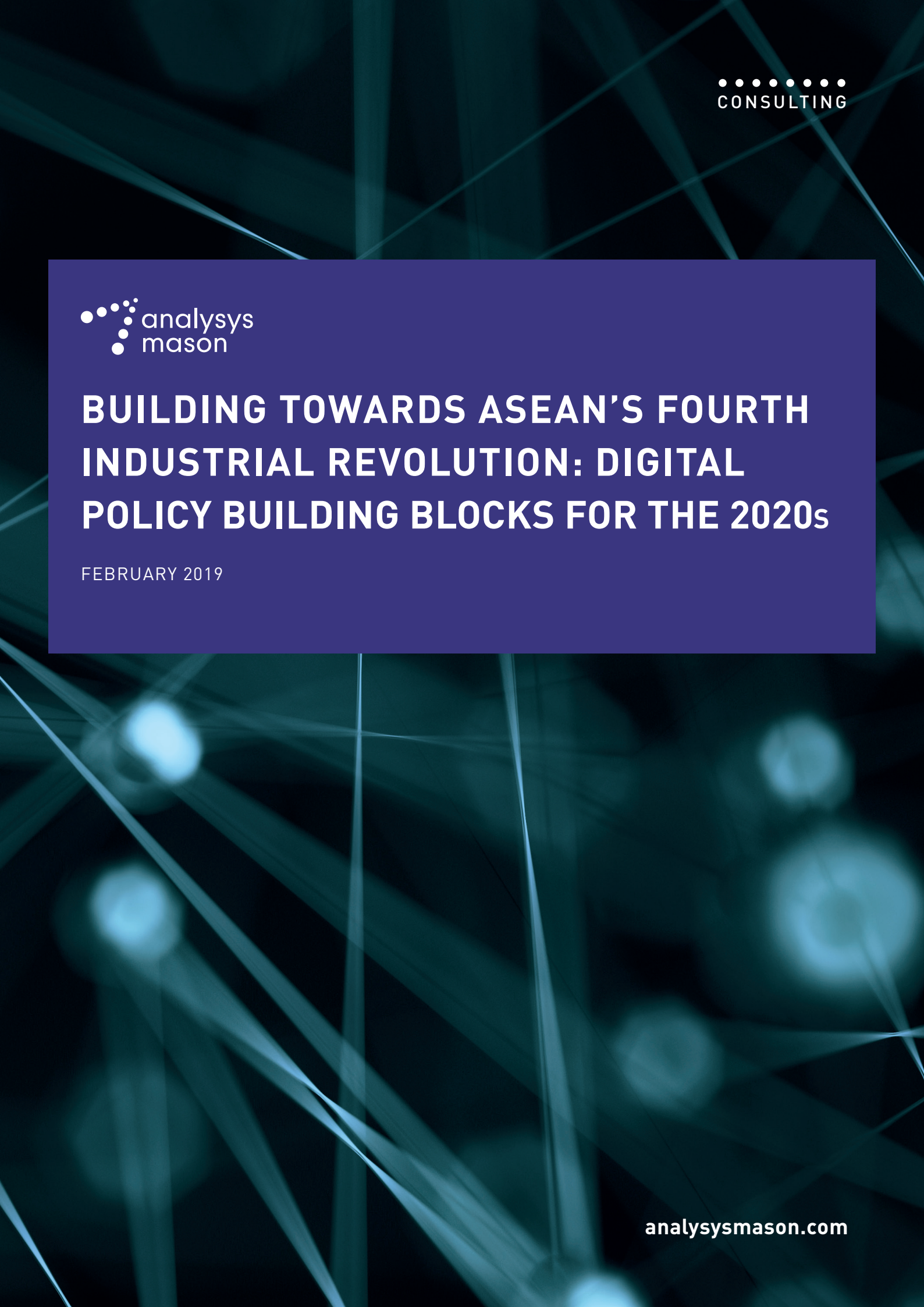
CONSULTING

analysys mason

BUILDING TOWARDS ASEAN'S FOURTH INDUSTRIAL REVOLUTION: DIGITAL POLICY BUILDING BLOCKS FOR THE 2020s

FEBRUARY 2019



analysysmason.com

Analysys Mason Pte Ltd
61 Robinson Road
#10-02 Robinson Centre
Singapore 068893
Tel: +65 6493 6038

singapore@analysysmason.com
www.analysysmason.com

Registered in Singapore No.
200506242R
Subsidiary of Analysys Mason Ltd
North West Wing, Bush House, Aldwych
London WC2B 4PJ, UK
Reg. No. 5177472

Contents

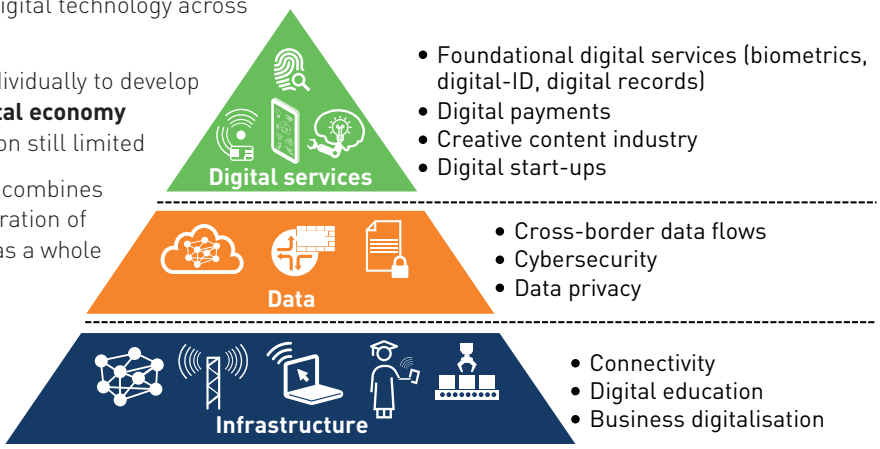
Building towards ASEAN's Fourth Industrial Revolution

- ASEAN can play a world-leading role in the ongoing 'Fourth Industrial Revolution' (4th IR), building on the digital revolution which resulted in growing access to and use of the Internet and digital technology across consumers, businesses and governments
- Many steps already taken by member states individually to develop effective policies at the **three layers of the digital economy** towards the 4th IR, but cross-border coordination still limited
- Policy measures across these three layers that combines sharing best practices, and furthering the integration of their digital markets can greatly benefit ASEAN as a whole

Incremental benefit to ASEAN GDP in 2030 ~USD165bn

Estimated growth in ASEAN employment in 2030 2–4%

Three layers of the digital economy



- Foundational digital services (biometrics, digital-ID, digital records)
- Digital payments
- Creative content industry
- Digital start-ups

- Cross-border data flows
- Cybersecurity
- Data privacy

- Connectivity
- Digital education
- Business digitalisation

Ten digital policy building blocks for the 2020s

Infrastructure	Connectivity	1. Continue to support measures to improve coverage, capacity, speed and quality of service of Internet connectivity in ASEAN
	Digital education	2. Support digital education in schools and the workforce
	Business digitalisation	3. Promote MSME and industrial digitalisation through adoption of 4th IR solutions
Data	Cross-border data flows	4. Reduce or remove data localisation measures to facilitate cross-border data flows within ASEAN, and with key trading partners
	Cyber security	5. Harmonise cyber-security regulations across ASEAN and put in place the necessary structures for strategic and operational co-operation on law enforcement
	Data privacy	6. Update regional privacy framework to APEC CBPR or similar standards
Digital services	Foundational digital services	7. Develop enabling foundational services and simplify policies for digital financial services
	Digital payments	8. Facilitate interoperability of digital payments systems in internal markets and across ASEAN
	Creative content industry	9. Simplify regulations to increase competitiveness of regional creative content industry in a global context
	Digital start-up	10. Support digital start-up ecosystem in internal markets and across the ASEAN region

Country-level action points

Country cluster	Short-term (1-3 years)	Medium-term (4-6 years)
Cluster 1: Growing nascent economy	• Ensure basic ICT services are available and affordable for all citizens and businesses • Improve access and quality of primary and secondary education	• Develop framework on cyber security & data privacy aligned with international standards • Enhance financial inclusion by providing foundational digital services to all citizens
Cluster 2: Joining middle -income countries	• Connect rural communities and strengthen education system with emphasis on STEM • Align cybersecurity and data privacy frameworks to international norms	• Develop conducive business ecosystem for digital services to flourish • Support innovation and digital start-up ecosystem
Cluster 3: Breaking out of middle-income trap	• Improve STEM outcomes and provide stronger incentives for private-sector led skills training • Encourage greater adoption of digital technologies amongst individuals and MSMEs	• Strengthen innovation and digital entrepreneurship ecosystem • Ensure regulations, policies and sufficient incentives are in place for 4th IR investments
Cluster 4: Maintaining leadership position	• Help MSMEs digitise and connect to ASEAN marketplace • Enable seamless use of digital services through digital-ID	• Help enterprises adopt advanced 4th IR solutions to improve productivity • Grow creative content industry to become net exporters of content

1 Executive summary

ASEAN can play a world-leading role in the ongoing 'Fourth Industrial Revolution' (4th IR). The 4th IR builds on the ongoing digital revolution that has resulted in growing access to and use of the Internet and digital technology across consumers, companies and governments. The addition of new and innovative technologies in artificial intelligence, robotics, the Internet of Things, 3D printing, and others will disrupt every economy, transforming business, governance and citizen's lives.[1] To fully benefit from the 4th IR and prevent an increase in the digital divide, it is important to complete the 3rd IR, which involves ensuring that the digital economy is developed across countries, with individuals, companies and governments all having advanced Internet access and the capacities to use that access.

With the fifth largest combined economy in the world,[2] favourable demographics, and fast economic growth, ASEAN countries could benefit greatly from an approach that combines sharing best practices, and furthering the integration of their digital markets. A regional digital market, supporting greater economic integration alongside digital transformation in multiple sectors of the economy, can increase the revenue opportunity for firms (access to a larger market), lower costs (economies of scale), and provide greater network effects for all. This paper proposes ten major policy initiatives, or building blocks, that can help ASEAN harness its scale to develop the digital economy towards the 4th IR.

The vision for ASEAN in 2025, as agreed in the ASEAN Economic Community Blueprint,[3] is for an economically-integrated, business-friendly, trade-facilitative economic region, which encourages innovation. These desired outcomes will be accelerated if ASEAN member states integrate further into a single digital market, which in turn will help pave the way to the 4th IR. Through regional initiatives and harmonised policies at national level, ASEAN could become a digital economic powerhouse.

The digital economy relies on three main layers of enabling factors: infrastructure, data and digital services. Infrastructure is necessary to bring new users online and develop their capacity to make the most of digital technology; it is foundational, but it is not sufficient. Users are attracted by digital services – what they can do once they get online. Many of these digital services, in turn, rely on free and secure flows of data within and between countries. In this way, the three layers work together to create a truly digital economy. To support further growth in the digital economy, effective policies must be put in place at all three layers. While many steps have been taken by member states individually, cross-border co-ordination has so far been limited.

We have identified ten policy measures across the three layers that can enable an effective digital economy in ASEAN to create the building blocks for the 4th IR. These measures can help to deliver at least an additional USD125–205 billion (2.5–4.1%) in GDP growth by 2030, with a similar impact on employment; some analysts have suggested that these benefits could be much greater once all the possible transformation mechanisms offered by digital technology are fully integrated in the economy. These measures aim to achieve a high level of economic impact, address the biggest challenges toward regional co-ordination, and although they are ambitious, we believe they are realistically achievable.

[1] "The Fourth Industrial Revolution, by Klaus Schwab", World Economic Forum; see: https://www.weforum.org/about/the-fourth-industrial-revolution-by-klaus-schwab

[2] Source: IMF

[3] "ASEAN Economic Community Blueprint 2025", The ASEAN Secretariat, https://www.asean.org/storage/2016/03/AECBP_2025r_FINAL.pdf

Infrastructure	1	Continue to support measures to improve coverage, capacity, speed and quality of service (QoS) of Internet connectivity in ASEAN
	2	Support digital education in schools and the workforce
	3	Promote MSME and industrial digitalisation through adoption of 4th IR solutions
Data	4	Reduce or remove data localisation measures to facilitate cross-border data flows within ASEAN, and with key trading partners
	5	Harmonise cyber-security regulations across ASEAN and put in place the necessary structures for strategic and operational co-operation on law enforcement
	6	Update regional privacy framework to APEC CBPR or similar standards
Digital services	7	Develop enabling foundational services and simplify policies for digital financial services
	8	Facilitate interoperability of digital payments systems in internal markets and across ASEAN
	9	Simplify regulations to increase competitiveness of regional creative content industry in a global context
	10	Support digital start-up ecosystem in internal markets and across the ASEAN region

FIGURE 1: TEN RECOMMENDED POLICY MEASURES
[SOURCE: ANALYSYS MASON, 2019]

Whilst all of ASEAN is embracing digital technology at an accelerating pace, we recognise that there are significant differences in each country's progress towards the 4th IR. In the short term, through to 2021, the main priority should be to grow the ASEAN digital economy as a whole, while identifying best practice policies and deploying them where possible in every country. In the medium term to longer term, throughout the 2020s and looking forward to 2030, the next stage of growth will require greater integration, harmonisation and streamlining of digital markets, laws, regulation and policy across the region.

These short- and medium-term priorities reinforce each layer of the digital economy within each market, while simultaneously removing cross-border barriers across the region. The resulting regional market will allow innovators, entrepreneurs and regional companies to offer digital services freely across the region, with little barriers to delivering goods or providing e-commerce services across borders. This will bring the 2025 vision for the ASEAN digital economy within reach, to the benefit of all citizens, consumers and companies in the region.

2 Introduction

2.1 Background and objectives

Digital technologies and Internet connectivity have propelled ASEAN towards a Fourth Industrial Revolution (4th IR). They are transforming the way societies communicate and gain access to goods and services, unlocking new drivers of economic growth and job creation, and helping governments to improve public services. People, businesses and governments can use these trends to their advantage if they prepare for and leverage the benefits of digitalisation, and these trends will act as the building blocks to the 4th IR. However, the use of digital technology is not distributed equally. The objective of this report is to highlight regional policies that can help to broaden access to digital technologies and Internet connectivity and create the foundation for the 4th IR.

Digitalisation and the digital economy are central to the 3rd IR and are an essential enabler of the 4th IR. Much progress has been made throughout ASEAN, enabling ever more people to access digital services. The percentage of ASEAN individuals connected to the Internet has more than doubled, from 21% in 2010 to 44% in 2017. However, this same progress is also deepening the digital divide between technology adopters and those who are left behind, restricting participation in the overall ASEAN digital economy. Across ASEAN, around 30% of users cannot be connected, while 32% of those that can be connected cannot yet access the Internet. These gaps must be filled to maximise the potential impact of the 4th IR.

Policy and regulation play an important role in creating a supportive environment for the development of digital infrastructure and services, to ensure that people and businesses can reap the benefits from the 4th IR. Beyond policies and regulation of individual member states, it is increasingly recognised that ASEAN countries, working together as a region, can be stronger than the sum of its individual nations. A regional market will create greater economies of scale for investment, larger markets for companies operating in the region, and consumers will benefit from greater network effects for the resulting services while having more economic opportunities and greater social and government connectivity. The lagging countries in the region will benefit from being part of a larger market, while service providers will benefit from removing cross-border barriers and having a larger market to serve.

Effective domestic policy and co-ordinated regional policy can help ASEAN to harness its scale to achieve the full benefits of the 4th IR. Specifically, ASEAN can play a role in co-ordinating the direction of national policies, and can also lead regional policies to help realise the potential of integration, harmonisation and streamlining of digital markets, laws, regulation and policy, along with co-ordinated and prioritised investments in infrastructure and digital skills development.

2.2 Sponsors and contributors

The authors would like to extend gratitude to our advisers and sponsors on this report.

2.3 Structure of document

The remainder of this document is laid out as follows:

- Section 3 describes ASEAN's current digital economy
- Section 4 describes the economic opportunity presented by the ASEAN digital economy
- Section 5 describes ten impactful policy measures recommended for adoption at ASEAN level
- Section 6 provides a summary of our conclusions.

The report includes a number of annexes containing supplementary material:

- Annex A provides a glossary for the key terms used in this report
- Annex B provides further references used in this report.

[4] *Id.*

[5] Based on ITU Internet penetration statistics

[6] Based on unique subscriber data from GSMA Intelligence

3 The ASEAN digital economy today: A region of pronounced variations across countries

South-East Asia is one of the world's fastest growing economic blocks. IMF estimates ASEAN member states to have a combined GDP of USD2.9 trillion,[7] which would be ranked fifth globally if considered as a single economy. This is up from eighth at the turn of the decade. Favourable demographics, high literacy rates and continuous economic integration is expected to drive the ASEAN economy onwards. Significant growth potential could be harnessed from ASEAN's digital economy, which only represents 7% of the total GDP of the group today, compared with more than 15% of GDP in the leading digital economies of China, Europe and the USA.[8]

While ASEAN member states are embracing digital technology at an accelerating pace, there remains a widespread digital divide across ASEAN markets due to current or prior socio-economic differences, and varying stages of digital development within each market. Building an inclusive ASEAN digital economy, which harnesses the full potential of its 650 million people, will require policies to reduce the barriers to meaningful access of digital technologies.

The ASEAN digital economy is enabled by three main layers: infrastructure, data and digital services (see in Figure 2).

Infrastructure includes 'hard' infrastructure, comprising broadband connectivity within and between countries and 'soft' infrastructure, which include systems to build digital literacy and develop the digitally-educated workforce needed for a digital economy. Greater **data** flows within ASEAN and global partners are key to unlocking the potential of digital technologies, particularly across borders; these flows of data must be protected through cyber security and data privacy to develop user's trust in digital services. These two first layers underpin the provision of **digital services**, which enable companies and individuals to access, analyse and exchange information, process data to derive new insight, consume content, or purchase goods and services online with the assistance of the Internet, among many other things.

Infrastructure is necessary to bring new users online, but it is not sufficient. Users are attracted by digital services – what they can do once they get online. These digital services, in turn, are fostered by free flows of data within and between countries. In this way, the three layers are interdependent on one another in creating a truly digital economy.

3.1 Infrastructure gaps are narrowing, but more can be done

Connecting people and businesses to the Internet is a necessary first step for participation in the digital economy. Increased emphasis on 'hard' ICT infrastructure investments over the past years, i.e. on high-speed mobile and fixed broadband networks as well as the international backbone, has reduced the gap of physical access to the Internet within domestic markets and across ASEAN. However, substantial gaps remain in the areas of digital education and business digitalisation across ASEAN (see Figure 3).

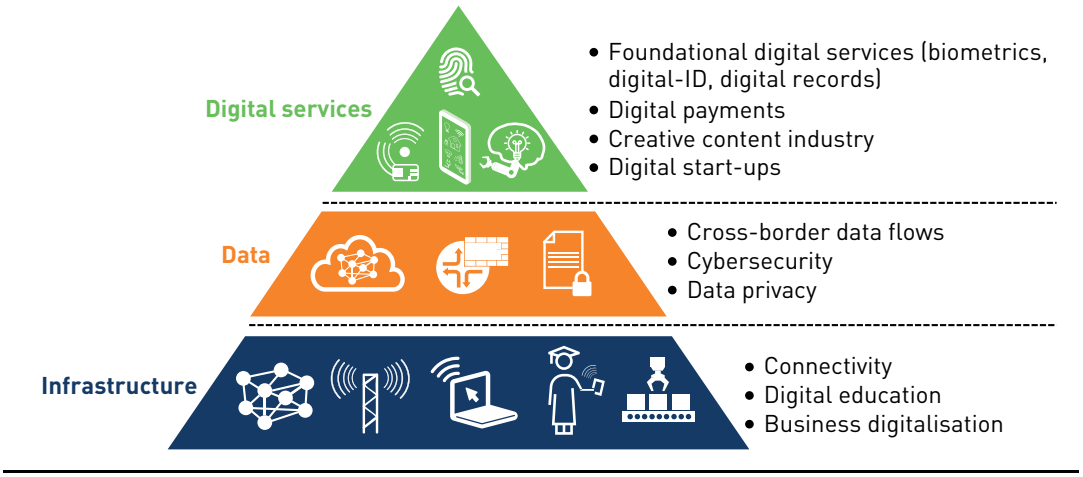
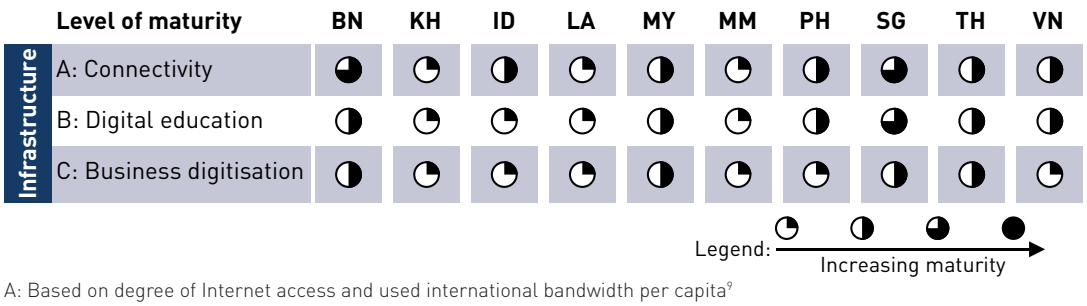


FIGURE 2: THREE LAYERS OF THE DIGITAL ECONOMY
[SOURCE: ANALYSYS MASON, 2019]

[7] "World Economic Outlook (October 2018)", International Monetary Fund. https://www.imf.org/external/datamapper/datasets/WEO

[8] "Advancing towards ASEAN digital integration", Bain & Company. https://www.bain.com/insights/advancing-towards-asean-digital-integration/



A: Based on degree of Internet access and used international bandwidth per capita[9]

B: Based on PISA ranking where available, quality of and STEM enrolment in secondary and tertiary education

C: Based on relative adoption of digital tools among small and medium-sized enterprises (SMEs) in five key sectors of the ASEAN economy[10]

FIGURE 3: COMPARISON ACROSS ASEAN MARKET IN THE INFRASTRUCTURE LAYER
[SOURCE: ANALYSYS MASON, 2019]

Significant ICT investments have laid the foundation for a strong connectivity backbone in ASEAN

Access to the Internet has improved greatly, particularly through mobile availability: 3G mobile broadband coverage is available across ~93% of the ASEAN population, and the UN Broadband Commission target for affordable Internet — 1GB of mobile broadband data available for 2% or less of gross national income (GNI) per capita – has been achieved across all ASEAN member states except for Lao PDR. Despite this, less than half of the ASEAN population are mobile broadband subscribers, as shown in Figure 4. Governments will need to address lack of awareness of how and why to use the Internet, together with its availability and affordability, to get more individuals online.

Significant ICT investments have also contributed to increased fixed network availability in South-East Asia. This is a boon to businesses, who are more likely than individuals to take advantage of the unlimited, high-capacity and lower-latency connectivity[11] provided by fixed broadband.

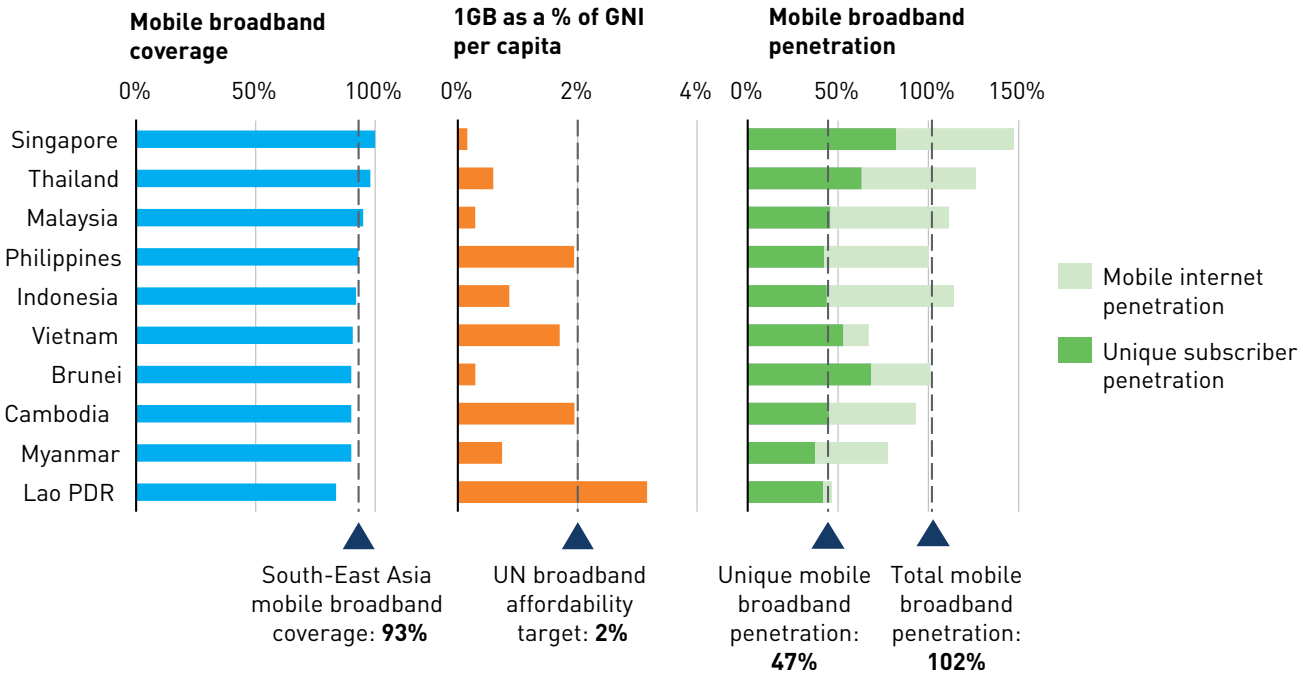


FIGURE 4: BASIC MOBILE BROADBAND SERVICES ARE INCREASINGLY AVAILABLE AND AFFORDABLE ACROSS ASEAN, BUT THE NUMBER OF UNIQUE SUBSCRIBERS IS STILL LOW [SOURCE: GSMA, EIU, OPERATOR WEBSITES, ANALYSYS MASON ANALYSIS]

[9] Sources: ITU figures on Percentage of Individuals using the Internet; GSMA used international bandwidth

[10] The five sectors are manufacturing, agriculture, retail, transport and logistics, and ICT. Source: ASEAN Digital Integration SME Survey conducted by Bain & Company

[11] 5G is expected to contribute higher data rates, along with ultra-reliable and ultra-low-latency connections that will enable new applications such as remote surgery and self-driving cars as well as many industrial applications. 5G fixed wireless access can also reduce the need for fixed broadband in certain areas, and for some uses.

Nonetheless, considerable disparity remains in network deployment across various ASEAN member states. Malaysia, Thailand and Vietnam are catching up with Singapore and Brunei in terms of fibre availability on the back of supportive regulatory policies and investments from fixed network operators (see Case study 1 for fixed broadband development in Vietnam[12]). Cambodia, Indonesia, Lao PDR, Myanmar and the Philippines are still in the early stages of their fibre deployment.

Case study 1: Fixed broadband growth in Vietnam

The Vietnamese fixed broadband market has developed rapidly, with high-speed broadband reaching ~50% of households, up from ~30% in 2015. This growth was catalysed by the government's Broadband Connection Plan that aimed to provide fixed broadband connection to 40% of households and individuals by 2020. The plan concentrated on funding for fixed network providers, enabling them to deploy networks in communes with no broadband facilities.

Improved fixed network infrastructure has allowed Vietnam to attract foreign direct investment from large hi-tech manufacturers such as Samsung, Bosch, Panasonic and GE, as well as develop e-government services in the areas of tax and smart city initiatives.

Total international Internet bandwidth has also increased sharply over the past five years. This reflects the significant investment made into international backbone infrastructure, in particular large submarine cable projects (i.e. SEA-ME-WE 5, AAE-1) that connects ASEAN member states to each other and the rest of the world.

There is, however, a wide disparity among the international bandwidth used per capita, and the number of cables landing into each member state across ASEAN. Leading ASEAN countries compete with key international hubs (e.g. Japan, South Korea), while other ASEAN countries lag far behind. There is potential to further grow international backbone capacity to facilitate greater adoption of cross-border, data-intensive activity (e.g. consumption of video-rich content, big data analytics on international servers).

The lack of digital education has constrained participation in the digital economy

Despite the increased availability and affordability of basic connectivity arising from 'hard' ICT infrastructure investments, digital economy participation continues to be constrained. This is in part due to lack of appropriate skills and understanding of how and why to use the Internet and associated digital technologies.[13] Specialised education – Science, Technology, Engineering & Mathematics (STEM), together with analytical skill development and vocational training at secondary, tertiary and adult learning stages, is required to equip the existing and future workforce with the skills and knowledge to participate in the digital economy.

Case study 2: Industry-led skills training centre

Established in 1989, Penang Skills Development Centre (PSDC) is a dedicated institution to meet the immediate human resource needs of the business community.

Leveraging on secondary education in Malaysia where 45% of students receive STEM and technical training, PSDC has trained over 200 000 participants in areas of design and development, manufacturing, and services; pioneered local industry development initiatives; assisted in the input and formulation of national policies pertaining to human capital development and contributed directly to the Malaysian workforce transformation initiatives.

99% employability rate

Linked to **200** member companies

[12] "Vietnam's PM approves broadband development programme", TeleGeography

[13] See for example Google, "Measuring Connectivity: A Call to Measure Internet Development with Open, Timely, and Relevant Data", 2015, and Facebook, "State of Connectivity Report 2015", to which Analysys Mason contributed

STEM education is not only directly relevant to jobs currently available in the digital economy, it also enables upskilling/retraining of the existing workforce to meet changing employment demands (see Case study 2).[14] In economies where STEM education has not been traditionally emphasised, retraining of low-skilled labour from the basic manufacturing and assembly segments will likely pose a challenge.[15]

STEM performance differs across ASEAN member states. While Singapore and Vietnam have ranked highly at OECD's Program for International Student Assessment (PISA) studies, other member states involved in the study (Indonesia and Thailand) have not fared as well despite efforts by respective governments to combat the country's education challenges.[16]

The diffusion of digital technologies across ASEAN businesses is slow

Cheaper devices, together with broadband availability and affordability, have helped ASEAN individuals to connect to the Internet and adopt digital technologies. In contrast, the diffusion of industrial digital technologies or 4th IR technologies (e.g. 3D printing, Internet of Things (IoT), robotics, AI, blockchain) across businesses is considerably slower, especially amongst micro, small and medium enterprises (MSMEs).

While enterprise adoption of these digital technologies is increasing (see Case study 3),[17] many MSMEs still find that they lack sufficient knowledge and workforce talent to digitalise and participate even in the 3rd IR.[18] For them, adoption of 4th IR solutions is even further away.

Case study 3: Growing robotics adoption in Philippines

PHILIPPINES

Historically, the Philippines has lagged behind in the adoption of robotics. A 2016 study by the International Federation of Robotics ranked the Philippines among the lowest adopters in the region, with only three industrial robots installed per 10 000 employees. Comparatively, average robotic density in Asia was 63 units installed per 10 000 employees.

Supported by the Philippines Department of Trade and Industry's Inclusion Innovation Industrial Strategy, industries have been developing and adapting technologies that will improve productivity. Over the last two years, robotics adoption in the Philippines has matched global growth of 72%, driven by strong demand from the growing manufacturing, electronics and automotive sector. There is potential for the Philippines to seize further automation opportunities from robotics grow domestic industrial capabilities.

3.2 Barriers towards open and secure flow of data impedes growth of the digital economy

The transnational nature of the Internet ecosystem promotes an open flow of data, which contributes to the development of innovative data-driven services and positive socio-economic outcomes for individuals, businesses and society (see Figure 5).[19]

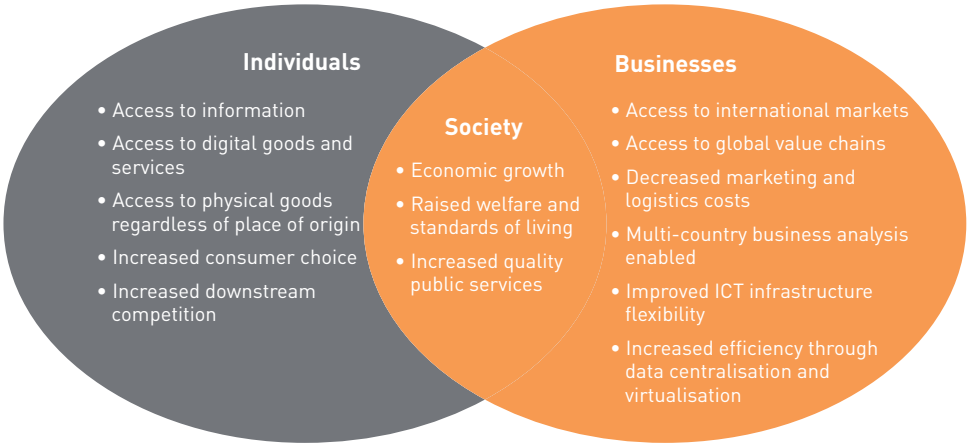


FIGURE 5: BENEFITS OF OPEN FLOW OF DATA [SOURCE: GSMA, ANALYSYS MASON]

[14] PSDC (Penang Skills Development Centre), http://www.psdc.org.my/about

[15] "Managing skills challenges in ASEAN-5", SMU and JP Morgan, https://socsc.smu.edu.sg/sites/socsc.smu.edu.sg/files/%5Bcurrent-domain%3Amachine_name%5D/news_room/Managing%20Skills%20Challenges%20in%20ASEAN-5_Final%20Report.pdf

[16] "How will Indonesia fare in PISA 2018?", The ASEAN Post, https://theaseanpost.com/article/how-will-indonesia-fare-pisa-2018-0

[17] "PH robotics adoption rate exceeds expectations – report", Manila Bulletin

[18] "Digital challenges continue to plague SMEs" Digital News Asia, https://www.digitalnewsasia.com/digital-economy/digital-challenges-continue-plague-smes

[19] "Regional Privacy Frameworks and Cross-Border Data Flows", GSMA

Case study 4: Go-Jek's cloud-driven rapid expansion

INDONESIA

Today, Go-Jek captures and analyses data associated with millions of drivers and customers across 167 districts and cities in Indonesia, and processes more than 100 million transactions a month. With its mobile app launched only in 2015, Go-Jek's hyperscale growth was made possible by the use of public cloud services for its services with the exception of digital payments due to Indonesia's data localisation laws.

By adopting public cloud services, Go-Jek is able to scale as quickly as it expands, optimising time and money spent on infrastructure and allowing its technology team to focus on what matters most – moving people and goods from one place to another.

Expansion into Singapore, Thailand and Vietnam is ongoing and forays into other international markets are in the works. In this context, the use of a common cloud platform, facilitated by cross-border data flows, becomes even more vital for Go-Jek to optimise its operations and succeed in new markets.

While an open flow of data has facilitated countless innovations and business expansion (facilitated by cloud solutions; see Case study 4),[20] on the other hand it is accompanied by a risk of undesirable side-effects such as cyber crime and personal data misuse. The respective ASEAN governments' approaches to cross-border data flow and data privacy vary considerably, whereas most governments recognise the importance of a strong cyber security domestically and across ASEAN.

Across ASEAN, there are varied levels of cyber-readiness which may impact overall development and usage of digital services (see Figure 6).

	Level of maturity	BN	KH	ID	LA	MY	MM	PH	SG	TH	VN
Data	A: Cross-border data flows	◔	●	◑	●	◑	◕	◕	◕	◕	◔
	B: Cybersecurity	◑	◔	◔	◔	◕	◔	◑	◕	◑	◑
	C: Data privacy	◑	◔	◔	◔	◕	◔	◕	◕	◔	◔

Legend: ◔ ◑ ◕ ● Increasing maturity

A: Relative ease of cross-border data flow, based on data localisation and data transfer regulations (see Figure 7)

B: Based on National Cyber Security Index ranking developed by e-Governance Academy Foundation

C: Based on data-privacy criteria from 2018 BSA Global Cloud Computing Scorecard[21]

FIGURE 6: COMPARISON ACROSS ASEAN MARKET IN THE DATA LAYER

[SOURCE: ANALYSYS MASON, 2019]

[20] "How Indonesia's Go-Jek scales the heights with cloud", Computer Weekly article, https://www.computerweekly.com/news/252446425/How-Indonesias-Go-Jek-scales-the-heights-with-cloud, and "GO-JEK: Using Machine Learning for forecasting and dynamic pricing", Google Cloud, https://cloud.google.com/customers/go-jek/

[21] BSA Global Cloud Computing Scorecard examines the legal and regulatory framework of 24 countries around the world, identifying 72 questions that are relevant to determining readiness for cloud computing

Member states have taken varied approaches towards regulation of data flows, preventing ASEAN from enjoying the full benefits of an open flow of data

ASEAN governments have taken varied approaches towards regulation of data flows. On one end of the spectrum, some countries have no general data-privacy rules in place (although sector-specific rules and related rights may exist) and allow data to flow out with no restrictions. At the other extreme, regulators have attempted to erect territorial-based borders for data flows, i.e. data localisation laws, in a bid to secure the domestic cyberspace and promote local digital industry growth. The middle ground is taken by some regulators in which cross-border data flows continue to be encouraged, but only to parties with trusted systems in place to process, analyse, store or use data. (see Figure 7).

Transnational Internet ecosystems mean that countries are susceptible to cyber crime, regardless of origin of the crime. Countries with data localisation measures are no less vulnerable.[22] Broad-based data localisation requirements not only affect basic business functions [23] but may actually undermine cyber security. Cyber crime is an asymmetric arms race – the hackers only need to get lucky once. International cloud providers have the resources and economies of scale to invest far more in security than local service providers, and those international providers that are located in countries with strong privacy laws and human rights records may have additional incentive to ensure security. Service providers in smaller countries may not even be able to provide the round-the-clock support/monitoring that international cloud providers offer, with fewer resources and less incentives to do so.

As such, general international consensus is pointing towards developing more robust cyber security and data-privacy frameworks, encouraging implementation of best practices, and enforcement rather than data localisation, i.e. co-operation rather than isolation, as the means to protect individuals and businesses' stake in the future digital economy. In short, it is better to attract localisation of data rather than to mandate it.

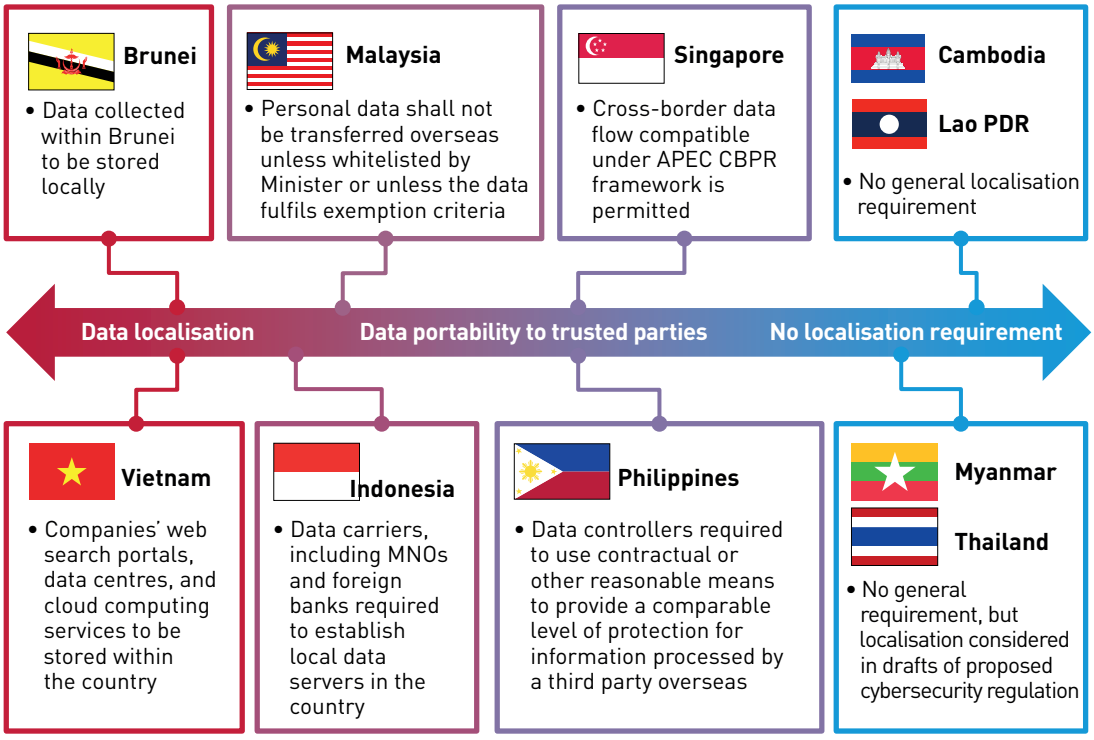


FIGURE 7: DATA LOCALISATION REQUIREMENTS ACROSS ASEAN MEMBER STATES
[SOURCE: NEWS ARTICLES]

[22] Countries are arguably more vulnerable if domestic IT infrastructure is subpar and/or security measures for data related to business operations is weak. Location as to where data is stored also becomes more obvious, making it more vulnerable to attack.

[23] "The Costs of Data Localisation: A Friendly Fire on Economic Recovery", ECIPE, http://ecipe.org/publications/dataloc/

The level of sophistication of cyber-security regimes varies across ASEAN, impeding a co-ordinated response towards cross-border cyber crimes

The threat and impact of cyber crime has traditionally been viewed as a function of the stage of digital development within a country, resulting in varying levels of sophistication of cyber-security regimes across ASEAN member states. Member states have also developed strong cyber-security laws to build consumer and investor confidence, thereby increasing usage of digital services.

Singapore and Malaysia have developed comprehensive regimes, with legislation for cyber-threats analysis, cyber-crime law enforcement and cyber-crisis incident management in line with international best practices. Vietnam, however, has recently adopted a broad-based cyber-security law, which contains provisions on local offices and data localisation, and grants the government authority to request data required to combat threats. This law has received criticism from the business community, rights groups and Western governments including the USA and the EU, who said the law would undermine economic development and digital innovation.[24] Cyber-security regimes in Myanmar and Cambodia are comparatively nascent.

Cyber attacks have become increasingly frequent, sophisticated and impactful, with the threat no longer contained within national boundaries. The global digital value chain is only as strong as its weakest link, and there is therefore an urgent need for countries to accelerate the development of their cyber-security regime to participate in the digital economy.

ASEAN is recognising the role of strong international collaboration in achieving collective global security. Cyber criminals can use the networks to attack from abroad, attribution of an attack can be difficult, and even with attribution the criminals must be found, arrested, and tried or extradited. The greater co-operation can be within a region and globally, the better stakeholders can protect themselves from attacks against known vulnerabilities, recover if they happen, and prosecute criminals.

Singapore has initiated development of a mechanism to enhance regional cyber co-ordination to bolster and harmonise the region's cyber-security capabilities. It has also set up the ASEAN–Singapore Cybersecurity Centre of Excellence, to train national Computer Emergency Response Teams (CERTs) in its neighbouring countries to better respond to increasingly sophisticated cyber threats. Thailand and Japan have also set up the ASEAN–Japan Cybersecurity Capacity Building Centre to develop the ASEAN cyber-security workforce. Nonetheless, more must be done to secure the regional cyberspace, pertinently in the area of cross-border information sharing and law enforcement. While all ASEAN member states have jointly ratified a mutual legal assistance treaty (MLAT), its usage in law enforcement within ASEAN is low. A review of cross-border law enforcement mechanisms is thus timely.

There are varying levels of maturity of data-privacy regimes across ASEAN, which may reduce consumer trust in digital services and impede digital trade

Personal data misuse by businesses and governments weakens consumer trust. Individuals may reduce spending and/or usage, and non-users may become reluctant to go online, putting the economic growth opportunity of the digital economy at stake. Additionally, as more countries legislate data-privacy adequacy requirements for cross-border data transfers, the lack of adequate domestic data protection and privacy framework[25] is likely to impede future ASEAN–third party (digital) economic activity.

Maturity of the data-privacy regime across ASEAN member states can be organised into three separate stages: nascent, progressing, and advanced (see Figure 8).

A national-level data-privacy regime is still nascent in most ASEAN member states, where data protection responsibilities are subsumed under general cyber-security law or civil and criminal code. Only Singapore, Malaysia and the Philippines have developed more advanced frameworks, with self-regulation guidelines and established enforcement authorities to encourage organisations to adopt reasonable and appropriate measures to protect personal information against unlawful use. Singapore has also adopted the APEC Cross-Border Privacy Rules (CBPR) system, which establishes voluntary accountability mechanisms for data protection.

[24] "Vietnam's draconian cybersecurity bill comes into effect", The Straits Times, https://www.straitstimes.com/asia/se-asia/vietnams-draconian-cybersecurity-bill-comes-into-effect; and "Exclusive: Vietnam cyber law set for tough enforcement despite Google, Facebook pleas", Reuters, https://www.reuters.com/article/us-vietnam-socialmedia-exclusive/exclusive-vietnam-cyber-law-set-for-tough-enforcement-despite-google-facebook-pleas-idUSKCN1MK1HL

[25] Elements of data protection and the privacy framework may include recognition of data protection as a fundamental right, a common set of safeguards and individual rights, requirement to notify of breaches over a certain threshold, and supervision and enforcement by an independent data protection authority

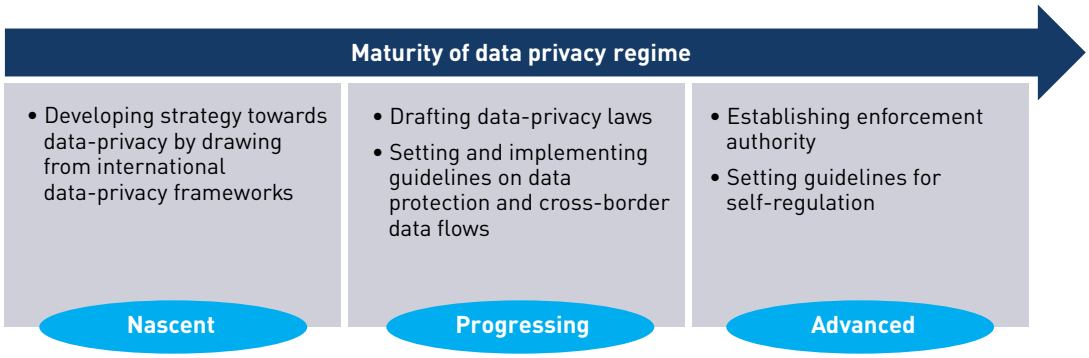


FIGURE 8: STAGES OF DATA-PRIVACY REGIME MATURITY
[SOURCE: ANALYSYS MASON, 2019]]

The increased focus on data-privacy laws within ASEAN member states is testament to these laws' importance in the regional agenda. There have been some steps towards making data-privacy principles operational within ASEAN; member states adopted the ASEAN Framework on Personal Data Protection in 2016, which sets out principles to guide implementation of data protection measures at national and regional levels. However, most member states face challenges such as the lack of administrative capability to legislate and find equivalence to more stringent data-privacy regimes, e.g. Europe's General Data Protection Regulation (GDPR).[26]

3.3 Full potential of digital services not yet tapped by ASEAN individuals and MSMEs

ASEAN individuals and business have benefitted tremendously from digital technologies. Over the last three years, the South-East Asian Internet economy, comprising online travel, e-commerce, online media and ride hailing, has more than doubled its size, reaching USD72 billion in gross merchandise value (GMV) in 2018.[27]

Nonetheless, full potential of digital services is not yet tapped by individuals and business across the ASEAN countries (see Figure 9). Lack of awareness of the benefits of digital services is keeping many ASEAN individuals offline, despite access to Internet becoming more available and affordable. Digital payments comprise only 3% of consumer expenditures in ASEAN, compared to 30% in China.[28]

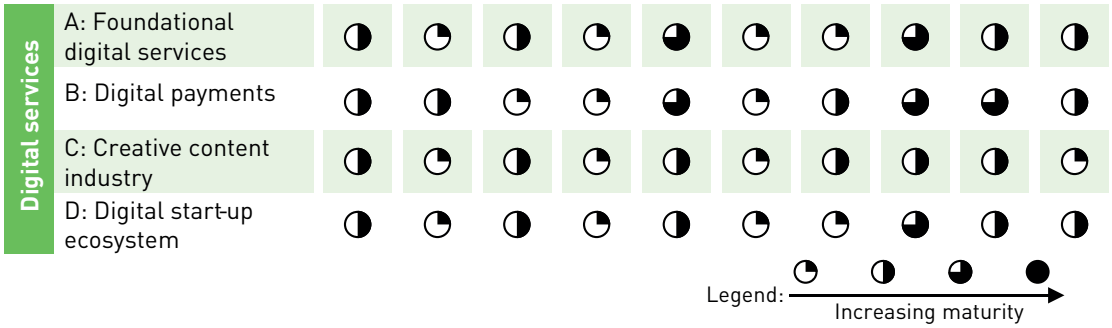
Large businesses have been actively adopting digital technologies. An industry poll by Cisco found 60% of large ASEAN enterprises use cloud services and 55% use big data and analytics, only slightly lagging behind more developed regions. The same cannot be said for ASEAN MSMEs. Despite keen interest, only 16% of ASEAN SMEs are tapping digital technology fully.[29] Digital adoption is likely even less among micro-enterprises, most of whom are not yet part of the formal economy.

[26] "Regional privacy frameworks and cross-border data flows", GSMA

[27] "e-Conomy SEA 2018: Southeast Asia's internet economy hits an inflection point", Google, Temasek, https://www.thinkwithgoogle.com/intl/en-apac/tools-research/research-studies/e-conomy-sea-2018-southeast-asias-internet-economy-hits-inflection-point/

[28] "Advancing towards ASEAN digital integration: Empowering SMEs to Build ASEAN's Digital Future", Bain & Company

[29] "Asean firms confident in digital strategy, but tech adoption rates still low: Study", Business Times, https://www.businesstimes.com.sg/asean-business/asean-firms-confident-in-digital-strategy-but-tech-adoption-rates-still-low-study



A: Based on relative maturity of national-ID/digital identity regimes and WEF's Networked Readiness Index[30]

B: Qualitative assessment of existing interoperability initiatives and adoption of global payment standards

C: Qualitative assessment of policies to promote creative content industries

D: Based on deal value and qualitative assessment of the policies to promote a supportive start-up ecosystem

FIGURE 9: COMPARISON ACROSS ASEAN MARKET IN THE DIGITAL SERVICES LAYER
[SOURCE: ANALYSYS MASON, 2019]

Foundational services are underdeveloped in some member states, restricting financial inclusion

Foundational services such as biometrics and digital records form the basis of authentication and issuance of credentials on digital platforms. These are essential to the provision of, and access to, online financial services and many other digital services (e.g. e-government, e-commerce).

For many in South-East Asia, the problem in accessing and using foundational services is two-fold.

First, many ASEAN individuals and MSMEs are not yet part of the formal economy. Most of these aforementioned ASEAN individuals do not possess a documented identity. These people and businesses use cash as the major form of transaction and are therefore precluded from the digital economy. This is for example a persistent issue in the Philippines, where the Government only launched its national identity programme in 2018.[31] The development of foundational services can help these people establish a digital identity necessary for digital financial inclusion. In Brunei, Cambodia, Lao PDR, Myanmar, Singapore and Vietnam, mobile operators are already required to capture and store customer information as part of SIM registration requirements; biometrics information is used or considered for SIM registration in Malaysia and Thailand.[32] There is scope to capitalise on such mechanisms enabled by better technology which collects biometrics, access-to-income proof and digital records to facilitate greater digital inclusion in ASEAN.

Second, in ASEAN countries with established national electronic identity programmes, electronic identity cards are mainly used for identification purposes, and are not yet tied to online services access. There is an opportunity for digital technologies to improve national-ID systems. Innovations in foundational services that better support the digital certification process (e.g. digital signature, multi-factor verification), and increased data security of digital-ID systems, will facilitate remote access and greater adoption of digital services. Out of all the ASEAN countries, only Singapore and Malaysia are in the process of planning and developing an advanced national digital-ID system that aims to be fully integrated with financial services. Other markets are still exploring the use of their electronic-ID in limited scenarios, e.g. electronic voting in Indonesia.[33]

Development of foundational services and other e-government services plays a key role in driving demand for the overall digital economy. Currently, there is a wide disparity between the digitalisation of public services in different ASEAN countries. Singapore and Malaysia are highly ranked in terms of government usage of ICT, but Cambodia, Myanmar and Lao PDR are lagging far behind.[34] An increased emphasis on digitalising public services will help to stimulate downstream innovations in digital services, boosting ASEAN's digital economy.

[30] "Networked Readiness Index", World Economic Forum, http://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/

[31] "Philippines channels India with ID system", The ASEAN Post, https://theaseanpost.com/article/philippines-channels-india-id-system-0

[32] "Access to Mobile Services and Proof-of-Identity: Global policy trends, dependencies and risks", GSMA, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/02/Access-to-Mobile-Services-and-Proof-of-Identity.pdf

[33] "Indonesia plans e-voting for 2019 presidential elections", GovInsider, https://govinsider.asia/innovation/indonesia-plans-e-voting-for-2019-presidential-elections/

[34] WEF's Networked Readiness Index: 8th Pillar: Government usage, http://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/

Interoperability issues prevent wider adoption of payment services within internal markets and across ASEAN

Despite growing rapidly over the last three years, interoperability issues are preventing wider adoption of payment services within internal markets and across ASEAN. Currently, interoperability issues between two digital payments providers are largely solved by establishing focused arrangements for specific use cases, and do not typically link with the wider banking infrastructure.

There have been positive steps towards developing an interoperable payment system amongst different payment providers within a jurisdiction. Thailand's PromptPay framework, for example, synthesises the mobile payments mechanism of major Thai banks, allowing individuals and businesses to accept payment via their mobile phones.[35] Singapore's SGQR initiative (see Case study 5)[36] is another example of a successful interoperability framework.

Case study 5: SGQR initiative

SINGAPORE

The fragmented e-payment landscape in Singapore has prompted the government to roll out a unified payment QR code. Key features of the SGQR initiative include:

- Single QR Code to aggregate multiple payment services
- Appointment of single acquirer by the regulator
- Standardised merchant discount rate (MDR) of 0.5%, reduced MDR of 0% for three years through government support
- Initiative aims to target >200 food establishments by 2020

Regional payments interoperability is currently limited to selected use cases, e.g. GrabPay's upcoming international wallet-to-wallet remittance offering.[37] Most member states (Brunei, Cambodia, Indonesia, Lao PDR, Thailand and Vietnam) have implemented National Payment Gateways but are not yet operating on global standards, such as ISO20022, making cross-border payment integration difficult. Nonetheless, there have been efforts to facilitate payments interoperability on a bilateral front. For example, the Monetary Authority of Singapore and the Bank of Thailand have agreed to work together to link their mobile payments mechanisms, PayNow and PromptPay,[38] contributing a significant first step towards interoperability of digital payments across ASEAN borders.

Growth of the ASEAN creative content industry has been impeded by legacy regulations that may not be applicable in the current creative content landscape

Over-the-top (OTT) services has dramatically changed the creative content landscape in ASEAN. Linear TV, particularly free-to-air (FTA) and pay TV in some markets, remains the predominant source for content in ASEAN, but content consumption is shifting to OTT services. There are two general models for OTT video. The first model consists of platforms that allow users to upload their own user-generated content (UGC), where other users can download this content. The second model consists of services that curate professional content, including movies, television and sports, and stream them to subscribers.

[35] "How Real-Time Payments Is Empowering Thailand's Small Businesses And Entrepreneurs", MasterCard, https://newsroom.mastercard.com/2018/04/30/how-real-time-payments-is-empowering-thailands-small-businesses-and-entrepreneurs/

[36] "Fact sheet on Singapore Quick Response Code (SGQR)", Monetary Authority of Singapore, http://www.mas.gov.sg/~/media/resource/news_room/press_releases/2018/Annex%20A%20Fact%20sheet%20on%20SGQR.pdf

[37] "Grab unveils region's first wallet-to-wallet remittance product", Grab, https://www.grab.com/sg/press/others/grab-unveils-regions-first-wallet-to-wallet-remittance-product/

[38] "PayNow to be linked to Thailand's PromptPay, among slew of initiatives announced at Fintech Festival", The Straits Times, https://www.straitstimes.com/business/banking/paynow-to-be-linked-to-thailands-promptpay-among-slew-of-initiatives-announced-at

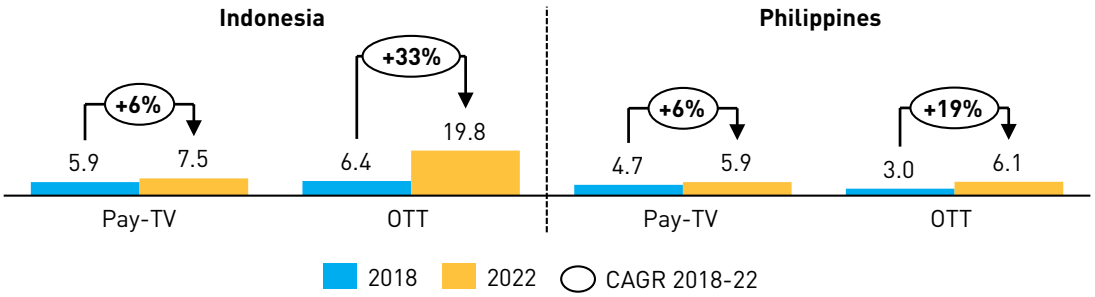


FIGURE 10: OTT IS PRIMED TO EXCEED THE PAY-TV MARKETS IN INDONESIA AND THE PHILIPPINES BY 2022
[SOURCE: ANALYSYS MASON RESEARCH, 2019]

Social media platforms with strong UGC, such as YouTube and Facebook, are consistently ranked by Alexa as among the top-five most visited websites.[39] Displacement of linear pay TV by premium OTT streaming services is ongoing: OTT is primed to exceed pay TV in the key ASEAN markets of Indonesia and Philippines by 2022 (see Figure 10). This is led by ASEAN and international OTT providers: Tik Tok is a leading platform for UGC, while Astro, iflix, HOOQ, viu, Netflix and Amazon Prime Video provide curated Asian and international content.

This new operating environment necessitates a review of regulations within the creative content industries. Regulations applicable to linear broadcasting (FTA or pay TV) are a result of a legacy of earlier regulatory approaches to broadcasting services. In these earlier times, TV was a mass-media platform where consumers had little or no choice over the programmatic elements being broadcast, and there was a relative scarcity of content. The nature of OTT is very different (see Figure 11), and such regulations will need to be redefined and restructured to adapt to a non-linear marketplace

The reaction from ASEAN regulators is to move towards regulation symmetry of linear TV broadcasting and OTT, but the approach is varied. While Singapore is levelling down regulations for pay-TV operators, Vietnam is moving in the opposite direction, imposing legacy broadcasting regulations on OTT players that decreases the business viability of conducting operations in the country, impeding growth of the overall creative content industry.

Linear TV broadcasting		
24/7 broadcasting limit	Limited by amount of spectrum available	Oligopolistic with 2-5 broadcasters
• Local content quotas to promote local content • Restriction on advertising (e.g. localisation rules, revenue and minutage restrictions)	• Licence fees and taxation, as spectrum is a scarce public good • Licensing of foreign channels to promote local content	• Rate regulation (e.g. wholesale/ retail rate regulation/ price controls) • Program supply restriction and other exclusivity restrictions (e.g. "cross-carriage" rules)
OTT platforms		
OTT is not limited by airtime and there is an almost unlimited amount of UGC that is uploaded and available for viewing	OTT does not use spectrum, and has unlimited shelf space	Competitive market due to transnational nature of Internet ecosystem

FIGURE 11: KEY DIFFERENCES BETWEEN LINEAR TV AND OTT
[SOURCE: ANALYSYS MASON 2019]

[39] "Digital in 2018 in Southeast Asia", wearesocial

At the same time, there are strong concerns about the amount of material that is uploaded to OTT platforms that infringes copyright. In the USA and EU, OTT platforms are considered intermediaries and are not liable for what is uploaded, as long as they take down content once notified that it is infringing. The platforms are not able to filter all content that is uploaded, and the imposition of liability impacts investment. The same is true for Internet service providers (ISPs). Their role is not to detect or punish copyright violations, although in some cases they have been instructed to block access to infringing content, such as through a November 2018 High Court ruling in Singapore.[40] That being said, ASEAN regulators will have to take a more proactive position against content piracy, especially streaming content from illicit streaming devices (ISDs); this is an issue which is becoming more prevalent as the share of locally produced content increases over time.

The benefits of start-ups are concentrated in countries with established start-up ecosystems

ASEAN entrepreneur and start-up ecosystems are thriving, led by six ASEAN-bred unicorns[41]– Go-Jek, Grab, Lazada, Sea, Tokopedia and Traveloka, all of whom have in turn become active investors in new ventures. Most recently, Go-Jek acquired Philippines[42] fintech company Coin.ph, as its first foray into the Philippines. From 2016 to 2017, funding raised by the region's start-ups increased threefold, soaring from USD2.5 billion to USD7.9 billion. This momentum is unlikely to wane, and deal value is predicted to double to USD70 billion in the next five years compared with the level seen in the last five years.[43]

The value of the ASEAN digital start-up ecosystem has accrued in very different ways across countries. Singapore remains the investment hub, backed by a supportive policy and financing environment, as well as a critical mass that facilitates knowledge transfer and networking. The start-up ecosystem in Indonesia is also flourishing, driven by the large economic potential of its demographic composition. The entrepreneurship ecosystem in other ASEAN member states, in comparison, is less developed. Gaps in early and mid-stage support for start-ups (i.e. pre-Series A and Series A)[44] contribute to entrepreneurial reluctance and/or drive start-ups to move to other markets for financing.

Start-ups have flocked towards the consumer market, taking advantage of the low levels of digital inclusion in developing ASEAN member states. As such, the digital B2C market is getting increasingly saturated. In contrast, digital B2B markets are still in infancy and have huge potential for growth, as in many developed markets B2B revenues far outweigh B2C. As discussed above, barriers to digital adoption within MSMEs remain high, which presents opportunities for digital B2B start-ups such as Builk (see Case study 6).[45] However, the lack of linkages between start-ups and MSMEs means that there is often supply but no demand for a start-up's products and services. More can be done to forge deeper partnerships within the private sector, to help MSMEs reap benefits from digitalisation and establish a viable market for start-ups.

Overall, good progress is being made towards building a thriving ASEAN digital economy. To support further growth, effective domestic and regional policies must be put in place to leverage the opportunities offered by a larger, harmonised ASEAN marketplace for individuals, businesses and governments. Only then can ASEAN better realise the economic opportunity of the digital economy.

Case study 6: Transforming the ASEAN construction supply chain

THAILAND

Builk is a Thai start-up that delivers web-based project management solutions for the construction industry. It currently serves more than 25 000 small and medium-sized contractors in five ASEAN countries – Thailand, Indonesia, Lao PDR, Myanmar and Cambodia.

Building a critical mass of industry users has allowed Builk to expand beyond its trademark online cost-control system to other facets of the construction industry. It has launched a cloud-based enterprise resource planning system for contractors, an online system for purchasing construction materials, as well as sales and customer relationship management software for the construction industry. By helping contractors reduce costs and manage their businesses in real time, Builk is transforming the construction supply chain in Thailand and ASEAN.

[40] Indeed, a recent High Court ruling in Singapore compelled ISPs to block access to applications streaming pirated content through connected set-top boxes

[41] A unicorn is a privately held start-up company with a current valuation of USD1 billion or more.

[42] "Go-Jek buys fintech startup Coins.ph for $72M ahead of Philippines expansion", TechCrunch, https://techcrunch.com/2019/01/18/gojek-coins-ph-philippines/

[43] "Investing in Southeast Asia: What's Behind the Boom", Bain & Company, https://www.bain.com/insights/investing-in-southeast-asia-whats-behind-the-boom/

[44] "Southeast Asia Startup Ecosystem Report 2018", e27, https://e27.co/wp-content/uploads/2019/01/e27-Southeast-Asia-Startup-Ecosystem-Report-2018.pdf

[45] Builk teams up with AddVentures in bid for Asean-wide impact", The Nation, http://www.nationmultimedia.com/detail/Startup_and_IT/30349527

4 Towards 2030: The economic opportunity of a cohesive ASEAN digital economy

Although the digital economy represents only 7% of the ASEAN economy today, there is a strong shared desire to develop ASEAN into a digital powerhouse in the medium term. Many steps have been taken by member states individually, but so far cross-border co-ordination has been limited. This limitation, together with sometimes stark differences in the broader economies of the various member states, have led to disparities in outcomes and policy frameworks across ASEAN nations, limiting the economic benefits of the digital economy.

The economic opportunity presented by further consolidation, integration and stronger cohesiveness as an ASEAN community is immense. To achieve this, all ASEAN nations will need to develop and/or harmonise laws such that they are in line with best practices and conducive to extensive trade and collaboration. This will drive more people and businesses online and catalyse higher usage of digital services, allowing ASEAN to develop into a true digital powerhouse.

4.1 Desired outcomes for the ASEAN digital economy in 2030

The ASEAN Economic Community (AEC) Blueprint 2025 envisions that ASEAN will become an economically-integrated, business-friendly, trade-facilitative economic region, which encourages innovation.[46]

This vision alludes to a set of desired outcomes that could be possible if ASEAN member states integrate further into a single digital market (see Figure 12). We believe that by implementing a harmonised approach towards policy development, the ASEAN community can accelerate the realisation of the benefits of the digital economy and boost the overall competitiveness of the region.

At the infrastructure layer, greater access to high-speed connectivity and industrial tools, coupled with increasingly sophisticated digital skills, will create a solid foundation for individuals and businesses throughout ASEAN to adopt digital services.

At the data layer, harmonised trust systems will facilitate the free and secure flow of data, giving business and individuals more confidence to interact and transact online.

This increased trust and supportive regulations then facilitates widespread provision and adoption of digital solutions across the integrated market (e.g. cross-border payments), and advanced 4th IR technologies across all ASEAN nations, allowing the enormous opportunity of the ASEAN digital economy to be realised.

[45] Builk teams up with AddVentures in bid for Asean-wide impact", The Nation, http://www.nationmultimedia.com/detail/Startup_and_IT/30349527

[46] "ASEAN Economic Community Blueprint 2025", The ASEAN Secretariat, https://www.asean.org/storage/2016/03/AECBP_2025r_FINAL.pdf

	Sub-layers		Desired outcomes
Infrastructure	Connectivity		Available and affordable access to high-bandwidth connectivity across all ASEAN countries
	Digital education		Promotion of digital literacy and a digitally-enabled workforce that can leverage on ICT to increase productivity and drive innovation
	Business digitisation		Adoption of digital tools among SMEs for increased productivity, cost reductions, and accessibility to global marketplace
Data	Cross-border data flows		Open and secure flow of data across ASEAN without requiring additional safeguards or authorisations
	Cybersecurity		ASEAN digital ecosystem fortified against cyber threats, including removal of red tape for information sharing, and ample cyber-security talent available across all markets
	Data privacy		Development of data-privacy regimes across ASEAN in line with international best practice; strong data stewardship with high levels of consumer trust in digital services
Digital services	Foundational digital services		Full financial inclusion across ASEAN where individuals and business have a broad range of affordable financial services that meet their various needs
	Digital payments		Seamless digital payments enabled by universal acceptance of cashless payments by merchants and interoperable payment solutions across ASEAN
	Creative content industry		ASEAN countries becomes net exporters of cultural content, driving the domestic and regional creative content industry
	Digital start-up		Vibrant ASEAN digital start-up ecosystem with conducive capital market system in all ASEAN markets, and linkages to consumers and businesses

FIGURE 12: THE ASEAN DIGITAL ECONOMY'S DESIRED OUTCOMES IN 2030
[SOURCE: ANALYSYS MASON 2019]

4.2 Benefits and difficulties in reaching a common position throughout ASEAN

If considered as a single economy, ASEAN already has the fifth largest economy in terms of GDP (it should be the fourth in 2030 on current trends), and the third largest by population. The resulting economies of scale and the increased revenue base of a larger market would have a significant impact across all levels of the digital economy in ASEAN.

On the infrastructure level, cross-border connectivity systems such as submarine cable systems and Internet exchange points (IXPs) would operate more efficiently at greater scale. Programmes to promote digital skills and industrial digitalisation could also benefit from increased scale and co-ordination across the region.

An integrated market would enable cloud-based services to be hosted in as little as one location in the region, while serving the entire region, providing additional benefits for users. It would also create a larger market for local developers of digital services and for e-commerce platforms, allowing them to enjoy greater economies of scale in their investments, with corresponding benefits for customers in terms of greater choice and service availability. Digital companies can also help other sectors to digitise and enjoy productivity gains, on the cost side, and a larger regional or global market, on the revenue side.

A virtuous cycle will emerge, as the increase in digital services will make the Internet more attractive, creating more demand for infrastructure, in turn generating more demand for digital services and the data that they generate.

A harmonised approach towards developing laws and policies in many areas of the digital economy will facilitate further socio-economic integration of the ASEAN community and is key to obtaining the desired outcomes of the digital economy in 2025.

However, there are many potentially conflicting interests between ASEAN countries when considering a unified approach to the digital economy. This requires continued debate between stakeholders across ASEAN, and a clear understanding of the benefits of a harmonised approach where it can be achieved. The main issues can be summarised as follows:

- **Investment constraints:** With a limited fiscal investment budget, there is a need for balanced distribution amongst the many demands across ICT investment, education and security as well as government administration, all of which underpin the entire digital economy.
- **Difficulties in collaboration and harmonisation due to diversity of stages of development:** Given its size, diverse array of digital and economic development, legal systems, and social and cultural ideologies, harmonisation of regulations and polices across ASEAN is not an easy task. In cases where the regulatory gap between countries is very wide, regulatory harmonisation may be infeasible without first establishing more mature frameworks and policies in lagging markets. This stymies the ability of ASEAN to quickly capture benefits of economic integration.
- **National security versus right to privacy:** As digital advances are enabled by the collective trust placed by individuals and businesses in the Internet, devices and digital services, governments will have to navigate the fine line between national security outcomes and privacy rights that is key for digital adoption and economic growth. Efforts to impose data localisation requirements or facilitate law enforcement access to data will face challenges, and must be weighed against the impact on investment and growth.
- **Sovereignty issues regarding cross-border law enforcement:** The complexity and transnational nature of cyber crimes means that international co-operation is required. However, the heterogeneity of law enforcement means that countries may disagree about the nature of the cyber threat, and manner to respond to threats. It is also unclear when a state can invoke forcible measures in cyber space against state actors engaging in cross-border cyber crimes, or non-state actors residing in another state's territory.
- **Balancing collaboration and competition of digital services:** Significant demand-side economies of scale are present for the adoption of digital services, as service providers can deliver more innovations to end users, and in a more cost-effective way, as the user set expands. Enforcing collaboration in certain parts of the value chain will allow the industry to reap benefits from economies of scale. However, enacting such regulations may prevent the development of other more innovative services within the space and reduce competition in the market. Governments and regulatory bodies need to balance the trade-offs between digital service collaboration and competition and adopt the appropriate role of overseer and regulator that allows digital services to flourish in ASEAN.

- **Decreased level of investment in new markets:** In a more integrated market, investment required for businesses to expand to new markets within the region would be lower than it is today, as businesses would be able to centralise some of the costs involved in serving new markets. As a result, benefits from regional integration may be concentrated in areas where the domestic industry is strong.
- **Base erosion and profit shifting (BEPS) issues:** Increased integration of ASEAN markets may potentially allow businesses that operate across borders to artificially shift profits to low or no-tax locations to exploit gaps and mismatches in tax rules.[47] Although there are domestic and international tax instruments to ensure that profits can be taxed where economic activity and value creation occur, actual implementation is complicated as it is hard to discern between the profits to be taxed in the headquarters and respective countries.

As result, ASEAN would need to carefully consider areas where ideological barriers are not insurmountable, and where benefits outweigh the potential risks to identify a set of common regulatory measures that can help ASEAN move towards becoming a global digital powerhouse by 2025.

4.3 Expected economic impact on GDP and employment growth

Through regional policies and harmonised national policies that promote economic integration, trade facilitation and innovation, ASEAN could be transformed into a digital powerhouse in the medium term. This could generate a potential GDP upside of USD125–205 billion, around 2.5–4.1% above the IMF forecast of USD4.9 trillion in 2030 (see Figure 13). This is in addition to the contribution from the digital economy to ASEAN GDP, estimated at around 20% or USD1 trillion in 2030.

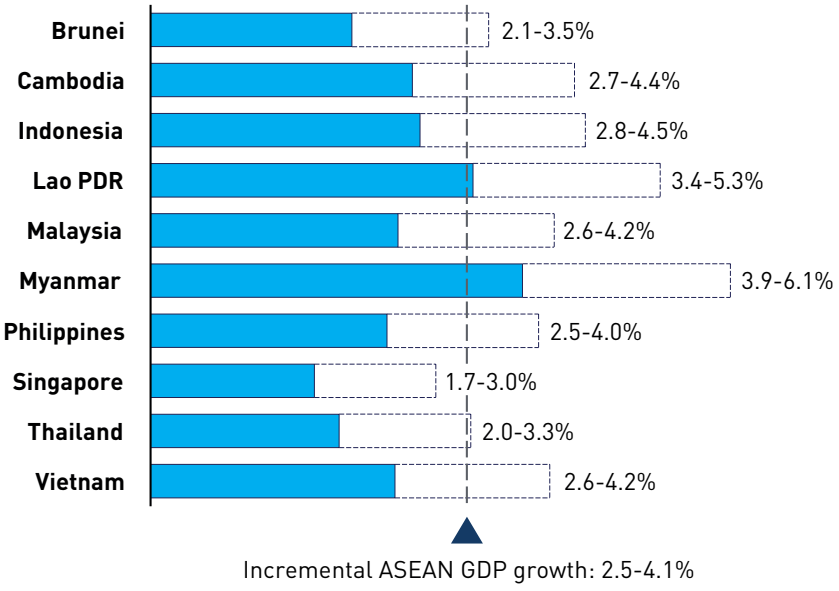


FIGURE 13: ESTIMATED INCREMENTAL GDP GROWTH ON 2030 GDP FORECASTS[48]

[47] "Inclusive Framework on BEPS", OECD, http://www.oecd.org/tax/beps/beps-about.htm

[48] Notes: The impact of broadband penetration is based on Edquist et al. (2017) and Czernich et al. (2011), where a 10% increase in broadband penetration will result in a mean GDP increase of 1.2% and 1.7% respectively; a more facilitative regulatory environment is estimated to increase mobile broadband penetration in individual countries by 4–16% depending on its current stage of digital and economic development, resulting in an incremental GDP increase of 1.4–1.9% across ASEAN.

The impact of digital market integration is based on the estimated impact of the EU Digital Single Market on the EU economy. The European Commission has estimated that a fully functional Digital Single Market could contribute ~8% towards the EU's digital economy; ASEAN's digital economy is expected to reach between 14–27% of its total GDP by 2025. The lower end estimate is derived from growth forecasts for the Internet economy in Google and Temasek, e-Economy 2016 report, while the higher end of the range assumes that ASEAN can have a digital economy of a similar magnitude as the EU relative to GDP. The resultant growth of broader ASEAN digital market integration is an incremental 1.1–2.2% of GDP.

The potential increase in GDP has been derived by considering two factors:

1. **Impact of broadband penetration:** Getting connected is a necessary first step for access to the digital economy, leading to productivity improvements and new economic opportunities for individuals, businesses and even governments.
2. **Impact of greater digital market integration:** Economic benefits from greater digital market integration are mainly driven by cost advantages from increased economies of scale and an increased revenue base associated with a larger market for digital products and services.

The forecast GDP growth is a benefit that largely arises from completion of the 3rd IR, and has been the subject of extensive study. Looking ahead to the 4th IR, while increased digitalisation potentially also has other economic effects, for example through new innovations and industries, these have not been included in our estimates because the effects of government policy on those areas is less clear. Other studies have attempted to quantify those economic values: AT Kearney predicted incremental GDP of USD300–400 billion by 2025, while Bain & Company forecasts put this contribution to USD80–130 billion by 2025.

Policies that are conducive to the growth of the ASEAN digital economy also have a positive impact on job creation. Based on estimates by the ILO, the International Labour Organization, ASEAN is expected to grow its labour force to 385 million people at steady state by 2030, from 327 million in 2017.[49] Supportive regulations and policies could facilitate an additional 1.9–3.9% growth in employment or between 7.4 and 14.8 million additional jobs on top of ILO estimates across the whole of ASEAN (see Figure 14).

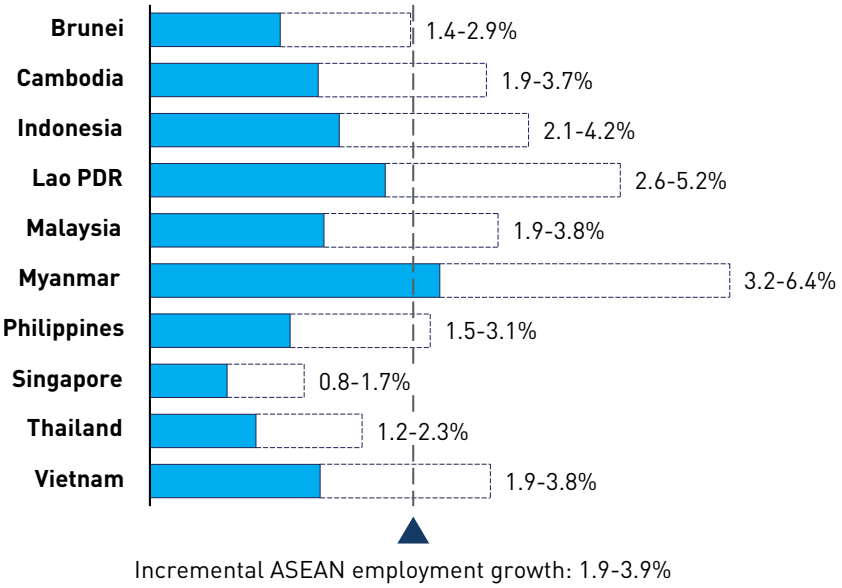


FIGURE 14: ESTIMATED INCREMENTAL LABOUR FORCE GROWTH ON 2030 LABOUR FORCE FORECASTS[50]

[49] "Labor force, total", World Bank, https://data.worldbank.org/indicator/SL.TLF.TOTL.IN

[50] Notes: Employment growth is driven by broadband deployment effects and the spill-over effects that broadband can have in terms of generating employment across the economy once it is deployed. The ITU report "The Impact of Broadband on the Economy: Research to Date and Policy Issues" estimated that a 1% increase in broadband penetration leads to 0.32–0.4% increase in employment. Based on the expected increase in broadband penetration of between 4–16% across individual nations, we expect an increase in the labour force of between 1.9–3.9% on top of ILO 2025 forecasts across ASEAN nations.

Sources: ITU, GSMA, ILO, EIU, Analysys Mason analysis

5 How to get there: Ten recommended policy measures

ASEAN has made notable progress towards adopting facilitative regulations that enable the ASEAN digital economy and moving towards achieving the goals set out in the AEC Blueprint 2025 and the ASEAN ICT Masterplan 2020.

This progress, however, highlights different sets of opportunities and challenges leading towards 2025, necessitating a rethink and reprioritisation of the initiatives underway. We recognise there are varying political and economic agendas that may lead to conflicting interests in developing a common approach towards the digital economy. Nonetheless, there remains many areas in which regional and harmonised national policies could have a significant impact on economic outcomes across ASEAN.

We have identified ten policy measures[51] that can enable an effective policy environment in ASEAN and help to deliver an additional 2–4% GDP and employment growth by 2025 (see Figure 15). Here we have highlighted measures that:

- (i) achieve the highest economic impact
- (ii) address the biggest challenges facing regional co-ordination
- (iii) have an appropriate level of difficulty/risk in mplementation (i.e. ambitious but achievable).

Infrastructure	1	Continue to support measures to improve coverage, capacity, speed and quality of service (QoS) of Internet connectivity in ASEAN
	2	Support digital education in schools and the workforce
	3	Promote MSME and industrial digitalisation through adoption of 4th IR solutions
Data	4	Reduce or remove data localisation measures to facilitate cross-border data flows within ASEAN, and with key trading partners
	5	Harmonise cyber-security regulations across ASEAN and put in place the necessary structures for strategic and operational co-operation on law enforcement
	6	Update regional privacy framework to APEC CBPR or similar standards
Digital services	7	Develop enabling foundational services and simplify policies for digital financial services
	8	Facilitate interoperability of digital payments systems in internal markets and across ASEAN
	9	Simplify regulations to increase competitiveness of regional creative content industry in a global context
	10	Support digital start-up ecosystem in internal markets and across the ASEAN region

FIGURE 15: TEN RECOMMENDED POLICY MEASURES
[SOURCE: ANALYSYS MASON 2019]

[51] This list is not meant to be exhaustive, as wide-ranging issues involved imply that the successful implementation of these ten measures will not deliver all the desired outcomes of the ASEAN digital economy in 2025.

INFRASTRUCTURE

1 Continue to support measures to improve coverage, capacity, speed and QoS of Internet connectivity in ASEAN

Strengthening connectivity infrastructure within individual countries and across ASEAN will promote efficient and affordable ICT within the region, boosting the region's global competitiveness and ensuring 'digital dividends' are spread more equitably

South-East Asia as a region has progressed significantly in terms of reducing development disparities in access and affordability of mobile and fixed broadband over the last few years, a key strategic thrust of AIM2020. Significant upheaval in the communications industry is expected over the next five years as 5G becomes mainstream, thus it is vital for ASEAN to continue to facilitate sustainability of infrastructural investment including the option of facilitating more rational market structures. These efforts could reduce the infrastructure gap between member states, ensuring that the ASEAN connectivity backbone is in place for more citizens to benefit from 5G and other new digital technologies.

Increased spectrum co-ordination to allow more timely release of harmonised spectrum

Increased spectrum co-ordination is required to resolve cross-border co-ordination bottlenecks impeding the timely release of valuable spectrum such as the 700MHz, 2.6GHz and C band spectrum in many ASEAN countries. Increased harmonisation also allows consumers to benefit from lower costs and mass-market availability of services and devices.

Improve access to rights of way (RoW)

Increased co-ordination between federal and municipal authorities and inter-ministerial utility agencies, and harmonisation of administrative and dispute settlement processes can reduce barriers associated with obtaining authorisation for access to RoW, facilitating swifter fibre deployments and greater availability and affordability of digital services.

Develop new spectrum management frameworks

5G may necessitate the consideration of novel spectrum management frameworks within and between countries, including but not limited to balancing of licensed and unlicensed spectrum, spectrum sharing, spectrum leasing and dynamic spectrum access, to ensure spectrum can be efficiently shared between its various uses.

Harmonise and expedite approval process and liberalise market for international backbone and network infrastructure

Harmonising (i.e. common set of rules on RoW of cross-border terrestrial cables), expediting (i.e. use of open access landing stations) the approval process of international cables, as well as liberalising the market will encourage foreign direct investment (FDI) into international backbone infrastructure projects and network infrastructure, contributing physical redundancy and geographical diversity to key international routes.

Case study: 'One-stop shop' for licensing and RoW applications

China

The lawful installation and/or operation of submarine cables within a country's territorial waters or for cables connected to a country's coastline requires many types of authorisation, including maritime, fisheries, environmental, RoW, construction and power.

China's Ministry of National Resources is a 'one-stop shop' for interested parties who wish to land or transit a submarine cable system in the country. The permitting process is simplified and accelerated by consolidating various approval procedures within one central liaison point.

INFRASTRUCTURE

2 Support digital education in schools and the workforce

Support across educational stages (secondary, tertiary, adult learning) will give ASEAN citizens the necessary skill and knowledge base to contribute effectively and reap the benefits of the digital economy

Many jobs are expected to be displaced due to widespread adoption of automation and digital technologies. The digital economy will also create new jobs and requires employees to adopt ICT in their current jobs. There is an urgent need to build competencies to bridge the skills gap as ASEAN member states move towards a more knowledge-intensive digital economy.

Increase emphasis on STEM and analytical thinking in secondary and tertiary education

With more jobs in the digital economy requiring STEM skills, there is a need to increase enrolment of students in STEM at the secondary and tertiary level and improve outcomes of STEM education. The STEM curriculum should move away from rote learning and promote meaningful learning/critical thinking, which prepares students to adapt to unfamiliar future work environments.

Create more opportunities for vocational training

Digital technology is forcing professions to evolve at a pace the traditional education models cannot keep up with. Work-based learning such as apprenticeships and on-the-job training thus provides an alternate avenue for workers to obtain practical skills that are recognised by industry, to facilitate the transition from school to formal employment.

Increase use of technology in the classroom

The technology skills gap is impeding individuals from more intensive participation in the digital economy. Increased use of technology not only helps students stay engaged, it also allows students to develop digital skills important for the digital economy. Teachers can also make use of technology to track each classroom's progress and adjust coursework to focus on areas where students need more assistance to improve educational outcomes.

Facilitate workforce upskilling and retraining

Upskilling and retraining existing workers helps to narrow the skills gap and stem structural unemployment. Policy makers can support adult learning initiatives with cash or capital to address opportunity costs of lost income for individuals and businesses who may otherwise be deterred from participating in upskilling and retraining programmes.

Case study: Germany's dual system of Vocational Education and Training (VET)

Germany

About 51% of Germany's workers are skilled workers trained in the VET. VETs are vocational training programmes that are heavily embedded in the tertiary education curriculum – more than one-third of all pupils graduating from secondary school in Germany enter a vocational training programme.

Most VETs comprise dual tracks: a classroom study in specialised trade schools and supervised, on-the-job work experience. Apprentices usually spend 60% of their time in the workplace under supervision of a certified trainer, and 40% in the classroom. ~68% of the dual-track VET programme's graduates enter the workforce in the company where they were trained immediately after training.

INFRASTRUCTURE

3 Promote MSME and industrial digitalisation through adoption of 4th IR solutions

Equipping the MSMEs with digital tools will allow them to better participate in the ASEAN digital economy and draw the full benefits from digital innovation. This ensures that benefits from using digital technologies are spread more equitably both between and within ASEAN countries to ensure sustained and inclusive economic growth in ASEAN

Lack of digital skills and awareness of the benefits of the Internet and digital technologies is preventing many ASEAN businesses from connecting to the digital economy. Supportive policies will need to be developed to help MSMEs get online and adopt 4th IR solutions (e.g. IoT, digitalisation of the production floor and value chains). Together with promoting the adoption of advanced technologies (e.g. robotics, AI), productivity of the local and ASEAN industrial and services sector can be elevated.

Develop local champion ecosystems

Employ local champions to advise MSMEs on how to deploy standardised solutions (e.g. digital payments, DIY accounting, customer management and analytics, digital marketing) to increase the productivity of their business. This can be conducted face to face or through mobile/web interfaces.

Establish awareness-building programmes

Even the most basic digital technologies can help to improve productivity and efficiency in many industries, e.g. in the agricultural sector where smartphone applications can provide the latest information on weather and market prices for crops to allow farmers to better manage crop production. Governments can partner private-sector bodies to support workshops and events designed to help MSMEs increase their digital awareness, use and capability.

Provide funding for MSMEs to adopt 4th IR solutions

Unlike large enterprises, MSMEs may not have the financial ability to invest in 4th IR technologies. Initiatives such as co-funding of advanced 4th IR solutions (e.g. robotics, data integration and visualisation tools, 3D printing, AI) will allow MSMEs to obtain the necessary technologies to move up the manufacturing value chain.

Case study: DigitalBoost

Scotland

DigitalBoost is Scotland's national digital engagement programme delivered in partnership with Business Gateway and Highlands and Islands Enterprise. It comprises the following programmes to help business in Scotland gain a digital advantage:

- Digital Health check: Simple online questionnaire to access a business' digital weaknesses and find out how digital technologies can help to improve business performance
- Local workshops: Covers a wide range of topics, such as e-commerce, social media and search-engine optimisation
- Free online tutorials: Providing advice and tips on the likes of paid advertising, cyber resilience and digital marketing
- 1:1 Digital support: Expert advisers that provide businesses with up to 21hrs of 1:1 support for free

DATA

4 Reduce or remove data localisation measures to facilitate cross-border data flows within ASEAN, and with key trading partners

Cross-border data flow contributes to increased economic efficiency and productivity, raising welfare and standards of living for ASEAN citizens

Digital trade, the open and seamless flow of data and information, and e-commerce facilitated by the Internet are critical components of the digital economy. However, some ASEAN countries have enacted laws requiring localisation of data storage and processing within their territory, claiming social, political and economic benefit for the domestic market. ASEAN markets should work together to remove barriers towards cross-border data flow, and facilitate an open Internet which benefits consumers, workers, and companies of all sizes. The use of regulatory sandboxes could be a safe pathway towards the removal of such barriers.

Remove forced data localisation measures

By removing data localisation measures on non-sensitive data, MSMEs and large companies will be given more choice to select the cloud services provider that best fits their requirements. Businesses can also store, process and analyse data from multiple geographies in one place, thus increasing business efficiency and decreasing operating costs. Discretion is advised for highly sensitive data (e.g. confidential and top secret diplomatic and military data), since it may not be appropriate to place this data on commercial servers.

Encourage free flow of data

Data has significant potential for re-use in new products and services. Creating an open data-sharing platform for the region will allow the collective innovative capacity of all residents within ASEAN to be harnessed to contribute to economic growth and/or solve national and regional challenges. Data security measures should be taken to protect data in transit and in storage.

Avoid unclear and broad-based data localisation regulation

While we advocate generally for the removal of data localisation measures, insofar as such rules are to be imposed for high-sensitivity data, we encourage a clear and consistent framework within which business can operate across the ASEAN region. Rules that are vague, arbitrary and unevenly applied restrict rather than support cross-border data flows. Any data localisation regulation should also be narrow in scope, to cover explicit scenarios where there is a legitimate public policy rationale for local data processing and storage (such as issues of national security). We suggest enumerating cases where data localisation is acceptable, such as confidential and top secret diplomatic and military data.

Case study: Digital trade standards set by United States–Mexico–Canada Agreement (USMCA)

The USMCA contains strong measures to facilitate cross-border data flows, including:

- preventing companies from having to open a local office or store data locally, which increases costs and regulatory burdens of businesses, especially SMEs
- ensuring that suppliers are not restricted in their use of electronic authentication or electronic signatures, thereby facilitating digital transactions
- limiting governments' ability to require disclosure of proprietary computer source code and algorithms, to better protect the competitiveness of digital suppliers
- promoting open access to government-generated public data, to enhance innovative use in commercial applications and services

USA

Mexico

Canada

DATA

5 Harmonise cyber-security regulations across ASEAN and put in place the necessary structures for strategic and operational co-operation on law enforcement

Identifying and closing gaps in strategy, policy, legislation and governance related to cyber security will minimise risk of cyber attack in the region and boost the confidence of individuals, businesses and governments, encouraging a move towards greater digital adoption

Cross-border trade, capital and data flows create opportunities to strengthen the digital economy and should be supported by strong cyber-security practices. Although there has been progress made to improve cyber-security capabilities in the region, more must be done, particularly in law enforcement, to adapt to the challenges of the Internet age.

Harmonise cyber-security regulations across ASEAN

Localised cyber-security regulations require business that operate out of multiple jurisdictions to understand regulatory nuances at the country level and design cyber-risk programmes that are coherent and robust across jurisdictions. This can overburden businesses, especially MSMEs seeking to expand internationally, and hinder trade flows and economic growth. Harmonising cyber-security regulations will decrease compliance costs for firms, while levelling up jurisdictions that are lagging behind in these protections by using regional best practices. Harmonised regional standards would also help governments with cross-border investigations and regulatory action.

Reform existing mutual assistance frameworks to improve response times

Digitalisation of the MLAT process, streamlining of the review of MLAT requests and appointing single points of contact in each jurisdiction can help to make digital evidence available in a timelier manner for transnational law enforcement investigations.

Enhance frameworks for ASEAN-wide cyber-security information sharing and assistance in cyber-crime investigations

Governments, operators of computer systems and cyber-security experts (including researchers) require timely information to identify vulnerabilities and prevent cyber incidents more effectively. Timely assistance in cyber-incident investigations, including establishing networks of experts and 24/7 contact points, will allow governments and industry to more effectively response to incidents.

Case study: EU Network and Information systems (NIS) Directive

EU

The NIS Directive is the first piece of EU-wide legislation on cyber security that focuses on the availability of crucial network and information systems in order to protect the EU's critical infrastructure and thereby ensure service continuity. The NIS Directive was transposed by member states in 2018 and provides legal measures to boost the overall level of cyber security in the EU, by requiring member states to set up a national NIS authority and a computer security incident response team (CSIRT), facilitating strategic co-operation and the exchange of information among member states.

Under the NIS directive, digital service providers and operators of essential services (energy, transport, water, banking, financial market infrastructures, healthcare) will have to comply with stricter security requirements such as notification of serious incidents to the relevant national authority.

DATA

6 Update regional privacy framework to APEC CBPR or similar standards

Harmonisation of data protection frameworks will bridge gaps and reduce inconsistencies across data-privacy regimes, providing assurance on data-privacy rights while facilitating international trade. By ensuring high levels of protection of personal data across ASEAN, frameworks also enhance consumer trust and encourage overall take-up of digital services.

Mutually recognised data-privacy frameworks are critical to establish data portability between two countries or economic blocs. While all ASEAN member states have adopted the ASEAN Framework on Personal Data Protection, there are benefits to improving linkages to Asia's other main data-privacy system – the APEC Privacy Framework and its accompanying systems (e.g. APEC Cross-Border Rules). There are challenges to greater harmonisation between ASEAN's framework and the APEC CBPR, such as different status of data-privacy laws, cost and capacity issues and certification concerns.

Help to set up third-party Accountability Agents within each ASEAN member state

For ASEAN member states that may face issues in adopting CBPR, i.e. due to high cost and lack of expertise required to manage the process, national non-profit third-party Accountability Agents can be set up to certify and audit adherence to CBPR at company level. This allows businesses to sell their goods and services to countries with data protection adequacy requirements, despite its home country having a less mature data protection framework.

Develop best practices to help ASEAN member states without data-privacy regulations to establish a framework harmonised with CBPR

National data-privacy framework should establish cross-border data transfer mechanisms, follow industry standards, and other cross-organisation co-operation mechanisms that ensure protections follow the data, and not national boundaries, in order not to impede global digital trade.

Harmonise national data-privacy frameworks to APEC CBPR or similar standards

Harmonisation between ASEAN member states' privacy frameworks must recognise the maturity and readiness of member states in adopting new features of the CBPR, include actionable steps and reasonable timeframe to ensure participation from all member states for all ASEAN citizens and businesses to benefit from a single digital market. Available options include introducing new features to the existing ASEAN framework, moving towards reciprocal recognition of APEC CBPR and adopting APEC CBPR.

Case study: Towards reciprocal adequacy of EU and Japanese data privacy frameworks

EU

Japan

To facilitate personal data to flow safely between the EU and Japan without being subject to any further safeguards or authorizations, the EU and Japan have moved towards reciprocal recognition of each other's data protection framework as "adequate".

This does not require Japan to replicate the EU's GDPR frameworks; instead, Japan needs to increase the convergence of its own framework through supplementary measures to bridge key ideological differences between the two frameworks.

Additional safeguards include enhanced protection for all sensitive personal data, establishing conditions under which EU data can be transferred from Japan to a third country, exercise of individual rights to access and rectification for all EU data, and a complaint mechanism to investigate and resolve complaints by EU citizens regarding access to their personal data by Japan authorities.

DIGITAL SERVICES

7 Develop enabling foundational services and simplify policies for digital financial services

Enabling foundational services and policy environment conducive for banks and fintechs will facilitate financial inclusion, as well as innovation and adoption of downstream financial products and services, fostering further socio-economic growth within each AMS

Millions of ASEAN citizens and businesses remained unbanked or underbanked because of the inability of traditional financial services providers to verify customers' identities and income, stemming from the lack of formal ID for individuals and digital inclusion. Foundational digital services (biometrics, digital ID) and regulatory policies for digital financial services can be better developed to allow firms to extend banking and non-banking services to more individuals and businesses within and across ASEAN countries.

Couple national ID systems with a secure and real-time identity authentication and legal recognition of digital transactions

There is an opportunity to capitalise on digital technologies to improve national ID systems. Linking electronic national ID systems with digital systems for identify verification (e.g. mobile biometrics and encryption) and removing legacy rules that require physical documentation (e.g. stamping) for legal recognition of transactions can be used to facilitate remote access to digital services and, in certain scenarios, minimise fraud in both the public and private sectors.

Simplify, modernise and harmonise regulations surrounding know-your-customer (KYC) or anti-money laundering (AML) processes

Simplifying KYC regulations helps institutions to verify customers' identities more efficiently, allowing them to streamline access to financial services while not sacrificing the integrity of the onboarding process. Harmonising KYC/AML regulations leads to less information requirement discrepancies across ASEAN member states and facilitates inter-operability of financial services (including mobile money services) between individuals and businesses in AMS.

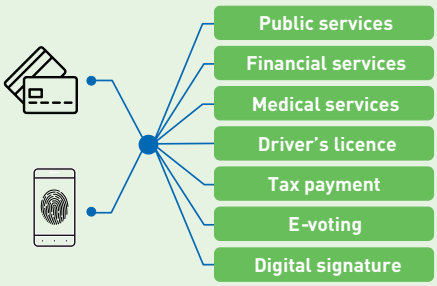
Risk-based regulatory requirements

Regulatory requirements for fintech providers should be proportionate to their size and the risk involved with their operations. Less onerous regulatory requirements should apply for third-party fintech providers that direct payments and partner with banks and other financially regulated entities for actual settlement, compared to a fintech provider that takes a deposit and lends it out. Regulators should provide sandboxes for permissible activities and innovations, rather than requiring specific approval be obtained.

Case study:
e-Estonia digital identity system

Estonia

Estonia ID is one of the world's most advanced digital identity programmes and software platforms, enabling the country's citizens and businesses to participate in the wider digital economy. With a cryptographically secure digital identity card and real-time identity verification through a mobile ID, Estonian citizens and residents are able to access the following services:



DIGITAL SERVICES

8 Facilitate interoperability of digital payments systems in internal markets and across ASEAN

Interoperable payment systems reduce the costs and complexities of payments, both within the local market and cross-border payments, across various platforms to promote financial inclusion and enabling trade of goods and services within ASEAN

The digital payments landscape across ASEAN is fragmented, with multiple banks and fintechs using processes or technology that are developed in parallel and are not compatible due to technology and/or commercial issues. This makes it difficult for end users to make and accept digital payments. Payments interoperability seeks to increase convenience for users, promote competition and improve the financial viability of digital service offerings. Despite its advantages, interoperability is currently only achieved in limited uses cases, which limits its impact. The true value of interoperability will become clear only when it is executed on a large scale, i.e. at a market or regional level.

Develop central technical blueprint for interoperability of retail payment systems

In markets where interoperability is not mandated upfront by regulators, regulators can focus on establishing technical interoperability between use cases (unified POS terminals, central addressing schemes) which allow a majority of providers and a majority of transaction types to interconnect. National payments councils may also establish open APIs and overlay solutions that supports payment interoperability.

Improve accessibility of retail payment infrastructures

As most digital payment service providers will still rely on existing payment infrastructures for clearing and settlement, regulation should be established to prevent participants with a dominant position in the payments infrastructure to leverage their position to establish access barriers towards new entrants. At the same time, there should be policies to enable innovative entrants or smaller fintech companies to access such infrastructure. This will allow new entrants to develop solutions that have basic interoperability with traditional payment instruments.

Implement national payment infrastructures that conform to regional and global standards

The adoption of the global messaging and data standards (ISO 20022) will facilitate development of real-time payment systems in the domestic market. These should be accessible to a wide variety of companies, international and domestic, subject to common rules (but without unnecessary barriers to entry). As a common language for global financial communications, this international framework will also facilitate regional and global payments interoperability.

Case study: Single Euro Payments Area (SEPA) instant credit transfer

EU

The SEPA instant credit transfer scheme, which conforms to ISO 20022 standards, went live in Nov 2017. It enables EU customers to make Internet purchases at any given time and place, as SEPA mandates pan-European credit transfer with funds made available on the account in less than 10 seconds. It builds on the previous SEPA credit transfer scheme which enabled EU consumers to perform direct debit and credit transfers in the internal EU market using only one bank account.

Although it is an opt-in scheme, ~50% of European payment service providers from 16 countries have joined the instant credit transfer scheme as at Dec 2018.

DIGITAL SERVICES

9 Simplify regulations to increase competitiveness of regional creative content industry in a global context

Restructuring broadcasting regulation and clarifying OTT regulations will offer new growth opportunities within the creative industry, encouraging production of better content to engage viewers locally and internationally

New media technologies have changed the broadcasting landscape, prompting regulators in various parts of the world to redefine and restructure broadcasting regulation to adapt to a marketplace with OTT. Regulatory symmetry through the simplification of traditional broadcasting regulations across ASEAN can strengthen the competitiveness of the regional creative content industry and encourage the industry to produce better content for viewers.

Reduce or remove local content quota requirements

Imposing local content quotas on creative content providers who have unlimited shelf space effectively sets an artificial limit to the foreign titles that a provider can carry in its library. This decreases consumer choice and drives consumers to seek out illegal means to view their desired content, to the detriment of the whole creative content industry. Different regulatory approaches could be applied for broadcasters and OTT providers to incentivise the creation of local content.

Provide funding for local productions

In place of local content quotas to incentivise the creation of local content that may otherwise be economically unfeasible to produce, governments may provide funding to spur local productions. Content providers could be required to pay into a fund, akin to universal services fund for telecoms providers, that would be used to fund such local content production.

The usage of these funds should not be restricted only to locally based providers and should be technology-neutral to encourage competition and production of better content.

Promote the local creative industry within ASEAN and to the global audience

In many ASEAN member states, the local market is too small to support new digitally-enabled creative services, therefore a concerted effort by the government to promote the local creative industry to its ASEAN neighbours and to the global audience will facilitate growth of the local creative sector, allowing it to achieve some of the economic potential brought about by digitalisation.

Case study: Promotion of Korean culture and creative content

South Korea

The Korea Creative Content Agency (KOCCA), a governmental agency that oversees and co-ordinates the promotion of the Korean content industry, was established in 2009 to introduce Korean content, which includes K-fashion, food and games on top of the popular K-pop and K-drama, to the rest of the world.

Besides organising cultural events to introduce Korean content to the local market, KOCCA provides funding and loans for small companies producing Korean cultural products. Estimates by the Hyundai Research Institute suggest the economic effects of Korean Wave-related business, including production, value-added and employment, reaches USD5 billion per year.

DIGITAL SERVICES

10 Support digital start-up ecosystem in internal markets and across the ASEAN region

A thriving start-up ecosystem will enable ASEAN to successfully spread the benefits accrued from the digital economy as well as contribute to sustained economic growth and employment

There is a tendency for start-ups to move to developed markets, to take advantage of the supportive policy environment, knowledge pool and greater availability of capital. To better foster entrepreneurship and retain local start-ups and capture gains from an integrated and digital ASEAN, policy makers should develop policies that bolster the domestic entrepreneurship environment.

Establish interconnected digital innovation hubs with incubators and accelerator programmes

Digital innovation hubs provide space for start-ups and MSMEs to share ideas and know-how, allowing start-ups to more easily identify and gain access to many users of new technologies (namely MSMEs), as well as making start-ups more identifiable by MSMEs. Closer co-ordination between government-supported digital innovation hubs across ASEAN could also facilitate knowledge sharing between start-ups and MSMEs, facilitating the adoption of digital techniques across products, processes and services across ASEAN.

Incubators and accelerator programmes could also provide start-ups with valuable resources (working environment, mentorship, go-to-market, funding, partnership agreements and networking opportunities) to help them to jump-start their business.

Establish regulatory sandboxes to incubate new technologies

Regulatory sandboxes can help companies test products and services in a controlled environment, leading to reduced time to market at potentially lower cost. Regulators can also use sandboxes to measure the potential impact of new technologies (e.g. blockchain) and tailor policy interventions to increase the benefits and mitigate the risks.

Provide grants and investor incentives

Grants and public–private funding schemes that support start-ups, especially at early and mid-stages of growth, can help a start-up fast-track the development of its proprietary solutions and generate a scalable business model. Private investment into start-ups can also be encouraged through tax incentives for individuals and fund management companies.

Case study: Israel – blockchain nation

Israel

Israel is known as the world's Start-up Nation, with the highest number of start-ups per capita, highest gross expenditure on R&D, and highest level of venture capital as share of GDP. In the age of new technologies, Israel is capitalising on the aspects that contributed to its 'start-up nation' brand to grow into a leading blockchain nation.

Since the 1990s, the Israeli government has subsidised venture capital, incubators, university R&D and technology transfer programmes to boost the tech economy. Start-ups also receive preferential tax benefits and grants that allow them to continue through the initial growth phase.

Besides seeding a supportive start-up ecosystem, Israel's regulators have also been keeping pace with the evolving technologies. They have enacted frameworks for blockchain that not only consider the current use cases, but also future implementations in the field. By establishing a clear set of rules, the blockchain industry in Israel is allowed to flourish.

6 Conclusion

All countries in ASEAN are embracing digital technology at an accelerating pace, with strong progress already made in terms of adoption, usage and innovation. Stronger co-ordination efforts and harmonisation and streamlining of laws, regulations and policies will improve digital outcomes in the region as a whole, but also in every country.

Despite the fact that all have much to gain from an integrated digital economy, the benefits for each country will vary based on how mature they are. The less digitally-advanced countries will gain greater access to services, infrastructure and investment to support acceleration of their digital development. The more digitally-advanced nations will benefit from a much larger market for digital services and entrepreneurship, and also from lower prices and a greater choice of online services.

As such, the priorities for each market towards achieving its desired digital economy outcomes will vary across the short and medium term (this is further detailed in Figure 16):

- **Short-term priorities (1–3 years, 2019–21):** The main priority will be to grow the market size of the ASEAN digital economy as a whole. Developing nations (Cluster 1 in Figure 16) should focus on getting more individuals and business connected to the Internet. Lower middle-income countries (Cluster 2 in Figure 16) should focus on reducing the digital divide to ensure their rural communities do not get left behind, while developing basic frameworks for cyber security and data privacy to enable greater trust and adoption of digital services. Middle-income and developed countries (Clusters 3 and 4 in Figure 16) should focus on preparing their workforce and industries for greater participation in the digital economy. Developed countries can also take a leading position to develop best practices and collaborative initiatives (e.g. interoperable payment platforms) to help grow the overall ASEAN digital economy.
- **Medium-term priorities (4–6 years, 2022–25): T**he next stage of growth will require greater integration, harmonisation and streamlining of digital markets, laws, regulation and policy across the region. Cluster 1 countries should work towards developing cyber-security capabilities and a national data-privacy regime that is harmonised with other ASEAN nations to enable regional economic harmonisation. Cluster 2 countries should focus on developing a facilitative environment for businesses to flourish, while improving its citizens' access to digital services. Cluster 3 countries could strengthen innovation and entrepreneurship ecosystems, taking advantage of its digitally-enabled workforce, while Cluster 4 countries could focus on leading development and adoption of advanced 4th IR solutions (e.g. connected cars, high-performance computing, artificial intelligence) to prepare ASEAN economies for the next phase of growth.

These short- and medium-term priorities reinforce each layer of the digital economy within each market, while simultaneously removing cross-border barriers within the region. The resulting regional market would allow innovators, entrepreneurs and regional companies to offer digital services freely across the region, with few barriers to delivering goods or providing e-commerce services across borders. Along with evolutions in other wide-ranging policy issues that may be out of the scope of our recommended measures, realisation of desired outcomes of the ASEAN digital economy in 2025 will be within reach.

	Short-term (1-3 years)	Medium-term (4-6 years)
Whole-of-ASEAN focus	• Harmonise regulations for improved connectivity services (spectrum management, RoWs) • Connect regional digital hubs to allow flow of data and knowledge across ASEAN	• Harmonise cyber security, data-privacy regulations horizontally • Facilitate co-operation on cross-border payments, cyber-law enforcement etc.
Cluster 1: Growing nascent economy	• Ensure basic ICT services are available and affordable for all ASEAN citizens and businesses • Improve access and quality of primary and secondary education	• Develop national framework on cyber security and data privacy that is harmonised with international standards • Enhance financial inclusion by providing foundational digital services to all citizens
Cluster 2: Aiming to join middle-income countries	• Connect rural communities • Strengthen education system with emphasis on STEM and cognitive training • Align cyber-security and data-privacy frameworks to international norms to enable greater physical and digital trade	• Develop conducive business ecosystem for digital services to flourish – remove regulatory burdens for SMEs and foreign companies • Support innovation and digital start-up ecosystem
Cluster 3: Breaking out of middle-income trap	• Improve STEM outcomes and provide stronger incentives for private-sector-led skills training to reduce skills gap • Encourage greater adoption of digital technologies amongst individuals and MSMEs, especially in rural areas	• Strengthen innovation and digital entrepreneurship ecosystem • Ensure regulations, policies and sufficient incentives are in place for 4th IR investments (industry alliances, national standards, financing etc.)
Cluster 4: Maintaining leadership position	• Help MSMEs digitise and connect to ASEAN marketplace • Enable seamless use of digital services (banking, e-government) through digital-ID	• Help enterprises adopt advanced 4th IR solutions to improve productivity • Grow creative content industry to become net exporters of content

FIGURE 16: SHORT- AND MEDIUM-TERM PRIORITIES TOWARDS ASEAN 2025
[SOURCE: ANALYSYS MASON 2019]

Annex A: Glossary

Anti-money laundering (AML): AML refers to a set of procedures, laws and regulations designed to stop the practice of generating income through illegal actions.

APEC Cross-Border Privacy Rules (CBPR) system: Developed by APEC economies to build consumer, business and regulator trust in cross-border flows of personal information. It requires participating businesses to implement data-privacy policies consistent with the APEC Privacy Framework. These policies and practices must be assessed as compliant with the programme requirements of the APEC CBPR System by an Accountability Agent (an independent APEC CBPR system recognised public- or private-sector entity) and be enforceable by law.

The Association of Southeast Asian Nations (ASEAN): ASEAN is a regional intergovernmental organization comprising ten countries in Southeast Asia: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam. ASEAN promotes intergovernmental cooperation and facilitates economic, political, security, military, educational, and sociocultural integration among its members and other countries in Asia.

ASEAN Economic Community (AEC) Blueprint 2025: The AEC blueprint is established on a convergence of interests of ASEAN Member Countries to deepen and broaden economic integration. The AEC Blueprint 2025 builds on the AEC Blueprint 2015, and consist of five interrelated and mutually reinforcing characteristics, namely: (i) a highly integrated and cohesive economy; (ii) a competitive, innovative, and dynamic ASEAN; (iii) enhanced connectivity and sectoral cooperation; (iv) a resilient, inclusive, people-oriented, and people-centred ASEAN; and (v) a global ASEAN.

ASEAN ICT Masterplan (AIM) 2020: AIM is an initiative by ASEAN to support ICT adoption and enable innovation and advancements in the ASEAN community. It is reviewed and reassessed every five years. The AIM 2020 is focused on enabling the transformation to the digital economy and developing the human capacity necessary for this transition, facilitating the emergence of a single integrated market that is attractive to investment, talent and participation, and building a digital environment that is safe and trusted.

Cloud services (also cloud computing and cloud solutions): 'Cloud services' refers to the on-demand delivery of compute power, database storage, applications and other IT resources through a cloud services platform via the Internet with pay-as-you-go pricing.

Computer emergency readiness team (CERT): A CERT is an expert group that handles computer security incidents.

Data localisation law: A law that requires data about a nations' citizens or residents to be collected, processed and/or stored inside the country, often before being transferred internationally.

Data privacy (also data security and data protection): Data privacy is the relationship between the collection and dissemination of data, technology, the public expectation of privacy, and the legal and political issues surrounding them.

Digital economy: A term that includes infrastructure sub-sectors (such as telecoms, hardware and software, 'soft' infrastructure), Internet and platform sub-sectors (such as e-commerce and sharing platforms), and the proportion of traditionally offline sectors and sub-sectors enhanced by digitalisation (such as adoption of web, cloud, mobile and other 4th IR solutions).

Digital ID: An electronic identification solution that allows citizens or businesses to be authenticated and thereafter access services provided by public and private organisations.

Digital literacy: An individual's ability to find, evaluate and compose clear information on digital platforms.

Digital signature: A mathematical scheme for verifying the authenticity of digital messages or documents. A valid digital signature gives a recipient reason to believe that the message was created by a known sender, that the sender cannot deny having sent the message, and that the message was not altered in transit.

Financial ecosystem: A financial ecosystem is the network of organisations – including suppliers, banks, customers, competitors, government agencies, etc. – involved in the delivery of financial services through both competition and co-operation.

Foundational services: Backbone support services that enable individuals and businesses to conduct digital and online financial activity, e.g. biometrics and digital records.

Fourth industrial revolution (4th IR): 4th IR refers to technology that enables connectivity and automation using hardware and software such as sensors/RFID/IoT, artificial intelligence, autonomous robotics and distributed ledger technology.

General Data Protection Regulation (GDPR): A regulation in EU law on data protection and privacy for all individuals within the European Union (EU) and the European Economic Area (EEA). The GDPR aims primarily to give individuals control over their personal data and to simplify the regulatory environment for international business by unifying the regulation within the EU. It contains provisions and requirements pertaining to the processing of individuals' personal data inside the EEA and applies to an enterprise established in the EEA or – regardless of its location and the data subjects' citizenship – that is processing the personal information of data subjects inside the EEA.

Gross merchandise value (GMV): A term used in online retailing to indicate a total sales dollar value for merchandise sold through a particular marketplace over a certain timeframe.

Hard infrastructure: Physical infrastructure, e.g. roads, bridges, telecoms network.

Interoperability: When payment systems are interoperable, they allow two or more proprietary platforms to interact seamlessly. Interoperability can promote competition, reduce costs, enable economies of scale and make payment services more convenient and accessible.

International backbone infrastructure: A conglomeration of multiple, redundant networks owned by numerous companies that provides connectivity between two or more countries. The international backbone is able to reroute traffic in case of a failure.

ISO 20022: A robust international framework enabling security, flexibility, scalability and interoperability through a common language for global financial communications.

Know your customer (KYC): KYC is the process of a business identifying and verifying the identity of its clients, and is commonly done in compliance with banking and anti-money laundering regulations.

Micro, small and medium enterprises (MSMEs): Micro, small and medium enterprises are non-subsidiary, independent firms that employ fewer than a given number of employees or generate lower revenue than a given amount.

Mobile network operators (MNOs): An MNO is a provider of wireless communications services that owns or controls all the elements necessary to sell and deliver services to an end user.

Mutual legal assistance treaty (MLAT): A MLAT is an agreement between two or more countries for the purpose of gathering and exchanging information in an effort to enforce public or criminal laws.

Over the top (OTT): A term used to refer to content providers that distribute streaming media as a standalone product directly to viewers over the Internet, bypassing telecoms, multichannel television and broadcast television platforms that traditionally act as a controller or distributor of such content.

Overlay solution: A overlay solution refers to the potential enrichment of the transaction beyond just the payment itself.

Regulatory sandbox: A regulatory sandbox is typically conducted by regulatory authorities for financial institutions and fintech players to experiment with innovative financial products or services in the production environment but within a well-defined space and duration.

Right of way (RoW): RoW describe the legal right, established by usage or grant, to pass along a specific route through grounds or property belonging to another.

Soft infrastructure: Refers to human capital and the institutions that cultivate infrastructure.

Annex B: Further references

"Blockchain Startups In Israel Have Tripled: Why Israel Can Become A Leading Blockchain Nation", Forbes, https://www.forbes.com/sites/rachelwolfson/2018/10/23/blockchain-startups-in-israel-have-tripled-why-israel-can-become-a-leading-blockchain-nation/#6a4db2d97

"Brunei's Darussalam Enterprise kickstarts Startup and Micro Business Bootcamp programs", eGov Innovation, https://www.enterpriseinnovation.net/article/bruneis-darussalam-enterprise-kickstarts-startup-and-micro-business-bootcamp-programs

"Chapter 19 Digital Trade", United States-Mexico-Canada Agreement Text, https://ustr.gov/sites/default/files/files/agreements/FTA/USMCA/Text/19_Digital_Trade.pdf

"Cooperation frameworks between Authorities, Users and Providers for the development of the National Payments System", ITU, https://www.itu.int/en/ITU-T/focusgroups/dfs/Documents/09_2016/Cooperation%20frameworks%20between%20Authorities,%20Users%20and%20Providers%20for%20the%20development%20of%20the%20National%20Payments%20System.pdf

"Developing a comprehensive national retail payments strategy", World Bank, http://siteresources.worldbank.org/FINANCIALSECTOR/Resources/282044-1323805522895/Developing_a_comprehensive_national_retail_payments_strategy_consultative_report(8-8).pdf

"Digital payment roadmap for Brunei Darussalam 2019–2025", Autoriti Monetari Brunei Darussalam, https://www.ambd.gov.bn/SiteAssets/Lists/News/News/AMBD%20Press%20Release%20-%20Digital%20Payment%20Roadmap_nra.pdf

"EPC Chair On SEPA's Instant Credit Transfer, One Year In", Pymnts, https://www.pymnts.com/digital-payments/2018/european-payments-council-sepa-instant-credit-transfer-one-year-anniversary/

"Global Standard Setting Bodies and Financial Inclusion – The Evolving Landscape", G20's Global Partnership for Financial Inclusion

"How Germany's Vocational Education and Training system works", Clean Energy Wire, https://www.cleanenergywire.org/factsheets/how-germanys-vocational-education-and-training-system-works

"How Industry 4.0 is defining the future of business payments", MasterCard, https://www.mastercard.us/content/dam/mccom/en-us/business-payments/documents/business-payments-2022-whitepaper.pdf

"Innovation by Collaboration between Startups and SMEs in Switzerland", Fabio Mercandetti, Christine Larbig, Vincenzo Tuozzo, Thomas Steiner, https://timreview.ca/article/1125+&cd=1&hl=en&ct=clnk&gl=sg

"National cyber security index", e-Governance Academy Foundation, https://www.ncsi.ega.ee

"Principles for financial market infrastructures", Bank for International Settlement, https://www.bis.org/cpmi/publ/d101a.pdf

"Radio Spectrum Policy Group report on improving spectrum efficiency and utilisation in frequency bands relative to the digital dividend", Radio Spectrum Policy Group

"Regional Subsea Cable System in South East Asia Region", TE Connectivity/ TE SubCom

"Rules to bar fintechs from moving into banking ops", The Straits Times, https://www.straitstimes.com/business/rules-to-bar-fintechs-from-moving-into-banking-ops

"Securing the digital dividend across the entire ASEAN: A report on the status of the implementation of the APT700 band for ATRC", GSMA and Windsor Place Consulting, https://www.gsma.com/spectrum/wp-content/uploads/2018/08/GSMA_700MHz_ASEAN_Executive_Summary_Aug2018.pdf

"Singapore Payments Roadmap Enabling the future of payments" KPMG, https://assets.kpmg/content/dam/kpmg/sg/pdf/2016/09/sg-singapore-payments-roadmap-enabling-the-future-of-payments.pdf

"Technology and Creative Industry", Brunei Economic Development Board, http://www.bedb.com.bn/invest-tech-creative

"Vision of the Future: Financial Inclusion 2025", CGAP, https://www.cgap.org/sites/default/files/researches/documents/Focus-Note-Vision-of-the-Future-Jun-2017_0.pdf

"World Development Report 2016: Digital Dividends", World Bank, http://www.worldbank.org/en/publication/wdr2016

analysys mason

Stay connected

You can stay connected by following Analysys Mason via Twitter, LinkedIn, YouTube or RSS feed.

@AnalysysMason

linkedin.com/company/analysys-mason

youtube.com/AnalysysMason

analysysmason.com/RSS/

analysysmason.podbean.com