businesses' carbon footprint. As a result, businesses are considering sustainability programmes as a standard operational expenditure (OPEX) instead of an ad hoc capital expenditure (CAPEX).

The COVID-19 pandemic has sped up the shift towards OPEX-based sustainability initiatives within the hotel industry. Hotels are reimagining their CAPEX-driven sustainability practices to save more time and money and quickly recover from the industry's hard-hit crisis. For example, they are moving away from simple CAPEX-driven sustainable practices such as eliminating disposable straws, utensils and plastics in favour of OPEX-driven options such as IoT-driven energy automation solutions.

There is a growing realization among hotels that OPEX-driven sustainability can be profitable. In the past, automating and optimising heating, ventilation and air-conditioning (HVAC) through smart energy solutions was seen as being disruptive and expensive. Now, IoT has made these solutions simultaneously more discreet and more impactful. The current IoT-driven smart energy solutions can be easily retrofitted to the existing structure and can save up to 30 percent of energy costs while maintaining maximum guest comfort due to its minimal manual intervention. Internal resources can be allocated more optimally and the hotel can reduce its environmental impact, creating a win-win situation for all.

Walking the sustainability talk

In addition to building long-term resiliency and competitiveness, IoT technology also enables businesses to establish an eco-friendly brand through its ability to monitor and collect real-time data. The data gathered on energy savings and carbon emission reduction can be used to back up businesses' claims of being a 'green' company. This enhances their appeal to the ever-growing eco-conscious market, while establishing trust between them and their existing customer base.

With heightened environmental awareness around the world, businesses must embrace sustainability to tap into a steadily widening market and revenue stream. IoT is the key enabler that makes sustainable technology viable for mainstream adoption, and it is likely to continue to play a transformative role as the technology advances. We are just scratching the surface of these myriad possibilities, and I personally look forward to how much further we can go on the sustainability track.

Pollution Index: 100

Cost of living: 0

Connectedness: 76

A score of 100 always means this city performs the best in this indicator in our index.

In this case, Singapore's pollution score is the best in our global SFI

Sai Ranganathan
Co-Founder and CEO of SensorFlow

Saikrishnan Ranganathan is the CEO and Co-founder of SensorFlow Pte Ltd, based in Singapore. Driven by the vision to mitigate global challenges, Saikrishnan Ranganathan has consistently worked towards engineering solutions that are practical, adaptable, and aligned with the immediate climate problems faced worldwide. SensorFlow is the result of that goal to reduce the massive energy consumption and environmental impact of buildings via smart and responsive HVAC automation.

building a regional business in Singapore

Economy growth: 100

Trade openness: 100

Southeast Asia is emerging as a focal point for new businesses and ventures due to its huge population, growing regional economy, accelerated technological adoption and access to different markets. To fully benefit from these advantages, businesses in Southeast Asia must have regional ambitions from day one to achieve rapid business growth.

The key to running a successful regional business is building it in the right place. Singapore is consistently recognised as one of the world's best places to start a business in. In 2019, it ranked second place on the World Bank's Ease of Doing Business rankings. This is made possible by having a strategic location, a hospitable business environment, supportive governmental policies, and a cosmopolitan culture.

Strategic location

Singapore is a strategic destination – both literally and figuratively – for a regional company. The country is geographically close to many emerging Southeast Asian economies. It also lies between China and India – two of the world's fastest-growing superpowers – and enjoys close trade ties with both. Unsurprisingly, it is one of the world's most well-connected countries. This accessibility makes it highly convenient for regional logistics and business travel.

Having our base in Singapore has enabled us to expand rapidly and concurrently grow our business in nearby markets such as Malaysia, Thailand and Indonesia. Travelling between countries is easy with many available flights, and similar time zones which make it easy for us to be involved in and oversee our business. Common cultural values in the region also allow us to focus on localising business strategies that already work for one market **instead of starting from scratch each time.**

Photo by Swapnil Bapat / Unsplash.com

Efficiency first

Singapore's legendary efficiency is one of its biggest draws for companies to set up a regional business. There are fewer hoops for new businesses to jump through, turnaround times are thankfully short and corruption is rare. A stable government and a strong judicial system are also important points in Singapore's favour.

Additionally, the Singapore government actively encourages the growth of new businesses. Many supportive policies, schemes, grants and programmes have been put in place to develop a business-friendly ecosystem, such as Startup SG and Enterprise Singapore. There are also tax incentives that encourage businesses to expand regionally, such as the Double Tax Deduction for Internationalisation.

Contract enforcement: 100
Time to register a new business: 100
Cost of starting a new business: 100
Corporate tax: 65

Talentpool: 64

Best of both cultural worlds

Singapore is a city with a unique convergence of both East and West cultures. Businesses gain access to a skilled local talent pool that is generally highly educated and tech-savvy. They are also familiar with regional norms and bilingual in English and Mandarin, two of the most important business languages. Meanwhile, the country's cosmopolitan culture is also influenced by its large multinational expatriate community, who contribute their foreign expertise, knowledge and perspectives.

We are very fortunate to have a multinational team at Carro that contributes invaluable experience and insight to the company, shaping our understanding of the individual markets in Southeast Asia and beyond. This is key to adopting the correct market approach, which can make or break a growing company – especially one attempting to enter different markets at once. A strong, diverse team is necessary to achieve our regional ambitions, and Singapore has been an excellent talent pipeline for us.

Tackling the diverse markets and business environments in Southeast Asia can be challenging, but also very rewarding if done well. The first step is choosing the right country to set up a strong foundation. Singapore's natural advantages and supportive environment made it the first choice for us and many others. By making the Lion City our headquarters, we have been able to scale quickly, enter other regional markets and complete acquisitions within a few years – and yet, there is still room to grow.

CARRO

Aaron Tan
CEO and Founder
Carro

Aaron is the the Founder and Chief Executive Officer of Carro, an automotive marketplace, where we provide a full-stack service for all aspects of car ownership. With professionalism at the heart of Carro's ethos, we are committed to setting new standards in the used car industry.

https://carro.sg/about

artificial intelligence is changing the way we manage our health and wellness

There is a rising global interest in personal health and fitness. It is a trend that is driven by millennials and working professionals, and we see this taking off in Southeast Asia, as reflected in the growing use of health and fitness apps.

In Singapore, the apps' use grew by over 330 percent over the last three years and 75 percent of people who use them actively engage with the app at least twice weekly. In neighbouring Malaysia, the fitness industry is growing rapidly (with the segment's market volume estimated to reach US$53 million by 2024) as millennials are working towards leading a better and healthy lifestyle.

As lifestyle diseases such as diabetes and obesity continue to rise in the region, there will be demand for all-inclusive solutions that help people adopt a holistic approach to health and wellness. It is here where artificial intelligence

(AI) can help crystallise their efforts. AI helps more people manage health and wellness on their terms

Health and wellness must be approached holistically, taking into account nutrition and a balanced diet, rather than just exercise to lead a healthy lifestyle. We observed that people are more willing to adhere to their health and wellness plans if there is a human element, namely physical coaches who can provide guidance. While we work closely with qualified nutritionists and trainers, scaling our service could only really happen if they are digitally-powered, which AI has proven to be the catalyst.

Before we launched our AI-powered personal fitness coach Ria in 2017, we could only serve about 100 customers per nutritionist. After Ria, we managed to drive this number up to 270. This is because Ria can answer personalised questions on nutrition, meals and fitness based on each user's lifestyle habits, recommending diets based on one's physical condition, fitness goals, body type and eating habits.

Ria also looks at data daily and can immediately advise on workout regimens and diet plans. This helped take the load off human nutritionists by answering most common queries and letting humans take over when the queries get too complex. In fact, such is Ria's popularity that she has started handling more queries than our human nutritionists. This could be due to the non-judgmental nature of an AI, or Ria's instantaneous availability compared to humans who respond based on their availability during working hours.

Making personal well-being accessible and sustainable

A key benefit of AI is that it helps people adopt better health habits so that they remain healthy and reduce the burden on healthcare services. When integrated with a consumer health application, the technology can help users proactively manage their health habits and lead healthy, fulfilling lives. Over the past year, we observed that many users are taking their personal health and wellness more seriously than ever. This is reflected in the 30 percent organic surge in user traffic, engagement and retention. User engagement increased from five sessions per week pre-COVID to 7.5 sessions a week. The number of foods that people tracked on our app increased from 40-50 times per month pre-COVID to over 70 times a month.

Instead of hiring more human nutritionists to cater to more consumers, we see AI as an opportunity to further optimise and scale our services. For example, the data collected by Ria also complements advice from our human nutritionists, helping them provide better feedback, guidance and support to users. Over time, analysing data on health habits can offer unique insights into both an individual and the population's health, which can benefit healthcare professionals and other organisations.

HealthifyMe

Tushar Vashisht
CEO & Co-Founder of HealthifyMe

Tushar Vashisht is the Co-Founder and CEO of HealthifyMe, Asia's leading digital health start-up that has helped over 20 million users become healthier and fitter using a combination of artificial intelligence and human advice. The platform offers localised health content, calorie tracking, meal plans, fitness workouts and health advice.

https://www.healthifyme.com/

Indonesia as a potential market

By João Castel-Branco

Indonesia is the biggest economy in Southeast Asia and has been, for the last few decades, one of the fastest growing economies in the world. After China, India and the United States of America, Indonesia is the fourth most populous country in the world, though it remains the 16th largest economy.

Despite experiencing a negative migration balance (more emigrants than immigrants), the population is still increasing due to a relatively young population and a high birth rate. With an increasing number of habitants and consistently increased productivity (measured by GDP per capita), Indonesia's economic growth is closing the gap to bigger economies like the United Kingdom, Brazil, Russia or France, which have been struggling with productivity due to an aging demographic. For these reasons, many think Indonesia is on the rise.

Indonesia's unique position in ASEAN as a massive market with eager young entrepreneurs is exactly what has made it a center of startups and innovation. For its vast population, Indonesians seek to create solutions for their environment. Additionally, neighboring countries such as Singapore often turn to Jakarta for skilled talent. In this section, we will look at what makes Jakarta's startup scene powerful and promising, how its position on the world stage has led to innovations in the FinTech sector in particular, and what challenges still lie ahead.

Eko Herwantoro / Unsplash.com

Jakarta, Indonesia

startup friendliness performance

In our SFI, from a list of 57 cities, Jakarta ranks in the 12th position after Chennai (India) and before Mexico City (Mexico) with a **final SFI score of 43.23**. Jakarta has major advantages relative to the average in domains like Market, Finance, Macro and Human Capital. In Human Capital, Jakarta stands out for the low salaries of both fresh graduates and software developers; in the Market domain, Jakarta benefits from the dynamics and size of Indonesia's market; in the Macro domain Jakarta has made strides forward in Indonesia's relatively fast and cheap business registration process and solid legal framework.

SFI SCORE JAKARTA

SFI SCORE:	43.23
Human Capital	50.69
Finance	42.96
Startup Scene	27.55
Infrastructure	51.51
Macro	55.79
Market	37.85

highlights

highlight 1

Low salaries are advantageous for startups

In Jakarta, average salary and minimum wage are among the lowest averaging $455 USD and 137 $USD respectively.

highlight 2

Simple and fast to start a business

In Indonesia, the process of business registration costs around $73 USD and takes 10 days, making it one of the fastest and cheapest processes among the countries in SFI.

If you want to go big, go to Jakarta.

To understand how to read the SFI, see page 20

Improving human capital

Innovation requires talent and education. Jakarta has only one university (University of Indonesia) on the top 1000 globally according to the Times Higher Education "World University Rankings", earning it a ranking of the 23rd position in the SFI. We talked to Aria Widyanto, the Director & Chief Risk and Sustainability Officer (CRSO) of Amartha, one of Jakarta's largest peer-to-peer lending businesses.

Although Aria accurately describes Jakarta as "the center of the best talents in Indonesia", internationally the city has been struggling to keep up in its curation of human capital. In 2017, 45,000 Indonesian students chose to study abroad rather than educate at home. The top destinations for Indonesian youth is Australia, followed by the United States of America. Despite this, Jakarta is still an anchor in the startup scene due to its sheer size and the potential talent therein, compounded by its economies lower salaries especially in comparison to other capitals in the region. The low salaries are a double edged sword, though: while they are advantageous for young companies, higher salaries outside are a key factor in keeping or attracting higher skill talent and Jakarta cannot compete with other wealthier cities which offer better monetary conditions.

Saturation ... and relief

Quality of life is another barrier to attracting the right talent. Jakarta is a bustling city, but its infrastructure can be a major detractor even for natives, let alone international talent. The intense traffic, pollution and a rising cost of living are becoming concerning topics. With high pollution levels, our SFI Jakarta ranks only 35th in environmental quality and 41st in cost of living (around 980 USD monthly per person including a 1 bedroom apartment in the city center). Aria Widyanto lamented, "Jakarta is not really a livable city. It's a difficult place to bootstrap your business, for instance. As it gets more international, it's getting more difficult to live here."

Still, challenges notwithstanding, the market size, market dynamics, the amount of talented people, the existence of solid technology infrastructure and the existence of already some big players in the ecosystem make Jakarta an attractive city. For that reason, Aria says "if you want to go big, go to Jakarta".

He is not alone: Jakarta has grown into an oversaturated city filled with the hopes of millions of Indonesians. With the increase of industry and services during the 20th century, Jakarta attracted millions of rural Indonesians

HUMAN CAPITAL
50.69

FINANCE
42.96

STARTUP SCENE
27.55

INFRASTRUCTURE
51.51

MACRO
55.79

MARKET
37.85

seeking better living conditions. The expansion of the city continued on from the center outward to the peripheries. Due to the accelerated pace of housing demand in the city, the quality of construction and urban planning suffered. Poorly constructed neighborhoods started to rise and merge into the city and shape the city itself. It is estimated that today the so-called "kampungs" are home to 25% of Jakarta's population. These are characterized by high density populations (up to 4 people per square meter) despite the lack of tall housing units. For example, the Tambora slum houses 260,000 people within five square kilometres. Narrow streets, poor materials and small houses are blockers to efficient transportation systems, environmental quality and security.

The explosion has spilled over to traffic congestion. In 2019, it was estimated that, on average, each Jakarta driver spends yearly 150 hours in traffic congestion. From 2000 to 2010, the number of registered cars in the city grew from slightly over 1M to slightly over 2M. These factors give Jakarta a score of 43 in our index on road infrastructure quality. Besides increased time spent in transit, there is the stress and the pollution factors associated with high traffic congestion, giving its score for the Pollution a 30 in our index.

On top of widespread below-average infrastructure and a consistent positive population growth rate, Jakarta is literally sinking. It is estimated that some areas in the northern area of the city sink around 25 centimeters per year due to subsidence. As a result, Indonesia will move its capital from Jakarta to the province of East Kalimantan to relieve the city and create some political decentralization for the nation. With the relocation of such a crucial role, the population of Jakarta is expected to decrease in the short run and it should slow the growth rate in the long run.

A blue ocean of FinTech

Many of Jakarta's early startup successes were not original business models. Often, they were adapted from other successful startups and adjusted for the Indonesian market. However, as is the case for many ecosystems in the region, Indonesia has its own unique set of challenges and its entrepreneurs are rising to meet the challenges. For Jakarta, this means the FinTech sector has been the site of renown innovation.

With a population of over 270 million, the majority of which is below the age of 35, technology is a key enabler for Indonesians. Around 185 million people have access to the internet (2020), and mobile subscriptions are as high as 415.7 million (more than one per person). Being composed of 17,508 islands, and the consequent lack of efficient transportation across the islands, creates remote areas where inhabitants have less access to infrastructure and services, not the least of which, banking.

Digital infrastructures overcome geography challenges quicker and cheaper than physical ones, and so advancements in FinTech were heralded in as the solution. In September 2019, there were 167 FinTech startups in Indonesia. By August 2020, that number had risen to 307, an increase of 83%. These startups tend to offer payment, lending, personal finance, crypto and blockchain, P2P (peer-to-peer) lending and investment, crowdfunding, insurtech, and PoS services.

Digital payments represent the bulk of the value of transactions, totalling over $30B USD. With traditional banking struggling to reach remote areas, less than 20% of the population had a bank account in 2011. Now, however, over 55% have access to digital banking. FinTech's success has been helped by strict traditional banking regulations in lending; in 2018, the average interest rate for a SME business loan was 12.69%. The rate for non-performing loans (NPL) for SMEs in 2018 was only 3.35%, suggesting that banks have strict and higher standards for lending, constituting a barrier in accessing traditional bank loans. In this gap, peer-to-peer lending (P2P) has an opportunity to offer the speed, reach, accessibility, conditions where traditional banking fails in Indonesia. P2P also helps bridge the gap between FinTech and traditional banking; banks lend money to P2P in order to reach new customers that they couldn't through the traditional methods, leading to a more robust finance sector in Indonesia overall.

Jakarta has grown into an oversaturated city filled with the hopes of millions of Indonesians.

In the next section, we will take a look at some of the policies that have driven FinTech forward in Indonesia.

highlight 3

Access to finance

In Jakarta, only 3.8% of firms consider access to finance a major constraint (score 82.66). When taking into consideration Indonesia as a whole, the value increases to 16.5%. Despite this, the average in Indonesia still trends better than the worldwide average of 25.9% of firms who view finance as a notable constraint. Access to loans is also significantly above average with a SME general score of 4.46 out of 7, thus ranking in the 12th position.

highlight 4

Indonesia has currently 5 unicorns and they are all based in Jakarta.

With a valuation of $10 B US Gojek was the first and largest company to reach unicorn status in 2016. It became a decacorn in 2019.

highlight 5

FinTech startups in Indonesia are experiencing substantial growth.

So substantial, in fact, that the growth value for 2020 is based only on the first 8 months of the year, and the amount was still 66% higher than that for 2019. It represents an increase of activity in the startup scene. Additionally, due to Jakarta's size, the number of startups is relatively high compared to the cities in SFI ranking at 12; in 2019, Jakarta had 821 startups, a number that had more than doubled – to 2492 – by the start of 2021.

highlight 6

The influence of external economies is considered low.

Economic trade openness (weight of imports and exports on total wealth generated) is lower than 40%. Jakarta's SFI ranking is 50th for influence of external economies.

policies in motion

The FinTech sector in particular is very sensitive to changes in regulation. As a solution, policy makers in Indonesia have curated a mutually beneficial relationship with its startups. Policy makers seek technical guidance and feedback on legislation to create a conducive legal framework. Meanwhile, startups gain a sense of security in a sector where legislation has previously disrupted business success. The coordination in this sector of how to increase opportunities and efficiency can be a pleasant byproduct of good relations between startup ecosystem agents.

Policies in FinTech regulated

In November 2017, Bank Indonesia (BI) introduced a regulatory sandbox through Regulation No 19/12/PBII/2017. This is a broad regulation on all FinTech sectors and although it is not the first of its kind, it still serves as the baseline regulation in the FinTech market. Indonesia's Financial Services Authority (OJK), has the authority to regulate matters relating to non-payment financial services in the banking, capital markets, insurance, pension fund and financing sectors. For P2P lending institutions, which were legally recognized in December 2016, major policies regarding finance include a foreign ownership limit of 85%, prohibition of carrying out any on-balance sheet lending and a lending limit amount of around $141,000 USD. As a result of the regulation, OJK has already blocked more than one thousand illegal P2P players from fraudulent activity.

1000 Startups Movement

Joko Widodo, the President of Indonesia, launched an initiative called "1000 Startups Movement" in June 2016. The project aims to foster 1000 startups by the end of 2020, with an expected valuation around $10B. The programme includes workshops, hackathons, bootcamps, and incubation programmes that are carried out across ten large Indonesian cities. By mid 2019, only 525 startups had been created, so in response, the IT Ministry of Indonesia launched the "1001 Digital Startup Movement" alongside several ecosystem stakeholders in the country's digital sector to launch further growth.

Ease of Foreign investment rules for startups

The government has unveiled a draft of presidential regulation which proposes to lift some of the rules concerning foreign investment in tech-based start-ups. It aims to limit the restrictions on foreign investment (from special economic zones) to the minimum requirement of more than Rp 10 billion (US$710,111). It is also intended to ease the process for start-ups to hire foreign workers without being required to have a government-approved plan to use foreign employees, which is included in the current article of the jobs law. The main goal is to decrease the barriers and give more capacity to start-ups to attract investment and human talent.

impact

Overall, the use of policy to impose regulations on the FinTech sector in Jakarta (and Indonesia writ large) work in tandem to promote two sides. The first is to allow innovators the freedom to develop new technology and new ways to expand the market. However, this freedom to innovate cannot come at the cost of the loss of credibility. In the end, FinTech relies on trust in technology and financial literacy; it is a market that relies on word of mouth marketing to bring in new customers. If the sector is overrun with bad actors and adverse schemes, it becomes all the more difficult to attract and sustain customers. In the end, these policies work to let the FinTech sector grow uninterrupted for the benefit of all Indonesians for whom financial inclusion is an added value.

empowering MSMEs for today's digitally dependent economy

Internet penetration: 49

In emerging markets like Southeast Asia, micro-, small- and medium-sized enterprises (MSMEs) are fundamental for job creation and overall economic growth. Yet, many businesses in the region find it challenging to integrate even the most basic elements of digitalisation – spelling trouble for their survivability during an age when technology is redefining industries and societies at breakneck speed.

Southeast Asia's economy rests on MSMEs. In this heterogeneous region marked by significant diversities (from language and culture to economic growth and technological penetration), Indonesia stands out as a microcosm. This is not only due to the diverse national makeup of the large archipelagic country but also by the role of its MSMEs; they comprise 99.9 percent of all enterprises, employ 97 percent of the workforce and add 61 percent to GDP.

SME Access to loans: 67

Not only are they the lifeblood of the economy, but they are also important for local communities, especially in more rural areas. BukuWarung works closely with more than 2.5 million of these businesses across more than 750 locations nationwide – many of them act both as places where people shop for everyday essentials and where they interact with their neighbours. The traditional socio-economic roles of Indonesia's MSMEs therefore cannot be understated.

The dearth of MSME-focused digital solutions

With Indonesia now digitalising at pace (it is now as a key technological hub in the region), its economic potential cannot be fully realised if their smaller enterprises do not digitally transform. However, MSMEs in Indonesia find it hard to digitalise as most solutions are not developed for their specific needs and/or that they cannot qualify for the financial help needed to invest in digital tools, as many still operate in informal economic sectors.

Smartphone penetration: 49

To illustrate, most MSME owners do not have powerful smartphones that can run digital solutions currently existing in the market. This is evident in operational matters such as accounting, as owners continue to rely on pen and paper ledgers, resulting in inaccurate and inefficient bookkeeping that takes almost 8-10 hours per week. This lack of captured financial data impacts the MSMEs' financial visibility and access to credit – a pertinent economic chokepoint, as research found a credit gap of US$54 billion in 2020, attributed by 74 percent of MSMEs lacking access to credit.

Overcoming the digital gap with tailored technology

Indonesia is now doubling down on digitalising its enterprises to make them more productive and competitive amid its economic recovery, with a particular focus towards largely untapped segments such as MSMEs. This is a laudable task but also a monumental one since there are roughly 60 million of such businesses stretched across the country's 6,000 inhabited islands.

Technology companies can thus play a central role in supporting Indonesia's digitalisation efforts, namely by introducing digital enterprise tools that cater directly to what MSMEs actually need. The solutions must speak less about innovation and disruption, but more on how everyday operational matters such as bookkeeping, stock fulfilment and receiving payments can be made easier and more efficient. Focusing on the most basic of enterprise hurdles these businesses face helps to create a foundation for their long-term digitalisation.

Those providing the solutions must also consider the MSMEs general technological limitations. Hence, they must be made as lightweight as possible; the better it performs on the cheapest entry-level device, the higher the chance of the technology's take-up by more business owners. To gain more users, especially in demographically diverse countries like Indonesia, localisation – namely via user interfaces and customer engagement channels – is also crucial. Tech firms eyeing the broader Southeast Asian market could then extrapolate this strategy across the heterogeneous region, instead of using one-size-fits-all approaches.
For enterprise solution providers and their investors eyeing Southeast Asia's young but promising markets, Indonesia represents a testbed where even the most basic digital tools can generate opportunity in untapped sectors. By extension, this can foster greater impact for communities.

Abhinay Peddisetty
Co-founder of BukuWarung

Abhinay's experience consists of building and scaling early to late stage internet companies (seed to series D) across Southeast and India, where he built growth, revenue and partnership teams. BukuWarung is a Y-Combinator backed technology company that is building digital infrastructure for 60 million micro-, small-, and medium-sized enterprises (MSMEs) in Indonesia.

Using the right technology to make logistics cheaper and more efficient

Transport: 47
ICT: 35

Logistics is a highly complex industry. The sector heavily depends on suitable infrastructure and reliable technology to manage costs and streamline processes for all players involved. These are especially apparent in Indonesia — where not only are infrastructure and technological adoption still maturing, it also faces the daunting challenge of servicing everyone throughout the archipelagic nation of over 17,000 islands.
COVID-19 has exacerbated the situation as more consumers went online to buy necessities, resulting in increased pressure on the already strained supply chain — pushing logistics stakeholders players to look at much-needed innovation in their operations to increase efficiencies and lower costs.
Such consumer behaviour is likely to continue post-pandemic, according to a McKinsey study which noted that 92% of Indonesian consumers adopted a new shopping behaviour in the last three months and 60% plan to continue to spend online post-Covid.

Indonesia's unique challenges

Indonesia has the highest logistics costs in Asia, accounting for 24 percent of GDP as compared below five percent in more developed markets, according to The World Bank. Yet, the country's unique geography means that adapting a supply chain model from other countries like China or neighbouring Thailand and Malaysia is impractical, simply because goods cannot be transported using trucks on land alone. Instead, a multimodal system — using land and sea transport as well as warehousing — should be applied to reach remote areas of each island.

Regulatory quality: 44

There is also high sectorial fragmentation, characterised by the lack of transparency and real-time information. Currently, 90 percent of orders and matching are done offline, and 80 percent of deliveries are manual, with slow verification and lack of instructions.

Many tasks are also done informally. For instance, contracts are usually handwritten, and communication is done ad hoc and through informal channels such as WhatsApp. Drivers may also receive payment months after completing a delivery. The result is sub-optimal utilisation of key resources such as trucks and warehouses, which then translates to long waiting times for drivers and in turn, the consumer.

As the industry positions itself for recovery and growth in the post-pandemic environment, technology must play a bigger role in enabling key stakeholders to quickly respond to evolving market realities and consumer demands.

Innovating for the needs of the hour

To eliminate ecosystem uncertainty and create value for stakeholders, logistics stakeholders in emerging markets like Indonesia must adopt realistic and solution-driven approaches to innovation.

Waresix's experience in doing this is by curating a marketplace platform linking both shipping firms and businesses to readily-available warehouses and trucks. This process prioritises efficiency as matching is based on supply and demand, as well as current needs and existing capabilities. In contrast, matching via conventional open marketplaces is typically done based on price, without fully considering the requirements of the different parties involved.

Additionally, mobile app technologies can help businesses improve their data management, monitoring and communication — leading to lower and more predictable costs, as businesses no longer need to heavily invest in infrastructure, especially across geographically challenging markets. Businesses can then leverage economies of scale from existing warehouse networks to consolidate or deconsolidate goods, improving flexibility and access to markets.

Today, digital tools for stock fulfillment are on the rise and many are being enhanced to help businesses better track their inventories. They help reduce operational uncertainties and costs as these businesses do not need to stock up on goods unnecessarily. For couriers and drivers, technologies included as part of transport management systems (TMSs) help create shorter verification times and improved processes. In turn, this improves truck utilisation and thus creates more jobs and better income for drivers.

A sustainable way forward

For emerging, middle-income nations like Indonesia, logistics must be made safer, more reliable and more efficient to take their economic growth to the next level.

2020 was a litmus test for logistics and after weathering the unprecedented period, we are optimistic about its prospects and are excited to help contribute to its long-term technological development

Andree Susanto
CEO & Co-Founder of Waresix

Waresix is a technology platform that offers trucking, logistics and warehousing solutions for companies navigating Indonesia's archipelago fof 17,000 islands. By connecting shippers and businesses with available trucks and warehouses across Indonesia, Waresix offers a one-stop solution for transportation both by land and by sea, as well as cold storage and general cargo handling.

Creating local solutions for local problems

By Heather Dannyelle Thompson

India's startup scene as a whole started off by building on its imperial remnants. Large public sector companies in the manufacturing sector laid the groundwork for the emergence of an innovation cluster spanning different sectors such as electronics, machinery and aeronautics. This in turn led to the establishment of a number of public R&D institutions and universities. And so began a wave of in-migration of science and technology qualified labor force into the city.

The entry of Texas Instruments into Bengaluru in 1984 marked the beginning of another milestone in the growth of the city: it was dubbed as the "Silicon Valley of India".

Overtime, the city grew a reputation for cheap IT labor. As it developed, it looked to address the "exclusive talent needs" of the Indian IT industry. An International Tech Park was created in Whitefield, Bengaluru, as the result of a joint venture between India and Singapore in 1994. This was followed by several other IT parks and, in the process, most major foreign software companies had set up development centers in India, overwhelmingly preferring Bengaluru.

Startups began to flourish as the talent hired by these large corporations began to develop into tech innovators themselves. Once lured by increased wages, skilled workers soon grew bored by the limitations of corporations and struck out on their own to create new companies. Today, the city is alive with a vibrant culture of tech enthusiasts and innovators. Corporations still play a large role in the ecosystem, often responsible for large innovation hubs, resulting in a diversity of companies and organizations across the business sector.

In this section we will look at how Bengaluru performs currently in the SFI, understanding how new waves of innovative solutions designed for India have erupted, and what role artificial intelligence and corporate innovations hubs have in the city today.

Abdullah Ahmad / Unsplash.com

Bengaluru, India

startup friendliness performance

Bengaluru has long been a regional powerhouse for startups. **In our SFI, Bengaluru earns a score of 48 out of 100**. It's particular strengths show through in its Labour Market score, 77.02 out of 100, from conditions that do not restrict access to labour such as a low minimum wage and lack of legal constraints to hiring, both of which are advantageous to startups. Along the same lines, we see indicators that the entrepreneurial spirit is alive and well in Bengaluru. Furthermore, its ICT penetration is apt for a start-up culture. There are droves of entrepreneurs hungry for a start in Bengaluru; however, they can lack proper access to funding and persistent inequality means there is a bias in terms of who can be part of the startup scene.

SFI SCORE BENGALURU

SFI SCORE:	48.45
Human Capital	57.93
Finance	45.99
Startup Scene	40.48
Infrastructure	62.91
Macro	56.67
Market	33.62

Singapore is a stellar example of how an ecosystem can serve an entrepreneurial culture.

To understand how to read the SFI, see page 20

highlights

highlight 1

Entrepreneurial culture is alive and well in Bengaluru

In 1984, Texas Instruments expanded into the city, a time many consider the rise of the "Silicon Valley of India". Our index shows that the city scores high for viewing entrepreneurship as a career path and the highest number of startups (100) with over 7400 listed; on the flip side, it ranks the worst for fear of failure (0).

highlight 2

Human capital is plentiful in Bengaluru

With a vast population, few regulations regarding hiring (workforce constraint: 99; labour regulation constraint: 95), and a low minimum wage ($54.50 USD monthly), Bengaluru is one of the easiest cities to hire in. More applicable to startups is the average salary of $777USD per month, which still pulls in at 80 in our index. Finding the right high quality talent, however, can depend on the sector of the startup.

Human capital aplenty

To help us understand how the startup scene in Bengaluru serves entrepreneurs, we turned to Ayushi Mishra, Co-Founder of Drona Maps, to discuss strengths, weaknesses, and areas for growth.

Ayushi's perspective confirmed much of what our SFI revealed. "Because so many of the start-ups and service industry are tech-focused, it's not as hard to find engineering talent to bring in. Our educational system has a strong focus on technical education," she says. "What can be hard, especially for our company, which offers a niche innovative solution, is finding talent that has domain specific knowledge we require. So then, what we end up doing is spending at least 6 months training our employees before they can start contributing." She is not alone. According to the Talent Shortage Survey 36% of Indian firms choose to train their own employees to meet their needs.

A lot of this is driven by the sheer size of the population. While there is a focus on IT and engineering colleges, the percentage of the population who can access them causes the indicator for University Students to lag to 7.53 in our global SFI."Entrepreneurs like me, who have had the opportunity to have an elite education, are privileged in some ways with respect to access to networks. Much like the rest of the world there is definitely an element of educational bias at play." Nonetheless, Bengaluru is known as an Indian education hub with 24 public universities, 12 deemed universities, 6 private universities, 207 engineering colleges, 61 medical institutions, 48 dental colleges, 280 management institutions , and more than 60 international schools.

Ayushi Mishra is the co-founder of Drona Maps in Bengaluru and New Delhi.

Of course, this is not unique to India or Bengaluru, but can often be a challenge in countries with high human capital but low GDP per capita, where low salaries lend themselves to a low GDP per capita. India itself scores a 4.16 for its GDP per Capita indicator.

The good news is that in India, you can bootstrap for longer to prove your concept before you need access to large amounts of capital.

"Across the different cities in India you won't see a huge difference in access to financing per-se, but the nature of startups is different. For instance, Mumbai has a large FinTech ecosystem as the financial capital of the country ," Ayushi says. "You may find a difference in access to networks," she adds. Indeed, Bengaluru sees a score of 65 for Loans Access and 99 for Funding

HUMAN CAPITAL	56.59
FINANCE	42,03
STARTUP SCENE	40.96
INFRASTRUCTURE	61.29
MACRO	58.62
MARKET	31.15

Photo by Arun Geetha / Unsplash.com

Constraint. For total VCs/PEs, India receives a score of 12.14. Here, Ayushi says, what is also important to note is that there is still a bias in what VCs tend to invest in: "there is an investor bias towards B2B businesses in general, however, B2C startups that target scale have made it big such as Ola, OYO, Zomato, and Flipkart."

But perhaps the most exciting aspect of the ecosystem is what Ayushi says is a growing willingness to innovate by Indian startups. "Three to four years ago, there started to be a shift," she says. "Now, you'll see more startups are creating new solutions which, yes, maybe are initially created for the Indian local context, but they are using the complexity of the Indian landscape as a good starting point for robust product development and are approaching global expansion faster." In essence, she says, it's a bit like how an individual artist may move from tracing pictures to innovating their own style. "We are in the phase where we are growing up."

Ayushi spoke also of some growing pains associated with this change: "For my company in particular, since we work with emerging technology, the technical and financial details of large scale deployments have to be developed as we go. This translates to difficulty in finding an effective commercial onboarding model. However, there has been positive changes to ease this pain point, to the point where even government tenders have started including exemptions for certified startups, which is a step in the right direction to enable the adoption of the technology."

Similarly, India's national policies can present obstacles for startups like Ayushi's. For a highly innovative field like drone mapping, it can be difficult to navigate the maze of legislation and regulatory offices to obtain all necessary approvals and clearances. Since 2018, pro-drone legislation emerged in India, allowing the pathway for more startups to operate in the industry. If these policies are not simplified, they could end up blocking innovative solutions from emerging.

Centers for startups

The city has come a long way since the nascence of its IT industry. When in the 1980s, aspiring tech giants, Infosys and Wipro, moved their offices to Bengaluru, the world began to see the city as a hub for IT. Large international and foreign companies began to look to Bengaluru as a source of cheap labor by hiring Indian developers and creating large contracts with IT centers. While the partnership was mutually advantageous for both parties, it has since evolved as the high tech environment soon gave way to genuine interest and new ideas. Over the years, a place unknown for supplying original ideas began to turn heads for new innovative ones.

Nowadays, Bengaluru and Karnataka in general houses more than 400 R&D centers. About 60% of biotechnology companies within India have a base in Bengaluru. The city is also home to several disruptive companies such as Flipkart, BigBasket, Mu Sigma, and Ola Cabs. The city is home to over 7,400 startups, making it the second in our index and ranks very high for how active its ecosystem is with on average 42 startup events per month.

There is also an established scene of accelerators, in particular large corporate incubators and innovation hubs such as Axilor, Kyron, and the Microsoft Accelerator, all of which focus on early-to-middle stage companies. The combined advantages of massive capital with young ideas have created a culture of innovation in the city that is quite unique and impressive.

See our guest article "AI for Good: creating good for people and planet" On page 62

highlight 3

Access to serious long term financing can be an issue

Our index shows that Bengaluru struggles in attracting a generous amount of funding. Its score for Seed & Pre-Seed funding pulls in at 17. "It would take 6-9 months for an investor to take a bet on you and the amount would not last you more than half a year," says Ayushi. Startups funded by grants come in at a resounding 2.29 as well. Likewise, high equity funding of $5M and $1M come in at 40.39 and 23.21 respectively in the index.

highlight 4

Innovative startups are on the verge, but investors are struggling to make the pivot

Innovative startups are on the verge, but investors are struggling to make the pivot Emerging from India is a growing trend of innovation from startups. While previously, many startups focused on replicating successful business models and applying them to the region, many startups are now focusing on creating new solutions, not only specific to their context, but that can scale up. Investors, however, still focus on less innovative, safer ideas.

In the next section, we will take a look at some of the policies that have driven FinTech forward in Indonesia.

Photo by Abilash Benny / Unsplash.com

policies in motion

There is no shortage of policies encouraging entrepreneurship in Karnataka, Bengaluru's state, or indeed in India as a whole. Between federal and state policies, there is a wealth of funding, particularly seed funding, available. The government recognizes the untapped potential of its population as an avenue to growth and increasing access to funding as the stepping stone to growth. The following policies provide a glimpse of the current policy priorities.

10,000 Startups

Launched in 2013 by NASSCOM, the trade association of Indian IT BPM industry, 10,000 startups is an initiative to boost startup culture in India. The program provides incubation, funding, and support to startups, with the hopes of reaching 10,000 startups supported by 2023. To date, they have impacted 5800 startups, provided funding for over 500 startups, and have held 3500 startup events.

Idea2POC Grant

As a part of the Innovate Karnataka Initiative, the state government offers funding specifically for early stage funding which have not established proof of concept. This is a particularly helpful policy, as investors rarely make investments before the proof of concept is established which, particularly for fields like biotechnology, cannot not always be bootstrapped entirely. The grant allows for up to Rs. 50 Lacs ($68,500 USD) for selected ideas. Other grants available under the Karnataka Initiative include ones specialized for other verticals such as the Semiconductor Venture Fund, the Bioventure Fund and the AVGC Fund for the Animation, Visual Effects, Gaming and Comics (AVGC) sector. Our SFI currently gives Bengaluru a score of 2% for Funding by Grants.

Foreign Trade Policy 2015-2020

India's trade balance is 39.55% of the national GDP. In comparison to the global average of percent 91.55%, it's trade activity, at least in regards to goods, is suppressed. The rise of neoliberalism and open trade has been on the rise for decades, with most of the world increasing its international trade as a means to leverage to increase comparative advantage and bring economic growth, India has seemed reluctant to embrace the same. The policy could likely be protectionist in some cases. As Ayushi noted, in the drone sector, the state allows little trade of technology for security. In other ways, the government seems to be more focused on compensating with the trade of services, leveraging its human capital. A direct and straightforward policy to balance trade and the reduction of taxes on exported goods would be a way to improve.

impact

While Karnataka and India's policies on its startup scene direct the most prominent pain point of an entrepreneur's potential success, access to capital and entrepreneurial culture (30% and 56% respectively), it's worth noting that these are only two of the domains represented in our SFI. Furthermore, the index is holistic, in that uneven performance in one category can bring down the total score considerably. It's bottom performing indicators of trade openness, GDP per capita, high equity funding, and FDI inflows, for instance, could benefit from innovative trade policies.

AI for Good: creating good for people and planet

Is artificial intelligence (AI) finally ready for prime time? I don't see a day go by where I don't hear of AI and, it's profound impact on humans. In this knowledge economy, growth is now dependent on the quantity, quality, and accessibility of available information. AI is no more a good technology to have; instead, it is a must-have!

The use and sophistication of AI gives an enterprise a distinct advantage to amplify their business services and products. AI will be ubiquitous in the near future – even if we are unaware of its existence while performing our day-to-day tasks. This has also paved the way for commentaries on this technology's ethical aspects and the need to institute effective practices of building fairness, interpretability, data privacy, and security as the core of every AI offering.

While much has been spoken about the business imperative of AI, this technology has an equally attractive social impact potential. From predicting protein structure to accelerated drug discovery, AI has been at the forefront in the fight against COVID-19 and has re-instated its pole position as an 'all-weather' technology with both business and societal impacts.

In this regard, I would like to specifically cover two use cases to showcase how AI can help the world run better and improve people's lives.

AI City Scale Simulator: A joint initiative by SAP, IISc and TIFR

SAP Labs India joined hands with Indian Institute of Science, Bengaluru (IISc) and TATA Institute of Fundamental Research, Mumbai (TIFR) to build an AI-based solution to perform city-data simulation, blend it with the COVID-19 cases data trend coming across from the world and gauge the real infection situation in the city.

The Epidemic City scale simulator is different from other forecasting mechanisms and similar Agent-Based Epidemic Models due to its unique features such as differentiating the spread on the basis of age, demographics, employment data, occupancy distribution, the mode of interaction in each ward / city, transmission rate/coefficients, spatial stratification, exposure in places of mass gathering, as well as the expectancy of spread due to commuting via different modes of public transport. Additionally, the simulator's focus is to understand the specific intervention method like social distancing, self-quarantining and lock-down and show disease progression results due to different interventions chosen.

AI- driven anti-counterfeiting solution: Safer products for consumers

Counterfeiting is rising at an alarming rate. *As per the latest* Global Brand Counterfeiting Report, the amount of total counterfeiting globally has reached 1.82 Trillion USD in 2020, which includes counterfeiting of all equipment/products touching multiple industry verticals.

As part of our Open Innovation Program at SAP Labs India called SAP Startup Studio, we collaborate with NeuroTags. This startup leverages Artificial Intelligence-based serialization technology to help consumer brands protect their products from counterfeiting. The solution provides unique randomized codes that go on to the products. Each code is then continuously monitored by a set of AI and heuristic algorithms, which give a score to each of the codes. If the score reaches a set threshold or violates any of the fundamental rules (anomaly), it is flagged by the system. NeuroTags algorithms monitor dozens of such signals and patterns.

NeuroTags' AI-powered anti-counterfeiting solution co-innovating on SAP's Business technology Platform is leveraging the capabilities of SAP's product serialization, offering end customers of a brand to evaluate the authenticity of the product via the unique QR code assigned to every product item. The QR code-based traceability of the product also enables a brand for a quick product recall in case if there are any issues with a product batch.

AI for Good: The road ahead

Advances in machine learning (ML) and artificial intelligence (AI) present an opportunity to build better tools and solutions to help address some of the world's most pressing challenges, and deliver positive social impact in accordance with the priorities outlined in the United Nations' 17 Sustainable Development Goals (SDGs)
Targeted applications of AI in the domain of social good have recently come into focus. Results from several recent studies hint at the potential benefits of using AI for social good. With an evolving socio-economic landscape, AI will play a pivotal role in shaping the narrative of the present and the future.

Sindhu Gangadharan
Senior Vice President SAP

As a Senior Vice President, she is the Managing Director of SAP Labs in India, responsible for product development and innovation at SAP's Research & Development facilities in Bengaluru, Pune, Mumbai, Hyderabad and Gurgaon. She also leads the SAP User Enablement unit, that provides a seamless, integrated end-user platform for all SAP's products. Sindhu joined SAP in 1999.

size + speed: corporate and startup engagement

Startup Events: 100

Total Startups 100

Accelerators: 20%

Funded by grants: 2

High Equity Funding Startups (over 1 mil USD): 2

Incubators: 20

"A startup is a company working to solve a problem where the solution is not obvious and success is not guaranteed," Neil Blumenthal, co-founder and co-CEO of Warby Parker.

Since the known beginnings of the term in the late 1990s, startups have had a major makeover. From struggling tech enthusiasts who tried to address a gap in the market with innovation to unicorns making corporate history, startups have covered vast ground. It would not be a stretch to say that "startup" is one of the most used words of the decade 2010-2020 (although "COVID" is a serious contender)!

The latest report released in January 2021 by the Department of Industrial Promotion and Productivity (DIPP), and Start Up India, finds that India is the 3rd largest startup hub in the world, with 41317 startups (recognised by DIPP till end of 2020). Bengaluru is a hotbed for startups with nearly 7700 of those[1].

Against this background, there are some very interesting trends emerging, where instead of defeating him, David joins forces with Goliath to create powerful synergies. A new wave of large companies such as Qualcomm, Bosch, Intel, Airbus, SAP and others are setting up their own dedicated accelerators. Increasingly, in the exciting startup ecosystem of Bengaluru, the leading multinational companies (MNCs) and large Indian companies have initiated their own cohorts and platforms to identify and select startups. The industry majors have begun to realise the potential and the value that the nimble and innovative young companies can contribute.

What the Big Companies Get Out of It

For these large corporations, the key objective is to accelerate innovation and speed to market. According to Mr Dattatreya Salgame, CEO/President of Bosch Engineering and Business Solutions India, "working with startups and universities enable companies to drive innovation in an agile manner, and drive new technologies which large companies have not yet invested in but which complement the existing business focus. This helps large organizations to quick-test the waters with minimal effort and time, while also providing an opportunity to address customer problems quickly."

To achieve these objectives, these large companies create an in-house cohort of startups that understand the culture and mission of the MNC. Working in tandem, this collaboration provides quick and proprietary solutions that can help them gain a market advantage, while the startups get the financial and strategic support they need..

1 https://www.startupindia.gov.in

How to Find Startups for Incubators

Different companies have different ways of choosing startups and onboarding them. Let's take Qualcomm, a technology company, as an example. They find their startups primarily through an annual program that resembles a competition, known as QDIC (Qualcomm Design in India Challenge).

QDIC, since its inception, has evolved through five annual editions, making it India's longest running hardware and IP incubator program for startups. So far, 65 of the nation's top startups have been incubated through it.

"These startups have been selected from hundreds of applicants, based on the relevance of their innovative products to India's societal needs, ability to do system level design, incorporating hardware and artificial intelligence, and quite uniquely, the ability and desire to protect their own innovations through patenting," says Sudeepto Roy, VP Engineering at Qualcomm.

The win-win situation that these companies have been able to curate makes the relationship attractive and symbiotic. In return for their expertise, startups receive grants and access to domestic and global business development network, allowing them to promote their business to a wider audience. Furthermore, they are eligible for investment consideration by the companies' venture arms or even become partners in a global consortium that builds in greater competitiveness, and quick reaction capability.

The idea behind the collaboration remains the same. Bigger companies are looking for innovative, agile startups that can help them drive the corporate strategy forward. The selected startups are working closely with the relevant business units as a part of their business plans and are associated with the outcomes.

The main element of such an incubation program is that the innovation management is done with uniform processes and standard legal procedures for the engagement (thereby improving efficiency for multiple engagements), meaning it is scalable.

Encouraging Outcomes

The pilot programs have resulted in very encouraging outcomes and valuable learnings. In the last three years, Qualcomm has disbursed $1.2 million in grants to highly successful startups.

For Bosch, equally running a pilot program, the winning startups have become an integral part of the company and partake in its Go-to-market partnerships. They can further access Bosch's toolchains and hardware solutions, such as robotic testing tools, and can get assistance with compliance (cybersecurity check software). Startups are much faster and can quickly develop prototypes, which can be a challenge for a larger company especially if it is a new trend (Blockchain, 5G, AR/VR). While the core and IP are developed in-house at the larger company, startups add value by providing the complementary offerings.

Together, "the David and Goliath" team are defining new paradigms in their quest to conquer the markets with speed and scale. It is a trend that will benefit many.

Fraunhofer

Anandi Iyer
Director Fraunhofer Office, India

Photo by Disruptivo / Unsplash.com

conclusions

in comparison
baseline factors

	SINGAPORE	JAKARTA	BENGALURU
SFI Score	(66.09)	(43.23)	(48.45)
INFRASTRUCTURE	(67.57)	(51.51)	(62.91)
Internet speed- download Mb/s	55.17 (39.77)	10.47 (6.60)	21.08 (14.47)
Internet speed (upload) Mb/s	77.58 (56.23)	5.14 (2.86)	17.26 (11.79)
Internet Cost (monthly) Monthly in $USD	$25.9 (53.48)	$36.47 (52.55)	$16.65 (84.95)
Cost of Living *1 bedroom apartment in city centre*	$3239.44 (3.05)	$980.16 (78.43)	$582.40 (91.70)
STARTUP SCENE	(50.22)	(27.55)	(40.48)
Co-working Cost *Monthly for individual seat*	$309.24 (0)	$136.23 (58.08)	$117.59 (64.34)
Rent *1 bedroom apartment in city centre*	$2,143.62	$476.83	$244.41
MACRO	(91.07)	(55.79)	(56.67)
Regulatory quality	(99.30)	(44.07)	(41.01)
Crime as a constraint *% of businesses identifying crime as a major constraint*	1.87% (97.35)	4.00% (94.34)	0.0% (100)
Bribery Depth *% of public transactions where a gift or informal payment was requested, based on an enterprise survey*	0.0% (100)	43.30% (56.66)	3.2% (96.80)

Scores in black are raw values
Scores in () are the index score

1. Development as a factor

There is a clear difference in the development of Singapore in comparison to Jakarta and Bengaluru. The crudest analysis of this difference would conclude that Singapore is more advanced, however in our data, research and interviews, we've come across multiple areas in which Singapore's startup ecosystem could gain from partnering with Jakarta and Bengaluru.

The phase of development for each has a significant impact on how the startup ecosystem develops and the type of innovation that is dominant: FinTech in Jakarta born out of a massive population and a lack of financial inclusion; emphasis in DeepTech solutions in Singapore from a lack of human capital and natural resources and a high trade economy; services trade, information technology, and biotechnology in Bengaluru from a scene teeming with talent and ideas.

2. Cost of Living

Broadly speaking, the expense of each city has an impact on the phase of startups that are common there. Singapore is an expensive city, and therefore, it is a difficult place to bootstrap a business. Whereas in Jakarta and Bengaluru it is far easier to bootstrap and to do so for longer periods of time, so its more apt for companies to start from the bottom there.

3. Crime is not a constraint

In Singapore, there is very little crime and informality is essentially nonexistent. Jakarta and Bengaluru, while having fairly high levels of informality, also do not report much, or any, trouble with crime interfering in their ability to start a business. Overall, in each city's macro score, we can see that while there may be a modest amount of issues with regulation or corruption, businesses do not report it as an impediment.

Overall, each of these countries supply the adequate baseline that startups need for support and growth. There are no strong disincentives to starting a business. Furthermore, each environment has presented its own challenges that startups are rising to meet.

Next, we will look at what factors differentiate each ecosystem.

in comparison

differentiators

	SINGAPORE	JAKARTA	BENGALURU
HUMAN CAPITAL	50.84	50.69	57.93
Women entrepreneurship *% of businesses majority owned by women*	27.50% (59.78)	19.10% (41.52)	0,90% (1.96)
University scores *The sum of the universities scores which are in the global top 1000 universities*	154.60 (38.16) National University of Singapore	29.5 (7.28) University of Indonesia	48.00 (11.85) Indian Institute of Science
FINANCE	(66.95)	(42.96)	(45.99)
Seed Funding *Average seed type fund raised per startup*	$149.8k (49.35)	$75.2k (24.46)	$50.1k (16.50)
Highest seed funding raised for ecosystem	Schonell raised $16M in a seed round (2015)	Ula raised in 2020 $10.5M in a seed round (2020)	Cred raised $30M in a seed round (2018)
Series funding *Average series type fund raised per startup*	$303.3k (63.28)	$329.66k (68.78)	183.3k $ (32.84)
Highest series funding raised for ecosystem	Grab raised in 2017 $2B in a series G round (2017)	Gojek in 2018 raised $1.5B in a series E round (2018)	Flipkart raised $1.4B in a series J round (2017)
STARTUP SCENE	(50.22)	(27.55)	(40.48)
Number of Unicorns in the city*	3	5	11
Number of Startups As of 2021	7007	1904	6449
Entrepreneurial spirit	(36.62)	(57.84)	(56.01)
Fear of failure *% persons who gave up from entrepreneurship due to fear of failure*	39.40% (49.89)	34.12% (61.36)	62.37% (0.00)
MACRO	(91.07)	(55.79)	(56.67)
Corporate taxes National corporate tax	17.00% (65.45)	25.00% (36.36)	30.00% (18.18)
Business registration time *in days*	1.5 (99.56)	22 (91.03)	18 (93.22)
Business registration cost *% income per capita*	$235.9 (0.4% of income per capita)	$75.43 (5.7% of income per capita)	$120.7 (9.3% of income per capita)
Informality as a Constraint *% of businesses identifying informal sector as a major constraint*	0.0% (100)	13.4% (84.58)	5.8% (93.33)
MARKET	(79.20)	(37.85)	(33.62)
Trade openness *Weight of imports and exports on GDP*	318.42% (89.62)	37.39% (4.79)	41.07% (5.90)

*Not in SFI. Source: https://www.cbinsights.com/research-unicorn-companies
Scores in black are raw values
Scores in () are the index score

1. Development as a factor, again

Singapore's startup market is focused, generally speaking, on higher value added products. Largely due to the competition and the cost of living, there is little room for ideas, products, or services that are not competitive or high value added. For this reason, we see many high tech solutions coming out of Singapore. On the opposite end, Jakarta focuses on taking advantage of its market size, creating consumer facing businesses, and on bringing younger people into the economy. Bengaluru sits somehow in a mix of these two extremes; it is a single ecosystem where there are both huge high tech investments and a massive market, and where engineers and highly skilled labor converge to create.

2.Unicorns tell a story

Not just the number of unicorns (in which Bengaluru surely dominates) but in the nature of the startups that tend to become unicorns. In Bengaluru, one of the largest startups is the e-commerce platform, Ola Cabs. The business model itself is not hugely innovative or original, but it is capitalizing on its market share. In Singapore, we see big AI companies, such as Trax, a testament to the country's focus on high tech solutions and to its lack of human capital and space. Finally, in Jakarta, enough cannot be said about the huge importance of FinTech, demonstrated by companies like the unicorn Ovo, that works to expand financial inclusion and capitalizes on the huge market of Indonesia.

However, the number of unicorns is not the full story. In Singapore, it is more common for big startups to go public sooner, at which point they are no longer considered unicorns.

3. Entrepreneurial Culture

In Bengaluru and in Jakarta, our index shows that the entrepreneurial spirit is alive and well. This may well be due to the cost of living and the perceived payoff of taking the risk of starting a business in comparison to current comforts. Additional factors are cultural expectations of success and status. In Singapore, we see that the lack of prestige in startup culture is a big factor in why young talent is drawn towards more traditional pursuits, whereas in Jakarta and Bengaluru, not only is startup culture understood and respected, but there is a hunger for the lifestyle.

4. Trade partnerships benefit startups

Among these three countries, there is a stark contrast in the role that trade plays in their economies. Singapore has long built a reputation as a trade economy: most regional trade goes through their ports, a lion's share of flights to the region connect through their airport, and their trade as a percentage of their GDP is over 300%, by and far the largest in the index. In comparison, Jakarta and Bengaluru have average trade levels, with many urging for more free trade, particularly in ASEAN.

Trade impacts startups, as it creates avenues for regional and global expansion. The biggest companies in Jakarta and Bengaluru don't necessarily need to go international, as their own markets provide plenty of revenue. This is not necessarily the case in Singapore, where ecosystem builders and entrepreneurs are not typically building for the domestic market, but for the regional and international one.

The context of each country has a transparent effect on trade as well. When considering Singapore's population of around five million people — in comparison to the 270 million in Jakarta in over 17,000 islands and the 1.3 billions Indians — it is not hard to understand why Singapore would opt to serve the larger regional and international market, while startups in Jakarta and Bengaluru have often operated domestically for longer. In the end, active trade in the economy can likely make an impact on how soon and how likely their startups are to expand internationally.

conclusions

Throughout the course of this report, and through data, research and interviews, we've seen how startup ecosystems have developed distinctly in Singapore, Jakarta, and Bengaluru. With final SFI scores of 66.09, 43.23, and 48.45, respectively, we've seen that each city has comparable differences and strengths. While their SFI score attempts to distill these differences into a single number, or even into an index of 90 indicators in 6 domains, we've seen that the vibrancy, innovation, and hunger for startup culture is alive and well in each city in a markedly different way.

In Singapore, we see high levels of government involvement in nearly every aspect of startup culture. The government has worked consciously to promote entrepreneurship and innovation through research and development since at least the 1980s. In every way that a state can influence a startup ecosystem, Singapore is actively doing it. In this way, there can be no doubt they are a leader of how government intervention can positively create a more friendly startup ecosystem.

But as much as Singapore shows the strength of big state behavior to encourage startups, so too do Jakarta and Bengaluru show the power and might of human will to create a vibrant startup ecosystem. To these cities, entrepreneurship has been garnered as a pathway to environmental improvements by citizens, for citizens. Their startup scenes represent a fire and a hunger that catapults them to the center of the conversation when we speak about the power of entrepreneurship to build an economy from the bottom up.

Surely, the world is watching to see, understand, and be amazed by these ecosystems and what role they will play in their regions and in the world.

Photo by Erol Ahmed / Unsplash.com

recommendations

Singapore

Photo by Peter Nguyen / Unsplash.com

1 Recent regulations have raised the minimum salary required to obtain a work visa in Singapore. While this is no doubt intended to tackle the issues presented by immigration to the nation, it creates a pathway for only high paid talent to enter the startup scene and blocks higher potential but lower skilled/paid talent from entering (especially in combination with the high cost of living).

It is a delicate balance to find, and the factors that are best for the country writ large are not necessarily the choices that are best for the entrepreneurial scene. However, policies such as these can incentivize the next generation of talent to look elsewhere. While Singapore is the leader in our index today, this can easily be a precarious situation when it comes to staying competitive.

We recommend keeping in mind the next generation and future trends when crafting policies for talent entrepreneurs abroad, such as making it easier to attract high potential foreign talent could help create more innovative solutions.

2 Continue the initiatives to create a fiscal union in the reciprocal green lane between regional neighbors. Though it was halted due to COVID, increasing collaboration in the region will help the flow of ideas.

Jakarta

Photo by Bayu Syaits / Unsplash.com

1 Many entrepreneurs speak of the struggles of living and working in the congested Indonesian capital. With a difficult infrastructure and rising costs for those living there, improvements to basic quality of life could help keep and attract talent to the ecosystem.

2 Creating more incentives for funding and starting a business can help leverage the nascent potential of its massive human capital and help the country compete in the startup scene with giants such as Bengaluru and Singapore.

3 With low levels of financial inclusion and free market practices that create a culture of opportunists that drain the system, Jakarta could benefit greatly from better regulatory quality. This would make sure more citizens have access to join the economy and that the market is fair for all involved.

Bengaluru

Photo by Atharva Tulsi / Unsplash.com

1 At 18 days to register and 9.8% of the per capita income, the time and cost to register a business is the highest in India of the three. This is a common trend for countries like India that have a high population and a low GDP per capita. Making these processes easier and cheaper could remove a barrier for startup involvement.

2 At 30%, India's corporate tax rate is among the highest in our index. Making the corporate tax rate more competitive and shoring up other regulatory aspects can attract more incorporation.

3 Much analysis has been done on India's current trade partnerships, with urging to create more transparent and beneficial trade partnerships. Evening the trade deficit and engaging in more regional trade can benefit startup culture.

Photo by Andrew Neel / Unsplash.com


Photo by Paweł Czerwinski / Unsplash.com

appendix

human capital

the right talent at the right price

A crucial ingredient for startups to thrive is talent. The Human Capital index measures the availability and affordability of local talent.

The subdomain *Talentpool* looks at the supply of skilled workers by taking into account the quality of the wider education system and the strength and reach of local universities. In addition, surveys with local businesses consider the level of skilled labor shortages. Overall, cities with a strong education system and conditions to retain skilled workers score well in this sub-domain.

The subdomain *Labor Market* looks at the ease of accessing local talent by taking into account female participation in the workforce, the level of jobseekers and the complexity and stringency of labor regulations. Furthermore, on the affordability side, the subdomain looks at the minimum wage and the average salary for the engine behind many startups, software developers.

The subdomain *Inclusiveness* was designed to understand how much of a city's or country's citizens can participate freely and actively in the economy. While there are numerous reasons to increase the inclusivity of a region, including the moral and human rights implications, higher inclusion in the economy leads to more economic activity.

Photo by Disruptivo / Unsplash.com

singapore

HUMAN CAPITAL	50.84
Talentpool	57.68
Workforce constraint	44.87
Skilled workers	98.73
Universities Score	38.16
University Students	3.16
Tertiary education	100.00
R&D Expenditure	61.18

jakarta

HUMAN CAPITAL	50.69
Talentpool	32.22
Workforce constraint	82.66
Skilled workers	77.45
Universities Score	7.28
University Students	5.55
Tertiary education	18.50
R&D Expenditure	1.85

bengaluru

HUMAN CAPITAL	57.93
Talentpool	34.32
Workforce constraint	99.25
Skilled workers	48.55
Universities Score	11.85
University Students	7.53
Tertiary education	21.78
R&D Expenditure	16.99

singapore

Labor Market	45.59
Labor regulation constraint	0.00
Minimum Wage	54.31
Average Salary	1.00
Female Participation	78.99
Unemployment rate	94.67
Inclusiveness	49.25
Migrant Acceptance	49.70
Legal Provisions for Gender Equality	75.00
Legal Provisions for LGBT Equality	16.67
Women entrepreneurs	59.78
Legal Provisions for Maternity Leave	45.10

jakarta

Labor Market	78.14
Labor regulation constraint	85.21
Minimum Wage	92.41
Average Salary	88.19
Female Participation	43.56
Unemployment rate	81.34
Inclusiveness	41.73
Migrant Acceptance	24.46
Legal Provisions for Gender Equality	75.00
Legal Provisions for LGBT Equality	33.33
Women entrepreneurs	41.52
Legal Provisions for Maternity Leave	34.31

bengaluru

Labor Market	77.02
Labor regulation constraint	95.26
Minimum Wage	97.18
Average Salary	79.74
Female Participation	23.71
Unemployment rate	89.22
Inclusiveness	62.44
Migrant Acceptance	43.59
Legal Provisions for Gender Equality	100.00
Legal Provisions for LGBT Equality	66.67
Women entrepreneurs	1.96
Legal Provisions for Maternity Leave	100.00

finance

procuring funding to start and to grow

Financing gives early-stage startups the funding to test innovations during a pre-revenue phase and equips established startups with the resources needed to rapidly grow both regionally and internationally. Without adequate financing, startups may have to cease operations or face being left behind by competing startups.

The finance domain evaluates access to funding by measuring the availability of different funding sources and the systematic factors that impact the wider funding environment.

The *Sources* subdomain takes into account data from startup funding databases to measure the level of funding raised by startups across the spectrum ranging from seed to venture capital. Furthermore, scores on the availability of loans for SMEs are taken into account.

The *System* subdomain evaluates the funding environment by looking at the number of angel investors and VCs in the ecosystem. In addition, the subdomain factors in the proportion of companies reporting funding constraints and data on the availability of loans.

Photo by Michael Longmire / Unsplash.com

singapore

FINANCE	66.95
Sources	53.25
Access to Loans	100.00
Pre Seed and Seed Funded	49.35
Series Funded	63.28
Funded by Grants	2.17
Funded by Other sources	4.67
SME Loan Access	100.00
System	80.66
Funding Constraint	83.56
Loans Rejected	100.00
Collateral Required	78.23
Total VCs / PEs	61.74
FDIs Net Inflows	60.40
Total Business Angels	100.00

jakarta

FINANCE	42.96
Sources	38.98
Access to Loans	65.16
Pre Seed and Seed Funded	24.77
Series Funded	68.78
Funded by Grants	1.98
Funded by Other sources	5.85
SME Loan Access	67.35
System	46.93
Funding Constraint	95.87
Loans Rejected	100.00
Collateral Required	63.49
Total VCs / PEs	6.07
FDIs Net Inflows	8.32
Total Business Angels	7.86

bengaluru

FINANCE	45.99
Sources	33.23
Access to Loans	65.16
Pre Seed and Seed Funded	16.50
Series Funded	38.24
Funded by Grants	1.47
Funded by Other sources	2.49
SME Loan Access	75.51
System	58.76
Funding Constraint	99.13
Loans Rejected	98.73
Collateral Required	69.49
Total VCs / PEs	12.14
FDIs Net Inflows	40.79
Total Business Angels	32.27

startup scene

encouraging and propelling entrepreneurs

Entrepreneurs face considerable challenges that often can't be overcome in isolation. It is therefore crucial for entrepreneurs to connect with mentors, peers and potential collaborators. It is also important that entrepreneurs have support closer to home with family, friends and the wider community providing a supportive backdrop to the entrepreneurs efforts.

The *Hubs* subdomain measures the number of accelerators, incubators, co-working spaces and technology parks providing support to startups.

The *Activeness* subdomain measures the number of startups and related events to understand the vibrancy of the startup ecosystem. The more active the ecosystem, the more opportunities there are to network and connect with others in the space.

The *Entrepreneurial Culture* subdomain looks at cultural indices that assess a region's stance and acceptance towards entrepreneurship. The indicators look at attitudes including fear of failure, entrepreneurship as a valid career and uncertainty avoidance.

Photo by Mimi Than / Unsplash.com

singapore

STARTUP SCENE	50.22
Hubs	53.55
Accelerators	42.73
Incubators	17.85
Coworking Spaces	77.14
Technology Parks	76.49
Activeness	47.00
Meetup Groups	50.00
Total Startups	24.60
High Equity Funding ($5mil)	66.46
High Equity Funding ($1mil)	46.95
Entrepreneurial Culture	50.11
Fear of Failure	49.89
Entrepreneurial Intentions	8.18
Entrepreneurship as a Career	42.35
Uncertainty Avoidance	100.00

jakarta

STARTUP SCENE	27.55
Hubs	11.86
Accelerators	0.40
Incubators	2.61
Coworking Spaces	40.88
Technology Parks	3.56
Activeness	17.18
Meetup Groups	8.28
Total Startups	6.36
High Equity Funding ($5mil)	29.23
High Equity Funding ($1mil)	24.85
Entrepreneurial Culture	53.60
Fear of Failure	61.36
Entrepreneurial Intentions	27.01
Entrepreneurship as a Career	73.10
Uncertainty Avoidance	52.94

bengaluru

STARTUP SCENE	40.48
Hubs	28.40
Accelerators	19.61
Incubators	19.96
Coworking Spaces	69.51
Technology Parks	4.54
Activeness	40.83
Meetup Groups	50.49
Total Startups	49.22
High Equity Funding ($5mil)	40.39
High Equity Funding ($1mil)	23.21
Entrepreneurial Culture	52.21
Fear of Failure	0.00
Entrepreneurial Intentions	46.48
Entrepreneurship as a Career	100.00
Uncertainty Avoidance	62.35

infrastructure

the basics needed to sustain business

High quality infrastructure helps to reduce friction for startups. The Infrastructure domain is assessed by analysing a city's quality of transportation, electricity, and IT. In particular, there is a focus on the associated costs of accessing these services, and the ease with which they can be accessed.

The *Transport* subdomain takes into account indicators that measure the quality of road, rail, sea and air transport links. This subdomain not only indicates the ease with which a startup can expand domestically and internationally but also to what extent the ecosystem can connect with other ecosystems, for example, is the ecosystem accessible by startup delegations from other cities or countries.

The *Utilities* subdomain looks at both the reliability of basic utilities that entrepreneurs need to be able to conduct their daily lives, e.g. electricity and water supply and also the cost of accessing these utilities. General living costs and working space costs are also considered.

The *ICT* subdomain measures internet availability, speed and cost. This is important for a functioning startup and a healthy digital consumer market.

Photo by Shawn Ang / Unsplash.com

singapore

INFRASTRUCTURE	67.57
Transport	87.27
Overall Quality	100.00
Roads Quality	100.00
Railroad Quality	82.35
Ports Quality	100.00
Air Transport Quality	100.00
Air Transport Capacity	41.27

jakarta

INFRASTRUCTURE	51.51
Transport	44.58
Overall Quality	36.59
Roads Quality	42.65
Railroad Quality	45.10
Ports Quality	37.50
Air Transport Quality	51.78
Air Transport Capacity	53.85

bengaluru

INFRASTRUCTURE	62.91
Transport	58.97
Overall Quality	56.10
Roads Quality	52.21
Railroad Quality	56.86
Ports Quality	53.13
Air Transport Quality	53.79
Air Transport Capacity	81.75

singapore

Utilities	68.88
Water Supply Quality	100.00
Electricity Access	86.32
Electrical Outages	100.00
Pollution Index	100.00
Coworking Space Cost	0.00
Cost of Living	3.05
Electricity Quality	100.00
Utilities' Cost	61.64

jakarta

Utilities	73.05
Water Supply Quality	98.89
Electricity Access	98.95
Electrical Outages	99.77
Pollution Index	29.77
Coworking Space Cost	58.08
Cost of Living	78.43
Electricity Quality	51.85
Utilities' Cost	68.69

bengaluru

Utilities	76.92
Water Supply Quality	90.00
Electricity Access	93.28
Electrical Outages	90.61
Pollution Index	29.93
Coworking Space Cost	64.34
Cost of Living	91.70
Electricity Quality	61.11
Utilities' Cost	94.37

singapore

ICT	46.57
Internet Cost	53.48
Mobile Internet Cost	13.61
Mobile Subscription	72.09
Internet Speed (download)	39.77
Internet Speed (upload)	56.23
Mobile Subscriptions	44.21

jakarta

ICT	36.91
Internet Cost	52.55
Mobile Internet Cost	42.24
Mobile Subscription	74.42
Internet Speed (download)	6.60
Internet Speed (upload)	2.86
Mobile Subscriptions	42.77

bengaluru

ICT	52.86
Internet Cost	84.95
Mobile Internet Cost	94.21
Mobile Subscription	100.00
Internet Speed (download)	14.47
Internet Speed (upload)	11.79
Mobile Subscriptions	11.71

macro

eliminating barriers through governance

Fair and reliable legal systems, political stability, and low crime are important fundamentals for creating an environment that is conducive to starting a new business. With the wrong conditions, these factors can create obstacles that drain some of a startup's limited resources or even worse, prove to be an insurmountable barrier.

Given the national nature of political and legal systems, these subdomains are composed largely of country-level indicators.

The *Political* subdomain takes into account World Bank and Economist indicators covering political stability and governance. An environment with stability is not only beneficial for the ongoing operations of a startup but also important for attracting investors and key employees.

The *Legal Framework* subdomain takes into account tax levels and the time and cost to register a business. Furthermore, it includes indicators compiled by The World Bank concerning the resolution of contract disputes and insolvencies.

The *Crime* subdomain relies on indicators from several global organizations tracking violent crime, bribery and corruption. Startups are often disruptive in nature and if they operate in a high-crime environment, they might be muscled out by disgruntled incumbents.

Photo by Hunters Race / Unsplash.com

singapore

MACRO	91.07
Political	91.15
Stability	100.00
Effective Governance	100.00
Regulatory Quality	99.30
Democracy Level	65.30

jakarta

MACRO	55.79
Political	50.09
Stability	50.60
Effective Governance	39.34
Regulatory Quality	44.07
Democracy Level	66.36

bengaluru

MACRO	56.67
Political	50.11
Stability	38.88
Effective Governance	41.45
Regulatory Quality	41.01
Democracy Level	79.09

singapore

Legal Framework	85.30
VAT	65.00
Corporate Tax	65.45
Contract Enforcement	100.00
Resolving insolvency	82.38
Business registration (time)	99.56
Business registration (cost)	99.41

jakarta

Legal Framework	60.27
VAT	50.00
Corporate Tax	36.36
Contract Enforcement	26.22
Resolving insolvency	74.96
Business registration (time)	91.03
Business registration (cost)	83.03

bengaluru

Legal Framework	47.16
VAT	38.75
Corporate Tax	18.18
Contract Enforcement	13.97
Resolving insolvency	45.28
Business registration (time)	93.22
Business registration (cost)	73.57

singapore

Crime	96.77
Violent Crime	83.25
Crime as a constraint	97.35
Informality as a constraint	100.00
Bribery Depth	100.00
Corruption Perception	100.00
Corruption Control	100.00

jakarta

Crime	57.02
Violent Crime	43.75
Crime as a constraint	94.34
Informality as a constraint	84.58
Bribery Depth	56.66
Corruption Perception	30.88
Corruption Control	31.91

bengaluru

Crime	72.74
Violent Crime	75.00
Crime as a constraint	100.00
Informality as a constraint	93.33
Bribery Depth	96.80
Corruption Perception	35.29
Corruption Control	36.00

market

measuring connection on the global scale

The state of the economy has a direct effect on an entrepreneurs' chances of success. A strong open market with consistent growth provides a tailwind that helps startups to start, receive investment, scale, and reach new markets. .

The *Performance* subdomain considers the size of the economy and how active it is. This is achieved through GDP measures showing the size of the startup's domestic (and initial) market and the wealth of the market's citizens. Economic growth rates are important for sensing the level of optimism about opportunity in an economy while interest rates, if low, provide impetus to invest and take risks.

The *Connectedness* subdomain indicates the startup ecosystem's openness in trade and interaction with other geographies. The indicators track the level of imports, exports, tourism and partnerships with other cities. Furthermore, the digital market penetration indicator assesses the population's openness to using and paying for digital products.

The *Digital Market* subdomain attempts to examine how adapted the population is to online shopping and online payment to goods and services. These indicators are important for any internet based startup, such as e-commerce platforms or for digital banking services. However, low connectivity in the digital market should not automatically be dismissed — oftentimes it can serve as an opportunity for innovation.

Photo by Fernando C. Ferdo / Unsplash.com

singapore

MARKET	79.20
Performance	89.09
GDP PPP per capita	100.00
Economy Growth	100.00
GINI Index	52.46
Deposit Interest Rate	99.54
Capacity Utilization	82.56
Trade Balance	100.00

jakarta

MARKET	37.85
Performance	56.09
GDP PPP per capita	9.92
Economy Growth	55.25
GINI Index	75.94
Deposit Interest Rate	69.87
Capacity Utilization	79.31
Trade Balance	46.22

bengaluru

MARKET	33.62
Performance	53.17
GDP PPP per capita	4.16
Economy Growth	65.60
GINI Index	82.03
Deposit Interest Rate	64.16
Capacity Utilization	64.91
Trade Balance	38.18

singapore

Connectedness	63.34
Trade Openness	89.62
Tourism	56.42
Sister Cities	10.00
Logistic Performance Index	97.33
Digital Market	85.15
Bank Account Penetration	98.57
Smartphone Penetration	92.34
Internet Penetration	78.28
Digital Market Penetration	71.43

jakarta

Connectedness	30.36
Trade Openness	4.79
Tourism	0.86
Sister Cities	70.00
Logistic Performance Index	45.78
Digital Market	27.12
Bank Account Penetration	40.10
Smartphone Penetration	45.50
Internet Penetration	9.34
Digital Market Penetration	13.53

bengaluru

Connectedness	17.66
Trade Openness	5.90
Tourism	0.05
Sister Cities	10.00
Logistic Performance Index	54.67
Digital Market	30.03
Bank Account Penetration	77.09
Smartphone Penetration	19.67
Internet Penetration	20.47
Digital Market Penetration	2.89

enpact empowers asian entrepreneurs

enpact was founded in 2013 specifically to empower entrepreneurs as a new approach to international development. At the core of our work are our programs. Spanning several countries globally including Egypt, Germany, Spain, Ghana, India, Indonesia, Iraq, Kenya, Mexico, Nicaragua, Peru, Singapore, South Africa, Thailand, Tunisia, United Arab Emirates, and Uzbekistan, and with participants from many more countries, we design programs to connect, educate and inspire. Our vision is that joining the enpact community is a life changing experience for our participants.

Our past programs include delegation trips to startup ecosystems to foster international networks, an accelerator program known as Program Design Labs (PDLs) to incubate startups, the Empowering Entrepreneurship Initiative, which delivers relief to over 300 startups globally that suffer from the COVID-19 crisis, and many more events, both virtual and in-person to discuss startup ecosystems and forge connections.

> **Entrepreneurs are the *heralds* of progress, as they take it upon themselves to battle the problems they see around them. Everything we do at enpact is designed to empower them.**
>
> — Matthias Treutwein
> Co-Founder and Managing Director

Currently, our network consists of more than 1,100 startups, 300 mentors and experts, and 100 support organisations.

Since its inception, enpact has also analysed 51 cities that can be compared using our very own methodology: the Startup Friendliness Index (SFI). This data is the foundation of The Bridge, leveraging the SFI into an analysis of ecosystems and how we can work to empower them more.

Learn more about how enpact empowers entrepreneurs at www.enpact.org.

past programs and events

pdl india

empowering entreprenuerhsip initative (EEI)

AsiaBerlin investor fireside chat

about AsiaBerlin

WE BELIEVE IN THE POWER OF COMMUNITIES AND CONNECTING STARTUP ECOSYSTEMS ACROSS ASIA AND BERLIN.

AsiaBerlin, powered by the Berlin Senate Department, forms the collective platform that brings together communities within the startup ecosystems across Asia and Berlin. We enable relationship-building among investors, startups, and bridge builders by organizing monthly AsiaBerlin events and delegation trips to Berlin and Asia throughout the year.

Our flagship event, the AsiaBerlin Summit is the annual summit of year-long AsiaBerlin activities where policymakers, startups, and investors meet to discuss the newest tech trends and cross-border collaboration between Asia and Berlin. We work closely with our partners in the Asia-Pacific Forum Berlin (APFB) and enpact, along with the ever-growing support of our honorary Ambassadors.

enpact e.V. archives

AsiaBerlin

REDHILL


Courtesy of REDHILL

REDHILL is a full-service communications firm that provides strategic counsel for public relations, digital narratives, crisis management, internal communications and branding across a wide variety of industries and sectors.

Driven by a team of passionate communications specialists, we understand that storytelling is an art form. Efficiency, flexibility and integrity underpin our approach to communications. Our portfolio encompasses everything from research and insight to content creation and multi-channel networks, leading to the creation of strong campaigns that build a brand's reputation and market share.

REDHILL is headquartered in Singapore and embedded in Southeast Asia. Besides our strong ASEAN presence, we have expanded to Europe, the US, the Middle East and Australia in just six years. After Singapore, our largest and most established international team resides in Berlin, fostering close ties between Europe and Southeast Asia.

At REDHILL, success is defined by the measurable impact that we create through our campaigns. We have recorded several successful client collaborations between Europe and Asia, including for clients such as the Estonian Government, Mekong Future Initiative, Palm Drive Capital, and enpact. To generate maximum impact, our tight-knit, multi-national team leans on its varied areas of expertise, working closely together with clients to support their efforts across the globe. Seamless communication across geographical time zones and locations helps REDHILL deliver enhanced value through in-depth insights, an expansive network and exciting partnerships.

REDHILL has been named as one of Singapore's fastest-growing companies by The Straits Times and Statista in 2021 and as the third fastest-growing agency in the world by The Holmes Report's Global PR Agency Rankings 2019. REDHILL was also a winner of the 2017 Asia-Pacific New PR Agency of the Year by the Sabre Awards.

about REDHILL

acknowledgements

Our entire ethos at enpact revolves around the concept and development of community and networks. We believe nothing worth doing can or should be done alone. In our work to create a global network filled with entrepreneurs, mentors, governmental entities, private interests, investors, and organizational partners, we have found a community ready to support our vision, not the least of which in the creation and execution of this report.

With that in mind, we would like to extend gratitude especially to our partners on this project, the AsiaBerlin program, produced in partnership with the Berlin Senate, as well as REDHILL Germany. Their commitment to enpact's vision and the vision of this report made it possible.

We would like to also extend a warm thank you to Michelle Ng, Aria Widyanto and Ayushi Mishra who gave their time to be interviewed and shared with us what excited them about their respective ecosystems. Their enthusiasm leaked through on our pages. We also thank our guest authors, thoughtfully sourced by Redhill Singapore by Felicia Chiriac and Charu Srivastava. Thank you to Lucas T. Jahn and Annika Ledeboer, who smoothly oversaw their contributions, enthusiastically managed the process and thoughtfully supplied critical feedback to the direction, tone, and refinement of the product.

So much artwork was included in this report to give it the right aesthetic. We thank the artists and photographers who elevated our report with their creativity:

From pexels.com: mentatdgt for the cover image.
Independent photographers: [Rainer credit], [Jan credit], and Zhihao Zhong.
From unsplash.com: Coleen Rivas, BNA Ignacio, Alexandra Lammerink, Ilham Wicaksono, Andrew Neel, Brook Lark, Annie Spratt, Sharon McCutcheon, Anders Jacobsen, Hanny Naibaho, Alexandre Chambon, Dikaseva, Lily Banse, Fahrul Azmi, Mimi Than, Scott Graham, Eugenia Clara, Nguyen Thu, Swapnil Bapat, Rival Sitorus, Simon Launay, Adeolu Eletu, Muhamad Raufan, Absolut-vision, Bayu Syaits, Edberg Carvalho, Arun Geetha, Abilash Bennet, Glenn Carstens-Peters, Rupixen-com, Ishan seefromthesky, Erol Ahmed, Peter Nguyen, Atharva Tulsi, Pawel Czerwinski, Disruptivo, Michael Longmire, Shawn Ang, Hunters Race, and Fernando C. Ferdo.
The *enpact e.V. archives* and its collection of photographers.
Illustrations by Joan Saló with the assistance of Heather Dannyelle Thompson.

A huge thank you to Joan Saló who worked patiently with me on several iterations of the design — corrected my irregularities on font size and alignment, worked diligently to align with my vision, and prepared the document for its final versions. Thank you for taking the concept of this final product from my rudimentary sketches to a polished report.

Thank you, as always, to our enpact family for continued support and willingness to lend expertise to the project, including all the authors who contributed to the report. For as much work in writing that there was, there was an equal amount of research, outreach, coordination, and connections leveraged as well. In that vein, thank you to Amrita Gandikota who used her connections in India to find the right guest authors and interviewees. Thank you to Anda Yoshina, who's expert hand at editing saved me a massive headache and to Yi Yeung who skillfully and enthusiastically took up the work for outreach and PR for the report. And to Olek Kosbasko who sat with me through iterations of the concept-design to make sure the right elements of our organization and data shone through.

Finally, thank you to Jan Lachenmayer, Sebastian Rubatcher, and Matthias Treutwein, enpact management and founders, who have created a work environment where bold ideas are welcomed and encouraged.

Thank you all for your work and support!
Sincerely,
Heather Dannyelle Thompson
Editor and Creator

references

Ashwini. *List of Government Schemes To Support Startups In India.* Startup Talky. January 18 2021. https://startuptalky.com/list-of-government-initiatives-for-startups/

Funding — Startup. Startup Karnataka. 2020. https://startup.karnataka.gov.in/funding

Prasad, *H.A.C. Emerging Global Economic Situation: Its impact on India's trade and some policy issues. October 2012.* https://dea.gov.in/sites/default/files/EGES_impact_indiatrade_policyissue.pdf

Karnataka Startup Policy 2015-2020. StartupIndia.gov. https://www.startupindia.gov.in/content/dam/invest-india/Templates/public/state_startup_policies/Karnataka_Startup_Policy.pdf

Foreign Trade Policy. IndiaFilings.com. Accessed Jan 2020. https://www.indiafilings.com/learn/foreign-trade-policy/#:~:text=The%20Foreign%20Trade%20Policy%20

Poojary, Thimmaya. *Why Bengaluru remains the best place for tech startups in India.* 20 Jan 2020. https://yourstory.com/2020/01/bengaluru-innovation-report-startups

Chiew, Louisa. *Your guide Bengaluru's Tech Startup Scene.* TechAsia.com. 30 Jun 2016. https://www.techinasia.com/guide-Bengalurus-tech-startup-scene

Hall, Rachel. *Bengaluru: what's next for India's tech capital*? The Guardian. 3 Jul 2018. https://www.theguardian.com/business-to-business/2018/jul/03/bengaluru-whats-next-for-indias-tech-capital

Sabuncu, Piruze. Startups' key role in Singapore's economic transformation. The Business Times. 23 Mar 2017. https://www.businesstimes.com.sg/opinion/singapore-budget-2017/startups-key-role-in-singapores-economic-transformation

"48% of Indian employers up against talent shortage". Economic Times.IndiaTimes. 18 Oct 2016. https://economictimes.indiatimes.com/jobs/48-of-indian-employers-up-against-talent-shortage/articleshow/54913657.cms?from=mdr

10,000 Startups. http://10000startups.com/

"Hiring foreigners in Singapore is becoming more difficult. Here's why." GuideMe Singapore. 23 Mar 2018. https://www.guidemesingapore.com/in-the-news/2018/what-do-you-need-to-consider-when-hiring-foreign-talent-in-singapore

"What makes Bengaluru an education hub". Times of India. 26 May 2014. http://timesofindia.indiatimes.com/articleshow/35613634.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Jakarta Local Government. *Jakarta Urban Transport Problems and Their Environmental Impacts Impacts.* https://www.ui.ac.id/download/apru-awi/jakarta-local-goverment.pdf

Indonesia picks Borneo island as site of new capital. (26 August 2019). BBC. https://www.bbc.com/news/world-asia-49470258

Lyons, K. (2019, August 27) Why is Indonesia moving its capital city? Everything you need to know. The Guardian. https://www.theguardian.com/world/2019/aug/27/why-is-indonesia-moving-its-capital-city-everything-you-need-to-know

Hawley, S. (2017, April 29). Jakarta, a city under pressure from a growing population in need of a leader with vision. ABC News. https://www.abc.net.au/news/2017-04-29/jakarta,-a-city-under-pressure-from-a-growing-population/8480226

Rukmana, D. (2018). IOP Conf. Ser.: Earth Environ. Sci. 124 012017

Wargadiredja, A. (2016, November 7). In This, One of the World's Most Densely Packed Slums, the Sun Never Rises. VICE. https://www.vice.com/en/article/yvj53v/in-this-one-of-the-worlds-most-densely-packed-slums-the-sun-never-rises

sources

INDICATOR NAME	SOURCE
Workforce Constraint	World Bank, Enterprise Survey
Skilled workers	World Bank, Enterprise Survey
University Score	TopUniversity.com; 4icu.org; Own Research For the Missing Data
University Students	TopUniversity.com; 4icu.org; Own Research For the Missing Data; Berlin Business Location Center.
Tertiary Education	World Bank - Gross enrollment ratio, tertiary, both sexes
R&D Expenditure	World Bank - Research and Development Expenditure / OECD Database
Labour Regulation Constraint	World Bank, Enterprise Survey
Graduates' salaries	Own Research, Berlin Startup Survey
Software Developers' Salaries	Payscale.com, Averagesalarysurvey.com
Female Participation	World Bank, Modeled on ILO estimate
Unemployment Rate	International Labour Organization, ILOSTAT database.
Female Entrepreneurship	World Bank, Enterprise Survey
Bank Loan	Own Research - Enpact Survey
Business Angels	Own Research - Enpact Survey
Accelerators and Incubators	Own Research - Enpact Survey
VC Funds	Own Research - Enpact Survey
Public Funding	Own Research - Enpact Survey
Funding Constraint	World Bank, Enterprise Survey
Loans Rejected	World Bank, Enterprise Survey
Collateral Required	World Bank, Enterprise Survey
Total VCs / PEs	MENA PEA, Adapted through own research
FDIs Net Inflow	World Bank
Business Angels (total number)	Angel List
Accelerators	Own Research, Expert Consultation
Incubators	Own Research, Expert Consultation
Co-working Spaces	Own Research, Expert Consultation
Technology parks	Own Research, Expert Consultation
Startup Events	Own Research - Enpact Survey
Total Startups	Crunchbase Pro
High Equity Funding Startups (over $1 mil USD)	Crunchbase Pro
Transport Overall Quality	World Economic Forum
Roads Quality	World Economic Forum
Railroad Quality	World Economic Forum
Ports Quality	World Economic Forum
Air Transport Quality	World Economic Forum
Air Transport Capacity	World Economic Forum
Water Supply Quality	World Bank, Enterprise Survey
Electricity Access	World Bank, Enterprise Survey
Electrical Outages	World Bank, Enterprise Survey
Pollution Index	Numbeo
Co-working Space Cost	Coworker
Cost of Living	Numbeo
Electricity Quality	WeForum
Utilities' Cost	Numbeo
Internet Cost	Numbeo
Mobile Internet Cost	Own Research
Mobile Subscription Cost	Numbeo
Mobile Broadband Penetration	GSMA intelligence
Internet Speed (Download)	Startup Meter Survey and testmynet.com
Internet Speed (Upload)	Startup Meter Survey and testmynet.com
Smartphone Penetration	Multiple sources; see country comments for more details.
Internet Penetration	ITU
Prepaid Subscriptions	GSMA intelligence
Mobile Subscriptions	ITU
Stability	World Bank
Effective Governance	World Bank
Regulatory Quality	World Bank
Democracy Level	The Economist Intelligence Unit's Democracy Index
VAT	World Bank Doing Business Report
Corporate Tax	KPMG Corporate income tax tables
Contract Enforcement	World Bank Doing Business 2017
Resolving insolvency	World Bank Doing Business 2017
Business registration (time)	World Bank Doing Business 2017
Business registration (cost)	World Bank Doing Business 2017
Violent Crime	Econoimc Intelligence Unit (EIU) analysts
Crime as a constraint	World Bank, Enterprise Survey
Informality as a constraint	World Bank, Enterprise Survey
Bribery Depth	World Bank, Enterprise Survey
Corruption Perception	Transparency International
Corruption Control	Worldwide Governance Indicators

GDP PPP per capita	World Bank
Economy Growth	World Bank
Deposit Interest Rate	World Bank
Capacity Utilization	World Bank, Enterprise Survey (under Performance)
Trade Balance	World Bank
Trade openness	World Bank
Tourism	World Bank
Sister Cities	Multiple Sources
Logistic Performance Index	World Bank, Logistic Performance Index
CrunchBase	CBS Insights, Unicorn table.

about enpact

The non-profit association enpact was founded in 2013 with the aim of empowering entrepreneurship in emerging and developing countries. enpact supports founders and startups in Africa, Asia, Latin America, and the Middle East through diverse programs to improve access to international mentor networks and skills needed to be lifelong entrepreneurs. The enpact Data&Research team works to understand the components of a successful startup ecosystem and deliver quantitative analysis and recommendation to ecosystem builders through the Startup Friendliness Index, or SFI.

www.enpact.org