

FinTech ecosystem playbook

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Foreword

In recent years, services provided by financial technology (FinTech) start-ups have gained prominence, and are increasingly impacting consumers, financial institutions and economies. Subsequently, ecosystems have emerged around these FinTechs, consisting of multiple interdependent and interconnected stakeholders.

A FinTech ecosystem is made up of consumers, financial institutions, FinTech start-ups, investors, regulators and educational institutions. The healthy development of such an ecosystem will result in mutually beneficial cooperation among stakeholders, and eventually, help financial services be delivered at lower cost, higher speed and at better quality to more consumers. The development is particularly distinct in emerging markets where financial services present unique opportunities and challenges.

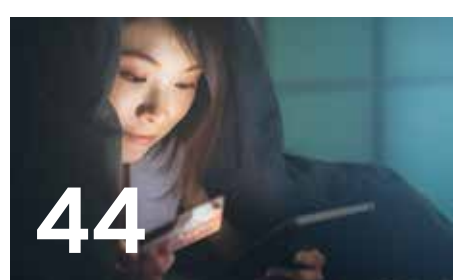
In *FinTech ecosystem playbook*, the teams bring you a panoramic view of a FinTech ecosystem in emerging markets in ASEAN, Latin America, Central, Eastern and Southeastern Europe & Central Asia (CESA), the Middle East, Africa, and Asia-Pacific.

The regulators and policymakers in these emerging markets are actively seeking to develop attractive FinTech ecosystems through a range of policies and other interventions. This report highlights some leading practices and provides a summary of what is going on at the regional and country level.

The report will not be ranking the hubs as the objective is to help each hub learn from global peers and grow the industry as a whole. Sharing these leading practices and success stories with the global FinTech community, the team believes will help us make a difference, together.

EY teams express our gratitude to FinTech associations and ecosystem enablers, including Fintech Galaxy, FINNOVASIA and FinTech Consortium (FTC).





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Fast facts

Scope of the study



26 hubs in emerging markets
across **6** clusters

Global FinTech landscape



34 unicorns are present in the
global FinTech industry, with
the most in **North America**

Global regulatory network



Global Financial Innovation Network (GFIN)

was created by the
UK Financial Conduct
Authority, in August 2018
in collaboration with 11
financial regulators and
related institutions

Source: FinTech investment data:
Global FinTech Report Q3 2018, CB Insights

FinTech investments

VC-backed total FinTech investment
reached



US\$32.6b

in 9M18 driven by a record investment of

US\$14b

raised by Ant Financial in 2Q18 from
domestic and international investors



The deal volume in 9M18 stood at

1,164 deals.

North America accounted for
the maximum FinTech funding of
approximately

US\$9.3b in 9M18



Asia accounted for approximately

US\$6.1b

of the global FinTech funding in 9M18,
excluding the Ant Financial deal

Europe accounted for approximately

US\$2.7b

of the global FinTech funding in 9M18

Objective of the study

FinTechs are ventures that leverage technology to develop new and augment existing capabilities for the discovery, distribution, operations and servicing of financial products and services.

A FinTech ecosystem comprises 'tech-savvy' start-ups and scale-ups, regulators, governments, traditional institutions, investors, and talent institutions. Each FinTech ecosystem is constantly evolving, with players continually interacting and developing. Regulators are tasked with the challenge of evolving with

the industry. They need to ensure that competition and innovation are not stifled while maintaining the safety and soundness of the financial system.

The *FinTech ecosystem playbook* captures the journey of 26 FinTech hubs in the emerging markets – their experiences and learnings in the process of building a strong financial services ecosystem. The teams highlight the best industry practices from these markets so that participants learn from each other

This report will facilitate hubs to think global and act local.



Global trends

Overview of key global FinTech trends that are redefining the financial services landscape



Local drivers

Review of hub-level best practices that drive the development of local FinTech ecosystems



Regional opportunities

Study of six regional clusters, assessing their macroeconomic environment and regional opportunities

Pillars of a FinTech ecosystem

Sustained demand

- ▶ Consumers: Digital readiness in terms of mobile and internet penetration, smartphone penetration, banking penetration and ease of access to financial services
- ▶ Corporations: Demand from enterprises, including small- and medium-sized enterprises (SMEs) and institutions
- ▶ Financial institutions: Demand from financial institutions for FinTech offerings



Access to capital



- ▶ Risk capital: Access to angel funding, high-net-worth individuals (HNIs) and government funds; ease of raising capital from alternative sources such as initial coin offerings (ICOs)
- ▶ Growth capital: Access to VC and government funds, financial institutions and tech companies
- ▶ Strategic capital: Funding from traditional institutions, tech firms, corporates and private equity (PE) funds

Talent availability

- ▶ Attract: Access to international talent, ease of mobility and visa policies
- ▶ Upskill: Development of talent pipeline – university courses, research and development investment
- ▶ Retain: Policies and initiatives that would reduce ‘brain drain’ and provide conducive environment to grow and flourish



Regulatory openness



- ▶ FinTech laws : Specific regulations and policies
- ▶ Overall regulatory environment: Ease of doing business, credit availability, taxation policies, visa policies and presence of regulatory sandboxes
- ▶ Competition: Encouragement of competition through policies

Enabling environment

- ▶ Strong: Collaboration with incumbents; and presence of accelerators, incubators, community enablers and co-working spaces (public or corporate)
- ▶ Scalable: Ease of access to local and international markets
- ▶ Sustainable: Government and industry support for sustainable development



Approach and coverage

The following four-step approach is undertaken to analyze the FinTech ecosystem of 26 hubs:



Assess the FinTech ecosystem of 26 hubs by leveraging EY extensive research capabilities, and network of EY financial services and FinTech professionals across the globe



Identify the overall drivers, trends and opportunities at each of the six regional clusters



Understand the macroeconomic and digital factors driving FinTech development at cluster and hub level



Discuss the success stories of 26 hubs by studying the FinTech initiatives

The six clusters and respective hubs are presented below:

Africa	ASEAN	Latin America	CESA	Middle East	Asia-Pacific
 Nigeria	 Singapore	 Brazil	 Estonia	 UAE	 Hong Kong SAR, China
 Kenya	 Malaysia	 Mexico	 Russia	 Bahrain	 India
 South Africa	 Indonesia		 Lithuania	 Turkey	 China
	 Thailand		 Czech Republic	 Saudi Arabia	 Japan
	 Vietnam				 South Korea
	 Cambodia				
	 Philippines				

UAE constitutes two hubs – Dubai and Abu Dhabi

FinTech hub trends

Demand

Advancing technologies, rapidly expanding economies and changing customer expectations are some of the factors driving demand for FinTech products and services across countries. Broadly, the demand for FinTechs can be categorized into:

- ▶ **Individuals:** In established hubs that enjoy high banking penetration, demand is largely driven by tech-savvy consumers looking for a better experience and a wider range of services. In emerging markets where financial inclusion is a challenge, FinTechs are helping bridge the exclusion gap. Rapid urbanization, mobile and internet penetration, and ease of use are driving individual demand for FinTech services. According to World Bank's *The Global Findex Report 2017*, 69% of adults, i.e., 3.8 billion people, have an account with a bank or a mobile money provider, which is an increase from 62% in 2014 and just 51% in 2011. The rise is attributable to the increasing use of mobile phones and the internet. Between 2014 and 2017, the percentage of users sending and receiving payments digitally increased from 67% to 76% globally; and from 57% to 70% in the developing world.
- ▶ **Corporations and SMEs:** SMEs present an attractive opportunity for FinTechs. Limited financial history, small ticket loans and high servicing cost resulted in this segment being underserved by traditional institutions. The digitization of the lending process, including the assessment of credit risk, is providing SMEs with an alternative way of funding. Digital identity projects in hubs, such as Singapore, India, China and Estonia, are presenting new opportunities for FinTechs to service this unmet demand in an efficient manner.
- ▶ **Financial institutions:** Banks across continents are partnering with and investing in FinTechs across the bank value chain to drive efficiencies, offer new products and augment customer experience, resulting in rising demand for business-to-business (B2B) solutions.
- ▶ **Governments and regulators:** Regulators are leveraging FinTechs' capabilities to improve their processes. For instance, the Monetary Authority of Singapore (MAS) has partnered with FinTech firm Anquan for blockchain-based Project Ubin.

Hub subsector specialization

Globally, successful hubs tend to have diversity in the ecosystem, with start-ups spanning across multiple subsectors and growth stages.

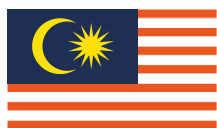
At the same time, some FinTech hubs have identified subsectors where they have certain advantages, and have managed to take leadership or are positioning themselves to become the dominant hub for those subsectors.

Some examples include:



Switzerland for cryptocurrency

Switzerland, where regulators displayed a clear and friendly stance in favor of cryptocurrency from as early as 2014, is home to the Crypto Valley in the city of Zug.



Malaysia for Islamic banking

With an estimated Muslim population of 61.3%, and an enabling regulatory environment, Malaysia has made considerable advances in the Islamic banking sector.



Stockholm for payments

Stockholm has established itself as a payments giant by providing a conducive environment for payment FinTechs, and is the home of FinTech unicorns Klarna and iZettle.

Capital

Increased access to government-backed funding:

- ▶ For FinTech entrepreneurs, access to capital often depends on a number of factors including the stage of product maturity, background of founders, headquarter location of the company and target customer segment. To ease some of the capital challenges, governments globally are supporting start-ups by giving access to risk and growth capital. Some hubs have dedicated funds or fund-of-funds (FOF) to support FinTechs in their growth phase:
 - ▶ The Dubai International Financial Centre (DIFC) launched a US\$100m FinTech-focused fund in November 2017 to accelerate the development of the FinTech sector by investing in start-ups, from incubation to growth stage.
 - ▶ The Government of India (GoI) introduced the Startup India initiative in January 2016 that included a US\$1.5b FOF for start-ups.
 - ▶ In June 2018, Bahrain Development Bank (BDB) announced that Al Waha Fund of Funds, its VC FOF, to support start-ups in Bahrain and across the Middle East and North Africa (MENA) region, had raised US\$100m.
 - ▶ In 2017, Hong Kong Government launched the US\$256m Innovation and Technology Venture Fund to invest in local technology start-ups.
 - ▶ In June 2015, Singapore's MAS committed S\$225m over a five-year period for the Financial Sector Technology and Innovation scheme. In December 2017, it announced the launch of the S\$27m Artificial Intelligence and Data Analytics (AIDA) Grant under the scheme.
 - ▶ Policymakers are also taking initiatives to improve access to private capital:
 - ▶ In July 2018, the Estonian Government, through its EstFund FOF, invested €60m into VC funds to support start-ups and SMEs. Private investors will add €40m to these VC funds.
- ▶ This year's *FinTech Investor Summit* under the MAS-sponsored *Singapore FinTech Festival 2018* has two components – (a) the FinTech Deal Day that connects FinTechs with potential investors and (b) **Meet ASEAN's Talents and Champions (MATCH)** that connects start-ups and enterprises in ASEAN across all sectors with potential investors. The 380 participating investors who enrolled for MATCH have indicated intentions to invest up to a total of US\$6.2b in ASEAN enterprises next year, and an additional US\$6b earmarked over the subsequent two years. More than 17,000 matches were generated between the 380 participating investors and 840 enterprise.

Talent

Attracting talent considered key by FinTechs:

- ▶ The most sought-after technical talent include data scientists, financial engineers, mobile marketers and computer programmers.
- ▶ The Big Tech firms are giving stiff competition to FinTechs and financial institutions in their efforts to attract strong tech talent.
- ▶ Some countries, such as the UK, France and the UAE, are attempting to import technical talent from other countries by offering special visas. The UK offers a visa route under the UKRI Science, Research and Academia scheme for non-European Economic Area (EEA) researchers and plans to offer start-up visas for foreign tech entrepreneurs. The UAE introduced a 10-year residency visa for investors and specialists. Meanwhile, countries such as Estonia and Lithuania have Startup Visa programs.
- ▶ Nurturing domestic talent is a sustainable solution to the talent unavailability challenge faced by FinTechs and financial institutions. Hong Kong and Singapore are moving toward this direction by partnering with schools to train students to develop FinTech knowledge and capabilities.

Making the workforce future-ready through FinTech-focused talent initiatives:

- ▶ As competition for tech talent intensifies globally, hubs are developing FinTech-focused specialized programs and initiatives to develop the local talent pool. Some initiatives being taken by the hubs include:
 - ▶ FinTech-specific courses and programs including government-led initiatives:
 - ▶ Singapore offers FinTech-specific courses under its SkillsFuture program. The National Trades Union Congress, Singapore Polytechnic (SP) and the Singapore FinTech Association (SFA) have jointly created the FinTech Talent Programme.
 - ▶ The Hong Kong Government has launched two dedicated publicly funded degrees in FinTech, beginning academic year 2017-18: Bachelor of Engineering Programme in Financial Technology at The Chinese University of Hong Kong and Bachelor of Science (Hons) in Financial Technology at Hong Kong Polytechnic University.
 - ▶ In India, Bombay Stock Exchange launched an MBA program in FinTech in association with the University of Mumbai in 2017.
 - ▶ Abu Dhabi Global Market (ADGM) offers FinTech-specific courses through the ADGM Academy.
 - ▶ FinTech talent incubator and accelerator programs:
 - ▶ The Hong Kong Monetary Authority (HKMA) has partnered with the Hong Kong Applied Science and Technology Research Institute (ASTRI) for the Fintech Career Accelerator Scheme (FCAS), which provides internship in the FinTech industry to undergraduate and postgraduate students.
 - ▶ Singapore has launched the TechSkills Accelerator (TeSA) FinTech Collective to strengthen Singapore's infocomm and FinTech talent pool.
 - ▶ Online learning initiatives: In October 2017, the University of Hong Kong (HKU) launched Asia's first FinTech Massive Open Online Course (MOOC).

Regulations

Facilitation of innovation through Open Banking

To increase competition and provide an enabling environment for FinTech firms, countries are pushing out initiatives in varying degrees with regards to Open Banking. It allows FinTechs to leverage on banks' data to provide and extend their offerings to bank customers. The teams have highlighted a few of the different approaches undertaken by regulators:

- ▶ The UK pioneered Open Banking, launching the initiative in January 2018, that mandates nine UK banks to open up their data via a set of secure application program interfaces (APIs).
- ▶ Singapore's MAS is encouraging financial institutions to adopt Open API as a key foundational layer for innovation and interoperability, although it is not mandated.
- ▶ In July 2018, Hong Kong's HKMA launched the draft Open API framework, which set out timelines for institutions to follow, and made recommendations on specific protocols and data formats. The framework also laid out expectations on how banks should deploy Open API.
- ▶ In the EU, the revised Payment Service Directive (PSD2) requires banks to share information of their customers' accounts with third parties with the authorization of the customers.

Regulatory trends

Change is constant in the FinTech space, with each idea being more revolutionary than the previous one. It is a momentous task for regulators to provide regulatory oversight to protect consumers while being mindful of not inhibiting innovation. Regulators have taken different approaches, but they have largely converged into a few similar ways:

- ▶ **Introduction of sandboxes:** FinTechs within a sandbox are able to launch products and services without necessary licenses. However, the number of consumers whom they can serve would be limited to contain any possible negative effects. At the same time, regulators would be able to have constant consultations with companies within the sandbox to understand the subsector.
- ▶ **Economic zones:** Some countries have created special economic zones where innovative firms can be set up. These zones have varying benefits; but the underlying concept is the same – to provide a location for the firms to innovate and offer assistance through regulations that are specific to the zones. These regulations may include lower taxes, permission to operate without necessary licenses (or with special licenses) and frequent consultations with regulators.
- ▶ **Consultations with industry players:** Regulators have been running consultations with industry players to learn where the industry is heading to, in order to gain an understanding of the industry and know how they could support the industry while protecting the consumers.
- ▶ **Guiding principles and frameworks rather than rules:** As the FinTech space is ever-changing, some regulators have implemented guiding principles to make their stance clear, instead of creating definite rules that may inhibit innovation.
- ▶ **FinTech laws or licenses:** To assist FinTechs within the local environment without changing much of the local regulations, some countries have rolled out FinTech-related laws or licenses that allow FinTechs to operate without the need to gain a banking license.

Regulations (continued)

Collaboration among regulators

A major concern for FinTechs when exporting their services is the differing local regulations.

Regulators are aware of this and have taken steps to mitigate this challenge. FinTech industry associations and financial regulators are entering into partnerships globally to share leading practices, experiences and frameworks, and to help

FinTech firms expand in each other's market. Regulators in the UK, Singapore and Australia have entered into the most number of bilateral agreements with other regulators.

The newest measure to improve collaboration among regulators is the Global Financial Innovation Network (GFIN). Twelve financial regulators launched the GFIN

in August 2018. The purpose is to provide an efficient way for innovative firms to interact with regulators, helping them navigate among hubs to scale new ideas. It is also expected to create a new framework for cooperation among financial services regulators on innovation-related topics.

▼ Hubs

▼ Instances of bilateral agreements

Abu Dhabi

Singapore, Australia

Canada

Australia, UK, France

Mainland China

UK, Australia, Hong Kong

France

Canada, Singapore, Mauritius

Hong Kong

UK, Dubai, Australia, Switzerland

Singapore

UK, Dubai, South Korea, Australia

London

US, Australia, Canada

United States

UK, Singapore, Canada

Regulators are experimenting with new technologies such as DLT

Some governments are aware that distributed ledger technology (DLT) can improve processes. They are experimenting with blockchain technology in areas such as payments (including wholesale payments, sovereign currency, trade finance and interbank payments). Some examples of DLT being adopted by governments are:

- ▶ In July 2018, Hong Kong's HKMA, along with seven local lenders, announced that it is going to launch a blockchain-based trade finance platform in September 2018.
- ▶ The South African Reserve Bank (SARB) conducted a successful blockchain experiment for wholesale payments using the technology.
- ▶ Hubs, such as Singapore, Canada and the US, are experimenting with their own digital currencies.
- ▶ Some small jurisdictions, such as Malta, Gibraltar and Bermuda, have taken a crypto-friendly stance to attract crypto or DLT firms to domicile in their jurisdictions.

Environment

Speeding innovation through public accelerator programs

- ▶ Incubators, accelerator programs and innovations labs or centers are important levers to drive the FinTech sector in an economy. Hubs globally have recognized the significance of these programs aimed at developing start-ups by providing mentoring, funding, training, networking, and marketing and public relation opportunities:
- ▶ Dubai's DIFC has launched its FinTech Hive accelerator program, which focuses on FinTech opportunities in the Middle East, Africa and South Asia (MEASA) region's financial sector.
- ▶ ADGM in Abu Dhabi has tied up with Plug and Play to launch its accelerator in October 2017.
- ▶ K-Startup Grand Challenge is a government-supported start-up accelerator program in South Korea.
- ▶ Singapore's MAS runs its global accelerator program, *Global FinTech Hackcelerator*, focusing on start-ups across the globe.

Receiving support from traditional financial institutions

- ▶ It is imperative that government-led initiatives are supported by industry participants in order to ensure a thriving FinTech ecosystem. Financial institutions globally are supporting the sector through various initiatives:
 - ▶ Banks globally, such as Citi, HSBC, Santander, BBVA, United Overseas Bank and Bank Mandiri, have dedicated funds to invest in FinTech ventures. It helps banks to achieve a two-fold objective: investing to enjoy the benefits of rising FinTech valuations, and leveraging the FinTechs' technological advantage in order to improve their own products and processes.
 - ▶ Banks are actively engaging with FinTechs through innovation labs, hackathons and accelerator programs.

Offering FinTechs global platform through branding and positioning initiatives

- ▶ Several hubs globally, through FinTech events and programs, are providing FinTechs with a platform to connect, collaborate and network with investors, tech players, industry participants and regulators. These events encompass a series of conferences, workshops, awards and exhibitions as well as networking, among other activities:
 - ▶ The *Singapore FinTech Festival* (a week-long event) is organized by MAS in partnership with the Association of Banks in Singapore and in collaboration with SingEx Holdings. It includes the *Global FinTech Hackcelerator*, FinTech conference and exhibition, the *FinTech Investor Summit* and *FinTech Awards*.
 - ▶ *Hong Kong FinTech Week 2018*, hosted by Invest Hong Kong (InvestHK), offers a window into Hong Kong's position as Asia's financial hub, and as an entry point to People's Republic of China and the Greater Bay Area. The third annual *Hong Kong FinTech Week*, held from 29 October 2018 to 2 November 2018, is the first cross-border FinTech event, expanding from Hong Kong to Shenzhen.



Cluster analysis

Cluster: Key takeaways



Drivers

The kind of demand and supply that have been driving the development of the ecosystem so far



Spotlight

Notable players and trends that have emerged in the local and regional ecosystem



Opportunity

Areas that present significant room for growth in the near future

ASEAN

Fast-growing economies with large populations make a unique playground



Drivers

ASEAN is the connecting bridge between China and India, making it a perfect place for large local and global players to collaborate and compete. Regulators are supporting innovation, but at the same time, are cautious in order to ensure that the financial system is prepared to handle the stress of a global financial crisis.



Spotlight

E-commerce, and social and mobility players are expanding into the financial services field, leveraging on their large user base.



Opportunity

The region has some of the fastest-growing economies with the largest population bases, and a strong historical and cultural heritage. As these economies continue to grow, there will be more demand for better quality services.

Latin America

Opportunities in underserved market



Drivers

Several governments are considering FinTech development as one of the pillars to increase financial inclusion. The development of FinTech has been driven by start-ups seeking to serve segments previously inadequately addressed by the financial system. Financial inclusion will drive sustainable economic development.



Spotlight

Private corporations and international investors are building ventures to complement existing financial services providers.



Opportunity

Collaboration in the region is becoming more frequent and the development of the FinTech industry will allow the expansion in quantity and quality of synergies among different actors in the ecosystem.

CESA

Leveraging strong talent base



Drivers

At the turn of the century, these economies opened up, and since then have become an attractive investment destination due to consumer spending growth, competitive wage rates and skilled workforce. The region has strong infrastructure and talent that are being leveraged upon.



Spotlight

The region is developing home grown companies and attracting international companies to set up headquarters to service the EU market.



Opportunity

By being part of the EU, countries have access to a large unified market. The region is placed strategically between Asia, the Middle East and Europe, and can be a bridge for companies expanding geographically in these areas.

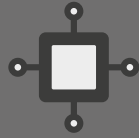
The Middle East

Government support and capital driving FinTech growth



Drivers

Capital has been one of the key strengths of the region due to the presence of large sovereign and private funds that have a long history of global investments. Several states view FinTech as a major alley to diversify their economies from natural resources and have specific initiatives to drive financial services.



Spotlight

Some of the hubs have regulatory technology (RegTech) as primary focus. Others have positioned themselves as launchpads to service the whole Middle East market.



Opportunity

The region offers unique opportunity to FinTech products and services that are focused on Islamic banking. FinTechs can also help solve the challenge of fragmented access to financial services in the region.



Africa

Leapfrog innovations



Drivers

The region has one of the largest concentration of the unbanked and underbanked population, which provides an opportunity for leapfrogging several generations of technology and infrastructure to provide a cutting edge solution. For example, the region has skipped landlines and 2G to go directly to 3G and 4G.



Spotlight

Several wallets backed by telecommunication companies have become global case studies of financial inclusion. Most of the innovation is driven by telecom players, which is unique to the region.



Opportunity

Large penetration of mobile money accounts present opportunities to FinTechs to explore expansion in other areas including alternative lending, cross-border transfers, personal finance and remittances. Collaboration with local financial players can help FinTechs navigate this market.



Asia

Rise of independent FinLife ecosystem platforms in Greater China; and India bringing the best from East and West.

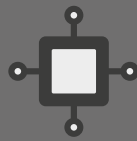


Mainland China and Hong Kong:



Drivers

In Mainland China, confluence of factors, including relaxed regulations, vast market of unaddressed financial needs and the growth in digital penetration, revolutionized financial services and made FinTech 'a way of life'. Proximity to Mainland China and supportive regulations are the key drivers for FinTech in Hong Kong.



Spotlight

Mainland China has independent finance and lifestyle (FinLife) ecosystems that started out as e-commerce and chat platforms before developing into full-scale financial services providers going on to earn bank licenses.



Opportunity

For China-based companies, leveraging data and tech to expand outside core areas as well as in global markets is key to growth.

India:



Drivers

Government-led digital infrastructure, and rapid urbanization and mobile penetration is driving the development of FinTech sector, particularly in payments.



Spotlight

Indian FinTech players are raising large funding from foreign investors looking to expand overseas. India is now home to two FinTech unicorns.

Opportunity



In India, global investors, such as Chinese internet finance players and American e-commerce players, have set up greenfield ventures as well as invested significantly in local ventures, creating an interesting stage for a FinTech ecosystem to be built. B2B business models are gaining prominence given the backdrop of government initiatives.



ASEAN

Key highlights



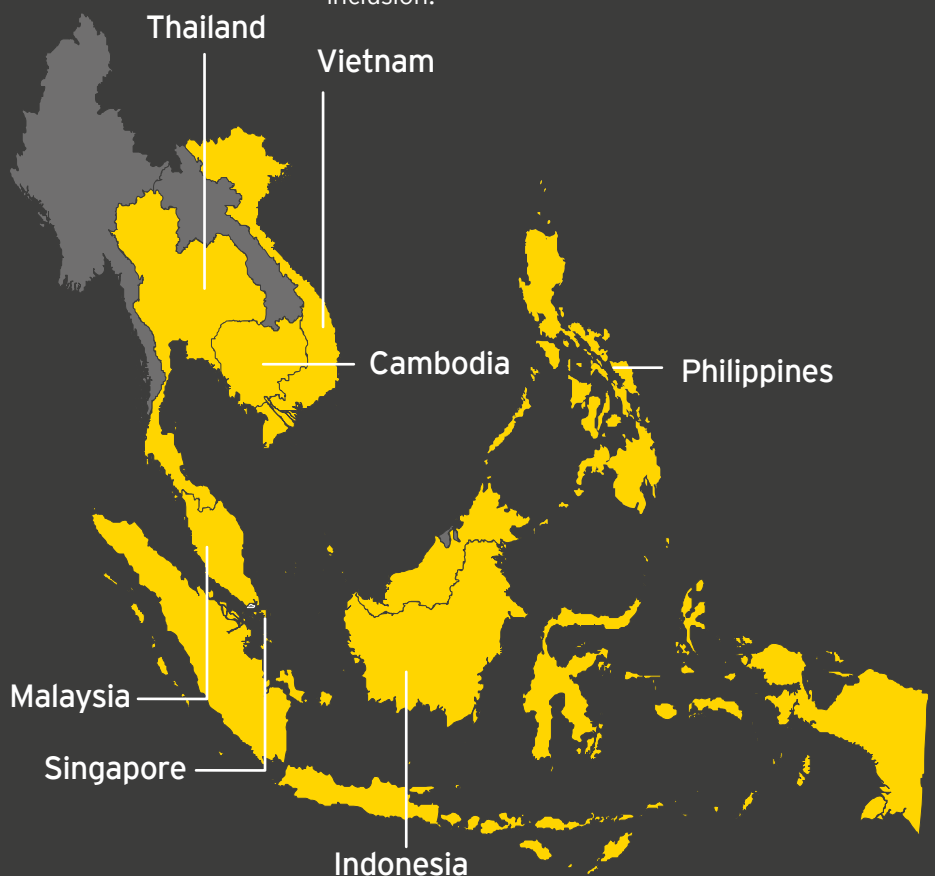
The region has an estimated population of 646 million, with a median age of 28.8 years. It has a 58% internet penetration rate with 390.8 million mobile users. FinTech investment was US\$366m in 2017.























The International Financial Corporation, along with regional stakeholders, established the ASEAN Financial Innovation Network (AFIN) in 2017 to facilitate collaboration among financial institutions with the primary objective of financial inclusion.

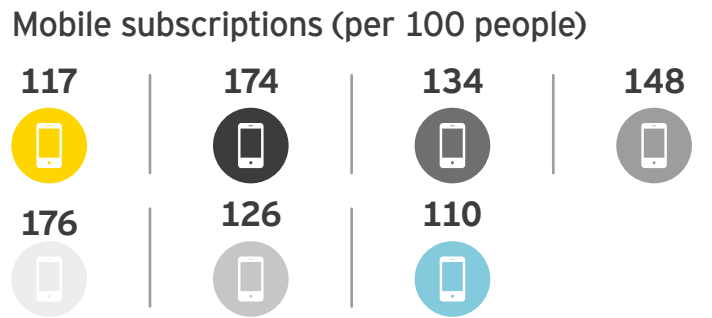
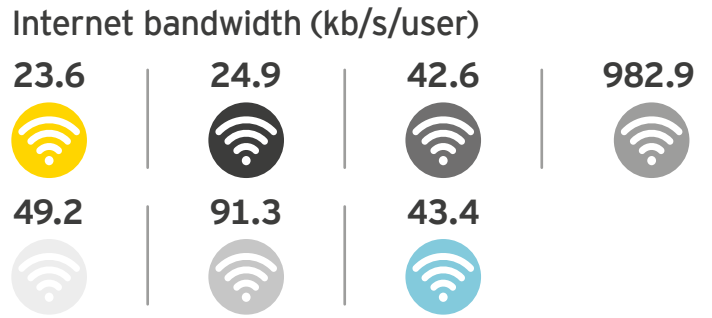
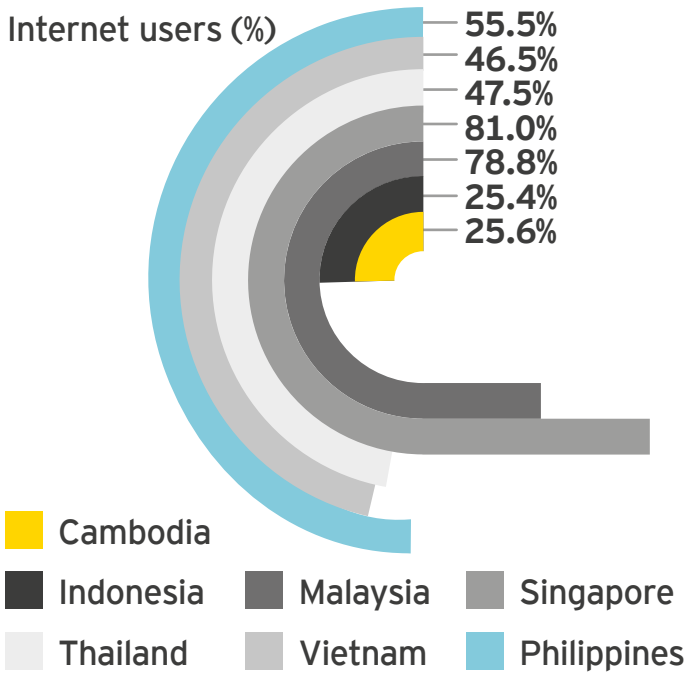


ASEAN Fintech Network (AFN) was launched in November 2017 to enable collaboration and cooperation on FinTech ecosystems among six participating nations.

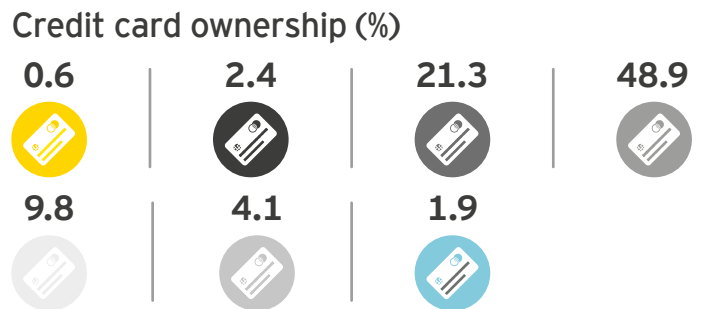
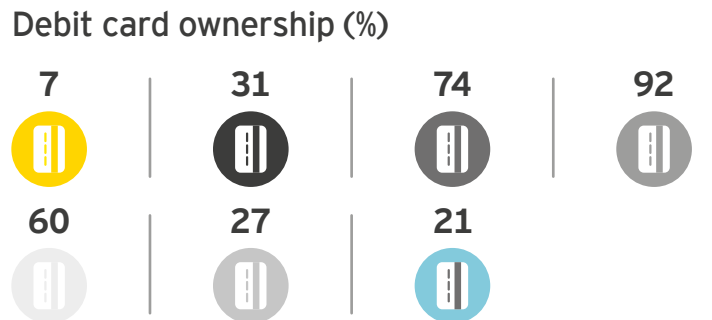
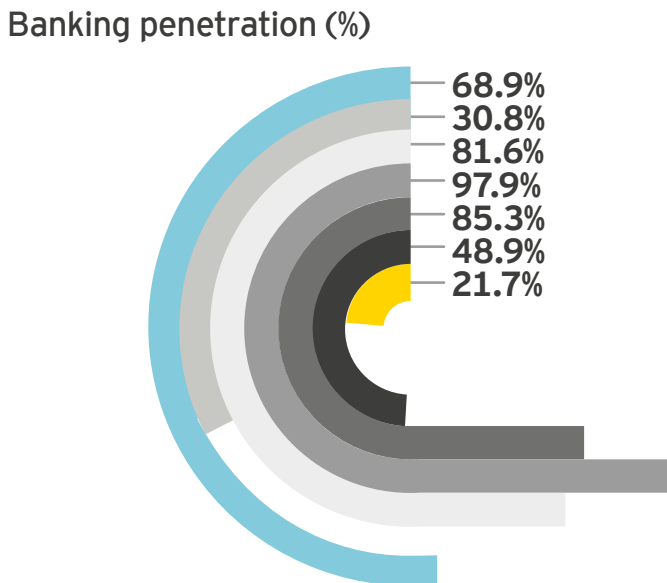


Thailand			
GDP: US\$455.8b 2017			
	GDP growth (y-o-y): 3.9% GDP per capita: US\$6,601		
	Population: 69 million		
	Inflation: 0.7% FDI inflow (% of GDP): 2% Regulatory sandbox: Yes		
Indonesia			
GDP: US\$1.0t 2017			
	GDP growth (y-o-y): 5.1% GDP per capita: US\$3,842		
	Population: 264.3 million		
	Inflation: 3.8% FDI inflow (% of GDP): 2.2% Regulatory sandbox: Yes		
Vietnam			
GDP: US\$220.6b 2017			
	GDP growth (y-o-y): 6.8% GDP per capita: US\$2,310		
	Population: 95.5 million		
	Inflation: 3.5% FDI inflow (% of GDP): 6.3% Regulatory sandbox: No		
Malaysia			
GDP: US\$315.2b 2017			
	GDP growth (y-o-y): 5.9% GDP per capita: US\$9,949		
	Population: 32 million		
	Inflation: 3.8% FDI inflow (% of GDP): 3% Regulatory sandbox: Yes		
Philippines			
GDP: US\$313.5b 2017			
	GDP growth (y-o-y): 6.7% GDP per capita: US\$2,982		
	Population: 105 million		
	Inflation: 2.9% FDI inflow (% of GDP): 3.2% Regulatory sandbox: Yes		
Cambodia			
GDP: US\$22.2b 2017			
	GDP growth (y-o-y): 6.9% GDP per capita: US\$1,387		
	Population: 16 million		
	Inflation: 2.9% FDI inflow (% of GDP): 11.4%* Regulatory sandbox: No		
Singapore			
GDP: US\$324.1b 2017			
	GDP growth (y-o-y): 3.6% GDP per capita: US\$57,749		Population: 5.6 million
			Inflation: 0.6% FDI inflow (% of GDP): 19.6% Regulatory sandbox: Yes

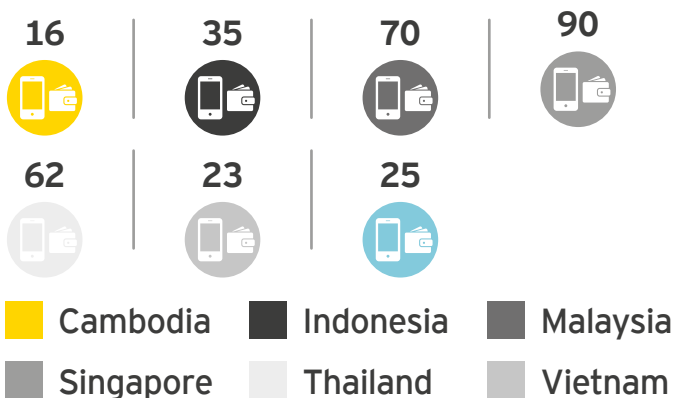
Digital readiness



Financial parameters



Made or received digital payments in the past year (% age 15+ years of population)

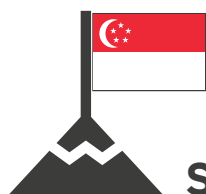


Sources:

1. ASEAN stats: EY ASEAN FinTech Census 2018 Report, February 2018
2. Gross Domestic Product (GDP) and population, inflation: Oxford Economics
3. FDI inflow and Mobile Subscriptions: World Bank Open Data
4. Internet users and internet bandwidth: The Global Competitiveness Report 2017-2018, World Economic Forum
5. Financial Parameters: The Global Findex Database, World Bank

* FDI inflow Cambodia - Considered 2016 figures instead

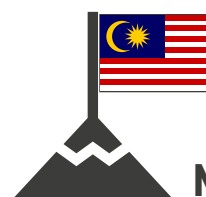
Success stories



Singapore

- ▶ MAS set up the Financial Technology and Innovation Group (FTIG) within its organizational structure in 2015. The formation of FTIG is a commitment by MAS toward the vision of a smart financial center. In 2016, MAS set up FinTech Office to serve as a one-stop virtual entity for all FinTech matters.
- ▶ Other initiatives of the Singapore Government include the FinTech Regulatory Sandbox, RegTech initiatives and the introduction of blockchain for interbank payments. In 2015, MAS announced that it would commit S\$225m over the following five years for FinTech projects. MAS has also issued guidance on ICOs and plans to issue guidelines for the use of artificial intelligence (AI) in the industry.
- ▶ The annual *Singapore FinTech Festival* sees the participation of thousands of start-ups and investors. Over 30,000 people from 109 countries representing more than 5,000 companies took part in the festival in 2017.
- ▶ The Intellectual Property Office of Singapore launched the FinTech Fast Track initiative, which provides expedited patent application-to-grant process for FinTech inventions.

- ▶ Singapore FinTech Association (SFA) is a cross-industry initiative that has over 300 members.



Malaysia

- ▶ Malaysia was the first country in ASEAN to introduce a regulatory framework for equity crowdfunding (ECF) and peer-to-peer (P2P) financing. Bank Negara Malaysia (BNM) has established cross-functional Financial Technology Enabler Group (FTEG) within the bank. FTEG is responsible for formulating and enhancing regulatory policies to facilitate the adoption of technological innovations in the Malaysian financial services industry. BNM also launched an Open API working group in September 2018.
- ▶ Malaysia aspires to become an Islamic FinTech hub, as evidenced by strong support from regulators.
- ▶ BNM released guidelines on e-KYC in 2017. The guidelines set out minimum requirements and standards that an approved remittance service provider must observe in implementing e-KYC.

Success stories



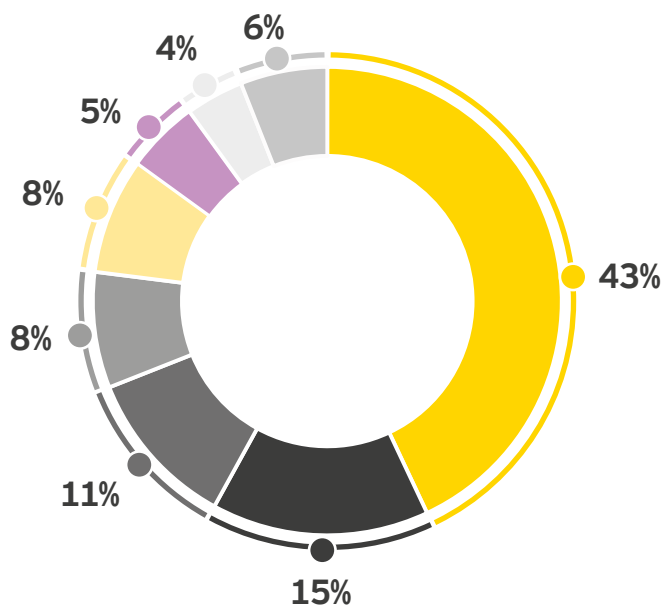
Indonesia

▶ FinTech growth in Indonesia is in digital payments, underpinned by huge e-commerce boom in the country. Of late, the country

witnessed an active payments M&A market, with regional players trying to expand their presence.

▶ Indonesia's financial services authority, Otoritas Jasa Keuangan (OJK), formed the FinTech Advisory Forum in 2017 to ensure constructive coordination among agencies, ministries, FinTech start-ups and other relevant parties.

FinTech distribution in ASEAN



- Payment and mobile wallets
- Financial comparison
- Retail investment
- Blockchain
- Financial lending
- Financial and business tools
- Account software
- Others

Source:
UOB State of FinTech in ASEAN
(Published: November 2017)

Success stories



Thailand

- ▶ The Bank of Thailand (BOT) has launched a sandbox, and formed forums to promote sharing, discussions and consultations with academicians, incumbents and regulators.
- ▶ Major Thai banks have set up their corporate venture arms to invest in FinTechs.
- ▶ In June 2018, the Securities and Exchange Commission of Thailand announced a regulatory framework for ICOs and ICO portals. The framework became effective in July 2018.



Vietnam

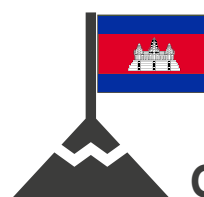
- ▶ In January 2017, the Vietnamese Government signed a policy decision aimed to significantly reduce cash transactions and improve electronic payment methods by 2020. Under the plan, total cash transactions would be less than 10% of total market transactions.
- ▶ The Fintech Steering Committee was established by the State Bank of Vietnam (SBV), the country's central bank in March 2017. Its aim is to advise the government on FinTech ecosystem development, which includes helping the government in the development of a regulatory framework, to ensure growth in the industry and support FinTech innovation.
- ▶ In May 2018, SBV, Asian Development Bank (ADB), the Australian Government and Mekong Business Initiative launched the *FinTech Challenge Vietnam* event, seeking solutions

from start-ups to address some challenges of financial inclusion in Vietnam. The event saw the participation of 141 FinTech companies, 45 of which were Vietnamese.



Philippines

- ▶ In December 2015, the Bangko Sentral ng Pilipinas (BSP) launched the National Retail Payment System (NRPS), which aims to enable any user with a bank or electronic money account to do electronic fund transfer (EFT) from one account to another account in any participating financial institution.
- ▶ As of April 2018, the BSP is also piloting RegTech solutions to strengthen its risk-based regulatory and supervisory activities. The BSP had partnered with the RegTech for Regulators Accelerator (R2A), a project that provides technical assistance for financial sector regulators to develop and test digital supervision tools and techniques.



Cambodia

- ▶ As of July 2017, the National Bank of Cambodia (NBC) was developing a national financial inclusion strategy, with the private sector playing a pivotal role, to bank significant number of adult Cambodians and provide formal financial services.

Latin America

Key highlights



The region has an estimated population of 553 million with 80% of people living in urban areas.



According to World Bank's *Global Findex Database 2017*, the mobile internet penetration in Latin America and Caribbean region is 55%, which is 15% more than the developing world average.



There are about 1,034 FinTech start-ups in Latin America, of which 41% service underserved or excluded customers and the SME market.

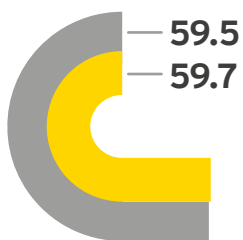




Mexico	Brazil
GDP: US\$1.2t 2017	GDP: US\$2.1t 2017
 <p>GDP growth (y-o-y): 2.3% GDP per capita: US\$8,935</p>	 <p>Real GDP growth (y-o-y): 1.0% GDP per capita: US\$9,810</p>
 <p>Population: 129.4 million</p>	 <p>Population: 209.5 million</p>
 <p>Inflation: 6.0% FDI inflow (% of GDP): 2.8% Regulatory sandbox: Yes</p>	 <p>Inflation: 3.5% FDI inflow (% of GDP): 3.4% Regulatory sandbox: No</p>

Digital readiness

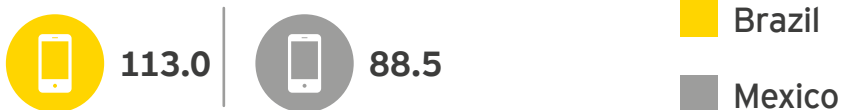
Internet users (%)



Internet bandwidth (kb/s/user)

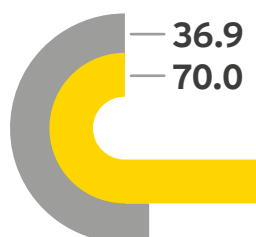


Mobile subscriptions (per 100 people)



Financial parameters

Banking penetration (%)



Debit card ownership (%)



Credit card ownership (%)



Made or received digital payments in the past year (% age 15+ years of population)



■ Brazil ■ Mexico

Sources:

1. Finnovista
2. Wearesocial Digital in 2018 report
3. Urbanisation in Latin America, BBVA Research, July 2017
4. Gross Domestic Product (GDP), GDP per capita, population and inflation: Oxford Economics
5. FDI inflow and Mobile Subscriptions: World Bank Open Data
6. Internet users and internet bandwidth: The Global Competitiveness Report 2017-2018, World Economic Forum
7. Financial Parameters: The Global Findex Database, World Bank

Success stories



Brazil

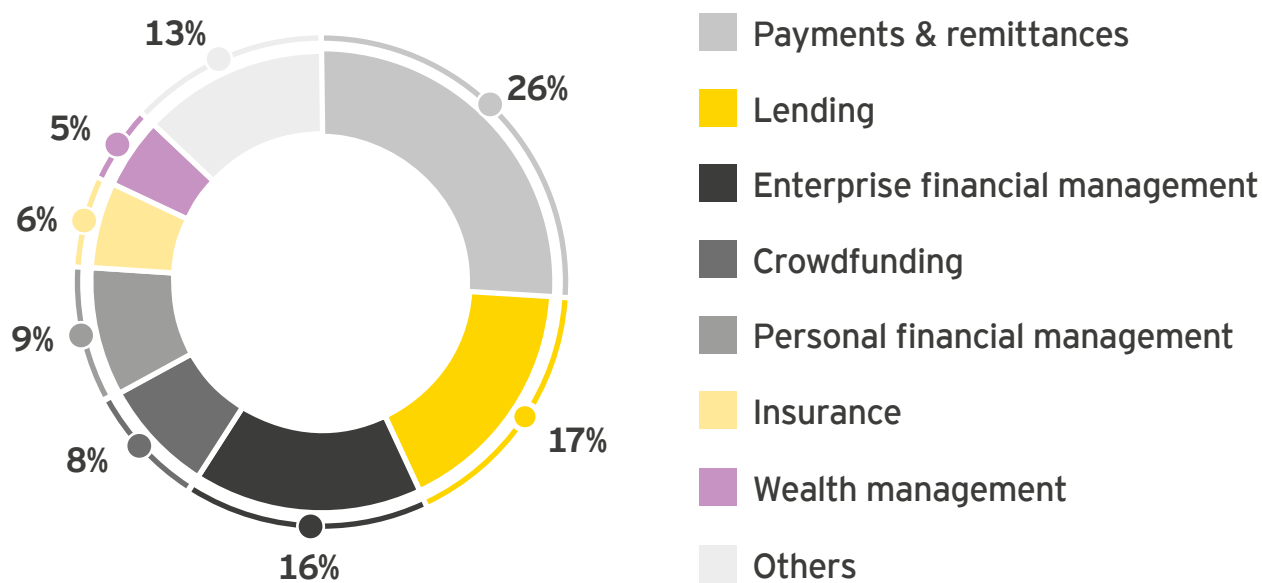
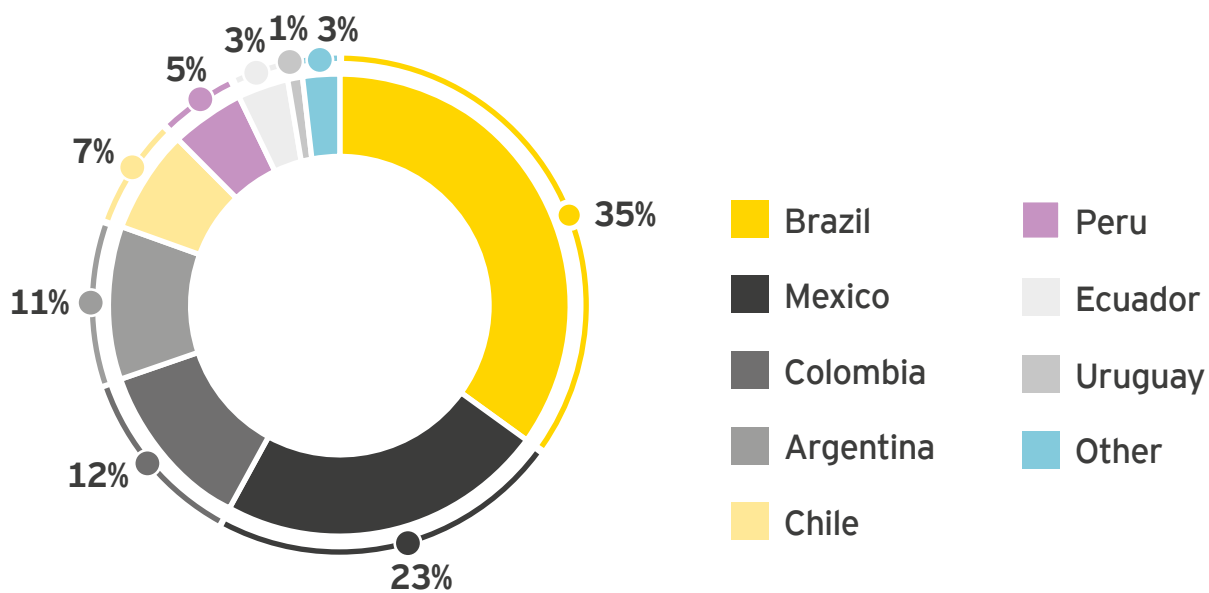
- ▶ In April 2018, the Central Bank of Brazil issued a regulation that grants autonomy to electronic lending platforms to carry out loan transactions directly between borrowers and lenders by introducing two new categories of financial institutions – P2P companies and direct credit companies.
- ▶ Banks in Brazil have been connecting with FinTechs through funding and incubation.
- ▶ The Securities and Exchange Commission of Brazil runs its FinTech Hub, which aims to analyze the development and application of FinTech in capital markets.



Mexico

- ▶ Mexico Financial Technology Institutions Law became effective in March 2018. It provides regulatory certainty on issues including crowdfunding, payment methods and cryptocurrencies. Mexico became one of the few countries globally to regulate the sector.
- ▶ A regulatory sandbox was introduced to allow companies to obtain a temporary authorization for a maximum of two years.

FinTech landscape in Latin America – 2017-18



Source: FinTech ecosystem in Latin America, Finnovista

CESA

Key highlights



The region has an estimated population of 406 million with nearly 74% internet penetration rate in 2017.



The region has a higher mobile penetration rate, with countries having mobile penetration rates above the global average of 112%.



Economies in Central and Eastern Europe witnessed a buoyant economic growth last year, driven by a rise in consumer demand and investment, which eventually lowered the unemployment rates in the region.



Estonia

GDP: US\$26.0b | 2017

GDP growth (y-o-y): **4.9%**
GDP per capita: **US\$19,744**Population: **1.3 million**Inflation: **3.7%**
FDI inflow (% of GDP): **3.3%**
Regulatory sandbox: **No****Czech Republic**

GDP: US\$217.2b | 2017

GDP growth (y-o-y): **4.5%**
GDP per capita: **US\$20,504.5**Population: **10.6 million**Inflation: **2.4%**
FDI inflow (% of GDP): **4.3%**
Regulatory sandbox: **No****Lithuania**

GDP: US\$47.3b | 2017

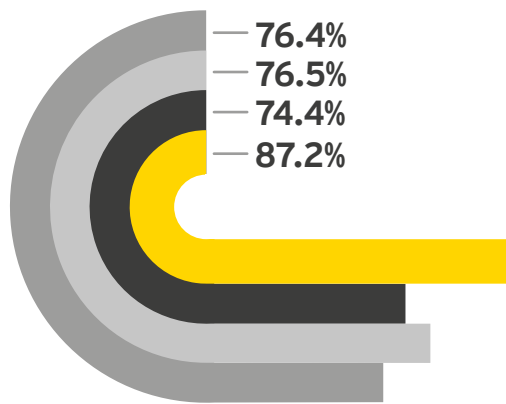
GDP growth (y-o-y): **3.9%**
GDP per capita: **US\$16,992**Population: **2.8 million**Inflation: **3.7%**
FDI inflow (% of GDP): **2.3%**
Regulatory sandbox: **Yes****Russia**

GDP: US\$1.6t | 2017

GDP growth (y-o-y): **1.5%**
GDP per capita: **US\$10,951**Population: **144 million**Inflation: **3.7%**
FDI inflow (% of GDP): **1.8%**
Regulatory sandbox: **Yes**

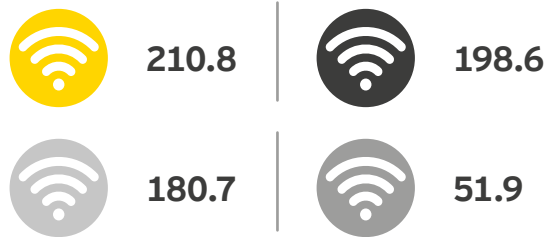
Digital readiness

Internet users (%)

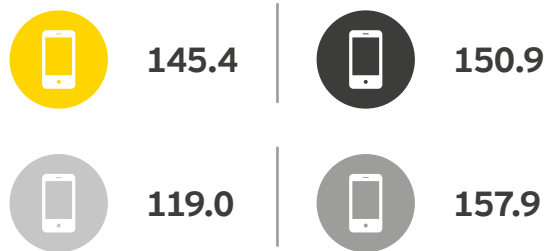


■ Estonia ■ Lithuania
■ Czech Republic ■ Russia

Internet bandwidth (kb/s/user)

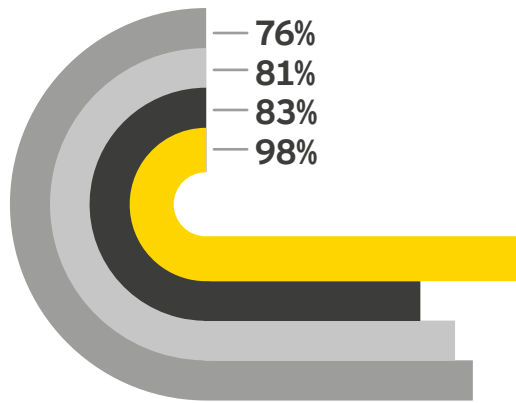


Mobile subscriptions (per 100 people)



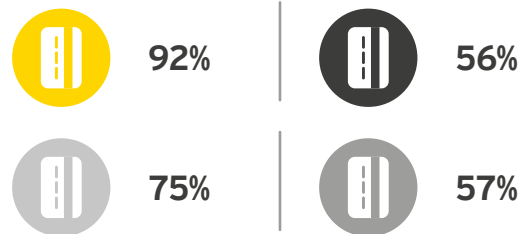
Financial parameters

Banking penetration (%)

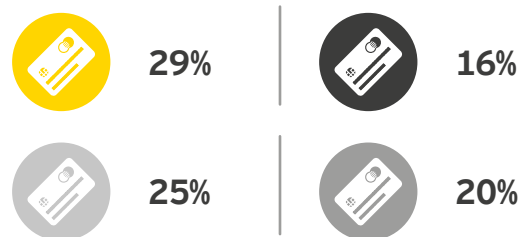


■ Estonia ■ Lithuania
■ Czech Republic ■ Russia

Debit card ownership (%)



Credit card ownership (%)



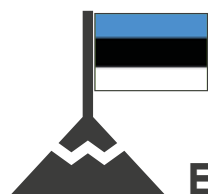
Made or received digital payments in the past year (% age 15+ years of population)



Sources:

- Digital in 2018 report, Hootsuite, January 2018
- Gross Domestic Product (GDP), GDP per capita, population and inflation: Oxford Economics
- FDI inflow and Mobile Subscriptions: World Bank Open Data
- Internet users and internet bandwidth: The Global Competitiveness Report 2017-2018, World Economic Forum
- Financial Parameters: The Global Findex Database, World Bank

Success stories



Estonia

- ▶ Estonia has a strong reputation for being a digital economy. The country boasts of much-lauded e-residency program that includes the e-identity program and e-Estonia state portal:
 - ▶ Under the program, the Government issues a digital identity that allows entrepreneurs to set up and run a location independent business. Businesses can quickly set up their presence in the country (in 15 minutes).
 - ▶ E-residents can start a company online, access banking and online payment service providers (PSPs), manage company remotely.
 - ▶ Estonia launched the e-Residency program in 2015, and its e-residents have since grown to approximately 40,000 people from 150 countries as of June 2018.
 - ▶ Estonia has developed one of the most liberal tax systems with a 0% corporate income tax on companies without dividends.
 - ▶ In 2015, the Estonian government established 'Startup Estonia' to strengthen the Estonian startup ecosystem, carry out training programs for startups, educate local investors whilst attract

foreign investors, and eliminate regulative issues and barriers.

- ▶ The country has a Start-up Visa program that enables non- EU residents to work for Estonia's start-ups.



Lithuania

- ▶ Lithuania positions itself as the entry point for FinTech companies to the EU. The country has taken measures to create a conducive environment for the development of its FinTech industry. A fast digital payment or e-money license (in about 3 to 4 months), easy licensing for P2P lending platforms and crowdfunding laws are some of the key initiatives by the Government.
- ▶ In July 2018, the Bank of Lithuania introduced a procedure that allows companies to apply remotely and online for FinTech licenses.
- ▶ Lithuania offers a specialized banking license that allows to establish a bank with a registered capital of only €1m.
- ▶ In January 2018, the Bank of Lithuania announced that it will be launching a blockchain sandbox platform for domestic and foreign companies. The platform, called LBChain, will allow FinTechs to develop and test out blockchain-based solutions.

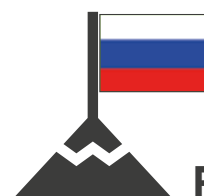


- ▶ For FinTechs, special support and advice systems are provided for their first year of operations. Non-banking institutions are given access to CENTROLink, the payment system operated by the Central Bank of Lithuania, and thus can execute payments in the EU's Single Euro Payment Area.



Czech Republic

- ▶ Government agency Czech ICT Alliance set up the Prague Startup Centre in 2016 to help early-stage start-ups connect with investors and partners. Services include an incubation program for university students and early-stage start-ups, offices in Prague downtown, various trainings and workshops for start-ups, and networking events.
- ▶ In January 2017, Czech Republic starting January 1, 2017, introduced the law against money laundering. The law prepared by the Ministry of Finance of the Czech Republic requires virtual currency exchanges to determine the identity of customers.



Russia

- ▶ In April 2016, The Central Bank of the Russian Federation created a dedicated department – Department Of Financial Technologies, Projects and Process Organization – to monitor, analyze and evaluate the scope of the emerging FinTech sector.
- ▶ In early 2018, the central bank published a document setting guidelines for the development of financial technologies from 2018 to 2020.
- ▶ In April 2018, the central bank introduced a regulatory sandbox to serve as a platform for modeling the processes of the use and application of innovative financial services.
- ▶ The government-funded Internet Initiatives Development Fund (IIDF) has \$100M (6bn RUB) under its management as of August 2018.
- ▶ From 2013 to August 2018, IIDF had closed 370 deals with values ranging from \$20k to \$5.5M



The Middle East

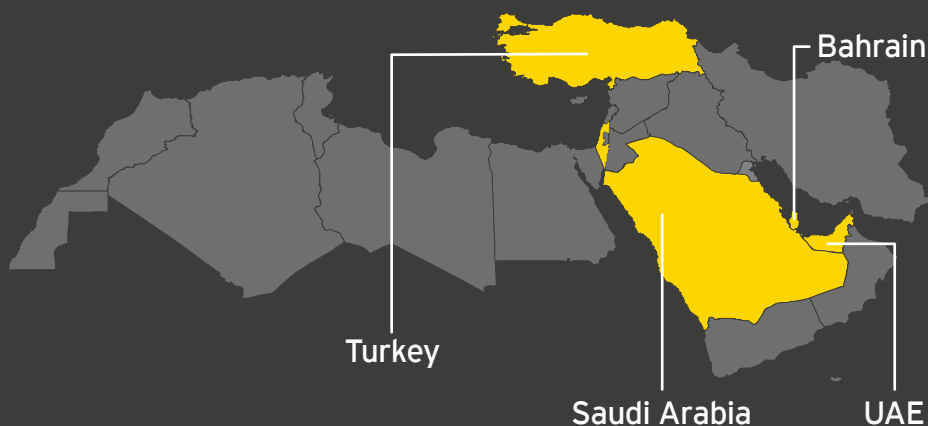
Key highlights






The region has an estimated population of 253 million in 2018 with overall internet penetration of 65% in 2017. The region has mobile penetration rate of 128%. However, internet penetration rate is fragmented across the region.




Gulf Cooperation Council (GCC) economies in the region are undertaking reforms to promote growth in the non-oil sector and investing in infrastructure development to push economic growth in the region.




Bahrain		
GDP: US\$36.7b 2017		
 GDP growth (y-o-y): 4.0%	 Population: 1.4 million	 Inflation: 1.4% FDI inflow (% of GDP): 1.5% Regulatory sandbox: Yes
GDP per capita: US\$26,820		

UAE


GDP: US\$382.6b | 2017



GDP growth (y-o-y): **0.8%**
 GDP per capita: **US\$40,622**



Population: **9.4 million**



Inflation: **2.0%**
 FDI inflow (% of GDP): **2.5%***
 Regulatory sandbox: **Yes (Dubai and Abu Dhabi)**

Saudi Arabia

GDP:⁽¹⁾ US\$686.7b | 2017



GDP growth (y-o-y): **-0.9%**
 GDP per capita: **US\$20,926**



Population: **32.8 million**




Inflation: **-0.9%**
 FDI inflow (% of GDP): **1.2%***
 Regulatory sandbox: **Yes (capital markets)**

Turkey


GDP: US\$851.3b | 2017



GDP growth (y-o-y): **7.3%**
 GDP per capita: **US\$10,527**



Population: **80.8 million**

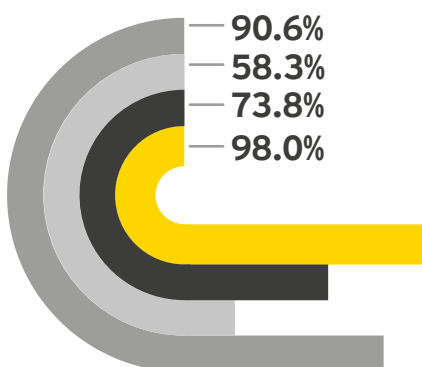


Inflation: **11.1%**
 FDI inflow (% of GDP): **1.3%**
 Regulatory sandbox: **No**



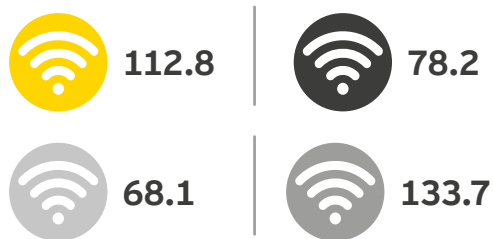
Digital readiness

Internet users (%)

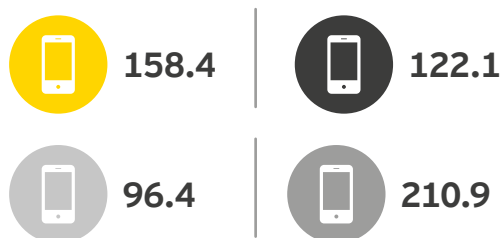


■ Bahrain ■ Saudi Arabia
■ Turkey ■ UAE

Internet bandwidth (kb/s/user)

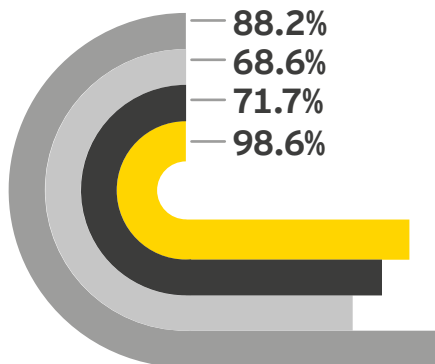


Mobile subscriptions (per 100 people)



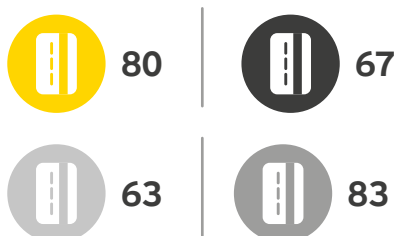
Financial parameters

Banking penetration (%)

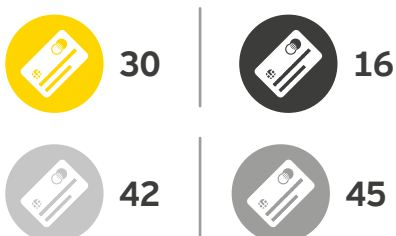


■ Bahrain ■ Saudi Arabia
■ Turkey ■ UAE

Debit card ownership (%)



Credit card ownership (%)



Made or received digital payments in the past year (% age 15+ years of population)



Note: * 2017 FDI inflow figures not available. Considered 2016 figures instead.

Sources:

- Digital in 2018 report, Hootsuite, January 2018
- Gross Domestic Product (GDP), GDP per capita, population and inflation: Oxford Economics
- FDI inflow and Mobile Subscriptions: World Bank Open Data
- Internet users and internet bandwidth: The Global Competitiveness Report 2017-2018, World Economic Forum
- Financial Parameters: The Global Findex Database, World Bank

Success stories



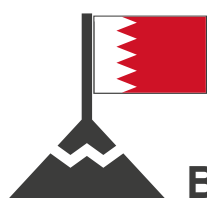
Dubai

- ▶ Established in 2004, DIFC is a major financial hub in the MEASA region. It has an independent regulator and judicial system, and a global financial exchange. The financial district has 2,003 active registered companies operating with a combined workforce of 22,768.
- ▶ DIFC established FinTech Hive, an accelerator that aims to bring financial and technology firms together. It offers licensing solutions for FinTechs and supportive regulation through its Innovation Testing Licence. It also offers dedicated commercial license, specifically developed for FinTech, RegTech and InsurTech firms to operate within the center.
- ▶ DIFC launched a US\$100m FinTech-focused fund to accelerate the development in financial technology by investing in start-ups, from incubation to growth stage.
- ▶ It launched The Academy, an executive education center, in 2017. Formed in partnership with leading business schools, The Academy provides access to financial services courses.
- ▶ In August 2017, the Dubai Financial Services Authority (DFSA), launched its regulatory

framework for loan- and investment-based crowdfunding platforms.

Abu Dhabi

- ▶ ADGM was founded in 2013. It comprises three independent authorities: ADGM Courts, the Financial Services Regulatory Authority and the Registration Authority.
- ▶ ADGM has introduced several initiatives and programs to support the country's FinTech ecosystem. It has a regulatory sandbox program and is part of GFIN.
- ▶ In October 2017, ADGM launched the FinTech Innovation Centre, a co-working space for FinTechs, and entered into partnership with Plug and Play, a global accelerator program to support financial innovation.
- ▶ In September 2018, ADGM launched a regulatory framework for private financing platforms that enable enterprises to seek financing from private and institutional investors to launch and grow their businesses.
- ▶ FinTech-specific courses were launched by ADGM Academy in May 2018. The academy is partnering with educational institutions for a range of programs on banking and finance, personal and professional development, entrepreneurship, and national development.



Bahrain

- ▶ Bahrain FinTech Bay was launched in November 2017 with the collaboration of Bahrain Economic Development Board (EDB) and FTC.
- ▶ In Bahrain, FinTech development is inspiring Islamic finance institutions to adopt digital. In December 2017, Al Baraka Banking Group, Kuwait Finance House and Bahrain Development Bank (BDB) launched the first global Islamic FinTech consortium, ALGO Bahrain. The consortium, which aims to increase the adoption in FinTech in Islamic banking, plans to launch 15 banking platforms by 2022.
- ▶ The Central Bank of Bahrain has a dedicated FinTech & Innovation Unit that aims to create a supportive regulatory environment to encourage investment in FinTech. Developments include a dedicated license category for conventional and Shari'a-compliant crowdfunding and a regulatory sandbox.
- ▶ In June 2018, BDB's Al Waha Fund of Funds closed its US\$100m fundraising round. The fund will support start-ups in Bahrain and across MENA region.



Saudi Arabia

- ▶ As part of Saudi Vision 2030, the Saudi Arabia Government has launched the Financial Sector Development program. Under the program, the Saudi Arabian Monetary Authority (SAMA) shall

establish a central payment unit to regulate the payments industry. It also plans to develop financial services payment laws and regulations together with creating new licenses for innovative nonbanking players. Additionally, SAMA has laid out framework for cybersecurity compliance. In May 2018, SAMA launched the FintechSaudi initiative to support the FinTech development.

- ▶ Capital Market Authority (CMA) laid out the regulatory framework for the innovation of FinTech in capital market within Saudi Arabia. FinTechs also require a permit that would enable them to first test their offerings in the FinTech Lab. In July 2018, CMA approved the first two licenses for FinTechs.



Turkey

- ▶ In July 2018, the Turkish Government set up FinTech Task Force with the aim to improve the FinTech ecosystem in the country. Consisting of executives from the Central Bank of the Republic of Turkey, the Banking Regulation and Supervision Agency, the Undersecretariat of Treasury, the Capital Markets Board Turkey, and the Savings Deposit Insurance Fund, the task force is setting a national vision and goal, determining a strategy and a road map for the industry.
- ▶ In December 2017, Turkey amended its Capital Markets Act to make crowdfunding that offers a return on investment (e.g., through shares) available in the country.
- ▶ The Interbank Card Center, BKM, has also been playing an active role in supporting FinTech in Turkey. In 2016, BKM introduced Turkey's Payment Method (Troy), an electronic card payment

system, in line with its vision of creating a cashless society by 2023.



Africa

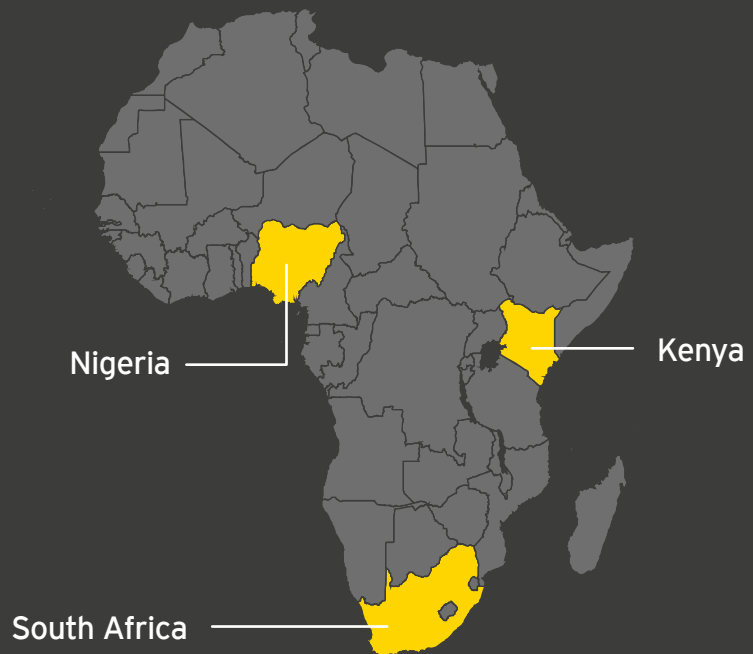
Key highlights












The region has an estimated population of about a billion in 2018 with 34% internet penetration rate and 82% mobile penetration rate.



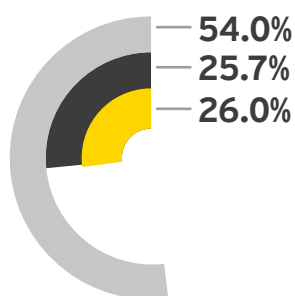
According to the World Bank, in sub-Saharan Africa, 21% of the adult population have a mobile money account, which is the highest in any region in the world. While mobile money has been centered in East Africa, it has expanded to West Africa and beyond.



South Africa	Kenya	Nigeria
GDP: US\$349.3b 2017	GDP: US\$74.9b 2017	GDP: US\$355.5b 2017
 <p>GDP growth (y-o-y): 1.3% GDP per capita: US\$6,150.6</p>	 <p>GDP growth (y-o-y): 4.9% GDP per capita: US\$1,506.7</p>	 <p>GDP growth (y-o-y): 0.8% GDP per capita: US\$1,860</p>
 <p>Population: 56.8 million</p>	 <p>Population: 49.7 million</p>	 <p>Population: 191.2 million</p>
 <p>Inflation: 5.3% FDI inflow (% of GDP): 0.4% Regulatory sandbox: No</p>	 <p>Inflation: 8.0% FDI inflow (% of GDP): 0.9% Regulatory sandbox: No</p>	 <p>Inflation: 16.5% FDI inflow (% of GDP): 0.9% Regulatory sandbox: Yes</p>

Digital readiness

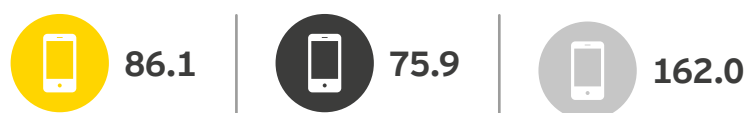
Internet users (%)



Internet bandwidth (kb/s/user)

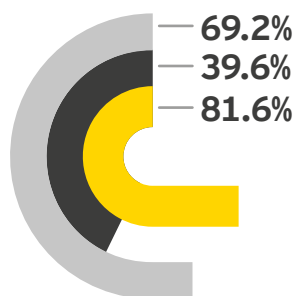


Mobile subscriptions (per 100 people)



Financial parameters

Banking penetration (%)



Debit card ownership (%)



Credit card ownership (%)

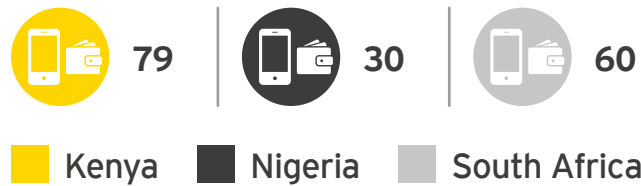


■ Kenya
 ■ Nigeria
 ■ South Africa



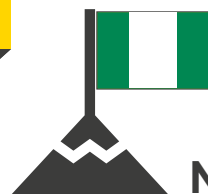
Success stories

**Made or received digital payments in the past year
(% age 15+ years of population)**



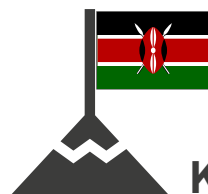
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5. Financial Parameters: The Global Findex Database, World Bank



Nigeria

- ▶ The Payments System Vision 2020 of the Central Bank of Nigeria (CBN) identifies ways to increase the resilience of the payments system infrastructure. The sector is using innovations, such as Unstructured Supplementary Service Data service (USSD), for payments.
- ▶ In March 2018, CBN, along with Nigeria Inter-Bank Settlement System, introduced a regulatory sandbox with the aim to facilitate digital innovation by FinTech companies.



Kenya

- ▶ M-Pesa is a key driver behind success of mobile banking in Kenya, which has helped alleviate financial exclusion. According to the Global Findex Database 2017, 73% of adults in Kenya have a mobile money account.

- ▶ The Central Bank of Kenya (CBK) is the financial regulatory body in the country and is receptive of the FinTech innovations, which is evident from the measures it has taken. In 2007, the CBK took the pivotal step of allowing mobile operator, Safaricom, to launch M-Pesa when there was no regulatory framework set up.

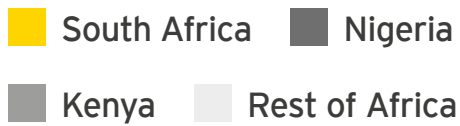
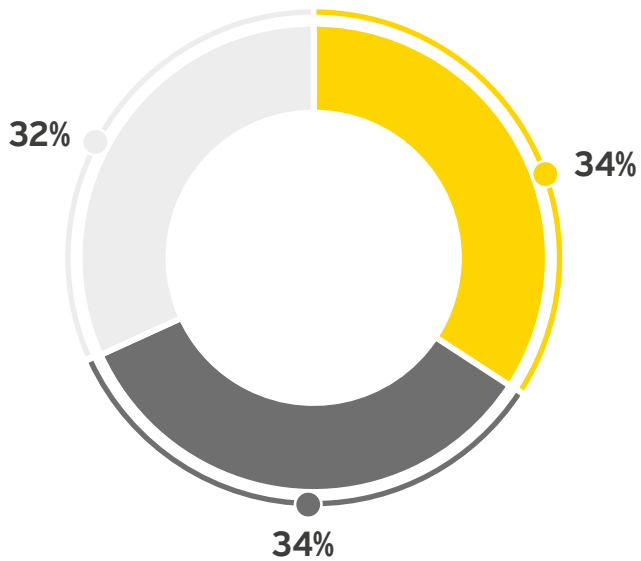


South Africa

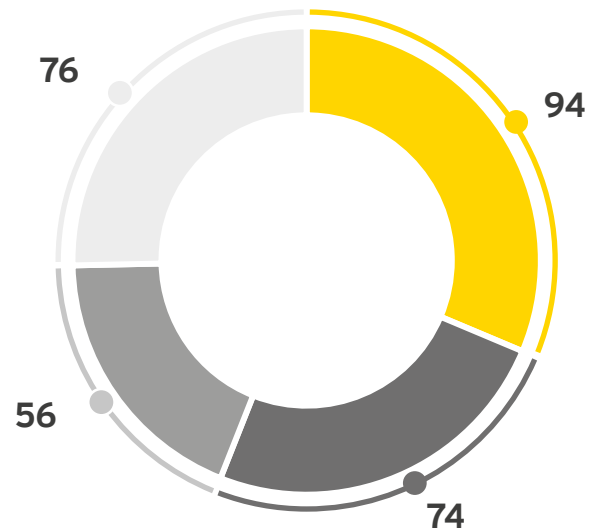
- ▶ In February 2018, SARB established a FinTech program that aims to strategically assess the emergence of FinTech and consider its regulatory implications. It has three primary objectives: evaluating private cryptocurrencies, investigating innovation facilitators (sandboxes, incubators and accelerators) and launching a DLT experiment (Project Khoka).
- ▶ In June 2018, SARB released a report on the Project Khoka, a PoC designed to simulate a real-world trial of a DLT-based wholesale payment system.

FinTech landscape in sub-Saharan Africa

Breakup of total FinTech funding for 2016-17: US\$100m



Distribution of FinTechs



Source: Finnovating for Africa: Exploring the African Fintech Startup Ecosystem Report 2017, Disrupt Africa



Asia-Pacific

Key highlights






The region has an estimated population of about 3.6 billion in 2018. Asia-Pacific has about 2 billion internet users, which is about 51% of the total world internet users. The region has a 48% internet penetration rate, and 102% mobile penetration rate.



Most of the hubs are encouraging digital payment initiatives and working toward financial inclusion.



South Korea		
GDP: US\$1.5t 2017		
 GDP growth (y-o-y): 3.1% GDP per capita: US\$30,008	 Population: 51.0 million	 Inflation: 1.9% FDI inflow (% of GDP): 1.1% Regulatory sandbox: Yes

Mainland China

GDP: US\$12.3t | 2017

GDP growth (y-o-y): **6.9%**
GDP per capita: **US\$8,697**Population: **1.4 billion**Inflation: **1.5%**
FDI inflow (% of GDP): **1.4%**
Regulatory sandbox: **No****India**

GDP: US\$2.5t | 2017

GDP growth (y-o-y): **6.2%**
GDP per capita: **US\$1,870**Population: **1.3 billion**Inflation: **3.3%**
FDI inflow (% of GDP): **1.5%**
Regulatory sandbox: **No****Hong Kong**

GDP: US\$341.4b | 2017

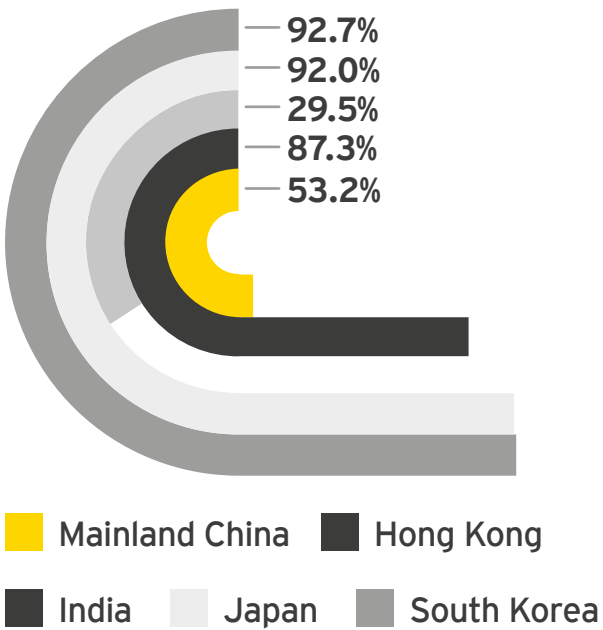
GDP growth (y-o-y): **3.8%**
GDP per capita: **US\$46,307.6**Population: **7.4 million**Inflation: **1.5%**
FDI inflow (% of GDP): **35.8%**
Regulatory sandbox: **Yes****Japan**

GDP: US\$4.9t | 2017

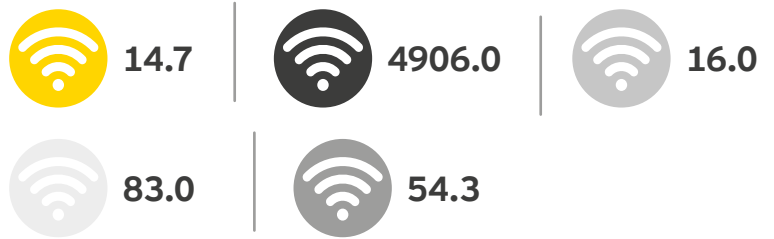
GDP growth (y-o-y): **1.7%**
GDP per capita: **US\$38,255**Population: **127.4 million**Inflation: **0.5%**
FDI inflow (% of GDP): **0.4%**
Regulatory sandbox: **Yes**
(FinTech Proof of Concept Hub)

Digital readiness

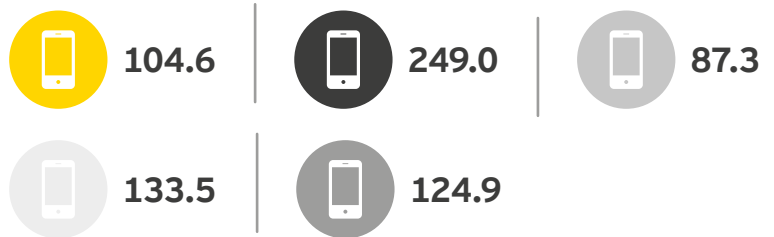
Internet users (%)



Internet bandwidth (kb/s/user)

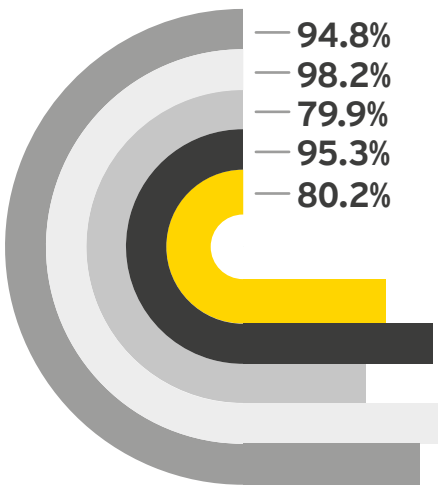


Mobile subscriptions (per 100 people)

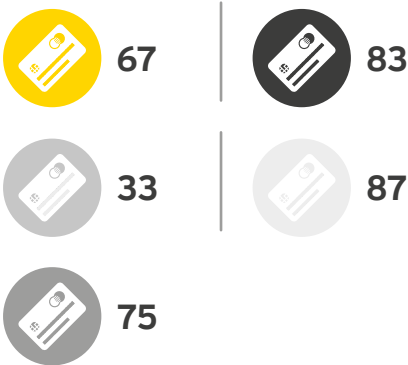


Financial parameters

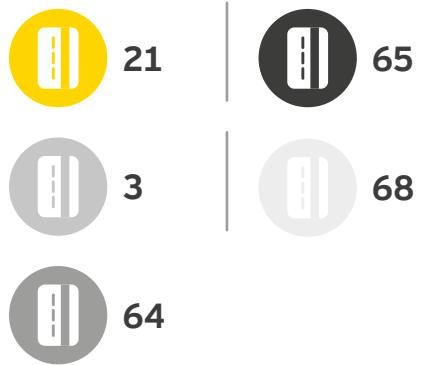
Banking penetration (%)



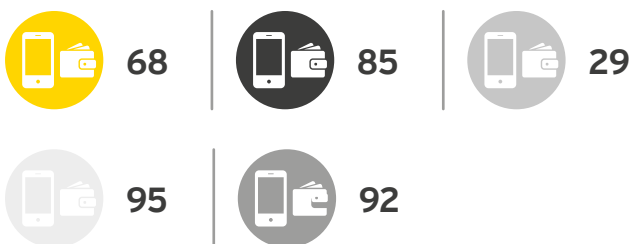
Debit card ownership (%)



Credit card ownership (%)



Made or received digital payments in the past year (% age 15+ years of population)



Sources:

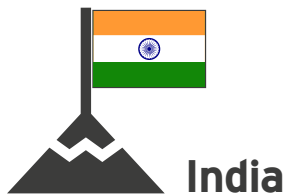
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5. Financial Parameters: The Global Findex Database, World Bank

Success stories



- ▶ Hong Kong has taken a number of steps to strengthen FinTech sector. In March 2016, HKMA established the FinTech Facilitation Office (FFO) to support the development of the ecosystem.
- ▶ The HKMA has launched seven smart banking initiatives, which include the following:
 - ▶ Faster Payment System (FPS): Launched in September 2018, the new system operates on a round-the-clock basis, and connects banks and stored-value facility (SVF) operators on the same platform.
 - ▶ Open API: In July 2018, Open API Framework for the Hong Kong's banking sector was released.
 - ▶ Enhanced Fintech Supervisory Sandbox (FSS) 2.0: As of the end of July 2018, 33 new technology products have been tested in the FSS. Separately, banks have collaborated with tech firms in 18 trial cases.
 - ▶ Virtual banking: In September 2017, the HKMA announced its intention to encourage virtual banking in Hong Kong.
- ▶ Closer cross-border collaboration: The latest initiatives include the development of a DLT platform to digitalize banks' trade finance processes in Hong Kong with potential connectivity with Singapore's trade platform.
- ▶ Research and talent development: HKMA has collaborated with the Hong Kong Applied Science and Technology Research Institute, Science Park and Cyberport in a number of research and education initiatives.
- ▶ Banking Made Easy Initiative – Aim is to minimize regulatory frictions in customers' digital experience, including remote onboarding, online finance and online wealth management
- ▶ The Hong Kong government's 2018 budget has pledged HK\$500m to the development of financial services over the next five years, including FinTech.
- ▶ In 2017, the Government launched US\$256m (HK\$2b) Innovation and Technology Venture Fund to coinvest with private VC in local tech-based start-ups.
- ▶ With specific focus to expand FinTech-based talent in Hong Kong, HKMA partnered with ASTRI to launch FCAS, providing internship to undergraduates and postgraduate students in the FinTech industry. HKMA also runs a talent accelerator program.

- ▶ The Hong Kong FinTech Week is a cross border event (from 29 October to 2 November 2018) took place in the Hong Kong and Shenzhen. Over 8,000 participants attended the event.



- ▶ The Government, through its Digital India initiative, has taken a number of steps to drive digital penetration in the country. The following initiatives have resulted in increase in banking penetration rate to 80% in 2017 from mere 35% in 2011:
 - ▶ Aadhaar, the largest biometric program in the world, had generated over 1.2 billion digital identities. As of 15 September 2018, over 23 billion authentications and 6.2 billion e-KYC have been done using Aadhaar (UIDAI stats).
 - ▶ Jan Dhan Yojna, one of the largest financial inclusion programs in the world, was launched by the Government in 2015, has over 327 million beneficiaries as of 19 September 2018.
 - ▶ United Payments Interface (UPI), an instant real-time payment system through bank account, was launched in 2016. In August 2018, UPI crossed an important milestone of 300 million transactions in a month.
 - ▶ In August 2016, the Government launched Bharat BillPay (BBP), an interoperable payment platform, which allows users to make bill payments across multiple channels and payment modes, and provides instant receipts through SMS.
 - ▶ In March 2017, the Government

launched Bharat QR, a common interoperable quick response (QR) code.



- ▶ In Japan, projects are being undertaken to develop platforms using contactless technology, QR codes, blockchain technology and digital currencies. In April 2018, the Ministry of Economy, Trade and Industry set a target to have 40% of all transactions to be done cashless by 2025, up from 18.4% in 2015.
- ▶ The Financial Services Agency the Japanese financial regulator, established FinTech Support Desk in 2015 to support FinTechs with the specific interpretation of banking laws for them or the applicability of regulations to FinTech business prior to launch.
- ▶ As of March 2018, 16 crypto-exchanges were registered under FSA and another 16 were still being examined for registration.
- ▶ In September 2017, FSA announced the establishment of the PoC Hub, a regulatory sandbox.



- ▶ Mainland China is home to large FinTech companies in payments, P2P lending, InsurTech, which have disrupted the way financial services are consumed.
- ▶ In January 2017, Asia FinTech Fund of Funds worth US\$1.4b was founded by state-owned capital

and private funds to nurture start-ups in the FinTech industry.

- ▶ In April 2018, the XiongAn Global Blockchain Innovation Fund was launched with US\$1.6b to invest in Chinese blockchain start-ups. In July 2018, China Merchants Group partnered with London-based investment firm Centricus to launch a US\$15b technology fund called New Era Technology Fund.



- ▶ Tech giants in the country have pioneered FinTech adoption by providing payment solutions as well as setting up digital-only banks that have acquired millions of users so far.
- ▶ In 2016, the FSC launched a Fintech Open Platform. The Open API system within Fintech Open Platform that provides program commands needed when programming FinTech services with banking functions.
- ▶ The regulatory environment regarding cryptocurrency is moving toward more transparency. Starting January 2018, cryptocurrency traders in South Korea will not be allowed to make deposits into their virtual currency exchange wallets unless the names on their bank accounts match the account names in cryptocurrency exchanges.

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