



DIGITAL  
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# The Digital Economy in Southeast Asia

## Strengthening the Foundations for Future Growth



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# **The Digital Economy in Southeast Asia**

**Strengthening the Foundations  
for Future Growth**

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2019



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## List of Abbreviations

|         |  |
|---------|--|
| 3G      | third-generation   |
| 4G      | fourth-generation  |
| 5G      | fifth-generation   |
| ACCP    | ASEAN Committee on Consumer Protection                                     |
| AITI    | Authority for Info-Communications Technology Industry of Brunei Darussalam |
| AML/CFT | anti-money laundering/countering the financing of terrorism                |
| AMMTC   | ASEAN Ministerial Meeting on Transnational Crime                           |
| APEC    | Asia-Pacific Economic Cooperation  |
| ARF     | ASEAN Regional Forum   |
| ASAPCP  | ASEAN Strategic Action Plan for Consumer Protection                        |
| ASEAN   | Association of Southeast Asian Nations                                     |
| A*STAR  | Agency for Science, Technology and Research (Singapore)                    |
| AVOD    | Ad-based video-on-demand   |
| B2C     | business-to-consumer   |
| BI      | Bank Indonesia   |
| BIR     | Bureau of Internal Revenue (Philippines)                                   |
| BSSN    | Badan Siber dan Sandi Negara (Indonesia)                                   |
| BTS     | Bangkok Mass Transit System  |
| C2C     | consumer-to-consumer   |
| CAGR    | compound annual growth rate  |
| CBM     | confidence-building measure  |
| CBPR    | Cross-Border Privacy Rules (APEC)  |
| CDD     | customer due diligence   |
| CDG     | Capability Development Grant (Singapore)                                   |
| CDN     | content delivery network   |
| CDP     | Capability Development Program (Singapore)                                 |
| CERT    | computer emergency response team   |
| CIT     | corporate income tax   |
| COD     | cash-on-delivery   |
| CPEA    | Cross-Border Privacy Enforcement Arrangement (APEC)                        |
| CPTPP   | Comprehensive and Progressive Agreement for Trans-Pacific Partnership      |

|       |   |
|-------|---|
| CSIRT | computer security incident response team                              |
| DAI   | Digital Adoption Index  |
| DBS   | Development Bank of Singapore   |
| DEDC  | Digital Economy Development Committee (Myanmar)                       |
| DICT  | Department of Information and Communications Technology (Philippines) |
| DPS   | Data Privacy Subgroup (APEC)  |
| DLTs  | distributed ledger technologies                                       |
| ECIPE | European Centre For International Political Economy                   |
| EDB   | Economic Development Board (Singapore)                                |
| EDC   | electronic data capture   |
| ESG   | Enterprise Singapore  |
| FCT   | Foreign Contractor Tax (Vietnam)                                      |
| Gbps  | gigabits per second   |
| GDPR  | General Data Protection Regulation (European Union)                   |
| GIP   | Global Immersion Program (Singapore)                                  |
| GNI   | gross national income   |
| GLC   | government-linked corporation   |
| GST   | goods and services tax  |
| ICPEN | International Consumer Protection and Enforcement Network             |
| ICT   | information and communications technology                             |
| IFC   | International Finance Corporation                                     |
| ILO   | International Labour Organization                                     |
| IoT   | Internet of Things  |
| IP    | Internet Protocol   |
| IPv4  | Internet Protocol version 4   |
| IRAS  | Inland Revenue Authority of Singapore                                 |
| ITMs  | Industry Transformation Maps (Singapore)                              |
| ITU   | International Telecommunications Union                                |
| kbps  | kilobits per second   |
| LEAD  | Local Enterprise Association Development (Singapore)                  |
| LGU   | local government unit   |
| LPI   | Logistics Performance Index (World Bank)                              |
| LTE   | Long Term Evolution   |
| MB    | megabyte  |



|         |  |
|---------|--|
| Mbps    | megabits per second  |
| MCMC    | Malaysian Communications and Multimedia Commission               |
| MDEC    | Malaysia Digital Economy Corporation                             |
| MDES    | Ministry of Digital Economy and Society (Thailand)               |
| MIC     | Ministry of Information and Communication (Vietnam)              |
| MICT    | Ministry of Information and Communication Technology (Thailand)  |
| MLEC    | Model Law on Electronic Commerce (UNCITRAL)                      |
| MNC     | multinational corporation  |
| MNO     | mobile network operator  |
| MOCIT   | Ministry of Communication and Information Technology (Indonesia) |
| MSMEs   | micro, small, and medium enterprises                             |
| NeCC    | National E-Commerce Council (Malaysia)                           |
| NPG     | National Payment Gateway (Indonesia)                             |
| OECD    | Organisation for Economic Co-operation and Development           |
| OJK     | Otoritas Jasa Keuangan (Indonesia)                               |
| OSA     | One-Stop Agency (Malaysia)                                       |
| P2P     | peer-to-peer   |
| PBOC    | People's Bank of China   |
| PCT     | Patent Cooperation Treaty  |
| PDPA    | Personal Data Protection Act                                     |
| POS     | point-of-sale  |
| PPP     | purchasing power parity  |
| QR      | Quick Response   |
| ROW     | right-of-way   |
| SFIA    | Skills Framework for the Information Age                         |
| SGQR    | QR code for Singapore  |
| SIMTech | Singapore Institute of Manufacturing                             |
| SMEs    | small and medium enterprises                                     |
| SOE     | state-owned enterprise   |
| SOMTC   | ASEAN Senior Officials Meeting on Transnational Crime            |
| SSBs    | standard-setting bodies  |
| TAP     | Technology Adoption Program (Singapore)                          |
| TELMIN  | ASEAN Telecommunications and IT Ministers Meeting                |

|          |  |
|----------|--|
| TRD      | Thai Revenue Department                              |
| UBcN     | Ultra Broadband Convergence Network                  |
| UNCITRAL | United Nations Commission on International Trade Law |
| UNCTAD   | United Nations Conference on Trade and Development   |
| UPU      | Universal Postal Union                               |
| USF      | Universal Service Fund                               |
| VAT      | value-added tax                                      |
| VOD      | video-on-demand                                      |
| WDA      | Workforce Development Agency (Singapore)             |
| WDI      | World Development Indicators (World Bank database)   |
| WEF      | World Economic Forum                                 |

## Country Codes

|     |                   |
|-----|-------------------|
| BRN | Brunei Darussalam |
| IDN | Indonesia         |
| KHM | Cambodia          |
| LAO | Lao PDR           |
| MMR | Myanmar           |
| MYS | Malaysia          |
| PHL | Philippines       |
| SGP | Singapore         |
| THA | Thailand          |
| VNM | Vietnam           |

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# Foreword



Southeast Asia's digital economy is expanding at an unprecedented pace. The signs of the region's digital transformation are obvious: from its impressive tech "unicorn" companies to the entrepreneurs and small firms that are innovating and using technology to grow. All of this is driving a high level of interest from the region's governments in faster and more inclusive digitalization.

Despite all this excitement, the full potential of technology as a driver of private sector and wider economic growth is not yet being realized. Southeast Asia still faces significant barriers to growing the digital economy. This report seeks to identify these obstacles and discuss possible strategies to address them. Six priorities stand out that can help countries strengthen the enabling environment for their digital economies.

The first is to improve the availability of affordable, high-speed Internet. Around half the population of ASEAN still lacks Internet access, and when available it tends to be through mobile broadband, such as using smartphones, rather than the fixed broadband needed for data-intensive business applications. Public and private investment will be needed to address this, but policymakers can also help through regulatory reforms. In many countries, the broadband market is dominated by one or two large firms. Reforms that promote competition could help to lower prices and increase speeds.

A second priority is to strengthen the population's digital skills, not just to boost the growth of the digital economy, but also to ensure that its opportunities and benefits reach everyone. Although the region already has good literacy and numeracy foundations, education systems need to be nimbler in developing the skills needed for the digital economy. These range from basic computer usage to advanced skills like coding and data analytics, as well as "soft skills" like collaboration and communication. Achieving this requires a focus on lifelong learning, not necessarily acquiring specific degrees but developing skills for life.

Digital payments are an essential part of a digital economy, and expanding their use is another priority for Southeast Asia. The latest World Bank Global Findex data shows that only 19 percent of financial account holders in the region access their accounts using a mobile phone or the Internet. This is well below the average of the world's middle-income countries, and Sub-Saharan Africa, respectively at 27 and 24 percent. Governments can help by putting the appropriate regulatory infrastructure in place and also by using digital payments in their interaction with citizens – such as paying for government services or receiving pensions. Likewise, government-run digital ID schemes can help citizens gain account access more easily.

Another barrier, especially for e-commerce, is logistics: making products reach their destinations is often expensive and unreliable. The challenging geography of many Southeast

Asian countries is an important factor, but regulation also plays a role. A recent World Bank-ASEAN report showed that barriers to intra-ASEAN logistics investment and trade are among the highest in the world. E-commerce shipments face unpredictable customs procedures in many countries. The World Bank Logistics Performance Index shows that customs is the weakest area of performance across the region's logistics environment.

Fifth, policies that promote trust are essential for growing participation in the digital economy. These cover a range of areas from data privacy, to cybersecurity, to consumer protection. Fewer than half of ASEAN countries have comprehensive data protection laws, and the capacity of data protection authorities remains limited. Policies are also not coordinated regionally, making it hard for individuals and businesses alike to know what regulations apply when their data moves across borders.

Finally, governments need to lead by example and become more digital themselves. This means streamlining systems on an integrated "whole of government" basis, but also offering digital services platforms that support businesses and reduce transaction times and costs, like online licensing and permit approvals. Initiatives such as national digital ID can trigger direct benefits in other areas of the digital economy – such as the previously-mentioned digital payments example.

Other policy areas, such as taxation, are also important for governments in growing the digital economy and managing its risks. But by building these six critical foundations for the digital economy, boosting the region's capacity, and brokering technology to solve its development problems, Southeast Asian countries will be better positioned to unlock the full potential of the digital economy across the region.

We hope that this report will contribute to the essential public-private dialogue needed to tackle these important topics and continue to advancing Southeast Asia's standing as a digital economy trailblazer.

**Boutheina Guermazi**

Director, Digital Development



# Executive Summary





**The signs of digital technology adoption are evident across Southeast Asia.** In big cities, the use of mobile phones for messaging and social media has become ubiquitous. Ride-sharing services and delivery riders using apps to obtain their next booking are changing the face of urban transport and other services. As consumers go online to purchase products, they are recasting the future of brick-and-mortar retail businesses. The impacts of the digital revolution are not limited to a few prominent social networking sites, online businesses, or mobile apps. Digital platforms – a combination of technical innovation, new business models, and value proposition – in the private and in some cases the public sector, offer a range of products and services via digital channels. The use of digital technology is transforming – indeed, disrupting – all sectors, notably services such as logistics and finance, but also industrial production and agriculture. These are all visible manifestations of a growing digital economy.

**Southeast Asia is primed to embrace this digital revolution.** There is a high level of interest from governments, businesses, and individuals in the region to support the growth of the digital economy and maximize its benefits. There is significant excitement about the rise of e-commerce platforms and app-based companies – including the region’s own “unicorn” technology companies. Southeast Asia leads the world in some indicators on the use of the Internet, for example in social media and messaging.

**However, there are signs that despite rapid growth in Internet usage in the region, many gaps remain that must be addressed if the digital economy is to achieve its potential.** There are gaps between countries in the region in basic access to the Internet, along with speed and cost. There are also gaps in Internet access within countries, especially in larger countries with remote regions. There are gaps between the day-to-day use of the Internet by citizens on the one hand and the use of the Internet by businesses as a tool for growth on the other. There are gaps between traditional models of education and training, and the approach needed in response to ongoing technological change. And there are significant gaps in the policy and regulatory

infrastructure required to unlock further growth in the digital economy, especially in building levels of consumer and business trust, within an overall environment of openness and integration between economies in the region. In short, there is great untapped potential for the digital economy to grow further and more rapidly in the region – for the benefit of all its citizens.

**This report deepens the evidence base for policymakers and other stakeholders in the region to address these gaps.** Its focus is on the foundations on which it can flourish – especially the policy and regulatory choices that governments must make to support further growth in a way that contributes toward their development objectives.

**The report surveys the available evidence on the foundations for the digital economy, focusing on four larger economies in Southeast Asia (Indonesia, Malaysia, Thailand, and Vietnam), with additional benchmarking data across the other six members of the Association of Southeast Asian Nations (ASEAN) where available.** It reviews five foundations – connectivity, skills, payments, logistics, and cross-cutting policy and regulation – and provides recommendations for policymakers to consider. It also provides an overview of relevant national digital economy plans that cover these foundations, and other priorities like supporting digital entrepreneurs, as well as covering regional integration efforts. A snapshot of key digital economy indicators in selected Southeast Asian countries is provided in Table ES.1 and a summary of the main policy and regulatory issues is outlined in Table ES.2.

**The picture presented here remains incomplete, not least because of the dynamic and evolving subject matter which it covers.** An ongoing challenge is the limited availability of data, e.g. on the extent of the digital economy itself and its contribution to individual economies, or the volume of cross-border data flows. Another factor to consider is the rapid pace of technological change and the challenge governments face in keeping up and adapting policy and regulatory frameworks – not just in technology regulation, but in a wide range of areas like education, transport, or healthcare.

**The report does not claim to be exhaustive in its treatment of all aspects of the digital economy, nor does it claim to provide a definitive framework for understanding all policy or regulatory issues relating to the digital economy.** For example, many governments are concerned with measuring the size of the digital economy, a challenge beyond the scope of this report. Similarly, the impact on both direct and indirect taxation, and balancing taxation with the need to foster innovation, is part of the wider macroeconomic and business climate that is not considered in this report. It is hoped that by reviewing the key foundations for the digital economy, this report will provide a stronger basis for more analysis at the country level in the region in the future, and tackling wider policy issues where relevant.

**In that context, the key findings on the digital economy foundations considered in this report are as follows:**

**Connectivity.** Ensuring stable and reliable Internet connectivity is a priority because fast, affordable Internet access is a prerequisite for digital economy development. About half the ASEAN population is online. Mobile broadband access is improving as is the proliferation of smartphones, but quality and affordability remain challenging. Fixed broadband access e.g. through fiber connections to the premises, essential for data-intensive transactions, is lagging. The challenge of affordable and reliable broadband is especially acute in rural and remote areas, where much more is needed to ensure more affordable and reliable Internet access. Governments have an important role in facilitating faster broadband rollout through regulatory reforms that enable further investment. Such reforms can, for example, improve competition at all levels of the broadband value chain (wholesale as well as retail) and help to optimize investments in unserved and under-served locations.

**Skills.** The diffusion of digital technologies and digitalization of business processes requires policymakers to reconsider traditional approaches to teaching and learning. Workplace demands are changing rapidly, requiring more nimble and adaptable human resources, particularly technical

and managerial skills. Building the right skill mix for the digital economy is a long-term challenge. Education systems need to equip people with digital skills, as well as the “soft skills” required to adapt to rapid technological change. A focus on lifelong learning will also be needed, with governments and businesses having a shared role in delivering this, rather than working in silos.

**Payments.** Finance is both an enabler of the digital economy, as well as one of the main sectors where digitalization is bringing about rapid change. As an enabling factor, means of paying for goods and services from a distance are essential for harnessing the full potential of the digital economy, especially e-commerce. It can also offer a new pathway into the formal financial system for people in the region without access to financial services. However, digital payments adoption is lagging in Southeast Asia. Measures that policymakers may consider include: (a) strengthening consumer protection to build trust in digital payments; (b) improving cross-sectoral coordination in policymaking and regulation, including standard-setting; (c) strengthening digital ID to facilitate the adoption of digital payments; (d) improving monitoring capabilities; (e) promoting interoperability of services; and (f) promoting electronic payments to and from government.

**Logistics.** As with payments, logistics itself is being digitalized, while also enabling the growth of the wider digital economy. For e-commerce, high logistics costs generated by the challenging geography of many countries in the region are exacerbated by regulations that limit competition in logistics. There are also various regulatory issues that need to be addressed along the whole e-commerce supply chain. For example, at the border, an important issue is trade facilitation for cross-border e-commerce. While governments are concerned about the revenue implications of e-commerce (with the increase in the volume of goods falling under duty-free and VAT/GST-free thresholds), risk-based approaches to managing border clearance need to be maintained, recognizing that the overwhelming majority of small parcels crossing borders through e-commerce are likely to be legitimate shipments, and that inspecting all or most parcels will not only

impede trade, but entail high administrative costs for Customs and other agencies.

**Cross-cutting policy and regulation.** Policies to promote trust in the Internet and digital activities are essential for growing participation in the digital economy. This includes policies and regulations on electronic transactions, cross-border data flows, cybersecurity, data privacy, and consumer protection. While legislation regarding electronic transactions has been enacted around the Southeast Asia region, data policies and regulations are largely underdeveloped. In some cases, they pose potential risks to digital economy growth. For example, countries adopting policies that take a blanket approach requiring the localization of data within national borders are limiting the potential for their own firms to harness digital technologies as a vehicle for growth, and risk triggering similarly closed approaches to data policies in other countries. If governments do define a need to localize data, it should be required only in clearly defined situations, based on the classification of the type and use of the data, such as national security or personal health data.

**Strategies and plans.** Most governments in the region have developed high-level masterplans for the digital economy, but many of these need to be strengthened by moving beyond vision statements to detailed, time-bound action plans, with clear performance indicators and monitoring frameworks. In some countries, the scope for the plans could be expanded to include all foundations of the digital economy, helping prevent siloed approaches to policymaking. Another way to strengthen the implementation of these plans would be to incorporate the private sector in their development, implementation, and monitoring. The rapid pace of digitalization in the economy is driven by the private sector, so it is essential for governments to consult closely with business. The private sector can also have a direct role in strengthening some elements of the enabling environment, for example through its role in supporting continual skill upgrading. A common theme is a desire by governments to support digital entrepreneurship, but there is a need to balance direct support programs with addressing the underlying foundations for the digital

economy, while also being careful not to crowd out private sector innovation. In implementing digital economy plans, the government has a direct role to play in providing systems or services that support the growth of the digital economy. Digital ID is one important example. While progress in the region is promising on having foundational digital IDs, more needs to be done to support their use for transactional/functional usage, with government and for private sector purposes.

**Regional cooperation and integration.** To advance the enabling environment envisioned in this report more effectively, governments should deepen regional cooperation, with the vision of developing an open, integrated Southeast Asian digital economy. An integrated regional market will be far more competitive than fragmented individual economies with overlapping or unclear regulations. The goal should be to enact regulations that are compatible and facilitate businesses from the region to operate with as little cost as possible across borders. This would also deliver gains for consumers, who would have easier access to goods and services produced in the digital economy from all countries. From a wider regulatory perspective, no individual country is large enough to shape the direction of regulation on the digital economy, for example in areas such as taxation or data policy, but collective and coordinated action based on a principle of openness would put the region in a much stronger position.

From the analysis in the report of the state of play of the digital economy, its foundations and the role of government in strengthening them through policy and regulation, three themes emerge as priorities for further detailed analysis.

The first theme is the need to build on the regional comparisons and evidence provided in this report with more detailed country-specific analysis on the foundations of the digital economy. Although this report provides a stronger evidence base as a basis for regional benchmarking, country contexts vary significantly across Southeast Asia, so detailed analysis of each country's situation is needed.

The second theme is that alongside the focus on opportunities, there is a need to consider the risks

associated with the growth of the digital economy in the region. This report highlights numerous risks: cybersecurity and data privacy; inadequate consumer protection; market power limiting broadband connectivity improvements; growing pressure on skills development and education created through rapid technological change; and pressure on social safety nets generated by changing business models. Governments are becoming increasingly concerned with some of these risks, as well as others like the potential for new business models associated with the digital economy to affect fiscal revenue. These risks need to be assessed systematically, drawing on available evidence, while also ensuring that responses to these risks do not stifle innovation in the digital economy.

Finally, a third theme for consideration is how to maximize the potential for the digital economy

to boost the inclusiveness of growth, while also needing to address concerns that some will be left behind. This is implied in the analysis of some issues – for example the wide gaps in broadband connectivity in the region, both between and within countries – but it is not a theme that this report addresses in detail, although it should be a priority for future research.

This reveals the extent to which governments have a tremendous opportunity to advance the growth of the digital economy in Southeast Asia. There is already evidence of the transformative potential of the region's digital economy. Well-targeted policy measures and their effective implementation, as well as institutional processes to support these objectives, can help ensure this potential is realized.

**TABLE ES.1 Snapshot of key digital economy indicators in selected Southeast Asian countries**

|                    | Connectivity                                   |  |   | Payments   |                                   |  | Logistics                                    |   | Skills  | Policy & Regulation                 |                          |                                 |                                       |
|--------------------|--|--|---|--|-----------------------------------|--|--|---|---|-------------------------------------|--------------------------|---------------------------------|---------------------------------------|
|                    | Mobile broadband subscribers (% of population) | Mobile broadband prices (500MB/month) as a % of GNI per capita | Fixed broadband subscribers (% of population) | Made or received digital payments in the past year | Paid Online for Internet Purchase | % of Online Firms Using Digital Payments | Logistics Performance Index Score (out of 5) | Integrated index for postal development | Human Capital Devt Index Global Rank (out of 120) | Cross-Border Data Flow Restrictions | Data Privacy Regulations | Consumer Protection Regulations | Cybersecurity Expenditure as % of GDP |
| <b>Indonesia</b>   | 100%   | 1.4%   | 3.1%  | 34%  | 49%                               | 51%                                      | 2.98   | 49.4                                    | 69  | Yes                                 | Yes                      | Yes                             | 0.02%                                 |
| <b>Vietnam</b>     | 82%  | 1.4%   | 12%   | 22%  | 10%                               | 51%                                      | 2.98   | 47.8                                    | 68  | Yes                                 | Draft                    | Yes                             | 0.04%                                 |
| <b>Thailand</b>    | 170%   | 1.2%   | 11%   | 62%  | —                                 | —  | 3.26   | 66.1                                    | 57  | No                                  | Yes                      | Yes                             | 0.05%                                 |
| <b>Malaysia</b>    | 116%   | 0.9%   | 8%  | 76%  | 52%                               | 57%                                      | 3.43   | 66.0                                    | 52  | Yes                                 | Yes                      | Yes                             | 0.08%                                 |
| <b>Cambodia</b>    | 67%  | 1.1%   | 1.5%  | 16%  | —                                 | —  | 2.8  | 19.7                                    | 97  | No                                  | No                       | Yes                             | —                                     |
| <b>Lao PDR</b>     | 51%  | —  | 1%  | 12%  | —                                 | —  | 2.07   | 41.4                                    | 105   | No                                  | No                       | Draft                           | —                                     |
| <b>Philippines</b> | 40%  | 1.5%   | 3%  | 23%  | —                                 | 52%                                      | 2.86   | 33.9                                    | 46  | No                                  | Yes                      | Yes                             | 0.04%                                 |

Sources: ITU Measuring the Information Society 2017; GSMA 2018; Telegeography, June 2018, World Bank 2017, Global Index; A.T. Kearney 2015; World Bank 2016, Digital Adoption Index; UPU 2016; WEF 2017; World Bank, OECD and Facebook 2018.  
Note: — = not available.

**TABLE ES.2 Summary of main policy and regulatory issues for Southeast Asian countries and regional cooperation (elaborated in the report)**

|   | <b>Cambodia, Lao PDR, Myanmar</b>   | <b>Indonesia, Malaysia, Thailand, Vietnam, Philippines</b>  | <b>Regional cooperation</b>   |
|---|---|---|---|
| <b>Connectivity</b>                     | Addressing barriers and strengthening enabling conditions for accelerated private investment in broadband           | Allowing greater competition along the broadband value chain  | Cross-border connectivity including regulatory harmonization  |
|   |   | Access to spectrum  |   |
|   |   | Passive infrastructure sharing and right-of-way   |   |
|   | Consolidate implementation of digital ID  | Digital ID as a basis for transactions  | Regional compatibility of digital IDs   |
| <b>Payments</b>                         | Facilitate innovation in digital payments   | Promote use (for example, payment for government services) and address regulatory gaps                            | Promoting interoperability  |
| <b>Logistics</b>                        | Issue clear regulations for small parcel trade  | Risk-based approach to facilitating small parcel trade  | Harmonized regional <i>de minimis</i> thresholds and simplified procedures                                    |
|   | Address regulatory barriers to entry in logistics   | Enable innovation in digitalized logistics services   |   |
| <b>Skills</b>                           | Continue upgrading basic education  | Implement approaches for lifelong learning through education system   | Enabling greater regional mobility of skilled workers, including through mutual recognition of qualifications |
|   | Targeted digital skills training, especially for small and medium enterprises (SMEs)                                | Deepen industry-business collaboration to identify future skills needs and meet short-term gaps                   |   |
| <b>Plans and strategies</b>             | Develop actionable digital economy strategies   | Identify concrete actions and institutional responsibilities to implement and monitor digital economy masterplans | Regional vision for open, integrated digital economy  |
| <b>Data policies</b>                    | Ensure legal regime exists for data privacy and data protection   | Build regulatory capacity and raise consumer and business awareness   | Pathway to regulatory coherence   |
|   | Caution on introducing data localization  | Roll back blanket data localization policies and introduce data classification-based approaches                   | Open regional regime on data  |
| <b>Cybersecurity</b>                    | Ensure laws exist to cover cybercrime and build enforcement capacity  | Boost public and private spending on cybersecurity and address skills gaps  | Regional regulatory and enforcement collaboration, including overarching governance framework                 |
| <b>Consumer protection</b>              | Legal regime for online consumer protection, at least at offline level  | Strengthen regulatory capacity for consumer protection, awareness, and outreach                                   | Regional complaint and enforcement mechanisms   |
| <b>Supporting digital entrepreneurs</b> | Providing targeted support for skill upgrading, technology adoption as overall digital foundations are strengthened | Ensuring coordination of SME support programs while still focusing on structural reforms                          | Supporting internationalization of SMEs through regional integration  |

Source: Authors

# Introduction



**The main objective of this report is to analyze the state of play and foundations for the digital economy in Southeast Asia, and to build an understanding of where countries are performing well and where they are lagging.** The report focuses on the role of policy and regulation in either facilitating or impeding the development of a conducive enabling environment for the digital economy. Chapter 1 of the report surveys the state of the digital economy in the region, assessing the extent to which the private sector is using digital technology to drive innovation and growth. Chapter 2 assesses four digital economy foundations: access to affordable, high-speed broadband Internet; digital skills readiness; digital payments adoption; and logistics. Chapter 3 focuses on a fifth foundation, grouped as “digital policies and regulations”, including data privacy, cross-border data flows, cybersecurity, and consumer protection. These two chapters draw on available quantitative and qualitative evidence for comparing the strength of these five foundations across Southeast Asia. They focus on policy and regulatory issues that governments can address to strengthen these foundations, while acknowledging that in most cases more detailed, country-specific analysis is required, along with the collection of new data to fill the many gaps that exist. Finally, Chapter 4 examines the strategies that governments have adopted at the national and regional level to grow the digital economy, covering the foundations discussed in the preceding chapters. It also covers two specific roles for governments in supporting the digital economy: implementing digital government initiatives that transform the provision of services to businesses and citizens; and setting up digital entrepreneurship programs.

**It is important to recognize that there is no standard definition of the “digital economy” and analysis on what the most importance factors shaping its growth are is evolving.** The term is sometimes used in a narrow way to refer to the “technology sector” or “ICT sector”, especially associated with fast-growing technology companies like Facebook or Google, or the rapid growth of e-commerce associated with companies like Amazon or Alibaba.

**However, in the context of this report, a wider concept of the digital economy is used, referring to private sector utilization of digital technologies as a driver of economic growth, innovation, and other means of transforming the economy.** In this sense, the digital economy is not restricted to the information and communications technology (ICT) sector, but rather encompasses the adoption of digital technology in all sectors of the economy. As highlighted in the *2016 World Development Report: Digital Dividends*, while ICT sector value-added in GDP is around 7 percent, up to 75 percent of the economic impact of the Internet is through firms in traditional sectors that harness technology to improve productivity (World Bank 2016a, 63). This underlines the need for governments to look beyond the ICT sector, and the policies and regulations relating to it, when developing strategies to grow the digital economy and maximize its positive impact.

**This broader vision of the digital economy reflects the way in which it has been recognized as contributing to wider economic growth and transformation across diverse sectors.** This insight has been articulated in various international contexts, including the G-20<sup>1</sup>, the Organisation for Economic Co-operation and Development (OECD)<sup>2</sup> and the Asia-Pacific Economic Cooperation (APEC). The 2017 APEC Internet and Digital Economy Roadmap, for example, noted that “APEC economies are increasingly influenced by the expanding Internet and Digital Economy, where all sectors of economic and social development are empowered by the underlying digital infrastructure. We recognize the broad-based economic growth that is made possible by this shift in all industry sectors and for businesses of all sizes including micro, small, and medium enterprises (MSMEs).”

1 The Dusseldorf April 2017 Digital Economy Ministerial Declaration mentions that G20 members discussed the “effective use of digital technologies is an important driver for efficiency-enhancing and economic structural optimisation.” The G20 Argentine Presidency, in explaining the ongoing G20 digital economy discussions, noted that “The digital economy refers to a broad range of activities which include: the use of knowledge and information as factors in production, information networks as a platform for action, and how the information and communication technology (ICT) sector spurs economic growth.”

2 The 2016 OECD Ministerial Declaration on the Digital Economy referred to how “the world economy is becoming ever more digital... growing use of and investment in digital technologies and knowledge-based capital is profoundly transforming our societies...the digital economy is a powerful catalyst for innovation, growth and social prosperity.”

**This report builds on evolving analysis on the wider topics of digital adoption and the role of digitalization in development.** In assessing the state of the play of the digital economy in Chapter 1, this report draws on and deepens the approach taken through the World Bank Digital Adoption Index (DAI) developed for the World Development Report 2016, which considers the three categories of business, people, and government (World Bank 2016b). The survey in Chapter 1 includes some of the same indicators used for the DAI, especially the “business” category, but incorporates additional data from a wider range of sources to deepen the analysis of digital adoption in Southeast Asia. The framework used for benchmarking the basic foundations of the digital economy draws on other ongoing World Bank analyses on the same topic in different regions.

**The report also draws on previous analysis on the wider topic of the role of the Internet in development.** Notably, one of the key messages of the World Development Report 2016 was that a series of “analog complements” shape the development impact of the Internet, with extending digital connectivity alone not being enough to ensure positive development outcomes. Although the focus of the current report is narrower, it builds on the analytical approach of examining both digital connectivity and “analog complements” of regulations, skills, and institutions. For example, it examines the role of regulations in promoting Internet connectivity, especially through the importance of increasing competition along the broadband value chain; the role of skills to take advantage of opportunities in the digital world; and the role of government in protecting data privacy and building trust in the digital economy (World Bank 2016a). At the same time, some of the “analog complements” are not examined in detail, e.g. the role of digital government service delivery initiatives in improving development outcomes, as they are outside the scope of this report.

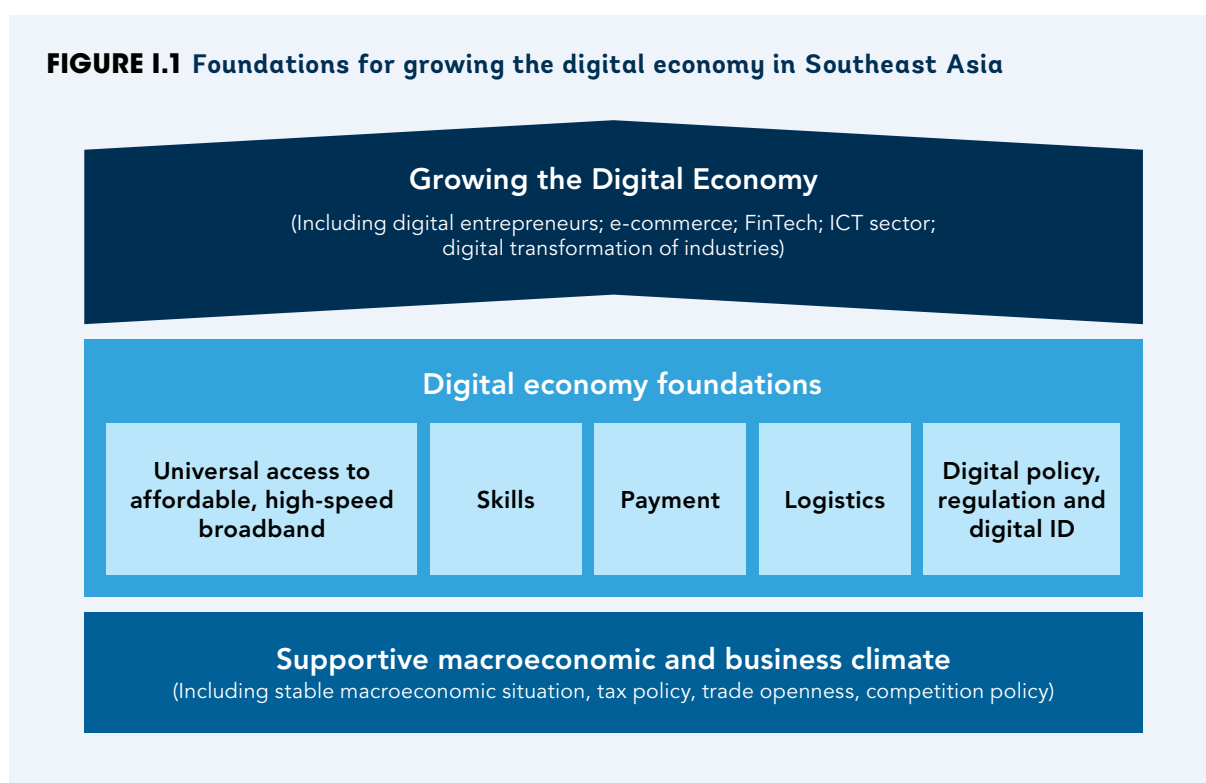
**An important consideration in preparing this report and selecting the focus topics is the availability of data for cross-country comparisons of the state of play of the digital economy, and the strength of its foundations.** Each section draws on available indicators to assess where countries compare with each other, and against relevant comparators within East Asia more widely or globally. As noted in the Executive Summary, there is a shortage of data on key aspects of the digital economy that limits the scope of such an effort – for example, robust cross-country data on the size of the digital economy, or the value of cross-border data flows, do not exist.

**Finally, the approach taken in this report complements digital economy policy priorities set by governments in Southeast Asia through national and regional plans.** In preparing this report, a consistent message heard from governments is that the basic foundations of the digital economy are well-known, but more specific guidance is needed to benchmark performance across countries, and on specific policy and regulatory issues.

**The report does not aim to provide a quantitative assessment of the scale or growth of the digital economy or its components, not least because there is still a significant shortage of both official and private data on the digital economy.** Indeed, one priority for further work in the region is to improve data on the digital economy, both through national statistical agencies and other government sources, as well as through greater use of privately-held data such as that held by e-commerce companies.

**Similarly, the coverage of institutions’ political economy is more limited within this report, and should be a feature of follow-up analysis at the country level, although some institutional issues like the implementation of digital economy plans are considered.** One important challenge is that it is still unclear in several countries which institutions have primary mandates for digital economy development, or how different ministries and agency stakeholders are coordinated. However, these institutional issues can be more appropriately addressed through policy dialog and other engagements at the country level.



**FIGURE I.1 Foundations for growing the digital economy in Southeast Asia**

**In this context, the report assesses five foundations for the digital economy, which shape the extent to which different sectors adopt, use, and create value through digital technology.** Figure I.1 sets out the foundations considered in this report, placing them in the context of the wider enabling macroeconomic and business climate, and showing their relevance for contribution to the growth of the digital economy. These wider issues also need to be considered in examining the broader topic of the impacts of the digital economy - as the *World Development Report 2016* notes in the context of the impact of the Internet on development, various “analog complements” to digital connectivity need to be considered. Some of these are addressed in this report, but not all are.

**The examination of the state of play, foundations for the digital economy, and national and regional digital economy plans in this report aims to contribute to further analysis and policymaking.** As the digital economy is dynamic and rapidly evolving, it is expected that frameworks for analyzing its enabling environment will continue to develop. Within the World Bank, a Digital Economy Toolbox is being developed to guide future analysis, and further country-specific analyses on the digital economy are being prepared in a number of regions. It is hoped that the framework used in this report will contribute to these efforts and the growing body of evidence for research and policymaking on the digital economy.

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**CHAPTER 1**

# **State-of-Play of the Digital Economy in Southeast Asia**

**This section reviews available data and research on the extent of Southeast Asia’s digital economy.**

Reflecting the fact that there is no standard definition of the digital economy, various aspects of the digital economy are covered, including Internet usage and social media; e-commerce; digital financial services; online content; general business adoption of technology; and cross-border services trade.

**Various studies and examples highlight the rapid spread of digital technology and its impact on the economy in ASEAN.**

For example, one estimate assesses US\$150 billion in revenues per year in ASEAN in digital economy-related activities (A.T. Kearney 2015a). Connectivity and online services are the biggest components, each accounting for 35 to 40 percent of overall revenues. The user interface (including devices, systems, and software) constitutes the third largest segment, accounting for close to 20 percent of revenues. Content and enabling technologies account for the remaining 10 percent. However, these elements are growing at very different speeds. For example, connectivity revenues are expected to grow just 3 to 5 percent, whereas online services are likely to grow at more than 15 percent compound annual growth rate (CAGR) over the next five years. E-commerce remains relatively underdeveloped in Southeast Asia, accounting for less than 1 percent of total retail sales, compared to rates of 6-8 percent in Europe, China, and the United States. However, many studies forecast high rates of growth. For example, one management consulting firm forecasts growth in online retail in ASEAN by as much as 25 percent annually (A.T. Kearney 2015b).

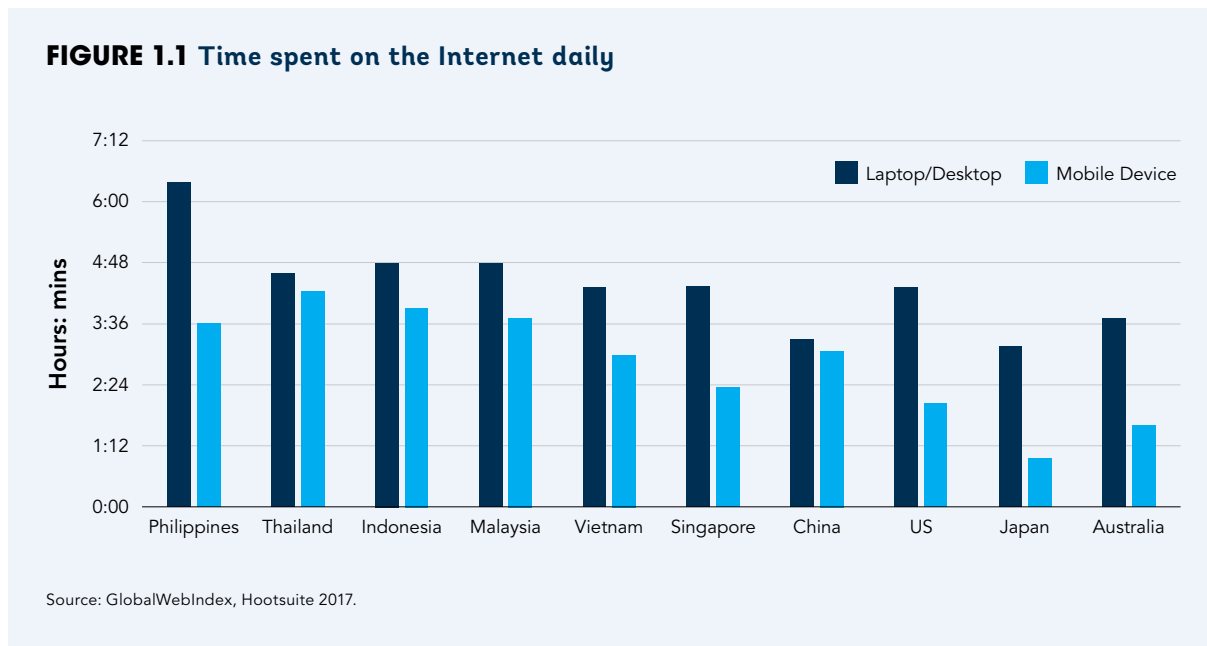
**The growth of the digital economy is not just about the “ICT sector” or technology companies.**

The spread and adoption of digital technology has an impact on growth and competitiveness in all sectors. For example, in manufacturing, digital technologies are having a significant impact through automation of production processes, coordination of production across complex supply chains, and lower-cost logistics. Similarly, digital technology is having an impact in the agricultural sector, from relatively simple applications like the use of mobile phones by farmers to access price, meteorological, or transportation information, through to the use of drones as part of the farming process (World Bank 2016, 90-92).



## Internet Usage

**Southeast Asia has among the highest rates of Internet usage in the world, with an average of 3.6 hours spent on mobile Internet every day.** Users in Thailand are logging about 4.2 hours per day, followed by Indonesians at 3.9 hours per day, which is far greater than the two hours per day in the United States and 1.8 hours per day for the United Kingdom (Google 2017). Figure 1.1 provides a sense of the high rates of Internet usage in the region.



**The use of social media is widely considered a precursor to more economically-productive use of digital technologies – and the levels of social media usage in ASEAN are among the highest in the world.** Social media users in Southeast Asia also grew by 31 percent over the past year, with 72 million people using social platforms for the first time in the 12 months up to January 2017.<sup>3</sup> Mobile social media continues to grow even more rapidly around the region too, with the number of monthly active users accessing social platforms via mobile devices up 34 percent from 2016 to 2017. Indonesia has one of the youngest, largest, and arguably one of the most digitally savvy populations in the world. More “tweets” were sent from Jakarta in 2014 than from any other city in the world, accounting for 2.4 percent of the global total. The social media landscape in Asia more broadly is dominated by messaging apps. WeChat and Line have maintained their dominance by providing access to various consumer services through their platforms, with Facebook rising to the top of several markets in Asia on the back of its social network, as well as its ownership of WhatsApp and Instagram (RVC 2016). (See Table 1.1 for a sense of leading social media platforms in East Asia.)

**Social media platforms are transforming how goods and services are marketed in Southeast Asia.** Social media is widely used to advertise goods, either for sale by business to consumers (B2C) or directly between consumers (C2C). Users in the region turn to social media as their key source of information when making purchasing decisions, along with friends, family and web search engines. One study found that 78 percent of consumers in Asia get information about products and services on social media, and

3 Digital in Southeast Asia 2017: Regional Overview, We are Social: <https://wearesocial.com/sg/blog/2017/02/digital-southeast-asia-2017>



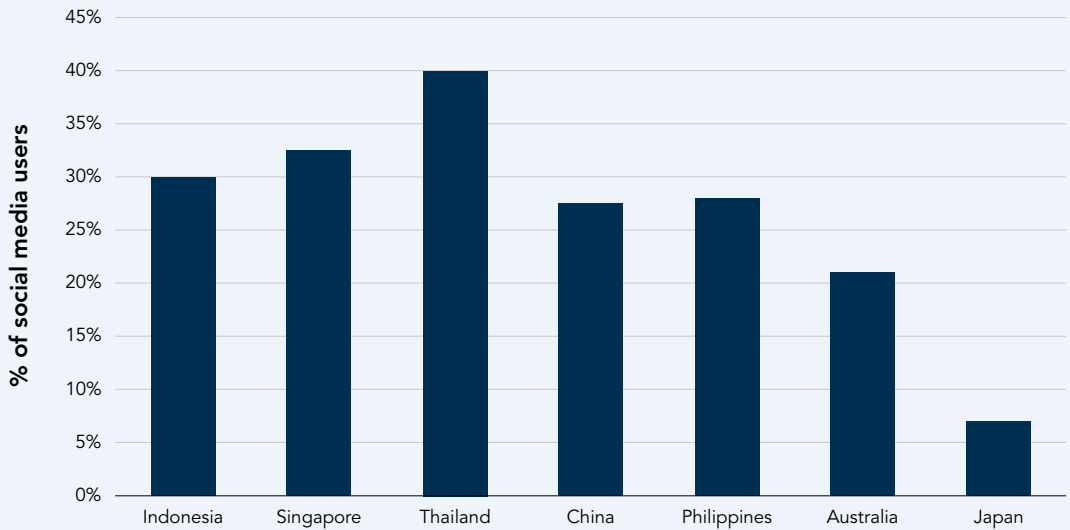
**TABLE 1.1 Social media penetration and leading platforms in Asia (2016)**

| Country     | Social Media Penetration Rate | Ranking of Top Three Social Media Platforms        |
|-------------|-------------------------------|--|
| China       | 47%                           | (1) WeChat (2) Ozone (3) Line                      |
| India       | 10%                           | (1) Facebook (2) WhatsApp (3) Facebook Messenger   |
| Indonesia   | 30%                           | (1) Blackberry Messenger (2) Facebook (3) WhatsApp |
| Philippines | 47%                           | (1) Facebook (2) Facebook Messenger (3) Skype      |
| Vietnam     | 37%                           | (1) Facebook (2) Zolo (3) Facebook Messenger       |
| Thailand    | 56%                           | (1) Facebook (2) Line (3) Facebook Messenger       |
| Korea, Rep. | 76%                           | (1) TALK (2) Facebook (3) KakaoTalk                |
| Japan       | 42%                           | (1) Line (2) Facebook (3) Twitter                  |

Source: RVC 2016.

68 percent share that brand-related information on social channels (We Are Social and Hootsuite 2017). A large part of Facebook's growth in Southeast Asia (50 percent in 2016) was driven by advertisers in the region leveraging the platform to reach the region's mobile-first consumers. About three quarters of users in Thailand and Vietnam utilize Facebook social media and messaging for commercial purposes – 74 percent of Thai users and 73 percent of Vietnamese users are actively connecting with businesses. E-commerce retailer Lazada grew its fan base by 60 times between 2015-2016 to reach 90 percent of the online population in the Philippines and 80 percent of the population in Indonesia, Malaysia, and Thailand. Qoo10, one of Singapore's e-commerce pioneers, had its start on Facebook and saw great success leveraging the network as a low-cost advertising platform.

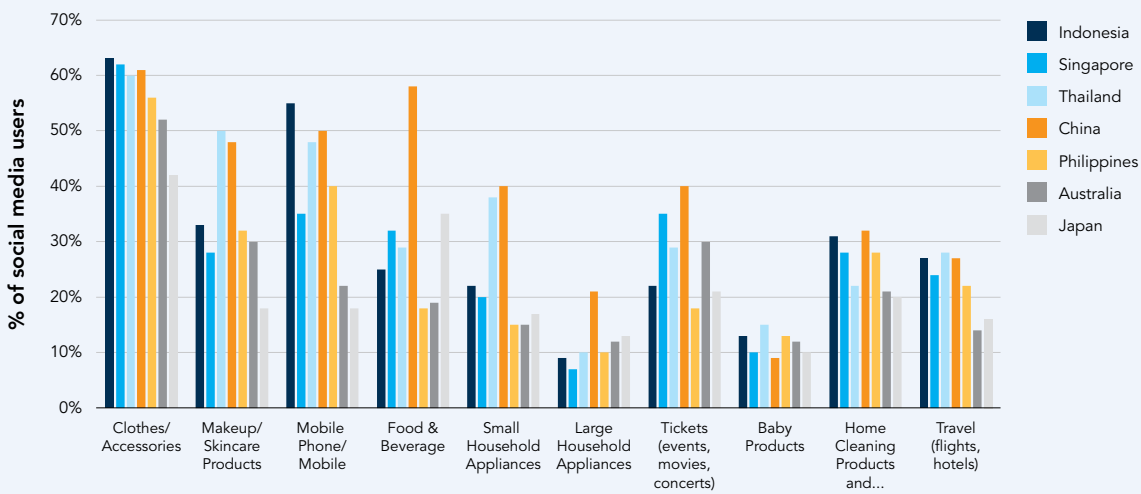
**FIGURE 1.2 Percentage of social media users who make purchases on social media**



Source: RVC 2016.

Similarly, messaging platforms are changing how customers and businesses interact. Businesses in the region use a variety of messaging applications – including Line, WeChat, Kakao Talk, WhatsApp, Facebook Messenger, Zalo, Viber, and Blackberry Messenger – to communicate with customers, push out text-based advertising campaigns, and market to new customers. These apps have also capitalized on the preferences of digital natives through innovative brand sponsorships, such as WeChat sponsoring Indonesian Idol and Line’s localized emojis, stickers, and a US\$10 million advertising budget as early in the lifecycle as 2014.

**FIGURE 1.3 Types of purchases made through social media apps**

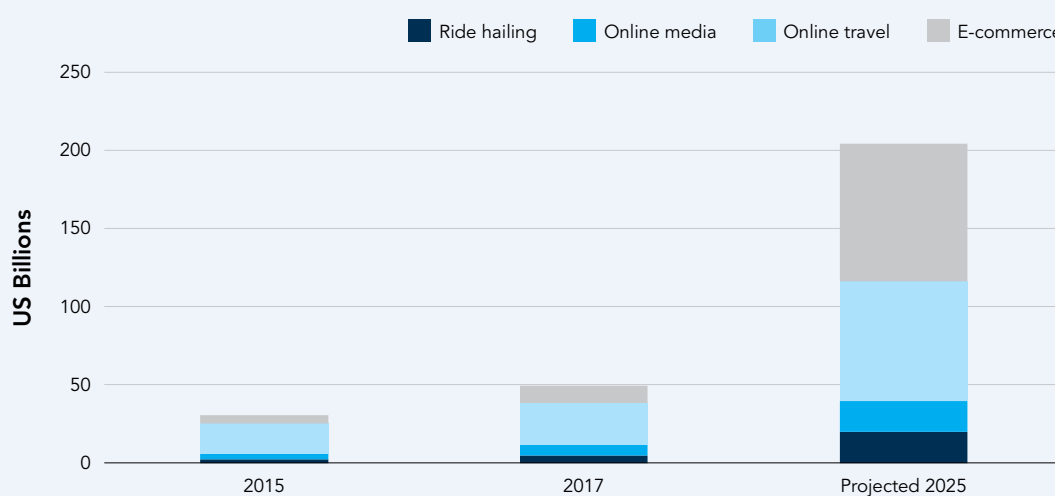


Source: Digital in Southeast Asia 2017: Regional Overview, We are Social

## E-commerce

**E-commerce in Southeast Asia is growing rapidly.** Although there is no consensus definition of e-commerce, one recent estimate foresees a CAGR of 27 percent, dominated by Internet-based retail platforms such as online travel, online media, B2C retail e-commerce, and ride hailing (Google and Temasek 2017). Google web searches for e-commerce companies have doubled in the past two years, and Southeast Asian users spent twice as much time as Americans, 140 minutes versus 80 minutes respectively, browsing top e-commerce sites (Google and Temasek 2017).<sup>4</sup> According to the same research, Southeast Asia's e-commerce platforms will reach US\$50 billion in 2017 in terms of market size and have the potential to exceed US\$200 billion by 2025 (see Figure 1.4). Online travel is the dominant form of e-commerce, reaching US\$26.6 billion led by growth in airline and hotel online bookings. Online media touched US\$6.9 billion driven by online ads and gaming. E-commerce and ride hailing have grown the fastest at over 40 percent CAGR. Despite continuing last-mile logistics issues and market fragmentation due to the proliferation of platforms, e-commerce sales of first-hand goods will reach US\$10.9 billion in gross merchandise value in 2017, up from US\$5.5 billion in 2015, growing at 41 percent CAGR. This projection is based on the high uptake of the marketplace model, and the impact it has had on offline SMEs' ability to sell online (Google and Temasek 2017).

**FIGURE 1.4 Market size of various industries involved in digital commerce, US\$, billions**

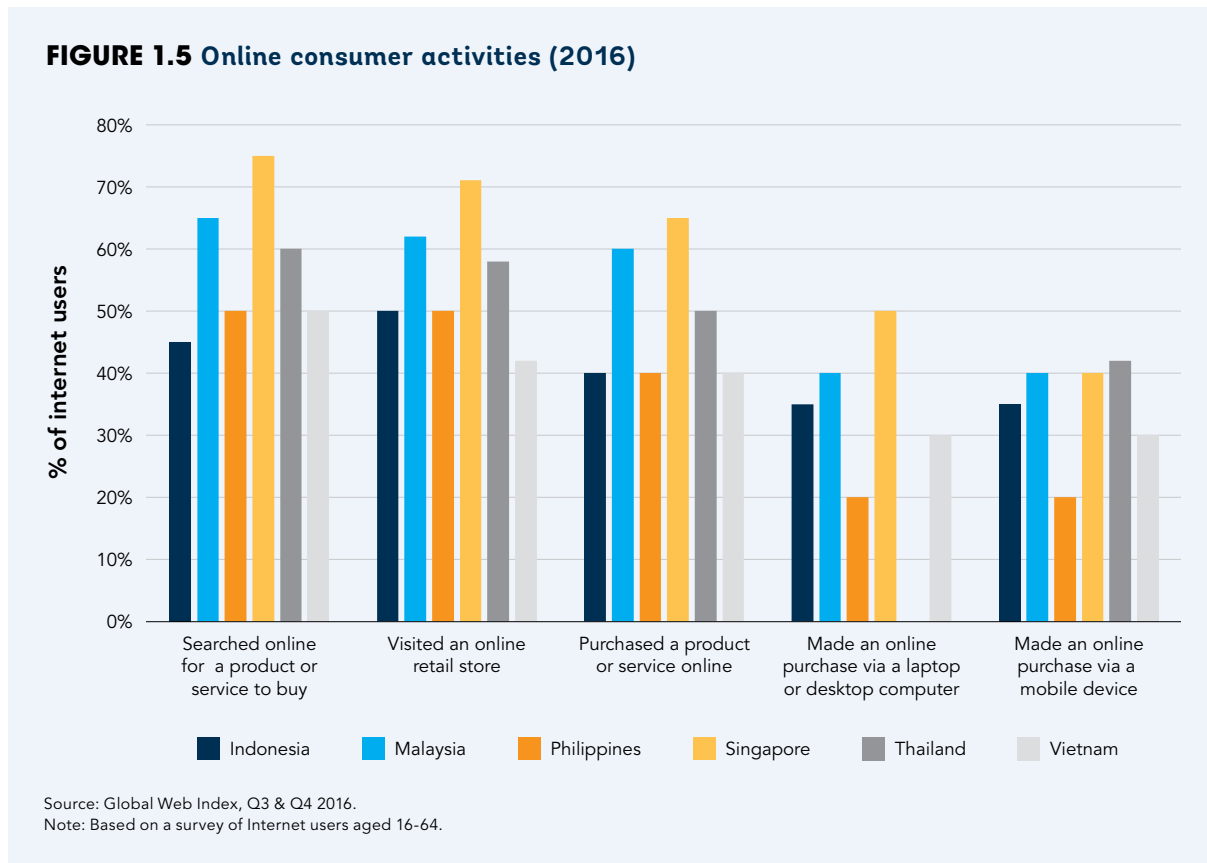


Source: Google and Temasek 2017.

**The acceleration of Southeast Asian e-commerce has been facilitated by the surge of marketplaces where small and medium enterprises sell to consumers.** Top players in this space such as Lazada, Shopee, and Tokopedia have enabled this growth by providing scalable, readily-accessible platforms where smaller retail players can transact online and reach new consumers within and beyond Southeast Asia. These trends have fueled a rise in digital consumers, defined as those who purchase products or services online. According to Hootsuite's Southeast Asia digital consumer survey, there were 200 million digital consumers in the region in 2017, up 50 percent from 2016. Indonesia, Vietnam, and the Philippines experienced the highest increases, with 74 percent, 63 percent and 58 percent growth in new digital consumers respectively in 2017 (We Are Social and Hootsuite 2017).

<sup>4</sup> Google and Temasek focus on B2C e-commerce models, including marketplaces that enable SMEs to sell to consumers. Second-hand goods marketplaces, consumer-to-consumer (C2C) platforms, online classifieds, and sales via social media were left out of the equation.

**Despite impressive growth, there is a widespread expectation that the industry is still in an early stage.** While most users in Indonesia, Malaysia, Singapore, the Philippines, and Thailand use the Internet to research products or services for purchase, these do not always translate into transactions on the Internet. Despite mobile being the device of choice to go online, the online population in ASEAN (except Thailand) prefer to purchase products on laptop or desktop computers over mobile devices (Bain and Company 2017; see also Figure 1.5).



**Significant private sector investment in Southeast Asian e-commerce companies reflects industry perceptions that there will continue to be strong growth in the region.** The region’s digital technology start-ups received US\$5 billion in funding from the first to the third quarter of 2017, exceeding the US\$3.1 billion total in 2016 (Yuniar 2017). This rapid investment increase in Southeast Asia is in large part due to funding from Chinese investors Alibaba, JD.com, and Didi Chuxing.

**The majority of recent e-commerce investments in the region went to companies based in Singapore and Indonesia.** Singapore-based companies have been involved in 609 deals, representing 58 percent of total funds raised in Southeast Asia, while Indonesia-based companies received 34 percent of total funds from 261 deals. Malaysia, Thailand, and Vietnam each recorded close to 130 deals, collectively amounting for less than 10 percent of total funds raised. While investments in Singapore-based companies like Grab, Lazada, and Sea Ltd. bolster the country’s position as Southeast Asia’s financial and tech hub, a sizable share of the funds raised in Singapore is deployed into operations in other Southeast Asian markets. Indonesia continues to be the market that attracts the most investor interest because of its huge population, burgeoning middle class, and rapidly developing digital ecosystem.



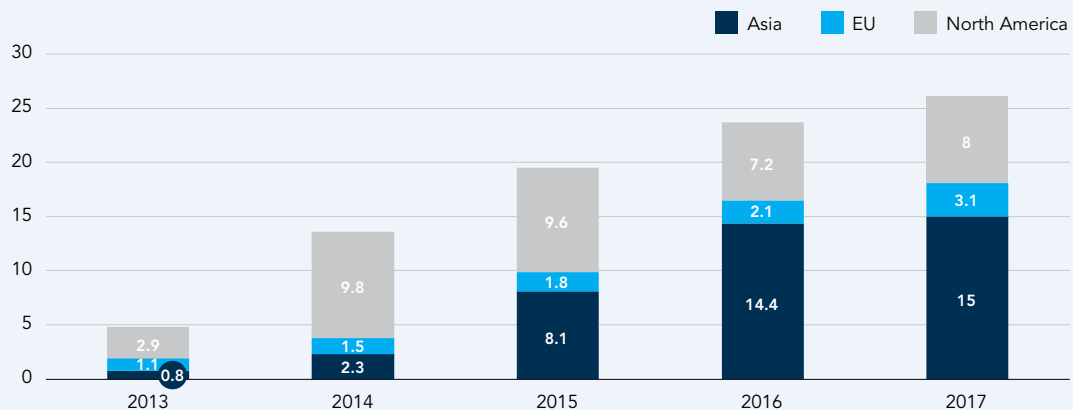
**These investment and growth trends have given rise to the region’s seven “unicorns” – Internet economy companies that have reached a valuation above US\$1 billion.** These are:

- Grab: ride-hailing app that has grown throughout Southeast Asia
- Traveloka: regional leader in hotels and flights bookings
- Tokopedia: leader of e-commerce sites in Indonesia
- GO-JEK: ride-hailing app from Indonesia, expanding to e-payments and services
- SEA Group: gaming platform, mobile commerce, and e-payments
- Lazada: leader of e-commerce in Southeast Asia
- Razer: gaming hardware, software, and systems

## Digital Financial Services

**Digital technologies have given rise to new ways of delivering financial services in Asia, particularly in facilitating payment and lending, promoting financial inclusion.** Financial technology (FinTech)-based lending in Asia reached US\$102.8 billion in 2015, while the proliferation of technologies further improved the efficiency of the payments system and strengthened Asia’s position as the largest payments market in the world.<sup>5</sup> FinTech investment in Asia exceeded North America for the first time in 2016, led by large deals in China, including Alipay and Lu.com raising US\$4.5 billion and US\$1.2 billion respectively (see Figure 1.6).

**FIGURE 1.6 Global FinTech investment activity, US\$, billions**



Source: PWC State of FinTech 2017 report: <https://www.pwc.com/sg/en/publications/assets/fintech-startupbootcamp-state-of-fintech-2017.pdf>

**Southeast Asia’s FinTech market is growing, in line with this wider growth of digital financial services in Asia.** In 2016, investments in the Southeast Asian FinTech market increased to US\$252 million, compared with US\$190 million in 2015, a rise of about 33 percent. The upward trend in ASEAN continued in 2017 and is projected to rise in 2018. Singapore is home to the lion’s share of FinTech companies in ASEAN, at 39 percent, and Indonesia is at second place with 20 percent. The FinTech landscape is dominated by payments and mobile wallets which comprise 43 percent of the sector, followed by financial comparison platforms at 15 percent and retail investment portals at 11 percent (UOB 2017).

<sup>5</sup> Asian Development Bank : <https://www.adb.org/news/events/understanding-digital-economy-what-it-and-how-can-it-transform-asia>

**Singapore is the most developed FinTech start-up market in the region, and Singapore-based companies are providing services in other countries.** According to data from Tracxn, there are a total of 367 payment FinTech start-ups in ASEAN as of October 9, 2017. Singapore is the most developed payments market in the region, with almost 28 percent of players (102 payment FinTech companies) located in Singapore. In terms of investment funding, payments is the most popular FinTech sub-sector. ASEAN-focused payment FinTech start-ups have received strong funding volumes during the last three years, registering a ten-fold spike from US\$8 million to US\$83 million in 2015. A 2017 report by Singapore-based United Overseas Bank (UOB) highlighted that as of September 2017, US\$117 million has already been invested in payment FinTech start-ups in ASEAN. Within this segment, digital wallets have received the highest amount of funds from investors, followed by remittance FinTech and payment gateways. The top two most-funded companies in this category to date have been Vietnam-based mobile-first payment company, Momo (US\$33.8 million), and Singapore-based mobile payment/e-commerce processing company, MatchMove Wallet (US\$30 million) (PWC and Startupbootcamp 2017). Another key FinTech segment, peer-to-peer (P2P) lending, remains at a nascent stage in Southeast Asia, at less than 0.1 percent of all loans originating from P2P lenders. According to Tracxn data, there are 54 P2P lenders in the ASEAN region, comprising 8 percent of the FinTech market.

## Digital Content

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**Users in Southeast Asia have become avid consumers of online video content.** Ad-based video-on-demand (AVOD) or user-generated content platforms such as YouTube are very popular, with Vietnam and Thailand ranking among the top 10 markets with the highest viewership globally (Fujita 2017).

**The growing volume of local content demonstrates the increasing adoption of digital platforms such as YouTube for the delivery of news and entertainment by local media companies.** For example, traditional media companies in the region have begun to utilize social media platforms actively to promote content, distribute short videos, and to advertise subscription packages. In the Philippines, the top media companies such as ABS-CBN have over 13 million YouTube subscribers, while GMA has 5 million. The top 10 YouTube media channels in Thailand all boast over 1 million subscribers, with GMM Grammy Official nearing 11 million subscribers.<sup>6</sup> The top media YouTube channels in Indonesia (Netmediatama) and in Malaysia (Astro Gempak) each have over 1.3 million subscribers.

<sup>6</sup> The subscribers have been combined across three ABS-CBN Channels namely ABS-CBN Entertainment, ABS-CBN news and ABS-CBN Starmusic. GMA numbers combine GMA Network and GMA News channel, subscribers. More information is available at <https://www.socialbakers.com/statistics/youtube/channels/philippines/media/>

**The video-on-demand (VOD) market is growing, although it remains relatively small.** Media Partners Asia forecasts that online video revenue in the Asia Pacific will reach US\$35 billion by 2021, with an average annual growth of 22 percent from US\$13 billion in 2016. VOD services are expected to garner 360 million paying subscribers across Asia Pacific by 2021, which is twice as many as today and roughly the size of all broadband subscribers in Asia Pacific in 2016.<sup>7</sup> The growth will strongly be backed by Asia-based VOD platforms, such as Thailand-based DooNee, India-based Hotstar Premium, Malaysia-based iflix, and Singapore-based HOOQ, on top of the growing popularity of global platforms such as Netflix and Amazon Prime. These companies are also increasingly positioning themselves as active players in the digital content industry. HOOQ, for example, recently invested in an Indonesian film titled “Marlina the Murderer in Four Acts” (Hawkes 2017) while iflix commissioned an Indonesian TV series called “Magic Hour” (Frater 2017). Despite the media hype, the VOD market remains small. Among Internet users, the number who have adopted VOD is still quite low (5.7 percent in Indonesia; 6.7 percent in Malaysia; 2.6 percent in the Philippines; 2.6 percent in Thailand; and 2.7 percent in Vietnam), though this could also be attributed to online piracy. The market volume is largest in Indonesia with an estimated revenue of US\$212 million, which is still smaller than that of the Republic of Korea (US\$334 million) and Japan (US\$639 million). Revenue in the rest of ASEAN is less than US\$30 million collectively.<sup>8</sup>

## Firm-Level Adoption of Digital Technology

**In contrast to the high level of digital media use, the diffusion of digital technologies among businesses in Southeast Asia remains low.** According to the World Bank’s Digital Adoption Index (DAI), the business segment of all four focus countries perform poorly compared to the people or government segments, meaning that businesses are behind the consumer and government segments in digital adoption (see Figure 1.7).<sup>9</sup> For example, Malaysia outperforms its income peers in the East Asia and Pacific region and some of the OECD countries including Canada, Greece, Hungary, and Mexico in overall DAI scores (0.70 out of 1), and its score for government is 0.87, which is better than many OECD countries. However, in business, Malaysia only scores 0.44, when the expected score for its income level is around 0.51. While Malaysia presents the starkest divergence in digital diffusion across the business, people, and government segments, the pattern is similar in all four countries.

**In order for the digital economy to flourish, firms in the region – including MSMEs – have to fully embrace digital technologies to boost productivity, innovate, and expand their businesses.** Digital technologies offer new opportunities for firms, including in lowering barriers to entry. As mentioned in the previous section, digital technologies can facilitate cross-border e-commerce and participation in global value chains (for example, WeChat or Line for communications, Google and Dropbox for file sharing, LinkedIn for finding talent, PayPal for transactions, and Alibaba and Amazon for sales). Enhancing access to networks and enabling SMEs to engage in e-commerce can be a pathway for small firms to go global and even grow across borders where they can become competitors in niche markets. The benefits from the digital economy could be disproportionately large for SMEs, as once-unaffordable computing power, storage, and development platforms become cheaper (for example, via cloud computing), identifying talent becomes easier and reaching markets they could not reach in the past becomes more accessible (OECD 2016).

<sup>7</sup> Ibid

<sup>8</sup> See data on the Statista website at <https://www.statista.com/outlook/201/100/video-on-demand/worldwide#market-arpu>

<sup>9</sup> The business segment of the DAI estimates the diffusion of digital technologies among businesses using proxy data such as a proportion of businesses with websites, use of secure servers, Internet bandwidth, and mobile broadband.

**FIGURE 1.7 Digital Adoption Index**



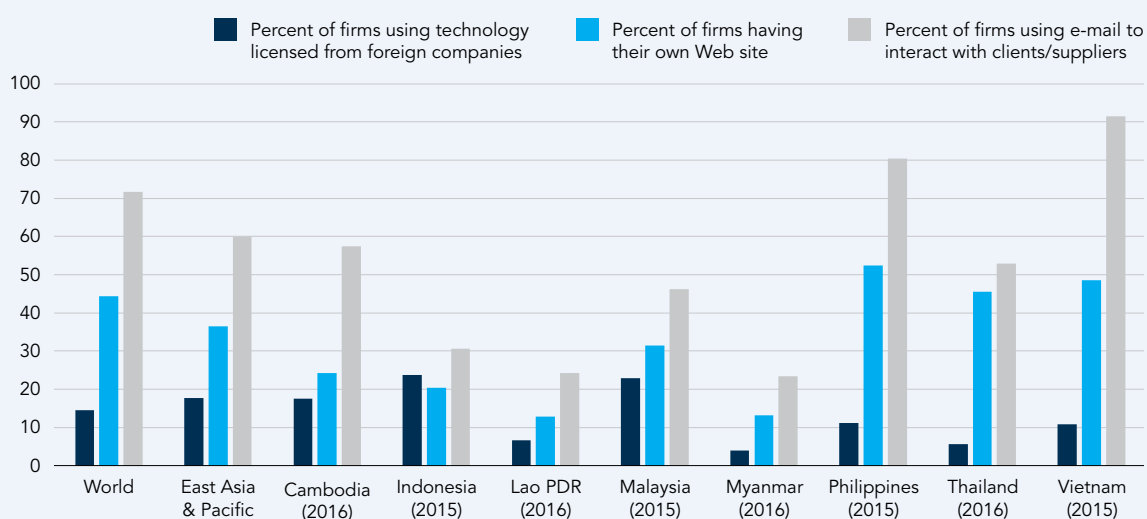
Source: World Bank. Data at <http://wbfiles.worldbank.org/documents/dec/digital-adoption-index.html>

**The relatively low level of digital adoption by businesses in the region is also highlighted by results from World Bank Enterprise Surveys.** The Enterprise Surveys are a global project to gather information from businesses on their activities, including most Southeast Asian countries. Three questions in the Surveys cover the use of technology, addressing some of its most basic functions for business purposes: the use of email; having a website; and using internationally-competitive software or hardware. The results (see also Figure 1.8) indicate the following:

- 31 percent of firms in Southeast Asia have their own website, compared with a global average of 44 percent and an East Asia and Pacific average of 36 percent. In China, the figure is 66 percent and in India it is 49 percent.
- 50 percent of firms in Southeast Asia use email to interact with clients/suppliers, compared with a global average of 72 percent and an East Asia and Pacific average of 60 percent. In China, the figure is 85 percent and in India it is 78 percent.
- 13 percent of firms in Southeast Asia use technology licensed from a foreign company, compared with a global average of 15 percent.

**The concerns around the level of digital adoption by Southeast Asian businesses persist despite the use of newer digital platforms.** Although it could be argued that the relatively low levels of email and website usage by firms in the region reflects that firms have already shifted to using other forms of communication such as messaging or social media platforms, caution should be used in reaching this conclusion. In other East Asian countries (where businesses have high levels of technology adoption), as well as India, the surveys indicate a much higher proportion of firms using these basic forms of technology as part of their operations. There are likely to be many reasons for this, but the data reinforces the message that business adoption of technology in Southeast Asia is not as widespread as in other regions, and certainly lags the use of the Internet in Southeast Asia for non-business purposes, as outlined in the preceding section.

**FIGURE 1.8 Firms' use of technology**



Source: World Bank Enterprise Surveys.

Note: Year of survey is indicated for individual countries on chart. Surveys are conducted in-person with business owners and managers.

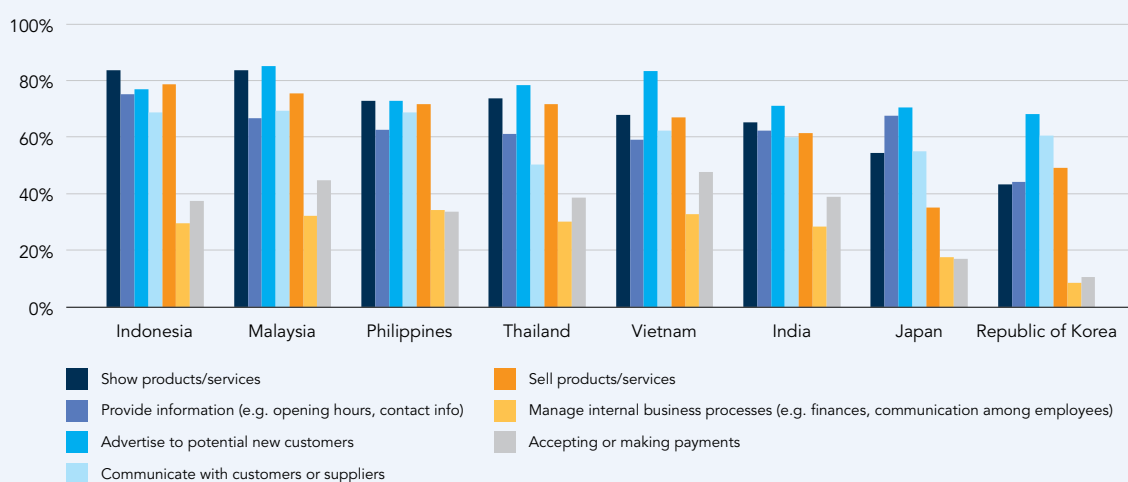
**Several factors could be responsible for the relatively low use of digital technology by firms in Southeast Asia.** One of them could be the digital divide between large firms and smaller firms. According to the OECD, the use of more advanced digital tools and applications within firms still differs significantly across countries, even among the most advanced economies. Moreover, there is an undeniable digital divide between firms within countries, with SMEs lagging in technology adoption at all levels of economic development (OECD 2017). Other reasons include lack of necessary digital skills or limited availability of affordable broadband.

**There is also a stark divide in digital adoption by firms between Southeast Asian economies.** In the World Economic Forum's Networked Readiness Index business usage pillar, Singapore ranked 14th globally, while Malaysia was 26th, Indonesia 34th, Thailand 51st, Vietnam 81st, Lao PDR 89th, Cambodia 104th, and Myanmar 138th. The business usage pillar measures the extent of business Internet use as well as the efforts of the firms in an economy to integrate ICT into an internal technologically-savvy, innovation-conducive environment that generates productivity gains. Consequently, this pillar measures the firm's technology absorption capacity as well as its overall capacity to innovate, the production of technology

novelties measured by the number of Patent Cooperation Treaty (PCT) patent applications or the extent of staff trained, so that management and employees are better capable of identifying and developing business innovations.<sup>10</sup>

**There is evidence that once businesses in Southeast Asia adopt digital technology as part of their business models, they do so to a greater extent than comparable firms in other economies, at least for sharing information about their businesses.** Global surveys of small firms with a Facebook page (one indication of whether a firm can be considered to be a “digital SME” suggest that digital SMEs in Southeast Asian countries surveyed use online tools as part of their businesses to a higher degree than SMEs in other Asian countries, including Japan, the Republic of Korea, and India (see Figure 1.9). The most common use of online tools is to share information with customers, but many SMEs are also using online tools to sell directly to buyers. On average, firms are around 50 percent less likely to use online tools as a way of increasing productivity through internal process improvements. Similarly, the use of online tools for payments is also uncommon.

**FIGURE 1.9 Use of online tools and platforms by SMEs with digital presence**



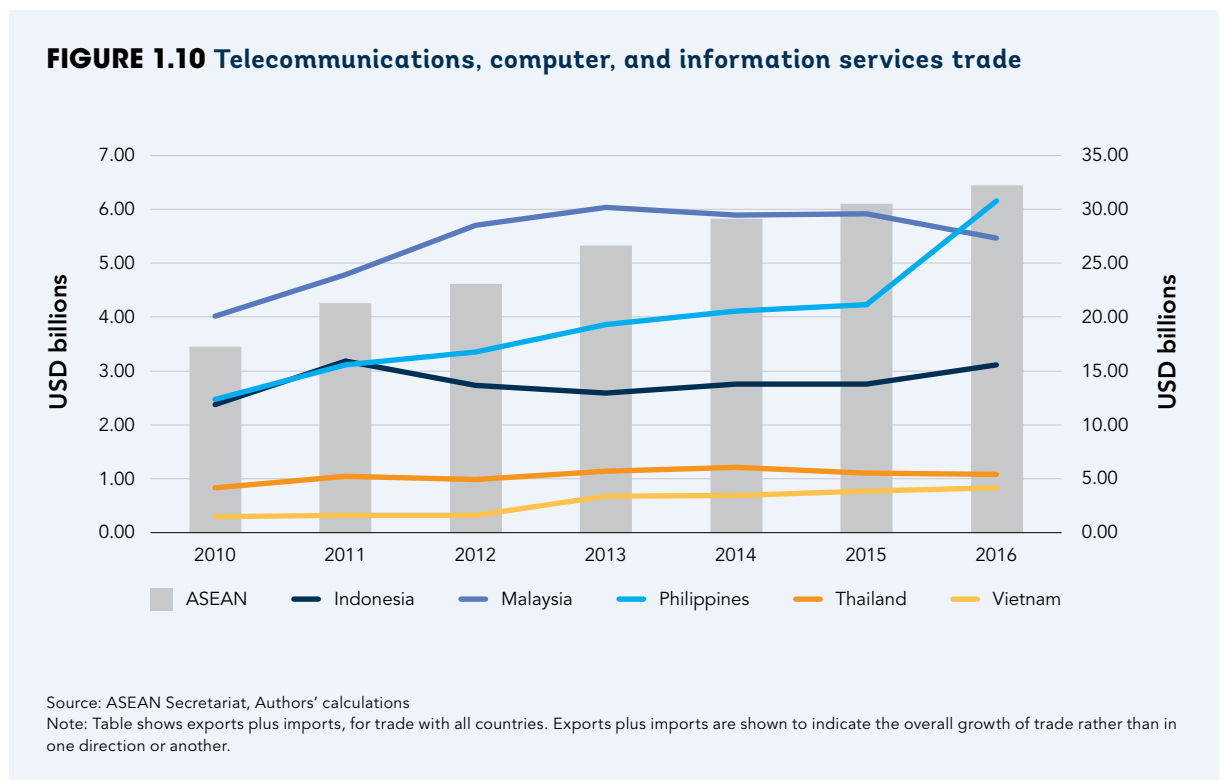
Source: World Bank, OECD and Facebook, Future of Business Survey.  
 Note: Data included is from February 2018 surveys. “Online tools and platforms” are defined in the survey as “websites/apps, platforms like Facebook/Google+, etc.”

## Digitally-Enabled Services Trade

**Beyond e-commerce in goods, the growth of cross-border services trade enabled by digital technology is further evidence of Southeast Asia’s growing digital economy.** The Internet has dramatically lowered the cost of delivering services, as well as marketing, ordering, and paying for them. In ASEAN, the rapid growth since 2010 of services directly related to the digital economy – telecommunications, computer, and information services – is a clear manifestation of this, but a range of other ‘digitally-enabled services’ have also grown.

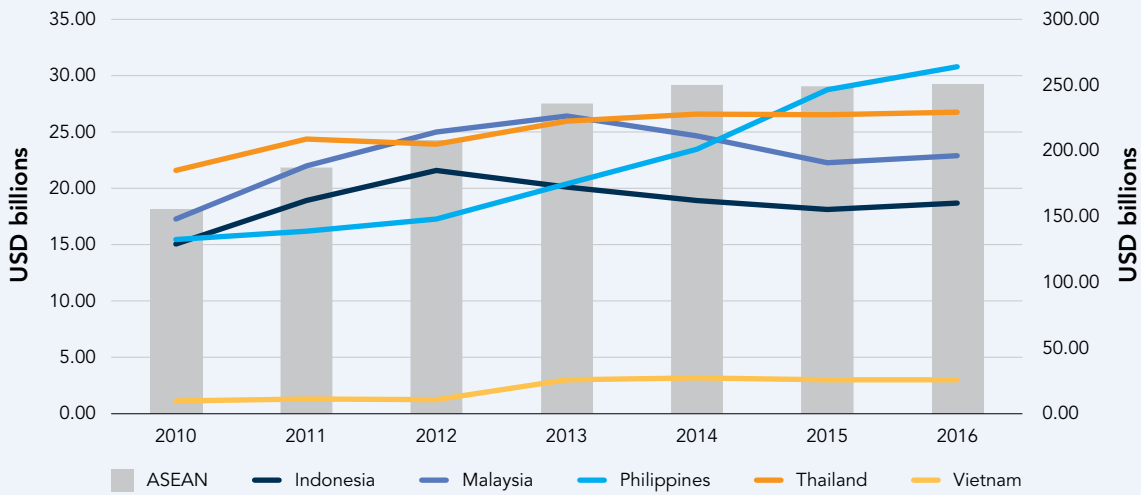
<sup>10</sup> See the data from the World Economic Forum’s 2016 Network Readiness Index at <http://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/#indicatorId=NRI.C.07>

**In the narrowest measurement of digitally-enabled services trade, namely telecommunications, computer, and information services trade, total trade in ASEAN has grown significantly since 2010, although the rate of growth varies between countries.** Total ASEAN telecommunications, computer, and IT services trade (adding exports and imports) almost doubled between 2010 and 2016 (see Figure 1.10), and its share of total ASEAN services trade grew by 28 percent. Of the region’s larger middle-income countries, the Philippines grew to become the largest participant in this type of services trade, growing by 149 percent to overtake Malaysia, whose total trade grew by a more modest 36 percent. Indonesia is the third-largest participant in this type of services trade, and while its total trade in these services has grown, this was driven by imports, with it being the only country whose exports of telecommunications, computer, and IT services declined from 2010 to 2016. This is not necessarily a cause for concern in itself, as imports of these services are likely to form (at least in part) inputs into other types of economic activity, but the lack of export growth compared to other ASEAN countries does suggest this is an area where Indonesia has not managed to capitalize on opportunities in the same way as other large middle-income countries in the region.



**A wider definition of digitally-enabled services shows similarly strong growth for ASEAN as a whole, although again the picture is mixed for individual countries.** This is shown in Figure 1.11. As with the previous, narrower category of services trade, the Philippines has grown to be the largest participant in digitally-enabled services trade, reflecting strong growth in both exports and imports, but especially exports of ‘other business services’, which includes those related to the Philippines’ business process outsourcing industry, a sector in which it is recognized as a world leader. For Thailand, key growth areas have been in financial services imports and exports, and other business services exports. Vietnam has shown strong growth since 2010, with large increases in imports of financial services, and payment of intellectual property charges, although its growth in digitally-enabled services trade has come from a very low base compared to the larger middle-income countries in ASEAN.

**FIGURE 1.11 Digitally-enabled services trade**



Source: ASEAN Secretariat; Authors calculations.

Note: Table shows exports plus imports, for trade with all countries. Exports plus imports are shown to indicate the overall growth of trade rather than in one direction or another. Following UNCTAD 2007 and U.S. Department of Commerce 2012, 'digitally-enabled services' includes financial services; charges for the use of intellectual property; telecommunications, computer, and information services; other business services; and personal, cultural, and recreational services.

**BOX 1.1**

## Singapore and Digitally-Delivered Services<sup>11</sup>

**Singapore sees digitally-deliverable services as an important area of trade growth and contributor to overall economic performance.** Its Ministry of Trade and Industry (MTI) claims that total trade (imports and exports) of digitally-deliverable services has grown at a faster pace than other digitally-ready economies (MTI 2017). Specifically, Singapore's total trade in digitally-deliverable services (in US dollars) grew by 14 percent per year from 2005 to 2015, similar to the pace of growth in China, but faster than other digitally-ready economies such as the United States (7.7 percent) and Japan (7.4 percent). Singapore's share of the global trade in digitally-deliverable services has close to doubled, from 3.5 percent in 2005 to 6.5 percent in 2015.

**According to the same research, the value-added from digitally-deliverable services exports accounted for around 18 percent of Singapore's nominal GDP in 2015, with financial and insurance as well as advertising and market research and business management services exports contributing the most to GDP.** Specifically, the value-added per dollar of digitally-deliverable services exports was S\$0.69, higher than that for non-digitally deliverable services exports (S\$0.49) and merchandise exports (S\$0.33).

11 Summarized from the Digital Economy of Singapore, a box article featured in the Ministry of Trade and Industry's Economic Survey of Singapore, 3rd Quarter 2017: [https://www.mti.gov.sg/ResearchRoom/SiteAssets/Pages/Economic-Survey-of-Singapore-Third-Quarter-2017/BA\\_3Q17.pdf](https://www.mti.gov.sg/ResearchRoom/SiteAssets/Pages/Economic-Survey-of-Singapore-Third-Quarter-2017/BA_3Q17.pdf)



## Conclusion

**In summary, while there are limitations in measuring the extent to which the digital economy has transformed the economic landscape of the region, there are strong signs that the digital economy has gathered momentum in Southeast Asia.** This can be seen by the growth of digital commerce, the rapid adoption of FinTech, the rise in digital content, and the growing digitalization of companies and government services. However, in order for the digital economy to have a significant impact on poverty reduction and inclusion, its key enablers need to be better understood. This is the focus of the following chapter.

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**CHAPTER 2**

# **Assessing Southeast Asia's Foundations for the Digital Economy**

The following two chapters assess the macro-level overview of the progress Southeast Asian countries have achieved in establishing the key enablers of the digital economy. This chapter focuses on connectivity, payments, logistics, and skills needed for the digital economy. Another general enabler, policy and regulatory responses to cross-cutting issues that shape trust in digital activities and establish legal frameworks for digital business, will be the focus of the next chapter. A snapshot of the overall framework and key priorities under each aspect of the enabling environment is provided in Figure 2.1.

**FIGURE 2.1** Digital economy foundations

| DIGITAL ECONOMY FOUNDATION    | PRIORITIES   |
|-------------------------------|--|
| Connectivity                  | <ul style="list-style-type: none"> <li>Increasing speed and lowering access costs for broadband, especially fixed broadband, primarily through enabling regulations</li> </ul>   |
| Payments                      | <ul style="list-style-type: none"> <li>Enabling online payments</li> <li>Increasing compatibility of e-payment methods, including across borders</li> </ul>  |
| Digital skills                | <ul style="list-style-type: none"> <li>Supporting lifelong learning and adaptability</li> <li>Developing more effective government-industry skills partnerships</li> </ul>   |
| Logistics                     | <ul style="list-style-type: none"> <li>Increasing efficiency of e-commerce logistics along the supply chain</li> <li>Streamlining cross-border trade facilitation</li> </ul>   |
| Digital policy and regulation | <ul style="list-style-type: none"> <li>Building trust: data privacy, consumer protection, cybersecurity, cross-border data flows</li> <li>Facilitating digital ID adoption and usage</li> <li>Providing a clear legal framework for digital businesses: e-transactions and other laws</li> </ul> |

Source: Authors.

## Connectivity

**In recent years, there has been a significant increase in access to the Internet in Southeast Asian countries<sup>12</sup>.** The number of Internet users in ASEAN member countries trebled in the last five years, from 127 million in 2011 to 390 million by end-2017. In other words, about half the population of ASEAN member countries are now online, marking a significant improvement from a decade ago when only 10 percent of the ASEAN population used the Internet. About 90 percent of ASEAN's Internet users are from Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.

**Southeast Asia has also been one of the fastest growing regions in terms of Internet penetration, with a CAGR of 13 percent between 2011 and 2016, while the world's average stood at 8 percent.** Indonesia, the Philippines, and Thailand saw a strong double-digit CAGR of 16 percent, 14 percent, and 15 percent respectively, while Malaysia and Vietnam recorded 5 percent and 6 percent CAGR respectively during the same period.<sup>13</sup>

**However, this region is still experiencing a significant broadband 'digital divide'.** Levels of economic development partially explain the disparity among the ASEAN economies, but regulatory factors are quite significant. In particular, the broadband penetration level of countries such as Indonesia and the Philippines is below the expected level of countries at their comparable per capita income.



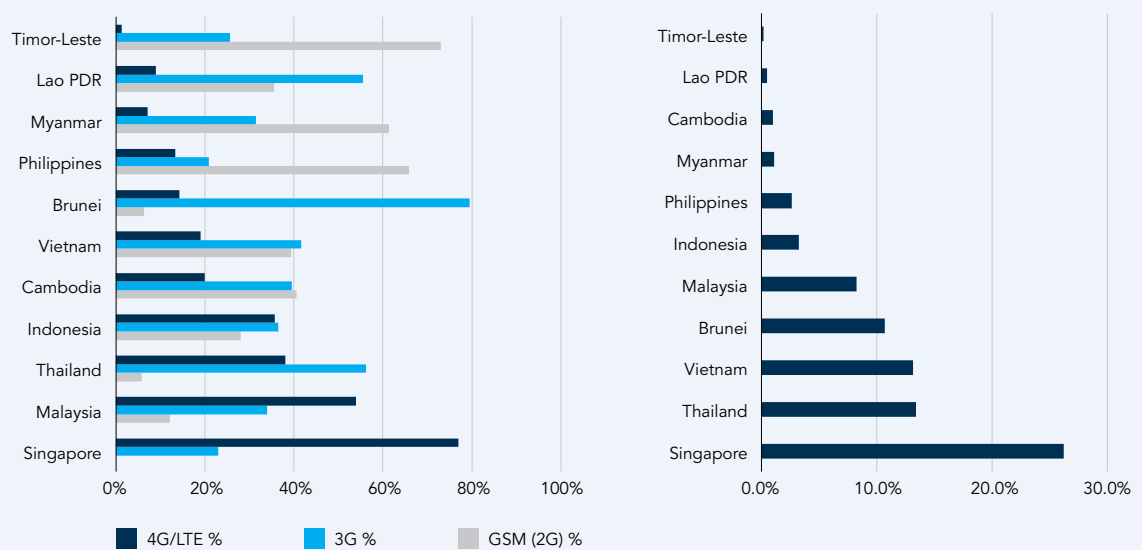
<sup>12</sup> <https://www.internetworldstats.com/stats3.htm#asia>

<sup>13</sup> Author's calculation based on the World Development Indicators (WDI) data on individuals using the Internet, percent of population and population data, and ITU Key ICT Indicators 2016.

## ACCESS TO BROADBAND

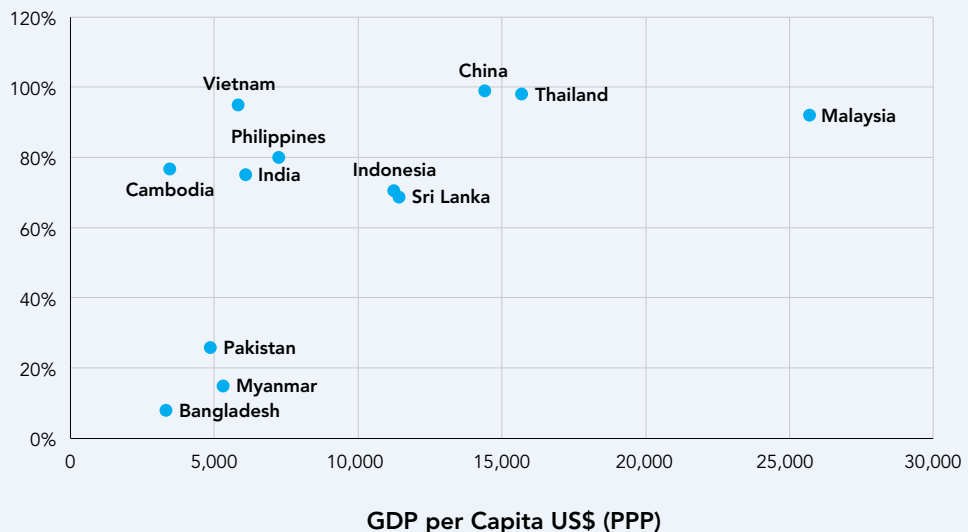
Connectivity data in the ASEAN region demonstrate a clear trend: widespread uptake of basic mobile service and increasing adoption of 3G mobile broadband, but slower uptake of 4G/LTE mobile broadband in many countries – which offers much faster data transmission capability – and even slower diffusion of fixed broadband, particularly optical fiber access networks. This is shown in Figure 2.2. For economies to remain competitive and leverage other digital technologies, additional investment in 4G/LTE and fixed broadband networks is required, including in rural/remote locations. Vietnam stands out for lower-than-expected 4G penetration (as shown in Figure 2.2), relative to income levels.

**FIGURE 2.2 Mobile/mobile broadband penetration and fixed broadband penetration**



Source: Telegeography, July 2018

**FIGURE 2.3 4G network coverage (end 2016)**



Source: Telegeography, GSMA.



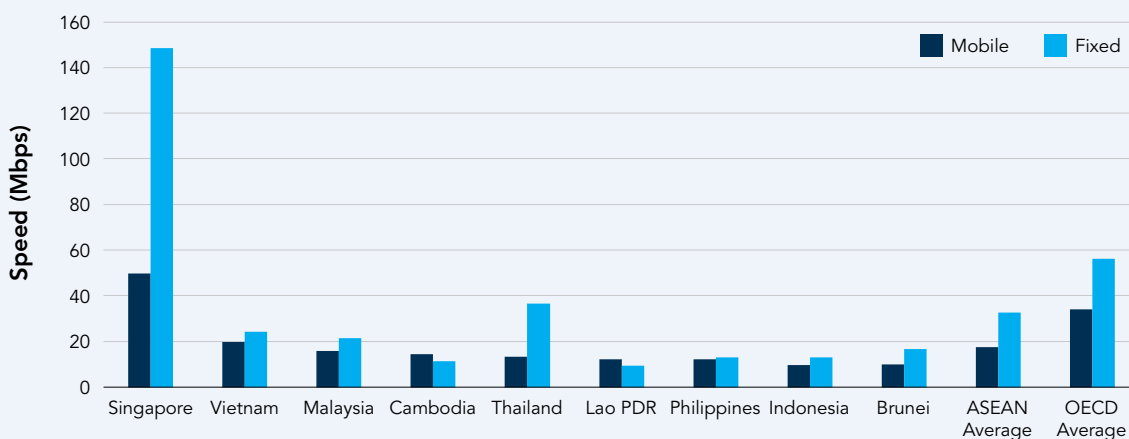
## QUALITY AND AFFORDABILITY OF BROADBAND

**Internet speed matters as new digital services, applications, and business models increasingly rely on always-on, high-speed broadband infrastructure – and this is especially important for businesses.**

For businesses, high-speed broadband is a pre-requisite in being able to embrace and adopt productivity-boosting, transformative technologies such as cloud-based services, the ‘Internet of Things’ (IoT), and data analytics.

**Broadband speeds in the largest ASEAN countries fall short of the global leaders, although the gap is closing.** The main middle-income developing countries in ASEAN all fall below the OECD average speeds over mobile and fixed broadband (see Figure 2.4). Thailand is the only economy ranked within the top 20 countries globally measured by Akamai in terms of the proportion of the population with broadband plans at 15 Mbps or faster speeds, on par with the UK and Belgium (Akamai 2017). Although Indonesia, the Philippines, and Vietnam are currently behind, the year-on-year growth rates – 520 percent, 509 percent and 1,222 percent respectively – are encouraging (see Table 2.2).

**FIGURE 2.4 Mobile versus fixed broadband download speeds (Mbps)**



Source: Speedtest Global Index, October 2017.

**TABLE 2.1** Download speeds over fixed and mobile broadband

|                                    | Lao PDR | CAM   | VN    | TH    | MYS   | IND   | PH    | MMR  | SGP    | BRN   |
|------------------------------------|---------|-------|-------|-------|-------|-------|-------|------|--------|-------|
| Mobile Broadband Throughput (Mbps) | 15.1    | 14.69 | 20.4  | 13.63 | 17.58 | 10.77 | 13.37 | 22.7 | 52.84  | 15.49 |
| Fixed Broadband Throughput (Mbps)  | 13.11   | 13.51 | 25.28 | 47.35 | 27.43 | 15.18 | 17.32 | 8.63 | 181.47 | 15.31 |

Source: Speedtest global index www.ookla.com July 2018

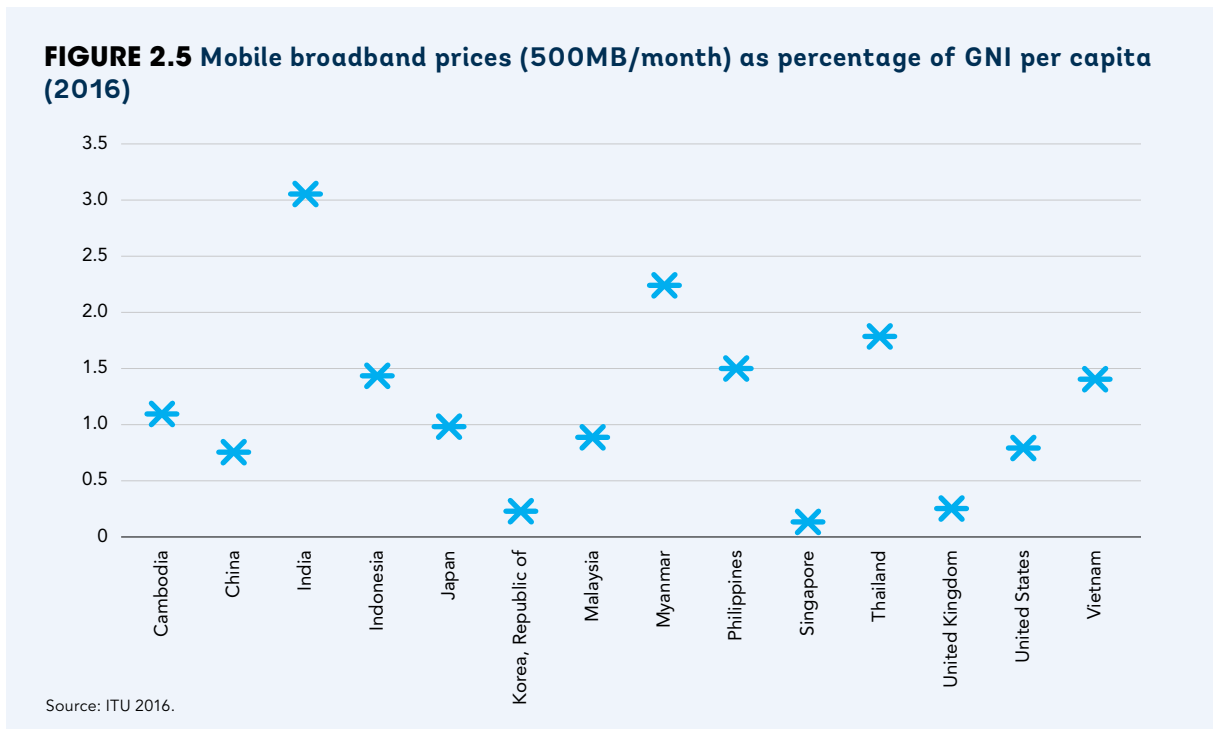
**TABLE 2.2** 15 Mbps broadband adoption (IPv4)

|    | Country/Region    | % Above 15 Mbps | QoQ Change | YoY Change | Global Rank | Country/Region    | % Above 15 Mbps | QoQ Change | YoY Change |
|----|-------------------|-----------------|------------|------------|-------------|-------------------|-----------------|------------|------------|
| -  | Global            | 28%             | 11%        | 33%        | 1           | Republic of Korea | 69%             | 7.8%       | -0.4%      |
| 1  | Republic of Korea | 69%             | 7.8%       | -0.4%      | 4           | Hong Kong         | 54%             | 2.8%       | 13%        |
| 2  | Switzerland       | 56%             | 3.9%       | 26%        | 5           | Japan             | 52%             | 3.3%       | 20%        |
| 3  | Norway            | 54%             | 0.1%       | 8.1%       | 6           | Singapore         | 51%             | -1.4%      | 20%        |
| 4  | Hong Kong         | 54%             | 2.8%       | 13%        | 13          | Thailand          | 43%             | 56%        | 186%       |
| 5  | Japan             | 52%             | 3.3%       | 20%        | 19          | Taiwan            | 38%             | 16%        | 17%        |
| 6  | Singapore         | 51%             | -1.4%      | 20%        | 27          | New Zealand       | 32%             | 26%        | 111%       |
| 7  | Sweden            | 49%             | 0.6%       | 7.1%       | 47          | Australia         | 19%             | 21%        | 90%        |
| 8  | United States     | 48%             | 14%        | 36%        | 52          | Malaysia          | 14%             | 28%        | 339%       |
| 9  | Romania           | 47%             | 5.6%       | 14%        | 57          | Vietnam           | 11%             | 69%        | 1,222%     |
| 10 | Denmark           | 46%             | -4.5%      | 14%        | 58          | India             | 10%             | 38%        | 405%       |
|    |                   |                 |            |            | 63          | Philippines       | 6.2%            | 72%        | 509%       |
|    |                   |                 |            |            | 69          | Indonesia         | 5.0%            | 16%        | 520%       |
|    |                   |                 |            |            | 70          | China             | 5.0%            | 122%       | 1,146%     |
|    |                   |                 |            |            | -           | Sri Lanka         | 11%             | 101%       | 556%       |

Source: Akamai 2017.

**Affordability of broadband, both in absolute terms and as a percentage of income, has seen steady improvement globally and in the Southeast Asian region (ITU 2016, 2018).** While mobile broadband is becoming more affordable (being less than 5 percent of GNI per capita; see Figure 2.5), fixed broadband is typically less affordable.<sup>14</sup>

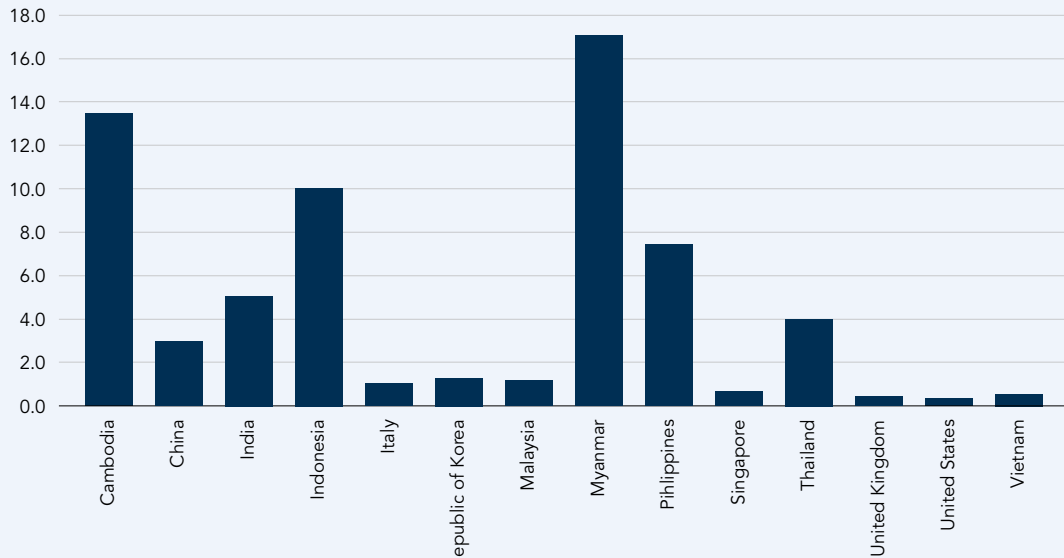
**Major Southeast Asian countries are struggling to simultaneously provide affordability on the one hand, and quality and speed on the other.** Fixed broadband is generally still much more expensive than its mobile equivalent, costing on average twice as much as mobile broadband in less-developed countries (ITU 2016). Malaysia ranks in the top 50 (at 42nd) out of 182 countries measured by the International Telecommunications Union (ITU), with fixed broadband costing 1.1 percent of GNI per capita in 2015. Vietnam ranks at 66th with 1.8 percent, and Thailand 98th with the fixed broadband price of 3.9 percent GNI per capita. Yet, the entry-level broadband product in Malaysia only offers 1 Mbps of speed while fixed broadband services start at 2.5 Mbps and 10 Mbps. The Philippines ranks 126nd out of 182 countries measured by the ITU with entry-level fixed broadband prices at 7.53 percent level of GNI per capita. Indonesia ranks even lower (at 133rd) and its fixed broadband costs nearly 10 percent (9.51 percent) of GNI per capita despite offering a low speed of 0.25 Mbps (or 257 kbps). Figure 2.6 provides a comparative snapshot of the cost of fixed-line monthly broadband in ASEAN and other countries as a percentage of GNI per capita.



**There are also significant variations not only in availability, but also quality and pricing of broadband services within countries,** attributable to multiple factors: geography and population distribution (particularly for Indonesia and the Philippines), technical factors (such as the type of backhaul technologies available – fibre, microwave, or satellite), overall costs of service deployment, and expected revenues for service providers. Others include local constraints such as permits and right-of-way requirements, and lower levels of competition in particular regions. For example an overview of mobile broadband tariffs in Indonesia shows price variations of between 15 percent (for basic packages) to 33 percent for less-populated areas in Kalimantan, Sulawesi, Maluku, and Papua regions. Crowdsourcing data e.g. OpenSignal for various countries and urban/non-urban, large and smaller cities, also shows significant variations between regions and service providers, irrespective of tariffs.

<sup>14</sup> The UN Broadband Commission’s recommended threshold is that the expenditure on communications does not exceed 5 percent of GNI per capita.



**FIGURE 2.6** Fixed-line monthly broadband cost as a percentage of GNI per capita in ASEAN and other countries (2016)

Source: ITU 2016.

**When benchmarked against regional peers such as Singapore, the Republic of Korea, and China, as well as Europe, the task ahead for Southeast Asian countries is clear: make broadband more affordable for everyone and improve speed at the same time.** Fixed broadband costs less than 5 percent of GNI per capita in all European countries, for example. In economies such as Singapore, the Republic of Korea, and Hong Kong SAR, China, fixed broadband products are not only inexpensive but also above 30 Mbps at the entry level. Data caps are another constraint for adoption and productive use of digital technologies over the IP networks that need to be addressed. This is not to say that there are no high-speed fixed broadband plans available in these countries; all four countries do have plans offering 100 Mbps or above, albeit scarcely. Consumers will also have to pay a lot more than their counterparts in more advanced countries, especially for high-speed broadband products. For example, consumers in Malaysia will have to pay approximately twice as much as those in Singapore (US\$76 compared to US\$36) for plans with 500Mbps of advertised speed.

## INTERNATIONAL BANDWIDTH

**International bandwidth is an important factor in assuring affordability and quality of Internet access within a country.** This is because a substantive portion of Internet traffic travels in and out of the country, except countries that consume more local content or locally-cached content on content delivery networks (CDNs). ASEAN countries added a significant volume of international bandwidth in recent years, reflecting their increased digital consumption as well as growing interconnection with the rest of the world through cross-border data flows. Between 2011 and 2018, ASEAN's international bandwidth grew from 332 Gbps to 49,562 Gbps. International submarine cables such as Asia Pacific Gateway (APG), Asia Africa Europe-1 (AAE-1) and SeMeWee5 that recently came online have played an important role in accommodating the growth.<sup>15</sup> Malaysia and Thailand have better international linkages than Indonesia, the Philippines, and Vietnam, despite having fewer Internet users in absolute numbers.

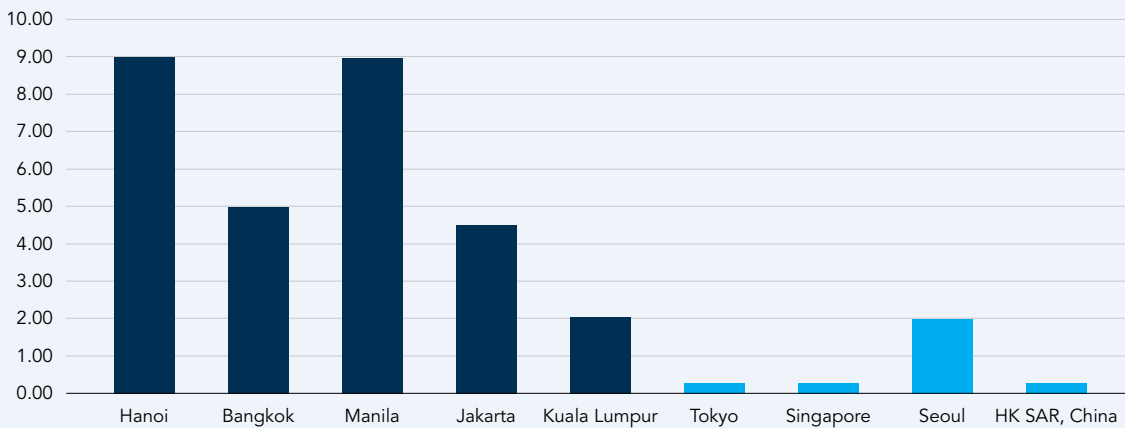
<sup>15</sup> Telegeography, Submarine Cable Profiles, 2017.

**The high capital expenditure required to build cross-border fiber-optic cable networks is one of the limiting factors of international bandwidth investment.** For example, while the cost of submarine cable construction costs has fallen, the average construction as of 2016 was still around US\$43,000 per kilometer.<sup>16</sup> Therefore, the network of cross-border submarine cables has developed more actively between trade partners, and among more developed economies with proven volume and traffic of cross-border transactions and trade. Southeast Asian countries have had a late start in the international bandwidth race, but are actively catching up with investment into inter-regional as well as trans-Pacific cables coming online in 2019 and 2020.<sup>17</sup>

**Relatedly, Southeast Asian countries pay relatively high IP transit prices to access international bandwidth.** This is highlighted in Figure 2.7. There are many factors determining price points for IP transit but in general the higher the volume of the bandwidth a country buys, the lower the prices tend to be. Hong Kong SAR, China, and Singapore have positioned themselves as the hub or exchanges of international bandwidth and thus able to avail exceptionally low IP transit prices. Fortunately for Southeast Asia, the price of international IP transit has decreased substantially and is forecasted to continue to decline for some time to come.<sup>18</sup>

**FIGURE 2.7 Average media IP transit prices for major Asian cities per Mbps, 10 Gigabit Ethernet (2018)**

Minimum IP Transit tariff in US\$/Mbps/month-selected cities



Note: Prices represent the average median monthly price per Mbps for a full-port commit in the listed city. Data derived from Q1-Q4 prices of 2017. Prices are in US\$ and exclude local access and installation fees. 10 Gigabit Ethernet (10 GigE) = 10,000 Mbps.

<sup>16</sup> Telegeography, Global Bandwidth Research Service, 2017

<sup>17</sup> Telegeography, Global Bandwidth Research Service, 2017; the planned submarine cables that would land in at least one of the focus countries include Pacific Light Cable Network, JUPITER and Sea Cable Exchange-2 (SeaX-2).

<sup>18</sup> Telegeography, International Bandwidth 2017, <https://www2.telegeography.com/enterprise-network-market-summary>

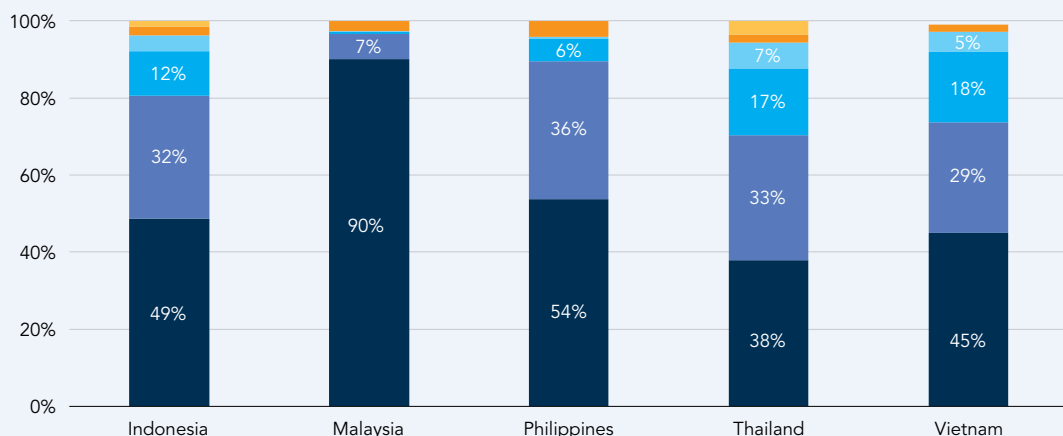
## CONNECTIVITY POLICY CHALLENGES

**Some of the causes for Southeast Asia's relatively low-speed and low-quality broadband networks relate to factors that are difficult to change, including geography and population distribution, but policy is also major factor.** Geography is a major obstacle to archipelago countries such as Indonesia and the Philippines, where the topography make it more expensive to roll out infrastructure, and the smaller number of potential users in several locations makes it less profitable to serve these communities. However, policy and regulatory factors also contribute to the broadband challenge in Southeast Asia, including limited competition in various segments of the broadband value chain; challenges with right-of-way and related permits; access to spectrum; licensing restrictions; and other barriers such as number portability. Addressing these policy and regulatory factors will contribute significantly to overcoming the challenges presented by geography in the region, reducing the broadband digital divide between and within countries.

### Competition along the broadband value chain

**Competition is limited in various segments of the broadband value chain.** The mobile broadband market in Southeast Asia is generally competitive, as demonstrated by continuous quality upgrades and decreasing prices. The fixed broadband market, however, is more concentrated and often dominated by incumbents, some of which are state-owned enterprises (SOEs) or government-linked corporations (GLCs) (see Figure 2.8). There are historical reasons behind the current market structure. Fixed networks were initially built as government-owned or supported infrastructure, which led to the traditional incumbents maintaining majority ownership of fixed networks. Despite the liberalization of most telecommunications markets, in some cases governments have retained equity interests or governance influence even after privatization, which has helped the incumbents to retain their dominance.

**FIGURE 2.8 Fixed broadband market share of incumbents (2017)**

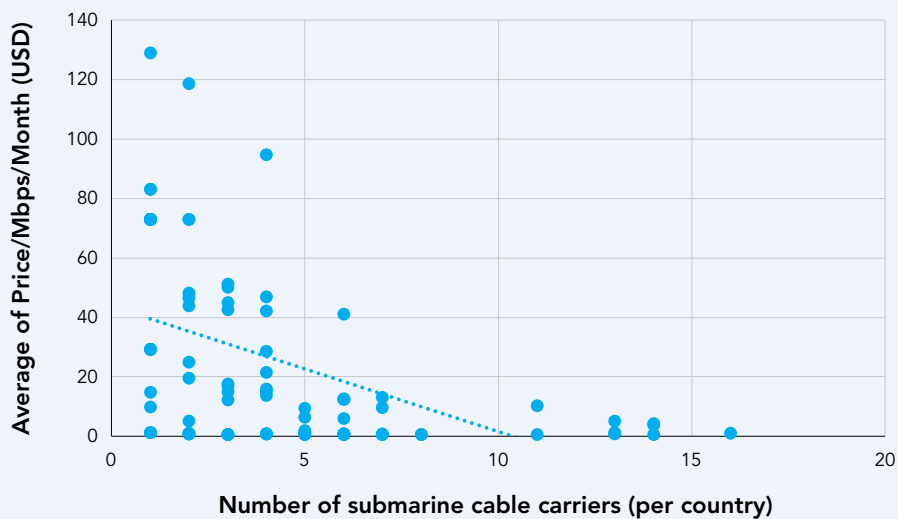


Source: Telegeography. Each column shows the market share of individual companies within the fixed broadband market, with names of companies removed. Values are not included for sections of each bar where the market share is lower than 5%.

**Improving the competitive landscape by promoting open access at all levels of the broadband value chain is very important.**

At the first mile, or international gateway segment, lack of competition among carriers providing and sourcing such international connectivity is one of the factors influencing IP transit prices; the larger the number of carriers, the lower the prices as the competition among carriers that bring such capacity into a country drives down prices. In some countries, incumbents are dominant players in the upstream/wholesale market and act as gatekeepers for international bandwidth.<sup>19</sup> This is partially due to the way investment and construction of submarine cables have been carried out. Due to the high cost of construction and to share risks, national carriers and international ISPs form a consortium to invest and construct submarine cables (see Figure 2.9). Since such consortia typically limit participation to one player per country, they have mainly consisted of incumbents of the countries where the submarine cables would land, allowing incumbents to become gatekeepers of the international bandwidth.<sup>20</sup> In recent years, there has been growing participation from other national operators as well as leading Internet companies such as Google and Facebook, adding more competition to the space and bringing the overall IP transit price down. There has also been a strong regulatory push to ensure open access of submarine landing cable, which gives access seekers fair and non-discriminatory pricing to access necessary international bandwidth (UNESCAP 2017).

**FIGURE 2.9 Monthly price (Mbps) versus number of submarine cable carriers**



Source: Telegeography 2017.

**Limited competition adds inefficiency at the wholesale level and contributes to higher broadband prices.**

This has been found in East Asia and the Pacific as well as other regions such as the European Union (EC 2014).<sup>21</sup> As many dominant players in Southeast Asia are vertically integrated, they have been able to dictate the terms through which their competitors interconnect or lease capacity and facilities for aggregation or backhauling of traffic.<sup>22</sup> This results in excessive interconnection fees which drives up retail prices. For example, Telekom Malaysia (Malaysia’s main telecommunications service provider) has been accused of blocking co-location arrangement and charging excessive connection fees to the cable landing stations despite the open-access regulations.<sup>23</sup> Another form of market abuse from incumbents

19 Telekom Malaysia, for example, controls 7 out of 10 international submarine fiber networks that terminate in Malaysia and 5 out of 7 regional cables.  
 20 Telegeography, Global Bandwidth Research Services, 2017  
 21 A World Bank analysis of average fixed broadband prices in 12 economies across the East Asia and Pacific found a strong correlation (0.62) between prices and the market share of the largest service provider.  
 22 Network operators and service providers wishing to enter the downstream market (that is, building access networks and offering services to customers) must either build their own backbone network or access the network of another operator.  
 23 Interview with mobile operators as part of the Malaysia Digital Economy project, August to November 2017.

is withholding exchange of traffic in non-discriminatory forms through carrier-neutral Internet Exchange Points (IXPs).<sup>24</sup> Until 2015, PLDT, a major operator in the Philippines, for example, operated its own Vitro Internet Exchange and routed the traffic through the Hong Kong Internet Exchange (HKIX) and did not interconnect with the PHOpenIX, the country's only carrier-neutral IXP (Noda 2015). According to one estimate, 40-70 percent of local traffic is routed through either Hong Kong SAR, China or Los Angeles in the United States, and most of this is due to transit through PLDT's gateway, affecting the speed and quality of Internet access in the country (Fafunwa 2010).

In addition, barriers to entry to the market either for foreign players or other potential competitors is still an issue in certain markets. The Philippines, for example, effectively has a duopoly market structure. In 2014, San Miguel Corporation, in partnership with Australia's Telstra, successfully attempted to become a third national mobile network in the Philippines, only to sell its telecommunications assets including spectrum to PLDT and Globe. The Philippines government is now seeking to attract a third operator, but a successful market opening would need to be bolstered by significant regulatory reforms to offer a more competitive landscape.<sup>25</sup>

### Infrastructure sharing and right-of-way

**Telecom operators have typically invested in proprietary network infrastructure around the region, but this has resulted in duplication and cost inefficiencies.** For example, 70-80 percent of the investment in fixed broadband is typically accounted for by passive infrastructure such as ducts, poles, ROW, building access (in cities) and civil works. In Indonesia, for example, passive infrastructure sharing for fixed broadband is currently neither required nor practiced by the industry. Tower sharing for mobile networks is effective, following the 2009 Tower Sharing regulation. Cross-sectoral passive infrastructure sharing (between (rail)roads and fiber-optic and electricity poles and fiber-optic) has taken place to some extent, but sharing between telecommunication companies is not yet well established or regulated.

**Deploying broadband infrastructure also entails working with national and, in some cases, local governments to secure permits and ROW.** This may add costs and uncertainty. Operators in the Philippines, for example, attribute the backlog in the rollout of cell sites and fiber builds to the challenges in getting necessary permits from local government units (LGUs), which are said to be as many as 25 permits (Globe 2016). In Malaysia, many state-appointed One-Stop Agency (OSA) offices or intermediaries between telecommunications providers and local councils started to impose additional security deposits and increased costs without consultation with the telecommunications providers. ROW can be challenging in Indonesia, particularly given multiple institutions involved in a decentralized administrative environment. Requirements for multiple permits and licenses add significantly to costs of network rollout.

**There is scope for efficiency gains by promoting infrastructure sharing.** Examples of relevant policies in this regard include 'dig once' policies, re-use of existing network assets or facilities (for example, fiber networks of utility companies, government assets) and coordinated construction of infrastructure with other sectors (for example, transport and energy).<sup>26</sup>

<sup>24</sup> An IXP is a physical location where different IP networks meet to exchange local traffic with each other via a switch and other equipment (for example, routers, servers). IXPs are integral part of the Internet ecosystem and provide a way for various networks (mobile, Internet, content delivery networks) to exchange traffic locally. IXPs promote local content development and shorten the routes between local users and their desired content, resulting in an Internet that feels as if it were running faster.

<sup>25</sup> Telegeography, GlobalComms, 2018

<sup>26</sup> In Indonesia, the Bandung municipal office has sought to regulate the optical cable network through Mayor Regulation No. 589/2013, an underground optical cable shared-duct provision, which mandates operators to utilise a shared duct for their broadband services. In Malaysia, the State Government of Penang is also actively promoting a 'dig once' policy, and is looking into incorporating a government entity to promote further coordination and infrastructure sharing among operators.

## Access to spectrum

**With mounting pressure from growing data demands, radio spectrum is a valuable resource that needs to be wisely allocated and optimally utilized.** Limited availability of spectrum – either due to inefficient allocation or lack of administrative capacity of the government to plan and assign available spectrum – is a key obstacle for many Southeast Asian countries to continue their trajectory of deploying high-speed mobile networks. In Indonesia, for example, the following spectrum reforms need to be completed:

- 700 MHz band. This requires digital TV migration to be completed. This band is very important to enable cost-efficient (4G/LTE and beyond) mobile broadband in rural areas.
- 2.6 GHz band. An important band to add capacity in urban centers. In Indonesia, for example, this band is currently used for satellite TV, and reallocation (on a consultative basis) is now being considered.
- 3.4–3.8 GHz band (and potentially the broader 3.3–4.2 GHz band). This band is the next band to add capacity after the 2.6 GHz band. This band is also seen as the band for early 5G introduction. Currently used for (extended) C-Band applications. Over time, some form of sharing should be considered with use of this band for mobile services in urban areas and for satellite services in those rural areas which may still require C-band connectivity.

In Malaysia, the Malaysian Communications and Multimedia Commission (MCMC) assigned the 2600 MHz band for LTE services to eight market players through a “beauty contest” or administrative allocation in 2012. To date, five players, namely Maxis, Celcom, U Mobile, Yes and Digi, have used this spectrum band effectively to roll out wireless broadband networks. Instead of meeting the rollout targets, these assignees are “leasing” the capacity to the leading mobile operators, effectively creating a secondary market of public goods without MCMC enforcing the terms of the license.<sup>27</sup>

## National broadband plans

**The key middle-income countries in the region have national-level broadband plans backed by national backbone projects, with set targets on penetration and user experience in terms of speed to be achieved by 2020.** These plans and targets are summarized in Table 2.3. However, in order for Southeast Asian countries to remain competitive in the global market, these targets may not be ambitious enough. For example, EU countries are targeting at least 100 Mbps for all European households in both rural and urban settings, upgradable to Gigabit speed by 2020 through its EU Gigabit Society program.<sup>28</sup> By comparison, the Republic of Korea has established a national “Ultra Broadband Convergence Network” (UBcN) with 1 Gbps speeds on fixed lines and 10 Mbps on wireless as early as 2009. By 2014, over 36 percent of households were using Gigabit Internet connections (KISA 2017). These results suggest Southeast Asian countries can be more ambitious about the quality of the national broadband networks they aspire to establish.

<sup>27</sup> Interview with MCMC.

<sup>28</sup> For an overview of this program, see the European Commission website at <https://ec.europa.eu/digital-single-market/en/policies/improving-connectivity-and-access>

**TABLE 2.3 National broadband plans and backbone projects**

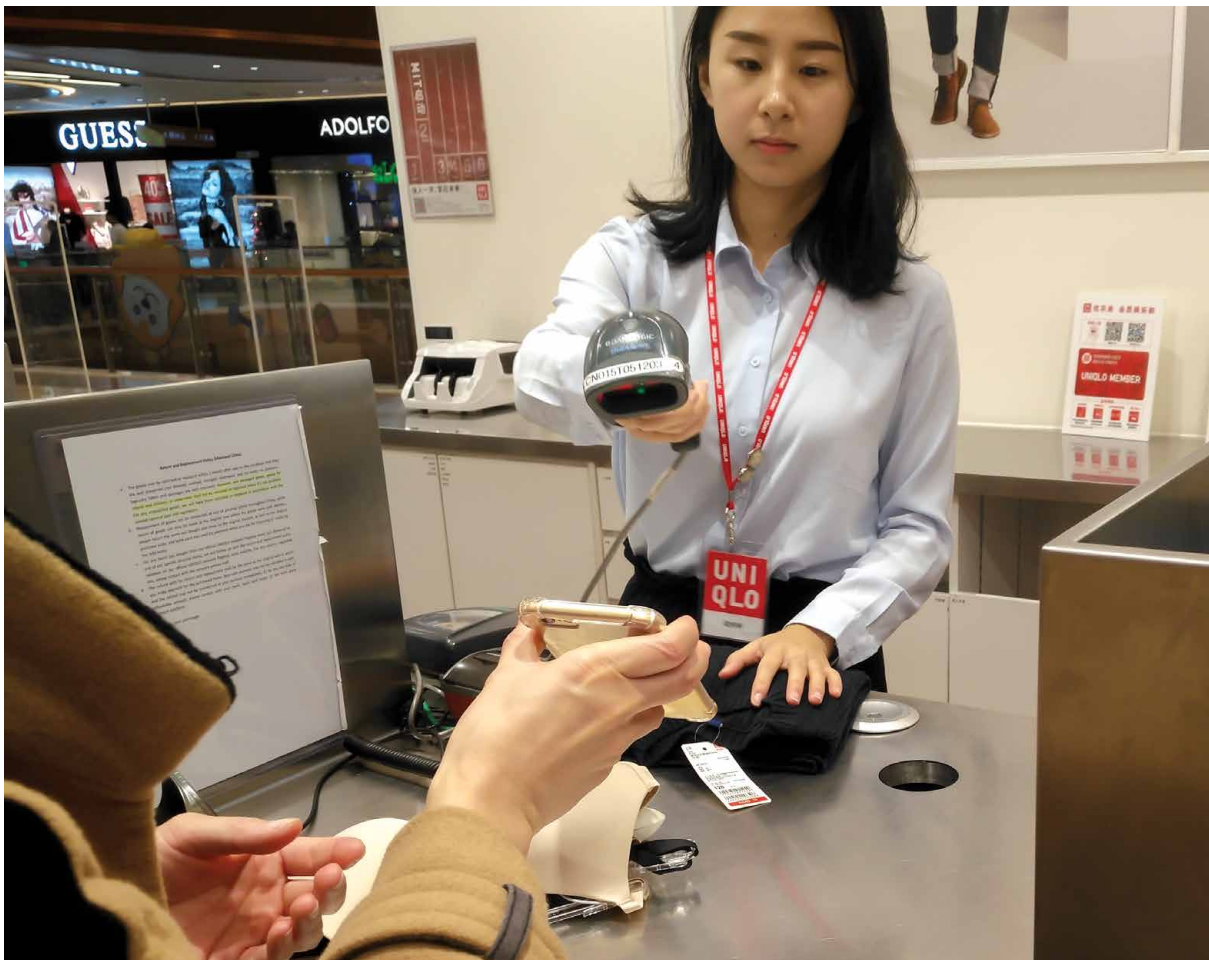
| Country     | National Broadband Plans and Projects  | Relevant Goals/Targets  |
|-------------|--|---|
| Indonesia   | Indonesia broadband plan 2014-2019   | <ul style="list-style-type: none"> <li>Fixed broadband: 71 percent of household penetration at 20Mbps in urban, 49 percent at 10Mbps in rural</li> <li>Mobile broadband: 100 percent of population coverage at 1Mbps for urban, 52 percent for rural</li> </ul>   |
|             | Palapa Ring Project  | <ul style="list-style-type: none"> <li>Southwestern package (Riau and Riau Islands (up to Natuna Island) with total length of fiber-optic cable around 2,000 km</li> <li>Central package (Kalimantan, Sulawesi, and North Maluku (up to Kep. Sangihe-Talaud) with a total length of fiber-optic cable about 2,700 km</li> <li>Eastern package (East Nusa Tenggara, Maluku, West Papua and Papua, to the interior of Papua) with a total length of fiber-optic cable over 8000 km</li> </ul>   |
| Malaysia    | <ul style="list-style-type: none"> <li>High Speed Broadband (HSBB) 1 (2008-) and 2 (2015-2025)</li> <li>Sub-Urban Broadband (SUBB) (2015-2019)</li> <li>Rural Broadband (RBB) (2015-)</li> </ul> | <ul style="list-style-type: none"> <li>HSBB1: Provide 1.3 million new ports for the Inner Klang Valley at up to 10 Mbps and above</li> <li>HSBB 2: Provide 390,000 new ports for state capitals, major towns, and high growth areas using FTTH, ETTH, and VDSL up to 100 Mbps</li> <li>SUBB: 420,000 new ports from 421 exchanges and upgrading of existing copper lines to provide broadband in suburban and rural areas outside HSBB and HSBB2 areas at up to 20 Mbps</li> <li>RBB: Broadband service in under-served rural areas up to 4 Mbps</li> </ul> |
| Philippines | National Broadband Plan (2016-2020)  | <ul style="list-style-type: none"> <li>50 percent of households with Internet access</li> <li>55 percent of individuals with Internet</li> <li>Fixed broadband per 100 inhabitants: 15 percent</li> <li>Mobile broadband: 55 percent</li> <li>Cost of ICT service, as a percentage of GNI per capita: &lt;6.4 percent</li> <li>Average broadband speed: 10 Mbps</li> </ul>  |
| Thailand    | National Broadband Policy  | <ul style="list-style-type: none"> <li>Mobile broadband: 80 percent penetration by 2015 and 100 percent by 2020</li> </ul>  |
|             | The National Digital Economy Policy and Plan (2016-2020)   | <ul style="list-style-type: none"> <li>95 percent broadband network access across the country at 100 Mbps speed in all regional hubs by 2020</li> <li>Providing free Wi-Fi to 10,000 locations, including non-formal and informal schools, Border Patrol Policy schools and digital Community Centers</li> <li>Doubling international bandwidth</li> </ul>  |
| Vietnam     | Programme for the development of the country's high-speed telecoms infrastructure  | <ul style="list-style-type: none"> <li>Fixed broadband: 40 percent penetration at minimum 25 Mbps by 2020.</li> <li>Public Internet access points: minimum of 50 Mbps using fixed broadband services</li> <li>Mobile broadband: 95 percent of residential area coverage at min 4 Mbps in urban and 2 Mbps in rural areas</li> </ul>   |

Sources: ITU Broadband Commission 2017; Telegeography; OpenGov; websites of DICT (Philippines) and MCMC (Malaysia)

## Digital Payments

**The growth in digital payments reflects the expanding digital economy, but it is also one of the main enabling factors for growing other aspects of the digital economy like e-commerce.** Within the last few years, digitalization has penetrated the financial services industry deep and wide, with innovative applications now extending to mobile wallets, P2P lending, cryptocurrencies, and distributed ledger technologies (DLTs). Additional financial services via digital platforms may be offered by banks and non-bank service providers – credit, savings, insurance, and even securities – also to the financially excluded and under-served, often relying on digital data to target customers and manage risk. Digital payment platforms have a central role in e-commerce, providing a way for buyers and sellers to make or receive payments and to store value electronically. The full benefits of reduced costs of accessing information on products and purchasing them from a distance can only be achieved if payments can also be made from a distance, in as frictionless a way as possible.

**Digital payments are a major driver of financial inclusion.** Payments are typically the entry point in the use of financial services by those previously excluded, including for example for the purpose of receiving remittances or social benefits (CPMI and World Bank 2016). Digital payment channels have the potential to empower those lacking access to banking services to access other formal financial services. Developing an inclusive digital payments ecosystem is essential for providing basic financial services to the excluded or under-served. For these users, access to payments is a stepping stone towards accessing other financial services.

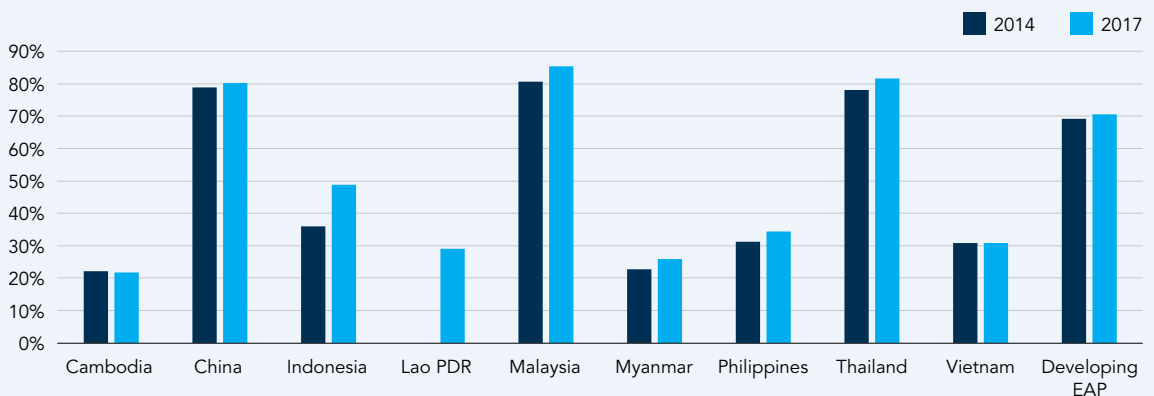




**One of the most significant promises of building an inclusive digital payments ecosystem is the inclusion of individuals, communities, and SMEs that have typically been left behind by the brick-and-mortar model of financial services.** Digital wallets, for example, can extend financial access to the unbanked, enabling them to store value and transfer funds conveniently and safely; online and mobile payments open doors to SMEs to engage in e-commerce and cross-border trade, ultimately expanding their market reach.

**Despite technological advances, lack of inclusion in the formal financial system is constraining access to digital finance in some countries in the region.** Access to accounts at a bank or other financial institution is a basic requirement for accessing digital financial services, and the situation on this front varies significantly across the region (see Figure 2.10). Inclusion is still especially low in Cambodia, Myanmar, and Lao PDR, with less than 30 percent of adults having an account. On other hand, countries like China, Malaysia, and Thailand have reached impressive levels of access to accounts. Between 2014 and 2017 there has been modest growth in accounts held at a financial institution in all countries except Vietnam and Cambodia. The growth has been most significant in Indonesia, where 49 percent of the population has an account, up from 36 percent in 2014.

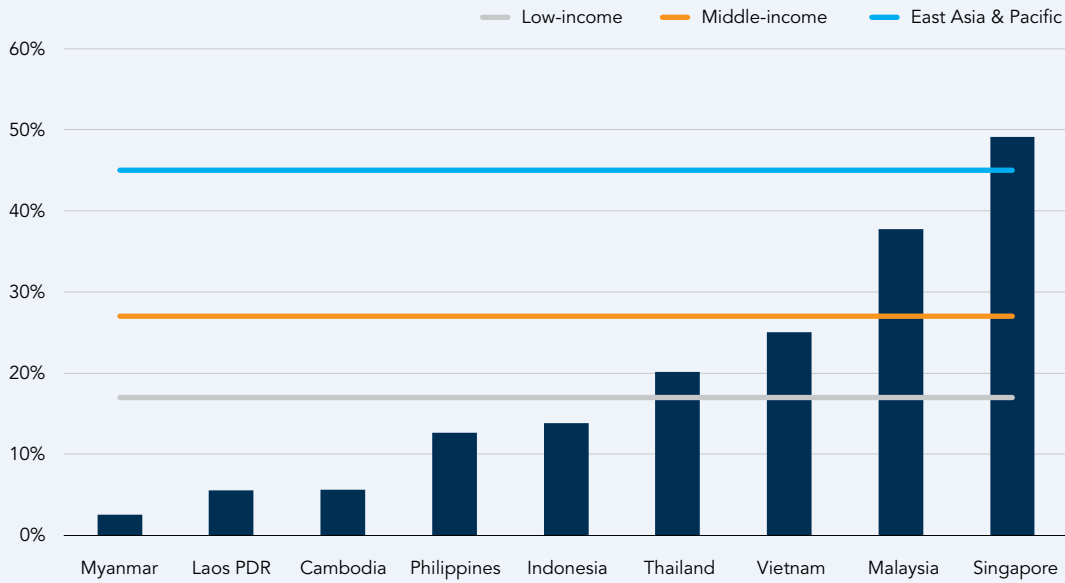
**FIGURE 2.10** Share of adults with an account at a bank or financial institution is rising slowly



Source: World Bank 2017a, Global Findex.

**Account holders are less likely to use digital means to access their accounts in Southeast Asian countries than globally, at comparable income levels.** As Figure 2.11 shows, the global average in middle-income countries is for roughly one quarter (27 percent) of account holders to access their accounts using the Internet or mobile phones. However, usage falls below this level in Vietnam, Thailand, Indonesia, and the Philippines, from two percentage points lower in Vietnam, to 14 percentage points lower in the Philippines. In Indonesia and the Philippines, account holders use digital means to access their accounts at around half the level of the global middle-income country average. Strikingly, usage in these two countries is below the global average for low-income countries. The levels of usage are even lower for Cambodia, Lao PDR, and Myanmar. In Cambodia and Lao PDR, the share of account holders using digital means to access their accounts is just under one-third of the global low-income country average; in Myanmar it is just under one-sixth. By way of contrast, in Sub-Saharan Africa, 24 percent of account holders use the Internet or mobile phones to access their accounts – a level exceeded only by Malaysia and Vietnam among Southeast Asia's developing countries.

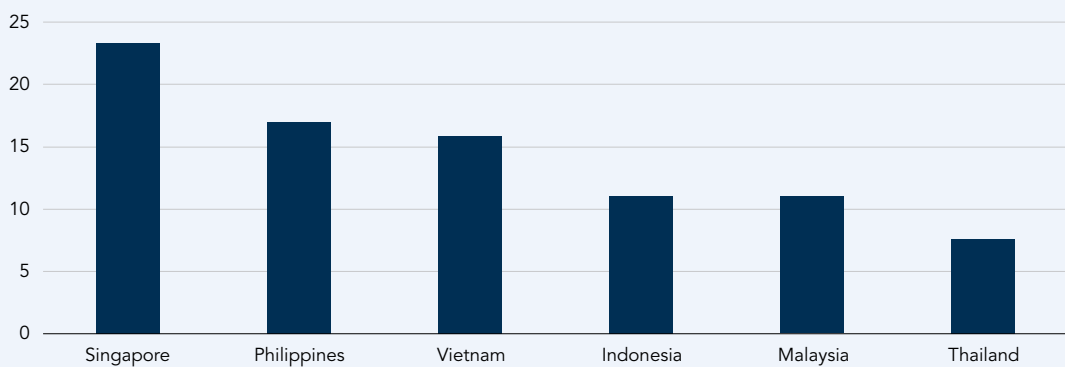
**FIGURE 2.11** Share of account holders that access their account digitally (mobile/Internet) is lower in most countries than relevant global averages



Source: World Bank 2017a, Global Findex.  
 Note: Data refers to holders of an account at a financial institution who have accessed their account using the Internet or a mobile phone in the past year.

The usage of digital wallets across the region mirrors the variation in use of digital payments between countries. Singapore is the most mature cashless payments market and has the highest digital wallet penetration at 23.3 percent, followed by the Philippines, Vietnam, Indonesia, Malaysia, and Thailand (see Figure 2.12). However, Singapore still lags behind the top users of digital wallets globally. For example, in the United States and China, 32 percent and 29 percent of the population respectively use digital wallets as a payment option.

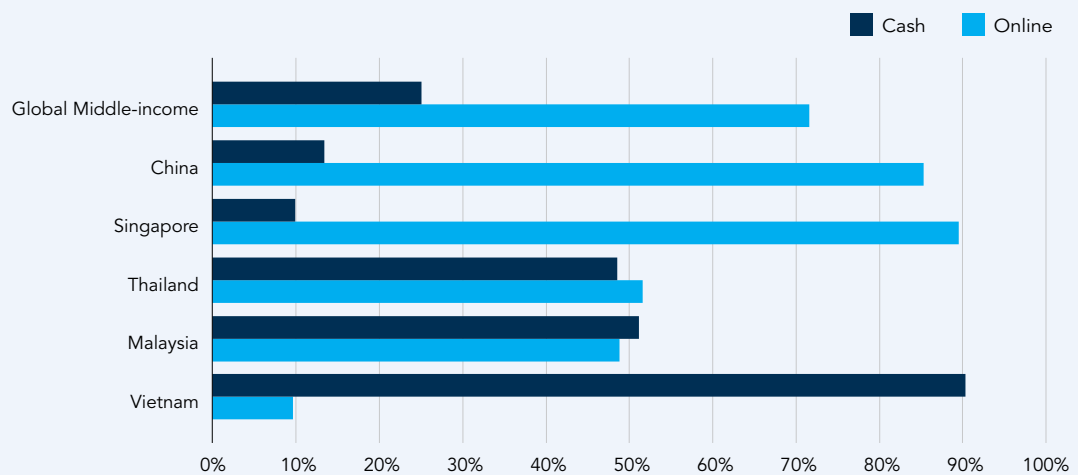
**FIGURE 2.12** Percentage of the population using digital wallets (2016)



Source: Mastercard Wallet Survey Results 2016.

**The reliance on cash-on-delivery (COD) to pay for online purchases suggests that there is a significant potential for greater adoption of digital payments in Southeast Asia.** In Thailand and Malaysia, online shoppers have roughly the same likelihood of paying COD as paying online for an Internet purchase. In Vietnam, online shoppers are nine times more likely to pay cash than pay online. This does not compare favorably with other countries. The level of online payments for Internet purchases in Thailand and Malaysia is roughly one-third lower than the average for middle-income countries globally, and around half that of the level in China or Singapore. In Vietnam, the usage of online payments is 14 percent that of the average for middle-income countries. (For comparisons, see Figure 2.13.) This limited use of online payments by consumers is in line with data on the use of online tools by SMEs with a digital presence, which shows that these firms are significantly less likely to use the Internet for payments than for marketing or other purposes (see Figure 1.9).

**FIGURE 2.13 Means of payment for Internet purchases**



Source: World Bank 2017a, Global Findex.

Note: Shows means of payment for a purchase made on the Internet in the past year.

**The relatively-low levels of digital payments usage in some Southeast Asian countries underline the potential for future growth if the right enabling environment is established.** The high levels of smartphone penetration and mobile broadband access in these countries is expected to provide a strong push to digital wallet adoption in the future. In the next five years, digital payments are expected to record double-digit five-year CAGRs across countries, with Malaysia expected to grow by 20.2 percent CAGR from 2017 to 2021. Indonesia is also not far behind with 18.4 percent expected growth; it is also expected to have the highest digital payments transaction value of US\$37 billion in 2021 (Visa 2017).

**Regional companies are capitalizing on the trend towards greater use of cashless payments.** In Indonesia, GO-JEK, a ride-hailing services app, acquired three FinTech firms in 2017 to grow its influence in the mobile payment market. In Thailand, Line, a mobile messenger app with more than 205 million active users, introduced LINEpay in 2015 and has recently rolled out a smartphone version of the Bangkok Mass Transit System (BTS) card. China, having set a precedent for what is possible in payments via mobile devices, has steadily penetrated Southeast Asian markets. For example, Ant Financials took over helloPay, the payment subsidiary of e-commerce firm Lazada Group, which will be re-branded as Alipay in relevant



markets, including Singapore, Malaysia, Indonesia, and the Philippines. It also forged a partnership with Indonesia's Elang Mahkota Teknologi (Emtek) to roll out a mobile payments service and also made a strategic investment in Filipino payment firm Mynt. Overall, the market remains fragmented, with no single firm having established its dominance.

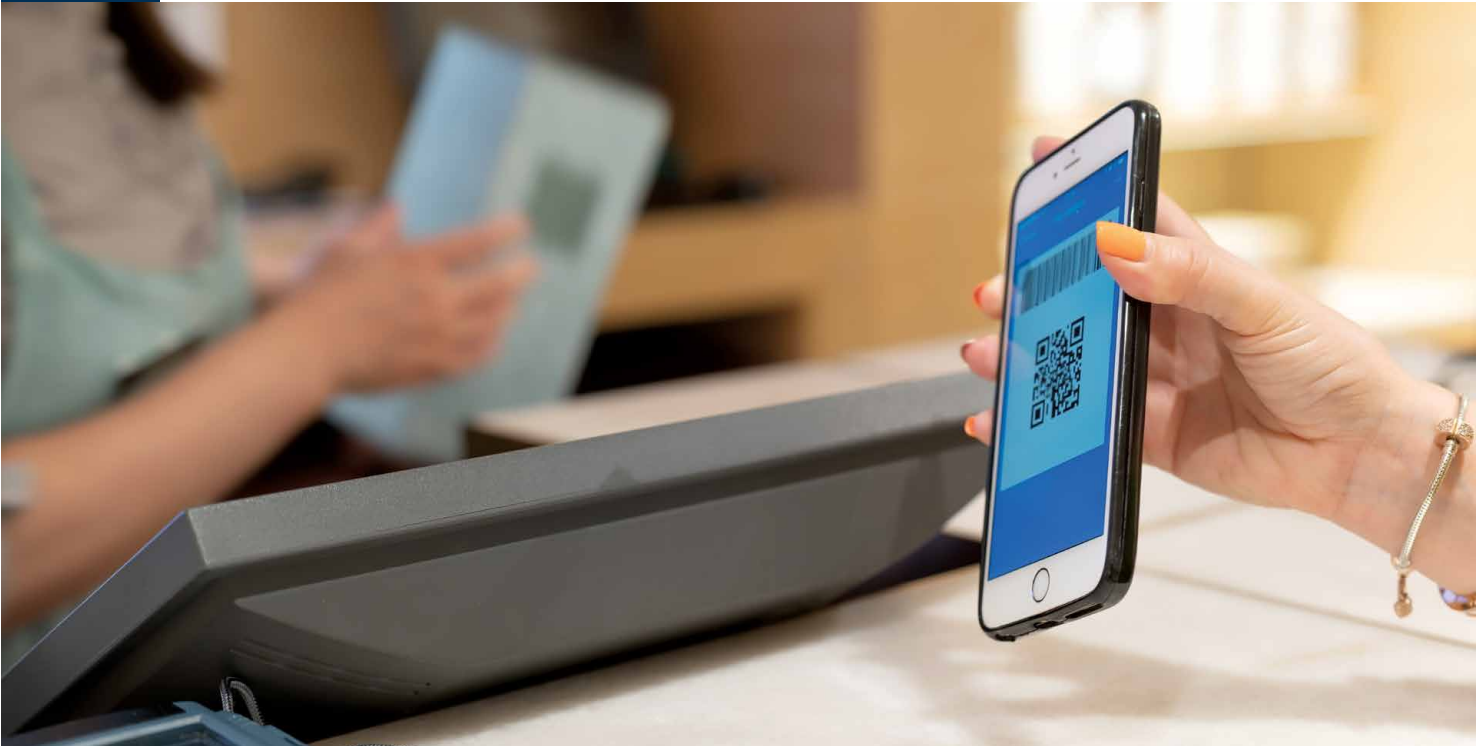
**However, there remain significant variations in readiness for the expansion of digital payments across Southeast Asian countries.** According to the APEC e-Payment Index,<sup>29</sup> - which assesses the level of readiness and potential to engage in adopt, and reap the broad range of economic and societal benefits that e-payments hold – Singapore ranks second overall, Malaysia 10th, Brunei Darussalam 11th, Thailand 15th, Indonesia 16th, the Philippines 17th, and Vietnam 20th. The Index measures countries' (1) policy and regulatory environments, (2) infrastructure, (3) demand, and (4) innovative products and services. While not all ASEAN countries are members of APEC, the Index provides a useful comparison tool to benchmark the progress of some of the more developed ASEAN countries (like Singapore, Malaysia, Thailand, and Indonesia) whose financial services industries are better positioned for e-payments.

<sup>29</sup> The APEC E-payment Index was designed to gauge the readiness and capacity of each of the 21 economies that comprise APEC to engage in e-payment, to use both e-payment and m-payment services, and to develop their overall e-payment ecosystem further. The 2016 APEC E-payment Index has fine-tuned 19 indicators out of the 44 used with newer statistics or more relevant indicators that have become available since the publication of the 2015 APEC E-payment Index.

**Policymakers face a variety of challenges in facilitating the expansion of digital payments, while managing consumer and other regulatory issues involved.** Furthermore, many of these issues fall within multiple regulators' competencies, requiring effective communication and collaboration among them. They include:

- **Consumer protection issues.** New financial services and products offered digitally to excluded and under-served customers both challenge traditional thinking about disclosure and recourse and raise other consumer protection issues. Some policymakers are leaning toward product standards and guidelines to complement digital innovations in disclosure and recourse. In addition, in the event the consumer suffers a loss, liability can be unclear due to the multiple parties involved in service delivery, namely agents and third-party providers of communications and technology services.
- **Increased need for cross-sectoral coordination and communication.** Digital financial inclusion – which involves new providers, services, and consumers – requires significant cross-sectoral coordination and communication among regulators and supervisors. This is true both at the country-level (for example, credit, insurance, and investments offered via digital transactional platforms require the attention of multiple financial regulators and supervisors and may call for involvement of the telecommunications regulator as well) and the global level of standard-setting bodies (SSBs) and other international bodies, such as the ITU.
- **Customer identity/digital ID.** Financial identity for poor people when services are delivered digitally carries the potential for both inclusion and anti-money laundering/countering the financing of terrorism (AML/CFT) gains, but also raises privacy and fraud risks. Meaningful and manageable privacy principles – which will involve work at both the national and global levels – offer the prospect of win-win solutions. Policymakers, donors, and other stakeholders worldwide are recognizing the need to develop comprehensive ID programs to enable access to financial services, as well as to multiple other types of services.
- **Developing sound monitoring systems.** There is also a growing recognition that reporting and monitoring systems need to become more sophisticated, with a greater focus on direct linkages to financial institutions' information systems (where feasible) along with real-time monitoring capabilities, and appropriate privacy and data protection.
- **Interoperability of services.** It would also be important to ensure the interoperability of services across service providers and points of service, including agents. This issue is critical for national efforts to broaden the reach of financial services into previously under-served, often rural, areas through digital technologies and delivery mechanisms. A recent example of industry-led mobile money interoperability was seen in Tanzania, where the four leading MNOs, supported by the International Finance Corporation (IFC), worked together over the course of a year to agree on payment scheme rules including exchange fees, dispute resolution and settlement. Box 2.1 highlights an example on ensuring interoperability in the use of Quick Response (QR) codes.

**BOX 2.1**



## Supporting Interoperable Payments: Standardization of QR Codes in Asia

**In line with the increasing popularity of QR codes as a form of payment, regulatory authorities in Asia are increasingly pushing for standardization to support interoperability of payments systems across financial service providers.** In 2017 the central banks of China, India, Thailand, and Singapore announced efforts to standardize QR codes. Japan announced in February 2018 that it will do the same.

**QR codes are two-dimensional machine-readable barcodes, used to facilitate mobile payments at the point-of-sale.** QR-enabled payments have gained traction in line with the region's mobile-first digital finance landscape.

Consumers make payments through mobile apps developed by their financial service provider. A standardized system will facilitate seamless e-payments, regardless of which banking app is used by customers and merchants. A common QR code could also facilitate payments among different payment schemes and e-wallets and allow FinTech companies to compete on the same playing field as incumbent banks. Diverging standards, leading to multiple QR codes at points of sale, lead to confusion for both consumers and merchants on what payment instruments to use, and how to use them. This slows down the pace of cashless adoption and the displacement of cash.

Source: Authors

**By establishing standard specifications for QR code payments, consumers and merchants will have more options to pay electronically without compromising on security and convenience.** The Standard QR Code is simple to set up and use and provides three key benefits. First, consumers will not need to scan different QR codes to make payments through their accounts. Merchants will only need to display one QR code at the storefront or through the acquiring bank's mobile application. Second, by routing the transactions through global-standard processing networks, consumers can access a fast, convenient, and secure payment experience. Third, the standards are intended to be globally interoperable and with the right mobile application, consumers will be able to use the same standard QR code to make payments everywhere the standards have been adopted. A readily-accessible and secure payment processing option for all stakeholders, the Standardized QR Code for payments will contribute to the growth and speed of electronic payment adoption across the country, lowering the cost for accepting electronic payments. However, to be truly effective, most standardized codes will have to work on both smartphones and feature phones with a camera function. Thailand's standardized QR code system was scheduled to be implemented by banks and merchants across Thailand in the third quarter of 2017, and will contribute to the financial sector's electronic data capture (EDC) expansion initiatives under the National e-Payment Roadmap introduced by Ministry of Finance. Thai consumers will benefit from being able to make QR code-based payments when traveling outside Thailand.

**Under China's new regulations announced in December 2017, payment institutions must obtain proper permits to offer barcode-**

**based payment services, according to a document released by the People's Bank of China (PBOC).** Both banks and non-banking payment institutions must channel cross-bank transactions involving barcodes through the clearing system of the PBOC or other legal clearing houses. The institutions should also enhance their security to prevent data breaches. Implementation of the trial standards begun in April 2018. The intent of the regulations is to ensure a balance between encouraging innovation and controlling risks.

**In Singapore, a newly-formed payments council, set up to look into ways to advance e-payments in Singapore, has created a task force specifically to develop a common QR code for Singapore (SGQR) that could be used for e-payments island-wide.** The Reserve Bank of India has encouraged the adoption of standardized QR code payment to provide access to low-cost, secure digital payments to millions of consumers and merchants through a collaboration with Visa, and merchants such as Tata Sky, Idea Cellular, Reliance Energy, and Mahanagar Gas, as well as Pizza Hut and supermarket chains Nakumatt, Spar, and Zucchini.

**These developments in Asia could create the necessary momentum for a global interoperable standard.** As digital payments help continue a shift toward a cashless future, this new global specification is an important step that promotes interoperability and standardizes the fast-growing ecosystem of QR code payments across the world. Already, 33 banks and more than 328,000 merchants across India, Kenya, and Nigeria have adopted the interoperable standards as they accelerate their QR code digital payment programs.

## Logistics

**Greater connectivity, the spread of digital payments, and adoption of e-commerce are leading to higher demand for delivery of goods, especially in small consignments and at low values, both within and across borders.** Logistics is also important for the growth of other aspects of the digital economy. For example, there is evidence that as manufacturing is increasingly automated, the importance of access to efficient logistics and other services increases (World Bank 2017). Logistics costs are also important for increasing SME participation in the digital economy, as e-commerce is one of the main channels for SMEs to benefit from platform-based models for connecting buyers and sellers.

**Logistics efficiency is especially important in connecting people in remote regions of countries to the benefits of e-commerce.** The digital economy creates opportunities to overcome physical remoteness in connecting people to economic opportunities. However, remoteness is still a challenge, especially for certain aspects of the digital economy like e-commerce. Logistics costs are one of the key aspects of e-commerce (along with digital payments capacity and Internet connectivity), each of which needs to be present for it to grow and result in significant opportunities in remote areas. Box 2.2 provides more information on the relevance of e-commerce for people in remote areas, and the relevance of logistics to this.

### BOX 2.2

## E-commerce, Remoteness, and Logistics Costs

**One of the important potential benefits of e-commerce for poor people, including those in Southeast Asia, is its capacity to reduce trade costs, especially by reducing the 'distance effect' created by separating buyers from sellers, driven primarily by reduced trust and information asymmetries.** However, remoteness is still a significant constraint. Transportation costs tend to be higher in rural than in urban areas of a country, and these are often many multiples higher than international shipping costs. Efficient domestic logistics is required to support greater agricultural trade (both domestic and cross-border) through e-commerce – and timeliness is especially important given the perishable nature of agricultural goods. Efforts to increase participation of people in remote areas in e-commerce therefore have to be executed at the same time as lowering logistics costs. This is likely to maximize the impact of connecting people in remote, rural areas to market opportunities through e-commerce. In China, for example, the reduction in the number of intermediaries along supply chains through the growth in e-commerce has increased returns for rural producers. It has also helped reduce prices of consumer products as well as agricultural inputs, increasing real incomes for people in rural areas (Asian Development Bank 2017).

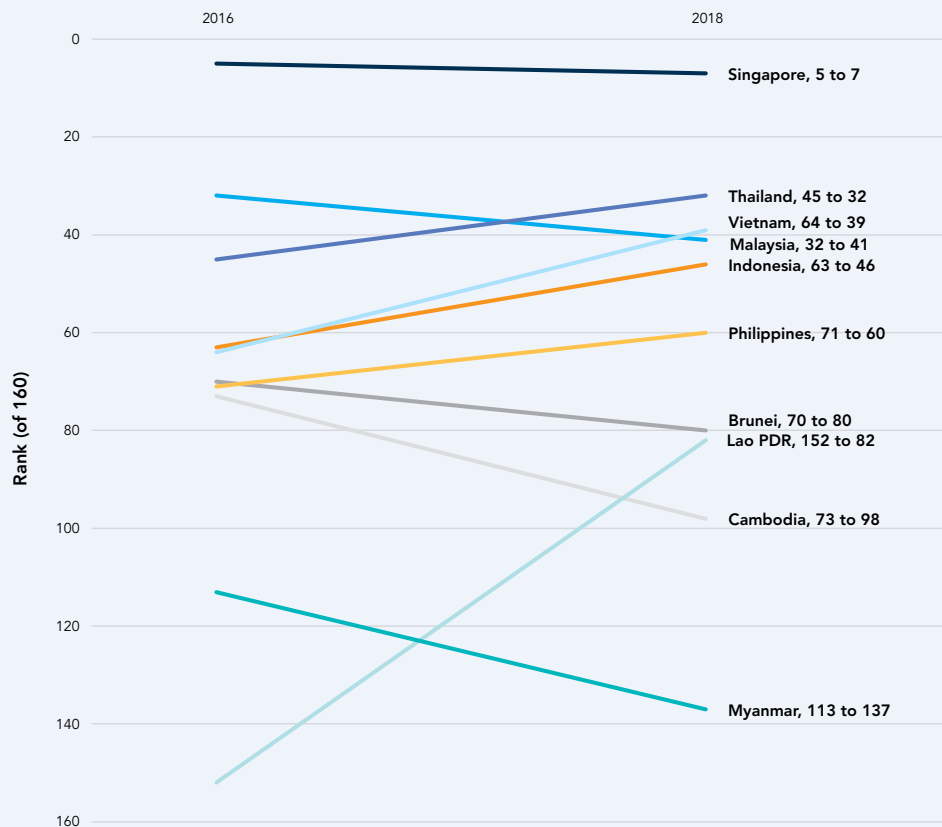


## Logistics Performance In Southeast Asia

**There is wide variation in logistics performance across Southeast Asia.** According to the World Bank's Logistics Performance Index (LPI), which surveys the international logistics industry's perceptions, logistics performance of Southeast Asian countries in general is relatively strong, although performance is uneven (see Figure 2.14). Of 160 countries ranked through the LPI, performance increased from 2016 to 2018 in five of the 10 ASEAN countries, including Thailand, Vietnam, Indonesia, the Philippines, and Lao PDR. However, fluctuations are not unusual from one edition of the LPI to the next, and it is important to monitor performance in future years to ensure improvements are sustained. In absolute terms, performance overall for ASEAN is not especially strong, with only three countries (Singapore, Thailand, and Vietnam) placing in the top 25 percent of performers in the LPI in 2018; and Malaysia, Indonesia, the Philippines, and Brunei placing in the top 50 percent.

**The component elements of the LPI suggest the aspects of logistics performance that are relatively weaker in Southeast Asia, with cross-border clearance being the weakest aspect for the region.** In most countries, complying with Customs and other border procedures is a major challenge. Other than Singapore, Brunei, and Myanmar, all countries in the region rank lower on the Customs and border management indicator of the LPI than their overall ranking. The gap between the two is greatest for Indonesia and the Philippines, suggesting this aspect of their logistics performance is especially weak. In most countries, logistics infrastructure is also perceived as being relatively weak.

**FIGURE 2.14 Logistics Performance Index Rankings**

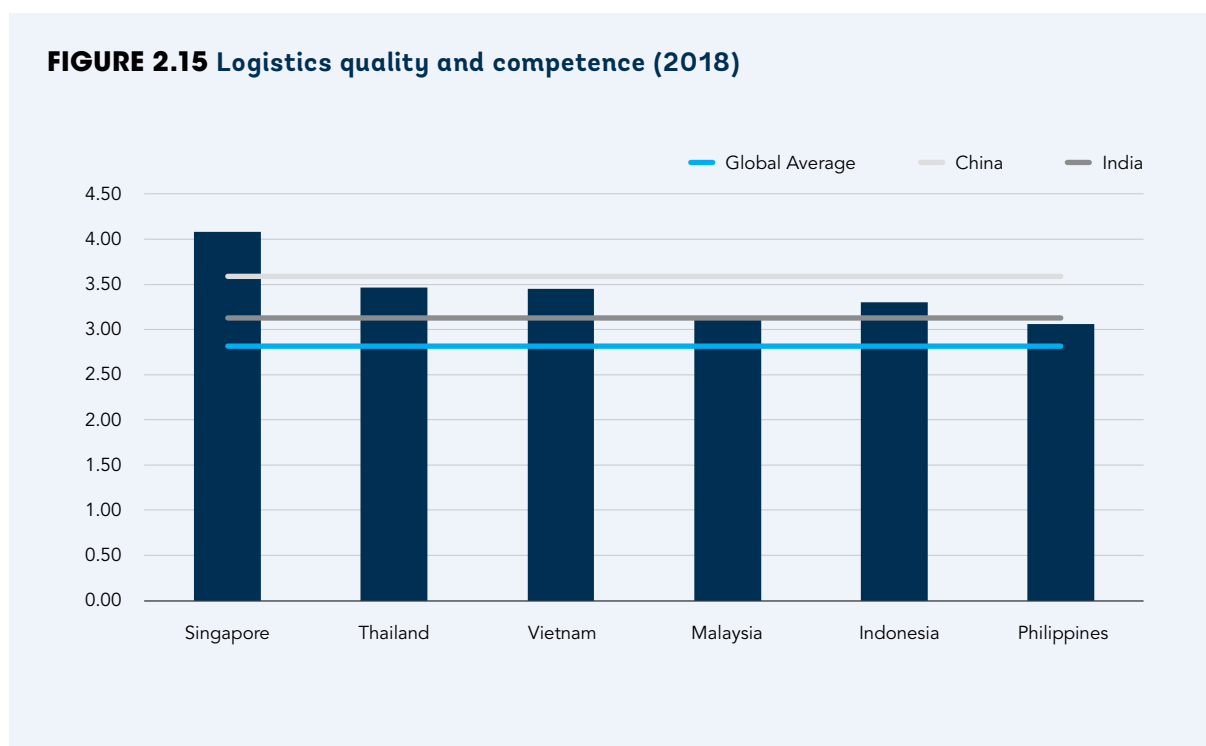


Source: World Bank 2018, LPI.

**Analysis of the lead time for import and export from the domestic LPI results reveals asymmetry in efficiency among ASEAN countries.**<sup>30</sup> Thailand and Singapore are on par with OECD countries in both import and export efficiency, while Vietnam is close to catching up. Indonesia, Malaysia, and the Philippines are not only behind the OECD but also a regional average of 2-3 days of lead time, signifying an opportunity to streamline their custom processes. Part of the competitive advantage can be attributed to geographic locations. For example, coastal access tends to improve logistics performance as land transit through neighboring countries tends to cost more time and money. Therefore, coastal countries tend to score better than their landlocked peers at similar income levels, according to the international LPI scores for 2010-2016 (World Bank 2016a). However, the Philippines and Indonesia are an exception in this case, although their geography does present significant challenges to logistics efficiency. Still, improving logistics performance will need to be a priority to support the upward trajectory of e-commerce growth in these two countries.

**In addition, the efficiency of the domestic supply chain is of critical importance for e-commerce.** The domestic segments of the supply chain includes beyond the border logistics to the last mile linkage to the consumers, and a variety of players such as express couriers, postal operators, third-party logistics providers, and e-commerce companies have started to make investments in the region to support the expansion of e-commerce (SP eCommerce 2014).

**The quality and competence of logistics services available to e-commerce companies is an important feature of this supply chain.** In this regard, performance in Southeast Asia is relatively strong compared to the global average, but lags China by a considerable margin, and in Malaysia and the Philippines is perceived as slightly lagging India, according to 2018 LPI results (see Figure 2.15). Not showing in Figure 2.15 is performance in the lower-income ASEAN countries, which is weaker still. Of the six indicators making up the LPI, quality and competence of logistics services performance is roughly in the middle of the six indicators, taking ASEAN as a whole.

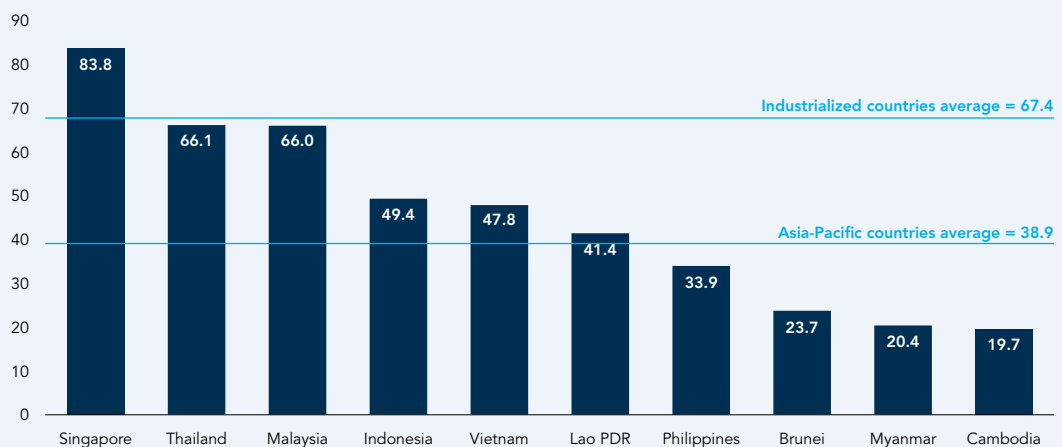


30 This analysis was conducted based on the 2016 LPI data.

**Postal services remain central to the delivery of e-commerce shipments, both for cross-border and domestic deliveries.** Cross-country data on postal services indicates a need to improve postal services performance in the region. According to the Universal Postal Union (UPU), as documented in its Integrated Index for Postal Development (see UPU 2017), a majority of Southeast Asian economies fall behind industrialized countries<sup>31</sup> in postal development scores, which examine the level of service (reliability), connectedness (reach), sales and market competitiveness (relevance), and sustainability (resilience) of the postal services from 170 countries (see Figure 2.16).<sup>32</sup> In part due to its unique geography in the region, Singapore performs exceptionally, and has one of the highest postal traffic per capita rates in the world, in terms of letter and parcel-post items, which is up to 50 times higher than the levels observed in most of the other postal services in the region. Thailand (ranked 22nd) and Malaysia (23rd) also perform relatively well. The postal services in Indonesia (ranked 55th) and Vietnam (57th) are slightly ahead of the Asia-Pacific average.

**Beyond the quality of postal service in general, a specific challenge affecting e-commerce is whether parcels can be delivered or picked up from home addresses.** This reflects a combination of the reach of postal services, as well as whether an addressing system exists that covers the entire population. Figure 2.17 shows that no ASEAN country (other than Singapore) has universal delivery to home addresses. At above 90 percent availability, Thailand and Malaysia are close to universal, but among the large middle-income countries, in the Philippines 15 percent of the population lack home delivery of mail, and 20 percent lack home delivery in Indonesia and Vietnam. This means that postal services and logistics companies need to make alternative arrangements for deliveries and pickups from these households.

**FIGURE 2.16 UPU Integrated Index for Postal Development (2017)**

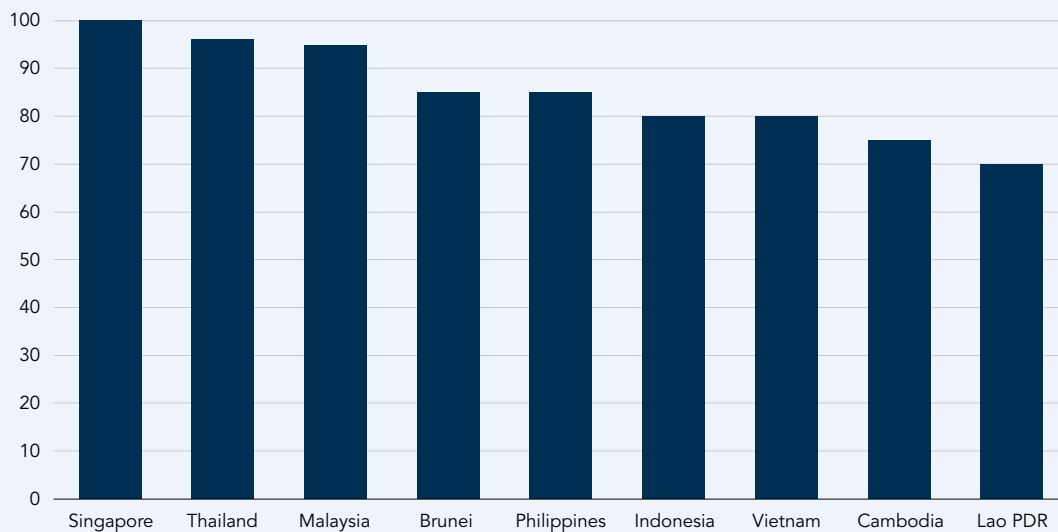


Source: UPU 2017.

31 UPU's classification of the industrialized countries include Switzerland, France, Japan, Netherlands, Germany, United Kingdom, Austria, New Zealand, USA, Canada, Finland, Ireland, Italy, Luxembourg, Australia, Belgium, Norway, Sweden, Greece, Israel, Spain, Iceland, Denmark, and Portugal.

32 The Integrated Index for Postal Development is a newly developed composite index that benchmarks four different aspects of postal services, namely the reliability, reach, relevance and resilience, which was developed through an analysis of UPU postal big data, UPU postal statistics database and surveys. Note: 100 = higher performance.

**FIGURE 2.17** Percentage of the population with home delivery of mail



Source: UPU 2016

## Overcoming Problems and Realizing Opportunities

**Addressing the weaknesses in logistics in the region will support the growth of the digital economy, especially e-commerce.** The timeliness and predictability of delivery regularly features as a priority for e-commerce companies and consumers alike. For example, a February 2018 survey in Indonesia identified delivery time as the second-highest ranked concern for e-commerce consumers (Financial Times, 2018). E-commerce companies like Lazada also perceive this as a key challenge, with the company identifying it as the leading bottleneck in its operations (Balea 2017). Lazada executives have commented publicly that the weak level of skills and efficiency of logistics companies in major markets like Indonesia drove the company to establish its own logistics operations, rather than using existing companies (Bittner 2017). Another area to focus on is upgrading logistics skills; the survey results from the latest LPI report reveals a global shortage of qualified staff across all levels of operations in logistics (World Bank 2016).

**Addressing the constraints facing e-commerce companies and consumers involves tackling the sources of inefficiency affecting the logistics sector as a whole, as well as the specific challenges relating to e-commerce.** The former requires a comprehensive strategy of legal and regulatory reforms, as well as logistics infrastructure investments in many cases. A number of countries in Southeast Asia are developing or implementing such strategies. For example, Vietnam has developed a Logistics Action Plan that encompasses domestic and international logistics connectivity; and Cambodia has developed a similar Master Plan on logistics. The increase in up-to-date data relating to logistics – for example, data from transport operators whose drivers all have mobile phones providing GPS data – is providing new opportunities for analysis underpinning such strategies, as well as for monitoring their implementation.

**A common problem in Southeast Asia is the existence of high barriers to entry in logistics, especially in terms of restrictions for foreign logistics providers to enter the market.** Indeed, ASEAN's transport services barriers are exceptionally high, and contribute to it being the second-most closed region for trade in services globally (ASEAN and World Bank 2016). Tackling the barriers to market entry increases

competition, which helps lower prices for consumers of logistics services, while also facilitating the exchange of expertise and technology between foreign and domestic logistics companies. In Indonesia, the government has implemented a program of reforms to lower barriers to entry in logistics, starting with relaxing barriers to entry for foreign logistics firms. It is now entering a new phase to address other barriers, including high minimum capital requirements, restrictions on where operations can be located, and cumbersome licensing requirements.

### BOX 2.3



## Parcel Lockers

**One response to the challenge of delivering to home addresses has been the rapid growth in parcel locker companies, which provide solutions for consumers to pick up their shipments at a time that suits them, using a code or other means of authentication.**

Lockers are found at various types of locations including minimarkets, petrol stations, trains stations, and office towers. Some of the rapidly-growing startups include: PopStation, with 163 locations in Singapore; PopBox, with 300+ locations in 17 cities in Indonesia; and Box24 150+ locations in Thailand, Malaysia, and Singapore. Box24 also is working on Lobby24, which applies a similar concept but aimed at apartment complexes. All provide franchising opportunities that are likely to allow the number of locations to grow rapidly.

**For courier services, the locker system helps consolidate parcel deliveries; this reduces the number of time-consuming drop-offs (particularly when receivers are not at home).**

More importantly, it allows parcels to be received from and delivered to lockers in light traffic hours (night services), which is not normally an option if the receiver has to be present. Locker companies are cooperating with large online platforms and retailers, further supporting usage. For example, Box24 received a major boost in Thailand when it partnered with Tesco and BigC. Large online retailers Zalora and Lazada use PopStation, PopBox, and Box24. The next step is to broaden the usage of lockers away from parcel delivery services to other services: for example, Box24 offers Washbox24 for laundry services and PopBox cooperates with several shoe repair services.

Source: Authors

## Logistics and the Rise of E-Commerce: Indonesia Case Study

**The rapid growth in the volume of parcel deliveries and pickups associated with e-commerce brings a particular set of challenges, as do the business models of e-commerce companies.** An identification of the specific challenges relevant to e-commerce needs to begin with an understanding of the e-commerce supply chain in each country, including international connections. Understanding the flow of goods from the e-commerce firm to the consumer is necessary to identify the logistics challenges at each step of the supply chain. Different business models raise different challenges. For example, e-commerce platforms that connect buyers and sellers without holding large inventories themselves will generate less demand for large warehousing and distribution spaces, although this demand may be transferred to the postal services or logistics companies that are responsible for the delivery of goods.

**Indonesia provides a case study of the logistics challenges facing e-commerce, even if the specific challenges will vary from country to country.** E-commerce requires goods to be delivered up to the door of the client, thus requiring efficient last-mile logistical solutions. Offering this is a major challenge for Indonesia. This stems in part from the country's complex geography, but the quality, efficiency, and cost of logistics services are a significant barrier to the growth of e-commerce. As yet, no integrated door-to-door logistics providers have arisen yet.

**One issue identified by the private sector (in interviews as background for this report) is that there is a lack of standardization in parcel sizes and address displays, limiting the potential for automation in sorting of parcels at distribution centers.** Industry interviews suggest that this leads to parcels being separated multiple times from larger loads to be sorted: for example, in Jakarta, this is done at the municipality, district, and sub-district levels, before reaching the final destination. Combined with high levels of traffic congestion, this results in a limited number of deliveries being made by couriers each day. The Indonesian Logistics Association (ALI) estimates about 50 drops per courier per day, compared with an average of higher than 100 per day in the United States.

**Another challenge relates to the limited long-haul trucking services available on Indonesia's most populous islands, which could offer an alternative to air cargo services for intra-island transportation, especially for deliveries where reliability is more important than speed.** On Java, trucks often take 3-4 days to travel between the two major economic centres of Jakarta and Surabaya, and freight services provided by passenger bus services offer limited capacity and low reliability. The Trans-Java highway (forecast to be completed in 2019) offers the potential for long-haul truck services to be offered as an alternative to air freight, improving the e-commerce supply chain's overall efficiency.

**Air cargo remains essential for e-commerce logistics, given Indonesia's geography, but it faces a number of constraints.** For example, the implementation of the system of 'Regulated Agents', through which a small number of government-mandated companies conduct security screening for air cargo, appears to have generated significant costs. In addition to using the Regulated Agents, many airlines conduct additional screening, which adds to the time required at airports for cargo, as well as adding to costs. Some courier companies report that the costs of storage and complying with security requirements is higher than charges for transportation. In 2017, the government reformed the Regulated Agent system in an effort to liberalize pricing and increase competition, although this has not yet translated to a significant increase in competition, according to logistics operators. This is compounded by capacity constraints at some key airports, including Soekarno-Hatta airport in Jakarta, although an expanded air cargo facility due for completion in 2019 should ease these constraints; as well as limited cargo capacity on aircraft.

## Cross-Border E-commerce: Trade Facilitation Challenges

The rapid growth of e-commerce is associated with a dramatic increase in the cross-border delivery of small, low-value goods. Rather than larger shipments of goods being delivered to retailers, and then sold to consumers within the domestic economy, e-commerce is associated with direct orders by consumers from foreign sellers, who deliver individual parcels, generally with relatively low value (for example, around US\$100) to consumers.

This has significant implications for trade facilitation. At present, most governments have 'de minimis' thresholds in place, setting a value for individual shipments under which customs duties and other taxes are not charged. As the volume of goods falling below these thresholds grows, associated with individual parcel deliveries across borders through e-commerce, many governments perceive that this generates risks, for community protection and safety, revenue collection, and intellectual property enforcement, among other areas.

Reflecting the global divergence in practice on this issue, there is no common approach in ASEAN, and governments have different views on the merits of raising or lowering de minimis thresholds. Table 3.4 shows the wide variation in thresholds in ASEAN, although there is potentially an emerging trend toward raising thresholds – for example, Indonesia, the Philippines, and Malaysia recently raised their thresholds.

**TABLE 2.4** De minimis thresholds in ASEAN economies

|                   | <i>De minimis</i> i.e. no duty/tax collection<br>(US\$ equivalent, converted from local currencies) |
|-------------------|---|
| Brunei Darussalam | 295   |
| Cambodia          | 50  |
| Indonesia         | 100 (Note: only for delivery through courier services. Increased in June 2017 from US\$50)          |
| Lao PDR           | 50 (Note: de facto level with legal basis unclear)  |
| Malaysia          | 128 (Note: increased from US\$76 in October 2017)   |
| Philippines       | 200 (Note: increased from US\$100 in October 2016)  |
| Singapore         | 296   |
| Thailand          | 28  |
| Vietnam           | 40  |
| Average           | 131   |

Source: Authors; and GEA Data on De Minimis Regimes World Wide, [global-express.org](http://global-express.org). Data not available for Myanmar.

**The policy choice governments make on the level at which the de minimis threshold is set has implications on the costs and capacity for border agencies, given the increasing volume of low-value goods being shipped across borders.** If thresholds are lowered and Customs authorities apply greater scrutiny to low-value goods than they do at present (for example, higher levels of inspections, more detentions of parcels while enquiries are made), this will involve significantly higher costs, including through staff time, storage facilities, and scanning equipment, among others. Although this is an under-researched area, not least because of the lack of data involved, estimates in the Australian context suggest that for a threshold of \$0 (as has been mandated in Australia) for GST collection, the cost of collecting GST per item delivered by international mail is an estimated A\$12.06, compared with average revenue collected of A\$7.28.<sup>33</sup> The compliance burden on consumers, as well as suppliers, also needs to be taken into account. The compliance burden should be expected to be higher on a per-parcel for duties than for GST/VAT or other charges. This is because deciding on the rate of customs duty to be applied involves a series of technical decisions on the origin of the good, its tariff classification, and whether it qualifies for preferential duties under a trade agreement, among others. The application of GST/VAT is relatively less complicated, as all that needs to be determined is whether a particular rate of tax applies (if there are variable GST/VAT rates for different categories of goods).

**Emerging technology is likely to provide more cost-effective ways of assessing and collecting taxes on cross-border goods deliveries.** For example, a public-private partnership with Shanghai Customs used software to pre-fill customs declarations based on product information on Alibaba, in order to lower the time and cost of doing so manually. The algorithm used gradually led to improved accuracy, resulting in around 90 percent accuracy at the end of the pilot.<sup>34</sup>

**Another important aspect of the cross-border delivery of low-value goods is the provision of information to Customs in advance of the goods arriving, so that assessments can be made on the risk associated with them, meaning they are not detained at the border.** Logistics companies delivering such goods by air routinely provide this information, but international mail remains largely paper-based, with no electronic provision of information. However, various pilot initiatives to address this are underway, including under the auspices of the UPU and World Customs Organization. Governments in the region should closely monitor these initiatives, and participate where it is feasible to do so (for example, Indonesia and Japan are piloting an initiative on electronic exchange of data on postal shipments).

**The advance provision of information on e-commerce goods arrivals is also central to risk-based approaches to border management, which allow Customs and other agencies to focus only on higher-risk shipments.** As with trade in general, the majority of e-commerce parcels are likely to present no risk, and should be facilitated to clear the border in a streamlined manner. Risk-based approaches allow government to focus resources on shipments that present higher risks, according to risk management frameworks that define what risks are most important for that government. Customs and other border agencies in Southeast Asia are already employing various levels of risk management in their existing processes, and improved data will allow them to better respond to the growth in small-parcel shipments associated with e-commerce.

<sup>33</sup> Australian Treasury (2012), The Low Value Parcel Processing Taskforce Final Report.

<sup>34</sup> Presentation to Beijing WCO E-commerce Summit, January 2018.



## Technology and the Future of the Logistics Industry

**The growth of the digital economy is changing the logistics industry itself, with significant potential to increase its efficiency if firms can increase their adoption of technology.** This is happening through a combination of technologies that have been in use for some time (for example, the use of GPS data to optimize routes for delivery companies) but with an increasing rate of adoption, as well as more technologically-advanced systems like the automation of warehousing and distribution facilities. This is complemented by the adoption of systems managed by governments to streamline regulatory compliance (like National Single Windows for trade), or systems adopted by key actors in the supply chain like port operators (using Port Community Systems).

**Technology is increasingly available at lower costs for logistics companies, helping optimize their operations.** For example, Transportation Management Systems are increasingly available on a 'pay as you go' basis through cloud-based providers, which provides a viable option for smaller firms to use such systems, rather than acquiring or developing their own systems. The logistics industry is both a consumer and generator of large amounts of data, so the provision by governments of a supportive policy environment for IoT is highly relevant for the adoption of these technologies (Lal Das et al 2017).

## Conclusion

**The challenges vary from country to country as each e-commerce supply chain is different, but some common themes can be identified. Several of the most frequently-identified challenges include the following:**

- There is a need for the adequate provision of space, especially in urban areas, for warehousing and distribution facilities in order to facilitate the timely delivery of small parcels. Research indicates that e-commerce companies require up to three times the inventory space compared to "offline" retailers.<sup>35</sup>
- Facilitating last-mile delivery is a particular challenge in those Southeast Asian economies that still have large gaps in postal addressing, such as Indonesia and Myanmar, given the heavy reliance on postal networks for e-commerce deliveries. In such countries, alternative solutions are often developed by the private sector and consumers. For example, supermarkets are commonly used to hold parcels until they are picked up by people that are not well-connected to postal networks. Parcel lockers are also being more widely used (see Box 2.2). In Indonesia the lack of standardization in addressing systems and parcel sizes directly affects the ability to automatically sort parcels, requiring the use of manual sorting. This is likely to push costs up as e-commerce demand grows.
- There are specific concerns related to border clearance for those elements of the e-commerce supply chain that involve international shipments. These include the *de minimis* regime issues that are discussed later in this report in the context of taxation, as well as simplified procedures for low-value, low-risk goods; 'trusted trader' schemes for frequent traders with strong compliance records; and the provision of data to Customs agencies by logistics operators or other firms in advance of a parcel's arrival.<sup>36</sup>

<sup>35</sup> Prologis 2016

<sup>36</sup> These issues are the focus of a forthcoming policy note from the World Bank.

## Digital Skills

**The growth of the digital economy is disrupting many aspects of work, placing a premium on certain skills, and reducing the value of others.** 'Digital Skills' is a fluid term encompassing anything from basic digital literacy to high-end data analytics. However, recent literature shows an emerging consensus around three 'tiers' of skills, outlined in Table 2.5, that are considered essential in the digital economy.

**TABLE 2.5 Skills relevant for the digital economy**

| Types                                   | Description  | Target  | Examples  |
|---|--|---|---|
| <b>Basic digital/ICT skills</b>         | To be able to use digital technologies (for example, send email, find work-related information on the Internet, use digital apps and non-specialized software, awareness and ability to stay safe in cyberspace)   | All citizens and workers  | EU: Digital Competence Framework for Citizens, also known as DigComp                              |
| <b>Digital/ICT complementary skills</b> | Soft skills required to carry out work in a technology-rich environment and to address the expanding number of opportunities for ICT-enabled collaborative work (for example, communicate on social networks, brand products on e-commerce platforms, or analyse data gathered from the web) | Middle-skill to high-skill professionals  | USA: Partnership for 21st Century Skills<br><br>USA: Agenda for New skills for Jobs               |
| <b>Advanced and specialist skills</b>   | Drive innovation, support digital infrastructure and the functioning of the digital ecosystem  | Industry and occupation specific (for example, program software, develop applications, manage networks, data analytics) | Skills Framework for the Information Age (SFIA)<br><br>Singapore's Workforce Qualification scheme |

Sources: OECD 2016; European Commission 2016.

**There is widespread recognition of the need to prepare the future workforce with digital skills at an early age, and to reskill the existing workforce as part of a long-term digital economy strategy.** Globally, countries are experiencing talent crunch in data management and analytic skills. According to a study by Microsoft, a lack of digital skills is one of the main barriers holding back Asia's businesses and governments from embarking on data-driven transformation.<sup>37</sup> The study also shows a significant gap between aspiration and action. While 88 percent of business executives polled understand the importance of building data-driven business agility, only 43 percent have a digital strategy in place (Microsoft 2016).

**The digital economy is associated not just with specific skills but also with a more rapid pace of change in business models and activities, meaning that specific occupational skills are becoming obsolete more quickly.** This underlines the importance of skills policies building adaptability among workers, not just focusing on specific occupational skills (World Bank 2016b, 259). There is a growing

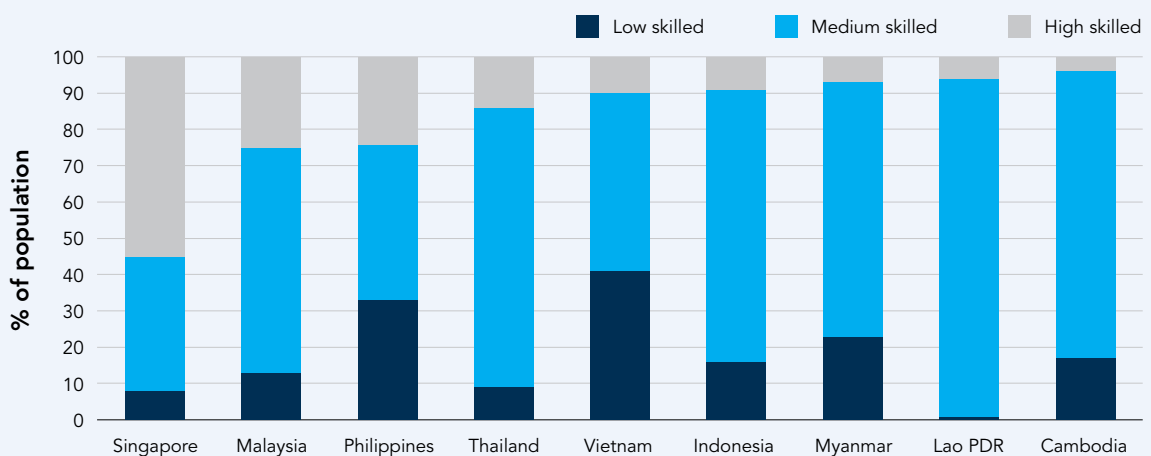
<sup>37</sup> The Microsoft Data Culture study was conducted in March 2016 with 940 business leaders from 13 Asian markets including Australia, China, Hong Kong SAR, China, Indonesia, India, Japan, the Republic of Korea, Malaysia, the Philippines, Singapore, Taiwan, Thailand, and Vietnam.

recognition of the importance of the premium attached to 'soft' skills of critical thinking and problem solving, communication, teamwork, and creativity in the digital economy, beyond the traditional focus on 'hard' skills such as programming and coding, science, and technology. This underlines the importance of governments investing in human capital, both to build basic literacy and numeracy, but also to develop socio-behavioral skills, which also reinforce adaptability in an environment where both the nature of work and specific jobs are changing rapidly (World Bank 2019).

## Human Capital in ASEAN

**Medium- and high-skilled jobs are on the rise in Southeast Asia, signaling that the region's workforce is increasingly better educated and well-positioned to take advantage of opportunities in the digital economy, but there is still considerable variation between countries.** This is reflected in Figure 2.18. ASEAN's workforce remains highly concentrated in agriculture (40 percent), though an equal number (41 percent) is engaged in the services sector while 19 percent are involved in industry – although this varies across the countries of the region. Vietnam and Thailand have a more agriculture-heavy labor market, while Singapore, Malaysia, the Philippines, and Indonesia have more services-based workforces. Malaysia has the region's largest share of the workforce in industry (WEF 2016).

**FIGURE 2.18** Employment share in the economy – low-, medium-, and high-skilled employment as a percentage of the total



Source: WEF 2016.

**The World Economic Forum (WEF) Human Capital Index, which measures countries on how they are developing and deploying their human capital, and tracks their progress over time, highlights strong variations across ASEAN.** Singapore is the top performing economy in the ASEAN region – ranked 24th globally out of 120 countries, with a score of 78 percent. At the other end of the scale is Myanmar, ranked 112th, which along with Lao PDR and Cambodia is one of a handful of under-performers in the region. Index results for ASEAN countries are shown in Table 2.6. The Index evaluates not only levels of education, skills, and employment, but also how well nations are using this potential to benefit their economies and society as a whole, underscoring the important role that governments play in addressing skills mismatches in the economy.

**TABLE 2.6 World Economic Forum Human Capital Index, rankings and scores for ASEAN countries (2016)**

| Global Rank | Country     | Score (out of 100) |
|-------------|-------------|--------------------|
| 24          | Singapore   | 78                 |
| 46          | Philippines | 71                 |
| 52          | Malaysia    | 70                 |
| 57          | Thailand    | 69                 |
| 59          | Vietnam     | 68                 |
| 69          | Indonesia   | 67                 |
| 97          | Cambodia    | 59                 |
| 105         | Lao PDR     | 56                 |
| 112         | Myanmar     | 53                 |

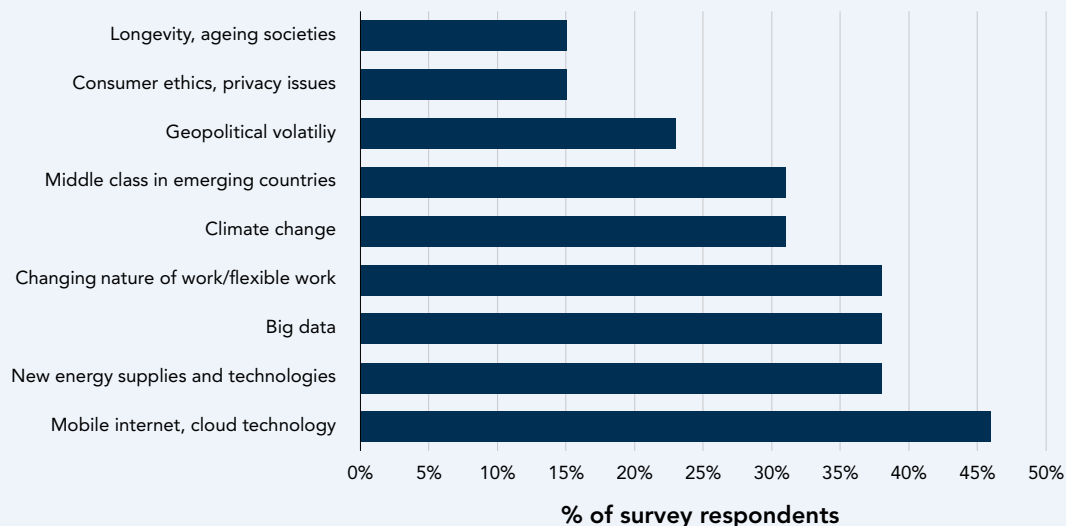
Source: WEF 2016.

**The Index also highlights some significant labor force participation gender gaps in the region.** The labor force participation gender gap is highest in Malaysia (41 percent), followed by Indonesia and the Philippines, at 38 percent and 35 percent, respectively. In Vietnam, Cambodia, and Laos, there is a relatively small workforce gender gap. Still, both Cambodia and Vietnam, as well as other countries across the region as a whole, have big gender gaps in the progression of female workers to senior levels.

**With growing pools of young, well-educated workers, several economies in the region compare favorably with global standards on the availability of skilled talent.** Companies surveyed by the WEF point out that Malaysia, Singapore, the Philippines, and Indonesia highlight the increasing ease of finding skilled employees. However, the perceived quality of skilling and training programs varies widely between and even within countries across different parts of the education and training ecosystem. In Cambodia, Lao PDR, and Thailand, for example, on-the-job staff training is rated comparatively higher than the rest of the local education ecosystem, pointing to local companies undertaking their own measures to secure their supply of talent (WEF 2016).

## Technology and the ASEAN Workforce

Private sector leaders in the region surveyed by the WEF underscored the implications of disruptive technology in shortening the shelf-life of employees' existing skill sets, as well opening up opportunities to pursue new tasks (Figure 2.17). For example, technological disruptions such as robotics and machine learning – rather than completely replacing existing occupations and job categories – are likely to substitute specific tasks previously carried out as part of these jobs, freeing workers up to focus on new tasks and leading to rapidly changing core skill sets in these occupations. ASEAN business leaders also projected a 4-to-1 job creation to displacement rate associated with increasing digital disruption (WEF 2016).

**FIGURE 2.19 Important drivers of change impacting industries according to ASEAN business leaders**

Source: WEF 2016.

**Estimates vary on the potential impact of automation on employment across ASEAN.** A 2016 report by the International Labour Organization (ILO) that focused on five ASEAN members – Cambodia, Indonesia, the Philippines, Thailand, and Vietnam – revealed that 56 percent of all employment in these countries is at high risk of being substituted by technology over the next decade (Chang and Huynh 2016). The study also notes that over the coming decade, mobile Internet connectivity, new energy technologies, cheap processing power and data analytics, as well as flexible and remote working, are expected to create more jobs, especially in the areas of transportation and logistics, sales, management and business, law, and finance.

**However, more targeted analysis that is focused on tasks rather than occupations would likely result in much lower estimates of employment that could be automated.** Studies like the ILO one cited above are open to criticism for assuming that a whole occupation can be automated, rather than assessing the individual tasks within an occupation separately. For example, the impact of technology has already replaced certain functions within industries without the entire industry being automated. For example, the replacement of paper-based accounting procedures with computer software has not eliminated the accountancy profession. Indeed, in the United States, the Bureau of Labor Statistics forecasts a 10 percent increase in employment between 2016 and 2026 for accountants and auditors, above the overall rate of employment growth of 6 percent.<sup>38</sup> Research in OECD economies found a much lower range of jobs likely to be lost through automation, calculating around 6–12 percent of current jobs being at high risk of automation (Arntz, Gregory, and Zierahn 2016). The numbers are likely to be even lower in low- and middle-income countries such as those that make up most of ASEAN (World Bank 2017, 132-134). Although difficult to estimate given the need to make forecasts about largely-unknown future occupations, it is also important to recognize that net employment effects depend on jobs created through new roles in the digital economy, not just through tasks replaced by technology. Nevertheless, governments in the region need to consider ways in which the digital economy may lead to increased vulnerability in employment. Box 2.4 highlights the critical role of social safety nets, and protecting workers rather than jobs, in addressing this.

38 For data, see the website of the U.S. Department of Labor at <https://www.bls.gov/ooh/business-and-financial/accountants-and-auditors.htm>

**BOX 2.4**

## Safety Nets and the Digital Economy

**Especially in advanced economies, there has been a vigorous debate on the implications of aspects of the digital economy for social protection, especially for workers in the so-called 'gig economy' (for example, delivery drivers) characterized by a shift to casual rather than fixed employment contracts.** The issues are relevant in Southeast Asia, although the already-large size of the informal sector in many countries in the region means that the challenges of informal employment, and minimal social safety nets, are not new. However, it will be important to ensure that aspects of digital transformation do not undermine the progress made in some countries in formalizing employment, and providing greater social safety nets, both linked to employment contracts, and more broadly for all citizens. It is essential that social protection schemes are appropriately targeted. For example, the last decade in Indonesia has seen a shift from largely-ineffective subsidy programs (for example, on fuel) towards various forms of cash transfers more carefully targeted to the poorest (World Bank 2017b). Nevertheless, the social protection system needs further strengthening, in line with ongoing high levels of poverty, and vulnerability to economic shocks. In Southeast Asia it will also be important to ensure that labor market regulations, and other regulations, do not create an incentive for digital economy activities to be conducted in the informal economy: regulation should not be so restrictive as to drive workers and firms into informality. As the 2016 World Development Report argues, the priority needs to be to protect workers, not jobs.

Source: Draws on World Bank 2016b, 279-281.



**Nonetheless, as the costs of automation fall, the region must begin to compete through skilled talent, not cheap labor alone, and to ensure the skills being prioritized are relevant to future growth.** For example, in several ASEAN countries a large number of students are studying social sciences, business, and law, while enrolment in engineering, health, and the natural sciences – areas critical to the evolving technological and demographic trends both regionally and globally – lags behind. With a young demographic profile and a rapidly expanding workforce, the region urgently needs to shift its approach to education curricula, bringing major reforms to the education value chain, from basic education through to vocational training and higher education.

**While the provision of digital skills may never keep pace with the speed of innovation, governments are promoting initiatives that support the build-up of a bedrock of core skills that citizens need to acquire, so that they can build on, extend, and then adapt to meet the demands of technological change.** Programs such as Singapore's Skillsfuture initiative, Thailand's new online digital skills portal, and Malaysia's #mydigitalmaker movement point towards a growing effort to prepare citizens at various stages of their career for the digital age. Given the rapid pace of changing skills needs, collaboration between governments and the private sector can help identify what these needs are. Box 2.5 describes an example of such an approach from Singapore.

## BOX 2.5

# Strengthening Private Sector Collaboration to Identify Skills Needs

**The digital economy is characterized by rapidly-evolving skills needs.** Governments face an acute challenge in meeting these needs since it is ultimately their responsibility to provide education as a public good. But it is the private sector, rather than governments, that is driving change and digital disruption in the economy. This underlines the importance of stronger public-private collaboration in defining the skills needs of the digital economy.

**Singapore provides an example of an approach that holds lessons for other countries.**

In 2016, the government identified 23 industries for which "Industry Transformation Maps" (ITMs) would be developed to forecast likely trends in those industries, as a way of defining future skills needs, among other policy issues. All ITMs were completed by early 2018 and form an input to various policy decisions, including on skills. However, as important as the output is the process through which the ITMs were developed, involving successive rounds of consultation between government, the private sector, and other stakeholders. Although it could be argued that such documents will rapidly become out of date given the pace of technological change, the model represents a positive example of dialogue between the government and private sector to define skills needs.

Source: Authors.

**Regional efforts to promote talent mobility within ASEAN also have a key role to play in optimizing the region's long-term human capital potential.** This has been identified in previous research (Papademetriou et al 2015). Currently, labor migration patterns in the region are centered on several one-way corridors: from Cambodia, Lao PDR, and Myanmar into Thailand (55 percent of total intra-ASEAN labor migration); from Indonesia into Malaysia (16 percent); and from Malaysia into Singapore (16 percent) (ILO and ADB 2014). In addition, the transferability and recognition of education and skills through common protocols of certification will also be necessary for reaping the full benefits of integration. Upgraded mechanisms for joint skills training, and mutual recognition of occupational qualifications and standards between ASEAN nations, are also highly-effective approaches to alleviating geographic skills mismatches: they can promote talent flows from economies with specific skills surpluses to those where such skills are in short supply. This needs to be coupled with policies that support the regional movement of skilled personnel, which may require the lifting of restrictive policies in some cases.

## Conclusion

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**In order to realize the potential of the region's digital economy to achieve development outcomes for all its citizens, governments will need to focus on well-targeted and evidence-based measures to address the enabling factors for the digital economy.** This includes initiatives to spread fast and affordable Internet connectivity, enable digital payments and drive financial inclusion, facilitate the emergence of a more efficient logistics sector, and, in collaboration with the private sector, promote the skills and lifelong learning needed for workers to respond to major technological changes.

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**CHAPTER 3**

# **Cross-Cutting Digital Economy Policy and Regulation**

## Overview

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**Across countries in Southeast Asia, the policy response to digital transformation has been mixed.**

Some are developing a strategic and pro-active approach to leveraging its benefits, working across the full range of government policies, while others have made piecemeal decisions to contain or roll back the consequences of specific incidents (for example, security breaches) or the impacts of new technologies, applications, or business models. In several cases, governments have been caught off-guard – be it by embedded code programmed to evade emission tests, IoT’s inherent lack of security, or tax policy challenges of the digital economy (OECD 2017).

**While the private sector typically drives innovation in the digital economy, governments have an important role to play.**

Policy and regulation affect all aspects of the digital economy, in two broad categories. First, in specific policy and regulatory issues for each aspect of the digital economy, for example, payments, connectivity, or logistics. These were discussed in the previous chapter. Second, with regard to the cross-cutting legal and regulatory framework, especially in terms of policies that relate to data, trust, and innovation.

**Almost all governments in the region have produced high-level plans, endorsed at head of government or similar level, for growing the digital economy – but their concrete implementation remains a challenge.**

Both government officials and the private sector see a need for ongoing political ongoing commitment at the political level beyond the original announcement of these plans. Governments in the region need to ensure that these high-level strategies are underpinned by institutions to facilitate sustained political engagement on growing the digital economy – including for coordination across government, with the private sector, and monitoring progress and bottlenecks. The experience of several countries with regard to their high-level plans is considered in more depth in Chapter 4 and the annexes.

**Beyond national policies and strategies, there are real benefits to be gained through more regional cooperation, with the overarching goal of an open, integrated Southeast Asian digital economy – rather than fragmented national digital economies.** Chapter 4 surveys several of the key regional instruments for facilitating cooperation on topics related to the digital economy, especially through ASEAN.

**Policies in emerging areas such as data openness and privacy are underdeveloped across the region, including in middle-income countries such as Thailand and Indonesia.**

While a key focus in improving connectivity has been to improve quality and access to the Internet, the demand for digital infrastructure is slowly but surely expanding beyond the need for high-quality broadband Internet towards greater appreciation of data collection, storage, transmission, and analysis. There remain significant gaps in developing robust domestic data management systems and encouraging openness to data flowing across borders, as well as open data from governments, balanced with privacy protections, and other ways of addressing trust concerns. There is also a need for more focus on policies to build trust for the greater use of data as a tool for growth, including by building strong foundations for consumer protection, data privacy, cybersecurity, and online payments integrity.

**Overall, policies and regulations pertaining to e-commerce are further developed than for other themes such as big data analytics, cloud computing or IoT.**

This focus is also evident in ASEAN’s regional digital agenda, which has seen a strong focus on e-commerce, rather than the digitalization of industries. As a result, most countries have put in place the basic legal and regulatory foundations for

e-commerce transactions. ASEAN countries – with the exception of Cambodia, Lao PDR, and Myanmar – have legal frameworks for secure electronic transactions, data protection and privacy, and consumer protection for online purchases (see Table 3.1). Although the existence of regulations in these areas is a basic indication of the legal and regulatory framework being in place, it says nothing about the detail of these laws or regulations; the extent to which they are equipped to address current issues in the digital economy; their compatibility across countries; or their implementation.

**TABLE 3.1 Legal frameworks in ASEAN countries for electronic transactions, data protection/privacy, and online purchases**

|                          | Does the country have a legal framework for electronic transactions/e-signature? | Does the country have a legal framework for data protection/privacy online? | Does the country have a legal framework for consumer protection when purchasing online? | Does the country have a legal framework for cybercrime prevention? |
|--------------------------|--|---|---|--|
| <b>Brunei Darussalam</b> | Yes  | No  | Yes   | Yes  |
| <b>Cambodia</b>          | Draft  | No  | Draft   | Draft  |
| <b>Indonesia</b>         | Yes  | Yes   | Yes   | Yes  |
| <b>Lao PDR</b>           | Yes  | Yes   | Draft   | Yes  |
| <b>Malaysia</b>          | Yes  | Yes   | Yes   | Yes  |
| <b>Myanmar</b>           | Yes  | No  | Yes   | Yes  |
| <b>Philippines</b>       | Yes  | Yes   | Yes   | Yes  |
| <b>Singapore</b>         | Yes  | Yes   | Yes   | Yes  |
| <b>Thailand</b>          | Yes  | Yes   | Yes   | Yes  |
| <b>Vietnam</b>           | Yes  | Yes   | Yes   | Yes  |

Source: UNCTAD Cyberlaw Tracker.  
[http://unctad.org/en/Pages/DTL/STI\\_and\\_ICTs/ICT4D-Legislation/eCom-Global-Legislation.aspx](http://unctad.org/en/Pages/DTL/STI_and_ICTs/ICT4D-Legislation/eCom-Global-Legislation.aspx)

**Encouragingly, there is growing recognition of the multidimensional nature of the digital economy and the need for an interdisciplinary approach to policy.** Going forward, governments in the region will need to focus on cross-cutting policy and regulatory issues that establish an enabling environment for the digital economy to flourish. This includes, but is not limited to, several key issues:

- Increasing digital adoption by building trust through consumer protection laws and data privacy
- Promoting innovation and entrepreneurship through skills development, investment incentives, and a strong rule of law protecting intellectual property
- Creating markets for digital economy firms by improving financial inclusion and literacy

- Safeguarding digital infrastructure through development and enforcement of robust cybersecurity architecture
- Encouraging harmonization at the regional level to ensure that domestic companies have access to markets and collaborative opportunities in the region

The rest of this chapter highlights the approaches taken by governments in the region on policy and regulatory enablers of the digital economy, in particular cross-border data flows; data privacy; cybersecurity; consumer protection; electronic transactions and e-commerce laws and taxation.

## Cross-Border Data Flows

**The use of data is central to the digital economy, and the ease of transmitting data across borders is central to the growth of cross-border business models.** At the transactional level, data underpins the flow of goods and services within countries around the region, and between Southeast Asia and its major trading partners. It is also a necessary condition for the adoption of cloud technologies that can reduce up-front capital costs and fixed costs, as well as driving productivity higher (Meltzer and Lovelock 2018).

**Cross-border data flows generate more economic value than traditional flows of traded goods, according to some estimates.** These flows account for US\$2.8 trillion of global GDP in 2014 and have the potential to reach US\$11 trillion by 2025 (McKinsey and Company 2015).<sup>39</sup> The same study estimates around 12 percent of international trade in goods have been estimated to occur through global e-commerce platforms such as Alibaba and Amazon. Indeed, the ability to move data rapidly and globally is the new growth engine for many businesses. According to the industry group Business Roundtable, big data analytics, back-office consolidation, supply-chain automation, digital collaboration, and cloud computing are some of the top areas in which firms transmit data across national borders (Pepper, Garrity, and LaSalle 2016). Cross-border flows also reduce costs related to both trade and transactions, including customer engagement (finding and fulfilling orders) as well as other operational costs associated with doing business.

**The region has seen a push by governments to implement restrictions on cross-border data flows, especially of sensitive personal data, driven by a mix of concerns.** These restrictions typically take a form of data localization requirements, which mandate services or applications dealing with sensitive personal data to operate in-country and process data locally to avoid offshore transfer. Such laws require businesses to ensure various forms of data are processed and stored in servers physically located within national borders, or impose that at least a copy of the data is available locally and accessible for law enforcement purposes (data mirroring). In Indonesia, localized data may only be transferred with prior consent and after the exporter has gone through a procedure of 'coordination' with the public authorities, for instance. Such measures will have economic and trade costs. According to calculations by the European Centre For International Political Economy (ECIPE), the impact of data restrictions on GDP in specific countries could be -1.1 percent in China; -0.1 percent in India; -0.5 percent in Indonesia; -0.4 percent in the Republic of Korea; and -1.7 percent in Vietnam. With regard to the effect of these measures on domestic investments, ECIPE estimates the impact will be -1.8 percent in China; -1.4 percent in India; -2.3 percent in Indonesia; -0.5 percent in the Republic of Korea; and -3.1 percent in Vietnam (Bauer et al 2014).

<sup>39</sup> It should be noted that there is no consensus on estimates on the value and impact of data flows, and gathering data on the scale of data flows or their economic value is highly challenging.

**Data localization requirements vary, with Vietnam and Indonesia having imposed the most comprehensive restrictions on cross-border data flows in ASEAN.** In these two countries, the arguments for such regulations range from enhancing national security, protecting personal privacy, aiding law enforcement, and preventing foreign surveillance, in addition to appeals to the principle of sovereignty. But governments have also restricted the transfer of data across national borders in order to foster the development of domestic technology sectors. Furthermore, governments have implemented data localization policies as a short-term means of promoting economic development via the construction of in-country data centers and the creation of highly-skilled technical jobs (FTI Consulting 2017). The current data localization requirements in Vietnam and Indonesia include:

- **Vietnam.** Vietnam's new Law on Cybersecurity (CSL) was adopted by the National Assembly on June 12, 2018, and will come into effect on January 1, 2019. It imposes obligations on domestic and foreign companies providing services to customers in Vietnam over telecom networks or the Internet, such as social networks, search engines, online advertising, online streaming/broadcasting, e-commerce websites/marketplaces, Internet-based voice/text services (OTT services), cloud services, online games, and online applications. Under the new law, both onshore and offshore online service providers are required to store Vietnamese users' information within Vietnam for a certain period of time. The law does not appear to expressly prohibit the online service providers from duplicating the data or transferring/storing such duplicated data outside of Vietnam during this statutory retention period. Earlier versions of the text required these providers to store their users' information within Vietnam and comply with specified assessment procedures before transferring any "critical data" outside of Vietnam. However, by requiring offshore service providers to "store" Vietnamese users' information in Vietnam, the law effectively forces these providers to have servers in Vietnam, either by directly owning/operating the servers or leasing servers owned/operated by other service providers in Vietnam to store such information.<sup>40</sup> The coordination of CSL with existing regulations is not clear yet, especially when there are conflicts between them such as 'safe harbor' for website/social network operators under other valid legislation that protects them from the responsibility to monitor or supervise digital information of their users, or investigate breaches of the law arising from the process of transmitting or storing digital information of their users. Vietnam's data-localization policies are part of broad efforts to control Internet-based activities, with the stated objectives including public security as well as commercial goals. For example, Vietnam forbids direct access to the Internet through foreign ISPs and requires domestic ISPs to store information transmitted on the Internet for at least 15 days. Under Circular No 38 issued by the Ministry of Information and Communication (MIC) in 2016, providers of cross-border public information which (a) has more than 1 million visits from Vietnam per month or (b) leases a data center to store digital information in Vietnam, are required to provide contact information to the MIC.
- **Indonesia.** Indonesia has a range of data-localization laws that cover a broad range of sectors and technologies. Indonesia has been expanding its range of localization policies in recent years. In 2012, Indonesia enacted a rule – regulation no. 82 (GR82) under the umbrella of the Electronic Information and Transaction (EIT) law – regarding the Provision of Electronic System and Transactions, which requires "electronic systems operators for public service" to store data locally. Indonesian officials have stated that 'public service' means any activity that provides a service by a public service provider, consistent with the broad definition of the term used in the implementing regulations to the 2009 Public Service Law. In 2014, Indonesia seemed to follow through on this as the government began considering a "Draft Regulation with Technical Guidelines for Data Centres" that would require Internet-based companies, such as Google and Facebook, to set up local data storage centers. The potentially broad effect of the law was evident by a spokesman's comments that the law "covers any institution

40 Giang Thi Huong Tran, Waewpen Piemwichai, Tu Ngoc Trinh, "Vietnam's controversial New Cybersecurity Law Raises Questions", Tilleke & Gibbins, 8 August 2018

that provides information technology-based services.” Most recently, Indonesia’s Technology and Information Ministry issued regulation 20/2016 (GR20) on personal data protection that stated that electronic system providers (ESPs) are required to process protected private data only in data centers and disaster recovery centers located in Indonesia. Localization policies are also spreading to other areas. There are also sector specific restrictions of cross-border data flow measures:

- » In 2014, Bank Indonesia (BI) – Indonesia’s central bank – enacted a rule that requires e-money operators to store data locally (Molina 2016). In 2017, BI started to require all domestic transactions to be processed through the National Payment Gateway (NPG).
- » The Financial Services Authority, or Otoritas Jasa Keuangan (OJK), requires banks to use data centers and disaster recovery centers in Indonesia (POJK No.38 of 2016). The same applies to insurance and re-insurance companies (both common and Syariah) under a 2016 regulatory measure, POJK 69. The regulation further specifies that personal identifiable information and transaction-related information must be located within Indonesia.
- » In 2016, Indonesia’s Ministry of Communications and Informatics issued Circular Letter No. 3, which notified over-the-top service companies (such as Skype and WhatsApp) about new regulations, including the requirement to store data locally.

**In contrast, Singapore, the Philippines, and Malaysia have not adopted broad data localization requirements but have instead implemented risk-based approaches that facilitate legitimate cross-border data flows.** Malaysia’s 2010 Personal Data Protection Act (PDPA) does not permit a data user to transfer any personal data out of Malaysia unless certain conditions are met, including user consent, and other reasonable preconditions. In the Philippines, the approach to liability regarding cross-border transfers under Chapter VI PDPA is fairly simple: it is the controller who is responsible for ensuring the protection of personal information under its control or custody – even when such personal information has been transferred to a third party outside of the country for processing. Controllers are required to use contractual or other means to ensure that the third-party entity to whom the personal information is to be transferred for processing provides a comparable level of protection as that of the Philippines. Similarly, an organization may only transfer personal data outside Singapore if it has taken appropriate steps to ensure that it will comply with obligations of Singapore’s PDPA with respect to the transferred personal data while it remains in its possession or under its control, and the recipient outside of Singapore is bound by legally-enforceable obligations to provide a standard of protection to the personal data transferred that is comparable to that under Singapore’s PDPA. An organization will be taken to have satisfied the second requirement if the individual consents to the transfer of the personal data to the recipient in that country. These approaches underscore that it is possible to ensure that cross-border data flows do not abrogate domestic privacy and protection standards.

**The negative impact of barriers to data flows often go unobserved, as many governments do not have the capacity to adequately measure the contributions of data to the digital economy.** While it would be challenging to expect a comprehensive approach, governments can take incremental steps by increasing the sample sizes used when measuring trade in services statistics, to collect data more often, and to provide more specific industry detail. This would improve the government’s ability to measure the effects of cross-border data flows on productivity. They can also explore how to collect more detailed and specific data on cross-border data flows and develop better measures to capture how the digital economy contributes to GDP, job growth, and productivity. Regional organizations like ASEAN can also support the development of a standard nomenclature for terms related to the digital economy, to support measurement and data collection.

**Blanket data localization restrictions can have widespread impact beyond the ICT sector, including in manufacturing and agriculture.** This is because of the increasingly central importance of data to economic activity in all sectors. For example, the use of data on production processes to monitor their efficiency, or the use of data to monitor the performance of engineering parts and identify needs for maintenance or replacement. Data is also central to the cross-border delivery of services, including by SMEs, and facilitating this is a priority for all Southeast Asian governments. Services themselves are also critical for increasing productivity and value addition in manufacturing and agriculture, with services embodied in the production of manufacturing and agricultural goods all along the value chain (National Board of Trade 2015). Many of these services are accessed through cross-border data transfers: for example, research and development services from a subsidiary in another jurisdiction being provided to a domestic manufacturing firm; design services for an engineering company; marketing for an agricultural producer; and so on. More research is needed in Southeast Asia to identify and quantify the impact of blanket data restrictions on the operations of companies in the region, both multinational and domestic firms.

## Data Privacy

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**Ensuring a balance between the protection of personal data and its legitimate use for commercial purposes is a central requirement of the digital economy.** The sharing of personal data is a routine aspect of participation in the digital economy, meaning that a robust legal and regulatory regime to protect personal data, while allowing its legitimate commercial use, is essential. This entails striking a balance between national regulatory standards, and allowing cross-border data flows to different jurisdictions. For example, cross-border data flows to a jurisdiction with lower levels of privacy protection can undermine domestic privacy protection. This creates an incentive for regulators to restrict cross-border transfers of personal information. For instance, as a rule the European Union's General Data Protection Regulation (GDPR) prevents transfers of personal data to another jurisdiction that has not been deemed by the EU to have adequate privacy protection, and the European Court of Justice has found that a finding of adequacy requires the other country to provide privacy protection that is "essentially equivalent" to that found in the EU (Meltzer and Lovelock 2018). However, transfers may take place from the EU if the recipient of the data has implemented "appropriate safeguards", e.g. by contract or other legally binding instruments and in practice, these exceptions have become the rule.

**The extent to which countries in the region have legal and regulatory frameworks on data privacy varies.** Malaysia, Singapore, and the Philippines have comprehensive data protection laws (albeit recently adopted, having come into effect in 2013, 2012, and 2016 respectively). Indonesia and Thailand have been discussing draft data protection laws, and in Indonesia sectoral regulations applicable to Electronic Service Providers are already in place. Vietnam has a variety of specific regulations in place but no cross-cutting data protection law. As noted in the preceding section, the regulatory regime in Indonesia and Vietnam includes stringent data localization requirements. Cambodia, Brunei, Lao PDR, and Myanmar do not yet have publicly-announced plans to introduce comprehensive data protection frameworks. Table 3.2 provides a summary of data privacy legislation in five countries.



**TABLE 3.2** Examples of data privacy or protection legislation in Southeast Asia

| Country  | Act/Practice  | Laws or Regulations Concerning Data Privacy/Protection   |
|----------|---|--|
| Thailand | Constitution, Thai Penal Code and the Child Protection Act B.E. 2543 (2003), Credit Reporting Act; Financial Institutions Act; conditions of licenses issued under the Securities and Exchange Act and the Decree on Electronic Payments; Telecommunications Business Act; National Health Act; Personal Data Protection Draft Bill | Although there is no general statutory law governing data protection or privacy, the Constitution of the Kingdom of Thailand recognizes the protection of data privacy rights. In addition, statutory laws in some specific areas (such as telecommunications, credit reporting, banking, and financial businesses), as well as other non-business related laws, such as certain provisions under Thai Penal Code and the Child Protection Act B.E. 2543 (2003), do provide a certain level of protection against any unauthorized collection, processing, disclosure, and transfer of personal data. <sup>41</sup> Moreover, a draft Personal Data Protection Bill was approved by the Cabinet on 22 May 2018, before going to the National Legislative Assembly. Adoption is expected by end 2018. This would be the first general law applicable to the protection of “personal data”, conventionally defined as data which directly or indirectly identifies a particular person. The law will apply to almost all uses of data in the public and private sectors, with few exceptions similar to common international exceptions. It provides much stricter notice and consent requirements, security protocols, and restrictions on the collection, use, and disclosure of personal data. The new law is modelled after similar European laws and offers greater clarity as to what is required for proper legal consent, as well as specifying the rights of “data owners” to review, and potentially withdraw consent for continuing use of their personal data, as well as to access their data and request their correction, deletion, and suspension or de-identification when appropriate. It further introduces data breach notifications requirements into the Thai legal system. Controllers must keep a record of processing operations and regularly assess the impact on personal data privacy of processing operations. Finally, transfers of personal data will in principle be possible only to foreign countries that meet a standard of privacy protection to be set by a newly created Data Protection Committee. Data exports are also possible in a number of cases listed in the Draft Law. Sector-specific provisions (including on data transfers) will remain relevant even after the Act is passed. |
| Malaysia | 2010 Personal Data Protection Act, Credit Reporting Agencies Act 2010   | Malaysia was the first nation in Southeast Asia to pass a Data Protection Act. The 2010 Personal Data Protection Act (PDPA), which came into effect in 2013, only covers the private sector, in respect of processing “for commercial use” only (a concept requiring interpretation). Credit reporting agencies, government agencies, and commercial organisations processing data for ‘regulatory functions’ are exempt. Malaysia’s PDPA closely mirrors the principles in the pre-GDPR European Union directive, with some variations that appear to adopt parts of the APEC Privacy Framework. It specifies that certain data users such as licensed insurers, professional firms (for example, legal, auditing, accounting, engineering, and architecture firms), housing developers and medical clinics are required to register with the Department of Personal Data Protection. The same may be requested to establish <i>ad hoc</i> forums and prepare sector-specific codes of practice in complement to legal requirements. Thus, codes apply in the Utilities Sector (Electricity), the Insurance/Takaful Industry, the Banking and Financial Sector, Licensees under the Communications And Multimedia Act (March 2015), and Lawyers (2018), which are enforceable. Individuals have the right to request access and correction of data which is inaccurate, incomplete, misleading, or not up-to-date, withdraw their consent, and opt-out for direct marketing. Finally, the Act requires that a company may only transfer personal data out of Malaysia if the country is specified by the Minister in charge of data protection and is then published in the Gazette. <sup>42</sup> Malaysia also appears to be considering a “whitelisting” approach to promote data flows to some jurisdictions that fulfil their data protection standards. Some of the key criteria for jurisdictions to be whitelisted include places that have: (i) comprehensive data protection laws; (ii) no comprehensive data protection law but are subjected to binding commitments (multilateral/bilateral agreements);  |

(continued on next page)

41 David Duncan, Thailand Chapter in “Regulation of cross-border data transfers in Asia” (Asian Business Law Institute, 2018), p. 383

42 The Personal Data Protection Act 2010 can be accessed via the website of the Department of Personal Data Protection at <http://www.pdp.gov.my/index.php/en/akta-709/personal-data-protection-act-2010>

**TABLE 3.2** Examples of data privacy or protection legislation in Southeast Asia (continued)

| Country   | Act/Practice   | Laws or Regulations Concerning Data Privacy/Protection   |
|-----------|--|--|
|           |  | and (iii) no data protection law but have a code of practice or national co-regulatory mechanisms. <sup>43</sup> The Malaysian Data Protection Commissioner, an agency in charge of implementing and enforcing PDPA under the Ministry of Communications and Multimedia (KKMM), has been operational since 2013. Enforcement has been slowly taking off in recent years.   |
| Indonesia | Constitution, Electronic Information and Transactions (EIT), Government Regulation No 82/2012 on the Implementation of the EIT Law (GR82), Regulation No 20 of 2016 concerning Personal Data Protection in Electronic Systems (MCI 20/2016)                          | Since 2014, Indonesia has been planning to adopt a comprehensive data protection law. A first draft for public comment was issued in 2015, and a series of drafts referring to EU GDPR were issued for public comments in 2018, but there is little public clarity on the path to adoption. Meanwhile, piecemeal protections in different texts apply. The most detailed is Regulation No. 20 of 2016 on Personal Data Protection in Electronic Systems (MCI 20/2016) issued in 2016 by the Minister of Communication and Informatics, which became effective on 1 December 2016 (but was only made publicly available on 9 December 2016). This regulation is an implementing regulation of the Electronic Information and Transactions Law (Law No. 11 of 2008) (EIT Law) and Government Regulation No. 82 of 2012 (GR 82) (which addresses the use of personal data through electronic media/systems). MCI 20/2016 provides a two-year transition period for full compliance (i.e. to 1 December 2018). It applies to “Electronic Service Providers”, i.e. any organisation in the public or private sector that operates an electronic system to manage personal data, whether for internal or external purposes. ESPs must ensure that the collection, use, and disclosure of personal data is based on the data subject’s consent, unless otherwise provided by law (parental consent is required for minors). The purpose of data use, processing, transfer, and disclosure must be detailed. Data may be disclosed to a third party only if that disclosure is in line with the original purpose for which the data was originally collected. ESPs are further required to develop an internal set of rules on data protection and are bound by strict requirements on data security and data breach notification. Data owners may access, request changes or update to their data, and their deletion when relevant, may opt-out of direct marketing activities, and enjoy a local version of the EU’s “right to be forgotten” since 2016. The Regulation includes specific provisions on cross-border data transfers (both user consent and “coordination” with the Ministry are required), which also apply to ESPs offering public services that must store their data in data recovery centres in Indonesia. In terms of coverage, MCI 20/2016 does not specifically state that it has extraterritorial coverage. However, as an implementing regulation of the EIT Law, there should be an assumption that it does have extraterritorial coverage. It remains to be seen whether the authorities will enforce the Data Protection Regulation against offshore electronic system operators. |
| Vietnam   | Law on Information Technology, Telecom Law, Law on Cyber-Information Security (CISL), Law on Consumer Protection, Law on E-Transactions, Decree 72 on Internet Services and Online Information, Decree 52 on E-commerce<br>Ongoing efforts to draft a regulation/law | Beyond constitutional clauses whose justiciability is uncertain, at the moment, Vietnam does not have a unified law regarding privacy. Its approach is instead informed by different laws and decrees that are rather restrictive, and of which there has been limited (if any) implementation to date. <sup>44</sup> Taken together, these laws and decrees provide a common key principle that the collection, processing, and use of personal information must be consented to by the information owner, and the use of such information must be in line with the purposes as notified and consented to. The CISL specifically provides the clearer concepts of personal information and processing, but with a focus limited to commercial processing and only “in cyberspace”. There are no specific requirements on cross-border data transfers, but that will change with the new Law on Cybersecurity adopted on June 12, 2018, coming into effect on January 1, 2019, which imposes restrictions on cross-border transfer of Vietnamese users’ information and data localisation requirements on companies providing online services to Vietnamese customers. Since 2005, state regulators have sought to enact data privacy protection measures into law and detailed penalties for violations. Moreover,  |

(continued on next page)

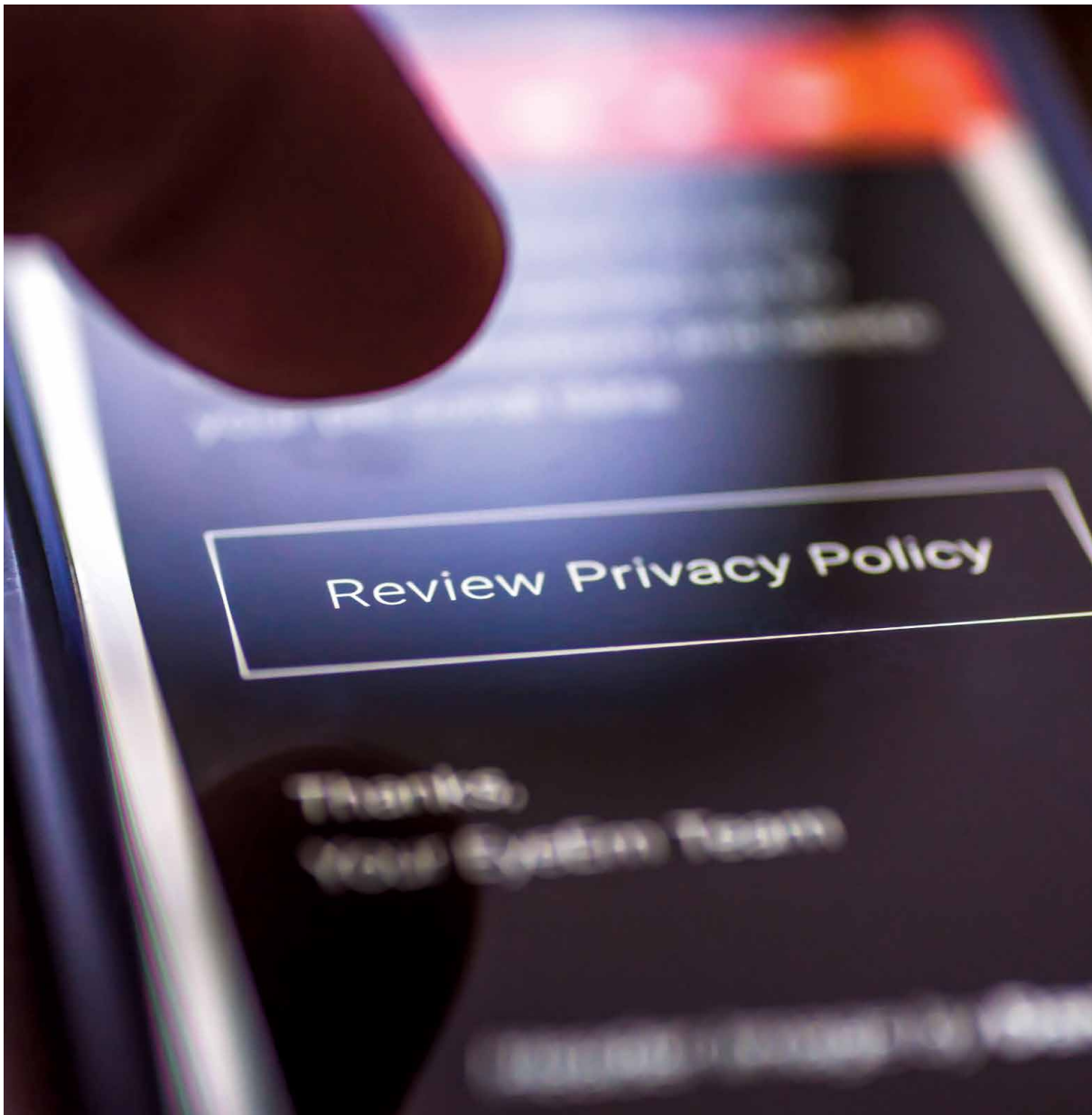
43 Department of Personal Data Protection, “Public Consultation Paper 1/2017: Personal Data Protection

44 Waewpen Piemlichai, Vietnam Report, in “Regulation of cross-border transfers of personal data in Asia”, *ibid.*, p. 396

**TABLE 3.2** Examples of data privacy or protection legislation in Southeast Asia (continued)

| Country     | Act/Practice   | Laws or Regulations Concerning Data Privacy/Protection  |
|-------------|--|---|
|             |  | <p>Vietnam is also actively engaged in bilateral and international cooperation on data privacy within the APEC framework and has expressed an interest in joining the CBPR system, although it has not yet subscribed to the Cross-Border Privacy Enforcement Arrangement, which is a prerequisite to join CBPR. Vietnamese enterprises also have become more aware of the importance of, and paid more attention to, data privacy issues. According to a survey conducted in 2008 by the Ministry of Industry and Trade, 18 percent of 132 enterprises said that they had already established data privacy policies while 40 percent planned to do so in the near future. Despite not having detailed rules on collecting and using customers' personal information, Vietnamese companies have started to adopt technological and managerial measures to protect customers' information. 67 percent of the surveyed firms said that they have taken both of the above measures.</p>  |
| Philippines | Constitution; Data Protection Act (DPA) 2012; Implementing Regulations (IRRs) (2016); Credit Information System Act (CISA) | <p>The Philippines was the second ASEAN country to adopt a Data Privacy Act (DPA) in 2012, based on the constitutional protection of privacy and communication. It is one of the toughest data privacy legislations in the region, which broadly applies to both the private and public sectors. By exception, the DPA does not apply to data processed in the public interest by the central monetary authority, law enforcement, and regulatory agencies. Data on credit borrowers is protected under specific legislation, and specific exemptions apply. The DPA has wide territorial and extraterritorial effect. Specific rules on processing and security apply to sensitive personal information, defined broadly. Overall, the Data Protection Principles are modelled on both the APEC Privacy Framework and EU GDPR. Personal data should be processed only with the individual's consent, but alternative grounds are available for lawful processing. Echoing GDPR, DPA and IRRs require transparency (including on the use of data for automated decision-making and profiling), and grant individuals rights to access their data, object to processing, and withhold consent. Philippine versions of the "right to be forgotten" and data portability also exist, and data subjects may object to the processing of their personal data for automated processing or profiling. There is no general data localisation requirement in the Philippines, and no data export limitations apply under DPA, except an 'accountability' requirement making a controller 'responsible' and 'accountable' for compliance with the DPA when data is disclosed to third parties, whether domestically or internationally. The IRRs further contain provisions for outsourcing and subcontracting agreements. Controllers and processors must appoint Data Protection Officers and are subject to the mandatory registration of their data processing systems with the DPC in certain circumstances. Conventional provisions require the security of processing, and data breach notification is required to NPC and affected data subjects within 72 hours in the event of a breach if there is a risk of serious harm. Established in March 2016, the National Privacy Commissioner (NPC) has quickly created a resourceful and engaging regulatory agency, holding both regulatory and quasi-judicial powers. Enforcement of PDPA has been taking off in 2017-2018.</p> |

Source: Authors; and others referenced in the table



**A key challenge is finding ways for data to flow freely between countries in the region with different regulatory approaches to privacy.** To address this challenge, there are ongoing efforts within the region to facilitate data flows through self-regulatory instruments, notably through APEC. APEC's Cross-Border Privacy Rules (CBPR) system represents an emerging approach to fostering trust and facilitating data flows amongst member economies. A key benefit of the APEC regime is that it enables personal data to flow freely even in the absence of two governments having agreed to formally recognize each other's privacy laws as equivalent. Instead, APEC relies on businesses to ensure that data collected and then sent to third parties either domestically or abroad continues to protect the data consistent with APEC privacy principles. The APEC CBPR regime also requires accountability agents (AA) accredited by their local government to monitor and hold businesses accountable for privacy breaches.<sup>45</sup> To date, in Asia only Japan has effectively joined the scheme, but it will soon be operational in Singapore and the Republic of Korea when they appoint their AAs. The Philippines and Vietnam have expressed an interest in joining the scheme.

<sup>45</sup> Trustarc and JIPDEC have been recognized as Accountability Agents in the United States and Japan respectively.

**Other frameworks beyond APEC also provide examples for Southeast Asia to consider in pursuing for greater regulatory coherence on data privacy.** For example, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) commitments on privacy in the e-commerce chapter provides another framework for integrating privacy, trade, and cross-border data flows. Although regional approaches are ultimately more efficient, because they reduce regulatory complexity generated by multiple systems, bilateral agreements between countries also offer examples of cross-border collaboration on data privacy, even if their implementation has been complicated. For example, the U.S.-EU Privacy Shield was implemented to replace the 'Safe Harbor' agreement, attempting to reconcile the EU approach to privacy and the U.S. accountability-approach.<sup>46</sup> In this regard, Privacy Shield avoids countries without a comprehensive data protection law (in this case the United States) having to adopt a top-down privacy regime akin to the EU's GDPR. Instead, Privacy Shield allows a subset of businesses in a given country to agree to a particular privacy regime in order to be deemed equivalent by the EU. This *ad hoc* scheme enables the free flow of personal data between the EU and the business participating in Privacy Shield. A recent agreement between the EU and Japan to mutually recognize each country's data privacy regimes provides another example, although the system has not yet taken effect.

**Another complementary approach is to work towards the convergence of existing data privacy laws, by building on their commonalities and helping bridge their differences.** In fact, a majority of Asian jurisdictions have effectively implemented the high-level principles and concepts embedded in various international legal instruments, frameworks, or guidelines (e.g. the OECD Privacy Principles, EU Directive 95/46/EC, now EU GDPR, APEC Privacy Framework, ASEAN Data Protection Framework) into their national legal systems, so that data protection laws in many respects appear similar across the region. However, this transposition has not achieved the desired objective of regional consistency. In reality, moving from a plain reading of the text of the newly-enacted data protection laws to the practicalities of enforcement and compliance, divergence actually increases as jurisdictions prescribe more and more detailed requirements, often with local nuance.<sup>47</sup> In this context, local or regional actions seeking to promote the convergence of existing data protection laws should be encouraged.

**Regarding data localization specifically, the key principle for all governments when designing regulations should be to manage risk – whether to privacy, from cyberattack, or the impact of delays to law enforcement agencies – to an acceptable level relative to the economic and social benefits, including innovation, expected from these activities.** This principle has been adopted by the OECD.<sup>[1]</sup> While it is up to each government to determine its acceptable level of risk, in most cases, blanket requirements on data localization are suboptimal in that there are ways to achieve legitimate regulatory goals with less impact on economic growth and trade. For example, in most countries certain types of data are required to be held on local servers (e.g. data of national security importance), rather than mandating a blanket requirement. This avoids affecting the operations of businesses that do not handle such data. Such approaches need to be considered carefully, and implemented in ways that do not introduce excessive regulatory complexity, for example by introducing multiple categories of data that are not clearly defined or relying on conditions that are imprecise. Still, the discussion of such approaches is important, and underlines the existence of options beyond blanket data localization requirements for governments to consider.

<sup>46</sup> Whilst the Privacy Shield arrangement is currently under scrutiny in the European Court of Justice, the terms of the dispute do not challenge the structure of the scheme itself.

<sup>47</sup> Hogan Lovells' Asia Pacific Data Protection and Cyber Security Guide 2018 – "Shifting Landscapes across the Asia-Pacific Region", p 4.

[1] OECD 2015, Principle 5.

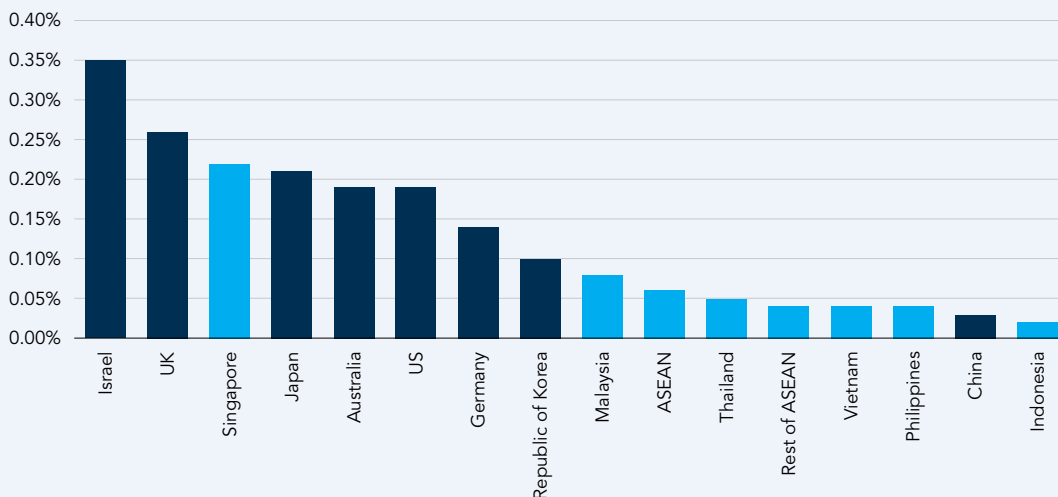
# Cybersecurity

**One of the greatest risks associated with the growth of the digital economy is the increased level of cybersecurity threats.** This has wide-ranging implications on commercial activities and personal privacy, and has triggered a range of regulatory responses. For example, a common argument in favor of data localization is to ensure the safety of data and to uphold personal data privacy protections. However, an effective cybersecurity agenda is far more far-reaching and multidimensional. Cybersecurity is a function of a number of elements – technical, financial, physical, and personnel.

**Research increasingly indicates that countries in the region are becoming “global hotspots” for suspicious web activities.** This assessment refers to locations whose vulnerable infrastructure can be used by hackers to launch cyberattacks (A.T. Kearney 2018). Spam botnets are also finding ASEAN countries to be attractive hosts for their attacks. For example, in 2017, Vietnam registered 1.68 million ‘IP blocks’ (blocks to prevent perceived suspicious Internet activity linked to various IP addresses assigned to organizations or countries) from December 2015 to November 2016, and the country is number five in the world’s top countries from which attacks against IoT devices originated in 2016 (Symantec 2017).

**Despite this high threat level, there has been an under-investment in the ‘hard’ and ‘soft’ infrastructure of cybersecurity.** In 2017, countries on average were estimated to have spent 0.13 percent of their GDP on cybersecurity. Singapore invested 0.22 percent of its GDP on cybersecurity, while Malaysia invested 0.08 percent. Singapore ranked third globally, following Israel (0.35 percent) and the United Kingdom (0.26 percent) while Malaysia came in ninth. Lao PDR, Brunei Darussalam, Cambodia, and Myanmar are considerably further behind. Overall, ASEAN countries appear to be under-spending on cybersecurity (see Figure 3.1). The region spent about 0.07 percent of its GDP on cybersecurity, below the global spending average of 0.13 percent (A.T. Kearney 2018). According to an assessment by A.T. Kearney, ASEAN needed to increase spending on cybersecurity between 0.35 percent and 0.61 percent of its collective GDP – or about \$171 billion – between 2017 and 2025.

**FIGURE 3.1 Benchmarking ASEAN cybersecurity expenditure – percentage of GDP spent on cybersecurity in 2017**



Source: Gartner and A.T. Kearney analysis, 2017 (see A.T. Kearney 2018).

**Although some countries in the region (including Singapore, Malaysia, Thailand, and the Philippines) have recently established national cybersecurity strategies and agencies to coordinate cybersecurity agendas, specific governance mechanisms and policies are underdeveloped.** The new agencies include Singapore’s Cyber Security Agency, Malaysia’s Cybersecurity Malaysia, the Philippines’ Department of Information and Communications Technology, Indonesia’s national cyber and encryption agency – Badan Siber dan Sandi Negara (BSSN), and Thailand’s National Cybersecurity Committee. Although the other countries do not have dedicated agencies, their national computer emergency response teams (CERTs) or computer security incident response teams (CSIRTs) currently play the role of national cybersecurity agencies. As of 2017, Singapore, Malaysia, Thailand, and Vietnam are the only ASEAN countries that have drafted cybersecurity bills. Cybercrime laws have also been passed in Singapore, Malaysia, Thailand, the Philippines, and Brunei Darussalam. Yet, apart from Singapore and Malaysia, few ASEAN countries have made progress in all areas.

**The reporting of data breaches aids transparency and the response to cybersecurity incidents, although there are varying requirements around the region regarding data breach notification.** For example, although Malaysia has personal data protection laws that require organizations to guard the personal data of individuals against loss, misuse, modification, unauthorized or accidental access, among other obligations, it does not mandate organizations to report data breaches.

**A key reason for the slow progress in improving cybersecurity is a dearth of skilled professionals and talent all over the world, and particularly in Southeast Asia.** The U.S. Information Systems Audit and Controls Association cited a global shortage of more than 2 million professionals by 2019. In ASEAN, the Malaysia Digital Economy Corporation (MDEC) has estimated that there are 6,000 cybersecurity professionals in the country; however, 10,000 will be required by 2020. Efforts are underway to build capacity in the long run – with capacity development programs identified in the national cybersecurity agendas of Singapore, Malaysia, Thailand, and the Philippines. Thailand has also garnered bilateral support from Japan to help operationalize their cybersecurity training program. In 2017, Singapore announced plans to set up a new cyber defense vocation that will create a force of approximately 2,600 cyber defenders, consisting mainly of civilians but also leveraging its mandatory national service program. The vocation will fall under the Singapore Armed Forces, adding military support to the capacity-building efforts (CNA 2017). To stimulate innovation while managing the associated cybersecurity risks, some countries have developed safe environments through regulatory sandboxes. For example, the central banks of Singapore and Malaysia have both developed FinTech sandboxes to provide a safe space for experimenting, and for identifying security vulnerabilities.

**At the regional level, an overarching governance or unifying framework to address cybersecurity has yet to be established.** The focus to date has been on including cybercrime into existing frameworks. ASEAN member states have used four ASEAN mechanisms that look into aspects of cybercrime, namely: the ASEAN Ministerial Meeting on Transnational Crime (AMMTC); ASEAN Telecommunications and IT Ministers Meeting (TELMIN); the ASEAN Regional Forum (ARF); and the ASEAN Senior Officials Meeting on Transnational Crime (SOMTC). AMMTC reviews regional issues and sets the agenda for the various Southeast Asian government agencies to work together on addressing transnational crime. The SOMTC then carries out AMMTC’s agenda. SOMTC has identified eight areas of transnational crime – including cybercrime – under its purview, and Singapore has taken the lead in the area of cybercrime. The ARF’s programs include ASEAN seminars on cyber terrorism, conferences on terrorism and the Internet, and workshops on cyber incident response and preparedness measures to enhance cybersecurity. Yet, despite these developments, ASEAN still lacks a coordinated approach to develop a comprehensive cybersecurity framework that establishes regional cybersecurity standards and encourages intelligence sharing.

**However, there are early signs that a more coherent regional approach is being developed, providing a basis for further efforts.** A S\$10 million ASEAN Cyber Capacity Fund has been launched by Singapore, which will be used to improve cybersecurity capabilities in the region. Singapore's Cyber Security Agency launched the ASEAN Cyber Capacity Program to support the development of cyber norms and confidence-building measures (CBMs) in the region. Singapore also launched the first ASEAN ministerial meeting on cybersecurity in 2016 to identify ways to increase cooperation and continue the development of norms in ASEAN states. Singapore also announced plans to establish an Asia Pacific Regional Intelligence and Analysis Center, which aims to provide deeper capabilities in cyber intelligence gathering and analysis for enhanced support in the financial services sector. Investigative capacities and coordination are also being strengthened. In an illustration of how regional initiatives can produce concrete outcomes, the Interpol Global Complex for Innovation, based in Singapore, launched a cybercrime operation in 2017 that uncovered nearly 9,000 servers that were used to launch cyberattacks in eight ASEAN countries.

**These emerging regional responses are timely, given rising business as well as consumer concerns about cybersecurity and the impact such concerns would have on the uptake of e-commerce and other digital economy activities.** A report by security firm Norton, also noted that Singapore netted the highest per capita losses to cybercrime recorded at US\$1,158, which in 2013 was four times the global average and twice the figure set 12 months earlier. Between 2007 and 2012, cybercrime cost Malaysia an estimated US\$897 million (Qing 2012). Indonesia also loses an estimated \$2.7 billion annually.<sup>48</sup> The SWIFT network attack that affected Bangladesh, Vietnam, and Ecuador cost US\$90 billion in losses. Apart from the costs to businesses, data breaches from cyberattacks and hacks have had a deterrent effect on consumers. Research by Google and Temasek Holdings has highlighted that cyberattacks and fraud have led consumers in Indonesia, the Philippines, and Malaysia to be wary of transacting online. Fifty-eight percent of respondents surveyed in Southeast Asia have expressed concerns over financial information being shared online, higher than the global average of 49 percent. The personal data of more than 46 million mobile phone users in Malaysia was reportedly leaked online in possibly the biggest data breach in the country. Additionally, the personal data of users of job portal Jobstreet.com, as well as a slew of medical organizations such as the Malaysian Medical Council and the Malaysian Dental Association, was compromised (Tan 2017).

**Overall, given the varying levels of preparedness and different national priorities, there is a need for ASEAN countries to develop national cybersecurity strategies with a well-defined vision, scope, objectives, and a practical road map for implementation.** In this context, an approach based on risk identification, risk analysis, and risk evaluation is crucial. Risk assessments should be carried out both at the national and the sectoral level. Defining and identifying critical sectors and the necessary information infrastructure is a vital part of the strategy. A clear set of sector-specific risk mitigation mechanisms needs to be put in place. Implementing practical cybersecurity legislation or updating it to current needs is the next step. In addition, while political issues could affect policy alignment at the regional level, the increasing integration of ASEAN requires a certain level of harmonization and coordination on this critical issue.

<sup>48</sup> Norton Cybercrime report: [http://now-static.norton.com/now/en/pt/images/Promotions/2012/cybercrimeReport/2012\\_Norton\\_Cybercrime\\_Report\\_Master\\_FINAL\\_050912.pdf](http://now-static.norton.com/now/en/pt/images/Promotions/2012/cybercrimeReport/2012_Norton_Cybercrime_Report_Master_FINAL_050912.pdf)



## Consumer Protection

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**Consumer protection laws are essential for building an ecosystem of trust and confidence in electronic transactions associated with the digital economy.** Despite consumer protection being a relatively-new area of policy in most ASEAN countries, concerns about potentially-greater consumer vulnerabilities through the rise of the digital economy have driven a growing focus on consumer protection relating to e-commerce and other aspects of the digital economy. For example, online consumer protection has featured in a number of ASEAN initiatives relating to e-commerce, and is a priority theme in Indonesia's E-commerce Master Plan.

**As well as this 'top-down' concern about consumer protection, there are indications that consumer concerns about trust and reliability in e-commerce are a barrier to further growth.** One example that demonstrates the overall lack of trust in online transactions is the continued preference for COD over electronic payments. Despite an increasing influx of money into the payments ecosystem in Southeast Asia, COD remains the most popular payment method in emerging Southeast Asian markets accounting for over 70 percent of transactions. Aggregated data shared by aCommerce indicates that the share of COD orders has increased over 12 months from March 2016–2017 (Jade 2017).

**Research by the Development Bank of Singapore (DBS) underscores that there is a lack of trust in online retailers in terms of product reliability and the safety of payment mechanisms.** Credit card ownership covers less than 10 percent of the population in Southeast Asia, and those who do have credit cards are reluctant to use them online for fear of fraud. For example, in Thailand, the majority of online shoppers (62 percent) are reluctant to give out credit card information while online. In addition, most customers in the region prefer COD which requires partnering with sophisticated delivery providers (DBS 2015). In Indonesia, the region's largest e-commerce market, studies have shown that customers' key concerns are over fraudulent transactions, security issues with online payments, and the reliability of product quality. A survey by AC Nielsen in 2017 found that 75 percent of Malaysians are concerned about digital payments due to security issues. In the Philippines, The Straits Times reported in March 2017 that despite being the fastest-growing smartphone market in Southeast Asia with 2.5 billion bank payments, only one percent were electronic (Ariffin 2018).

**Apart from the fear of online fraud, consumers in Southeast Asia also have reservations regarding product safety as well as the viability of product returns.** Data from Page365, a Thai social media e-commerce marketing and e-commerce platform, shows that 33 percent of Thai consumers have not been satisfied with the quality and safety of products ordered online, and are particularly wary of false marketing by e-commerce traders, as well as the lack of redress mechanisms for non-performance of contracts. Issues relating to product safety through cross-border trade are not new, and are the focus of quality and standards agencies. However, with e-commerce driving a rapid increase in the range of importers, from a wider range of destinations, the enforcement of product safety standards has become more challenging. In terms of returns for products, both B2C and C2C platforms are usually unwilling to accept returns (Kinasih 2016). Although this is partly driven by companies' choices on whether to accept returns, there is also a role for regulation in addressing this, notably in the customs and border procedures that apply to returns. Private sector bodies have expressed a desire that governments in the region put in place clear policies on the application or refund of duties for returned goods (US-ASEAN Business Council 2016).

**Both companies and governments have a role in addressing relatively low levels of consumer trust.** A number of companies in Southeast Asia have actively sought to boost consumer trust. For example, Zalora Indonesia has introduced money-back guarantees, COD payments, and customer service platforms

to address these issues. In the Philippines, online stores like flower delivery service company Island Rose, also offer COD options, in spite of having invested heavily in building a secure online transaction website through third-party cloud software-as-a-service solutions (DBS 2015). While still essential in a nascent e-commerce environment, COD options present a high cost to companies, especially SMEs, because of the multiple delivery fees, high return rates, and fraud. This is exacerbated in an emerging market where consumers are testing this new medium of ordering goods, with high return rates. While COD may have a part to play in enticing a certain demographic of Internet users who are new, or less likely to have access to credit cards, improving consumer protection will help online customers to increase their confidence in electronic transactions and ensure continued e-commerce growth.

**The main effort at the regional level to address these issues is the ASEAN Strategic Action Plan for Consumer Protection (ASAPCP) 2025, the implementation of which has focused on information-sharing between regulators, although there are also more ambitious goals such as creating a cross-border redress system and a rapid alert system on product safety.** The Plan was introduced in 2008 to provide more granularity on the strategic measures on consumer protection under the AEC Blueprint 2025, in terms of strategic goals, initiatives, and outcomes. The ASAPCP was endorsed at the 48th ASEAN Economic Ministers' Meeting on August 3, 2016 in Vientiane. The ASAPCP will be implemented by the ASEAN Committee on Consumer Protection (ACCP). Key objectives are to: assist regulators in ASEAN countries to provide consumers with proper information and redress; prevent rogue traders and unfair commercial practices; and ensure that only safe products are placed in the market. ASEAN has also sought to create a cross-border redress system to advise and assist with the resolution of consumer claims, and it has established a rapid alert system for hazardous consumer products to inform member states of banned, restricted, or recalled goods. It has also encouraged capacity-building, as well as regulatory cooperation, in related areas.

**However, ASEAN's initiatives can only advance as far and as quickly as the members themselves can enforce laws and regulations that protect transactions both online or offline, and not all countries have consumer protection laws in place.** While every ASEAN jurisdiction has laws governing commercial exchanges such as contracts, only a few ASEAN jurisdictions have comprehensive laws in the areas of privacy and consumer protection (ASEAN 2014, 30-32). At the regional level, ASEAN initiatives have focused on the transactional aspects of e-commerce, prioritizing the creation of legal instruments in the area of contract law (which is already relatively well-developed in most countries) while areas with insufficient or no laws – those of consumer protection and privacy – have been given less attention.

**Consequently, countries in the region have varied levels of legal protection for consumers, covering both online and offline transactions.** For example, while Singapore and Malaysia have relatively comprehensive protective regimes that deal with themes that range from specific product safety regulations through to false marketing, fraud, and scams,<sup>49</sup> Lao PDR, Cambodia, and Myanmar are only beginning to address basic consumer issues such as the right to lodge complaints or seek redress for damaged goods or enter into dispute settlement.<sup>50</sup> Table 3.3 highlights several consumer protection laws in the region relating to product safety. There has also been limited national implementation of regulations necessary for the ASEAN consumer protection system to operate effectively. For example, few countries have laws in place that require firms to notify governments if voluntary recalls are being conducted, undermining the potential effectiveness of the ASEAN-wide cross-border alert system (Nottage and Thanitcul 2016).

49 For Singapore, see the Consumer Protection (Fair Trading) Act 2004; for Malaysia, see the Consumer Protection Act (CPA) 1999.

50 see individual country reports in ASEAN Australia Development Cooperation Program Phase II (AADCP II) 'Roadmapping Capacity Building in Consumer Protection in ASEAN' (2011).

**TABLE 3.3 Consumer protection laws relating to product safety**

| Year enacted                 | Country     | Statute                              | Highlights   |
|------------------------------|-------------|--------------------------------------|--|
| 1992                         | Philippines | Consumer Act                         | Only for unsafe “consumer” (purpose) goods, but also services; some intermediate suppliers liable as well; no “development risks” defence; manufacturer must prove goods were safe   |
| 1999                         | Indonesia   | Consumer Protection Act              | Reversed burden of proof of negligence (not strict liability); covers defective services as well as goods; representative actions by regulators (for large-scale harm) or certified consumer NGOs  |
| 1999                         | Malaysia    | Consumer Protection Act              | One regime similar to the EU (limiting consequential damages to goods ordinarily and actually used for personal use); but another extending also to consequential loss to non-consumer goods if the unsafe goods themselves (lacking “acceptable quality”) were ordinarily for personal use  |
| 2009<br><i>enforced 2011</i> | Cambodia    | Civil Code                           | Consequential loss also to non-consumer goods (influenced by Japanese law)   |
| 2008<br><i>enforced 2009</i> | Thailand    | Product Liability Act                | Consumer need only prove harm from product used normally (then manufacturer must prove goods were safe); up to triple damages; consequential losses also for non-consumer property; defence if consumer knew the goods were unsafe; no (express) “development risks” defence; extended limitation period for toxic torts; representative actions by regulator and certified NGOs |
| 2010<br><i>enforced 2011</i> | Vietnam     | Law on Protection of Consumer Rights | Consumer may only need to prove harm from product used normally; representative actions by certified NGOs  |

**While traditional consumer protections continue to apply online, online fraud and deception may require additional protections given consumers’ current lack of familiarity with the Internet environment.** For instance, many consumers are unfamiliar with novel forms of misconduct, such as phishing or spamming, and thus are less able to protect themselves. This warrants special attention by regulators to problems of consumer protection in e-commerce, but in many cases regulators take a more limited approach in only addressing consumer protection in telecommunication services or the right to Internet access (Corones et al 2016).

**The increasingly cross-border nature of e-commerce provides a strong incentive for cooperation across ASEAN jurisdictions to develop regulations and collaborate on enforcement initiatives that address cross-border fraud, including by ensuring guilty parties are held liable.** At a basic level, online vendors and consumers must obey the relevant laws and regulations of the jurisdictions where they are engaging in the transactional activities. Laws must also ensure that consumers can seek redress in their home jurisdiction and rely on effective dispute resolution mechanisms. Apart from ensuring that consumers cannot be contractually-bound to arbitrate or to sue in a remote forum, as is the case in the United States,<sup>51</sup> it becomes necessary to create cheap, fast, and efficient complaints-handling mechanisms and/or online dispute resolution frameworks.<sup>52</sup> The difficulties of cross-border enforcement can be alleviated by the introduction of online dispute resolution mechanisms, which could provide an accessible and low-cost method of obtaining redress (Schmitz 2016). In this regard, ASEAN could benefit from instruments and proposals from other jurisdictions.<sup>53</sup> In addition to establishing active consumer protection agencies and promoting cooperation between them, ASEAN members could join the International Consumer Protection and Enforcement Network (ICPEN), which is a platform for sharing consumer protection issues, including best practices and legislative reforms. Notably, the ICPEN encompasses an online initiative – *econsumer.gov*—aimed at educating consumers about scams and online abuses.<sup>54</sup> To date, the only ASEAN members that have joined ICPEN are Vietnam and the Philippines.

## Electronic Transactions and E-commerce Laws

**ASEAN countries tend to have a more developed legal regime for electronic transactions than for data privacy.** In general, ASEAN countries have adopted two UNCITRAL instruments, the Model Law on Electronic Commerce (MLEC) and, more recently, the Convention on Electronic Contracting. Both instruments prohibit any discrimination of contracts originating in electronic form and any disparity of treatment between electronic communications and paper documents.<sup>55</sup> These prohibitions are regarded as ‘enabling’ e-commerce by removing doubts about the enforceability of contracts formed online. To date, multiple ASEAN jurisdictions have enacted domestic legislation based on either the MLEC or the Convention. However, the adoption of the MLEC in individual ASEAN jurisdictions has not been uniform:

- Malaysia has adopted the provisions of the MLEC almost verbatim.<sup>56</sup>
- Singapore has adopted the Convention with modified wording and added sections concerning electronic signatures, certification authorities, and intermediary liability.<sup>57</sup>
- The Philippines substantially follows the MLEC but supplements its Electronic Commerce Act with multiple provisions governing specific aspects of online contracting, such as carriage of goods and transportation documents.<sup>58</sup>

51 The Federal Arbitration Act 9 U.S.C. § 2 provides that an arbitration agreement “shall be valid, irrevocable, and enforceable, save upon such grounds as exist at law or in equity for the revocation of any contract;” *AT&T Mobility LLC v. Concepcion* 131 S. Ct. 1740 (2011).

52 United Nations Guidelines for Consumer Protection (2016) 9.

53 See for example Directive 2013/11/EU on Alternative Dispute Resolution for Consumer Disputes, 2013 O.J. (L 165) 63; or the UNCITRAL Technical Notes on Online Dispute Resolution (2017).

54 For more information see ICPEN’s website [www.icpen.org](http://www.icpen.org) and specifically on this initiative at [www.icpen.org/staying-safe-online](http://www.icpen.org/staying-safe-online).

55 MLEC Article 8, Explanatory Note, paragraph 129.

56 Malaysia, Electronic Commerce Act 2006.

57 Singapore, Electronic Commerce Act 2010, sections 18, 22 and 26.

58 Republic Act No. 8792 of Philippines Electronic Commerce Act of 2000, for example section 16 (2) addresses electronic transactions made through banking networks, section 25 regulates actions relating to contracts of carriage of goods and section 26 deals with transportation documents.

- Indonesia’s legislation addresses a wide range of issues related to the digital economy, such as domain names and dispute resolution.<sup>59</sup> The provisions dealing with electronic transacting seem to follow the MLEC, although it has been argued that there is scope for clearer drafting.<sup>60</sup>
- Lao PDR models the relevant sections of its e-commerce instrument on the MLEC,<sup>61</sup> but also includes multiple provisions on electronic signatures, dispute resolution, and intermediary liability.<sup>62</sup>
- A similar approach is adopted in Myanmar,<sup>63</sup> Thailand,<sup>64</sup> Brunei Darussalam,<sup>65</sup> and Vietnam,<sup>66</sup> all of which follow (to a greater or lesser extent) the wording of the MLEC and add provisions governing other legal aspects of online transacting.
- In addition, the relevant electronic transactions acts frequently address further legal issues that are not directly related to the transactional aspects of e-commerce, including such topics as domain names, intermediary liability, or unsolicited commercial communications.<sup>67</sup>

**The implementation of these laws requires further study, but there are indications that there is not yet full equivalence in practice in the legal regimes for online and offline transactions.** For example, the legal regime for electronic signatures in some ASEAN countries may require further clarification or simplification in order to facilitate the more widespread use of electronic signatures (Virasin 2015). There is also need for government leadership in the wider acceptance of electronic documents. For example, paper-based systems for Customs clearance still operate in most countries, despite a regional vision having been in place for many years to shift towards an electronic, ASEAN Single Window system.

## Conclusion

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**This chapter has argued that there are a number of cross-cutting policy and regulatory challenges – cross-border data flows, data privacy, cybersecurity, consumer protection, electronic transactions, and e-commerce laws – where government action at the national and regional level is crucial to building trust and confidence in digital interactions and platforms.** Addressing these issues in a smart and balanced way will help spur inclusive digital economic activity and enable the region’s digital economy to grow.

59 Law of The Republic of Indonesia Number 11 of 2008 Concerning Electronic Information and Transactions, articles 23-26.

60 See articles 17-22; in particular, articles 21 and 22 seem to conflate problems of message integrity and problems of automation.

61 Law on Electronic Transactions, No 20/NA, 7 December 2012, articles 8-12.

62 Law on Electronic Transactions, No 20/NA, 7 December 2012, articles 40-45.

63 The Electronic Transactions Law (The State Peace and Development Council Law No. 5/2004) art 21-29.

64 Electronic Transactions Act B.E. 2544 (2001).

65 Electronic Transactions Act 2008, Articles 11-15.

66 Law on E-Transactions 51/2001/QH10 of 25/12/2001 of the 10 Legislature, Session No. 10;

67 A good example is the Directive 2000/31/EC of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market, OJ 2000 No. L 178, 17 July 2000, which combines multiple legal areas under the umbrella term “e-commerce.”

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CHAPTER 4

# Moving from Vision to Reality: National and Regional Digital Economy Initiatives



**All ten ASEAN countries have developed high-level digital economy plans.** These masterplans provide insight into governments' digital priorities, as well as a benchmark against which to assess their capacity to deliver. Some aspects of these plans are highlighted in Table 4.1. Many of these masterplans represent a shift from digitalization efforts devoted to specific sectors to the establishment of broader, more comprehensive digital economy development frameworks. For many countries in the region, these plans represent sequential efforts – the recognition that once the basics of infrastructure are delivered, countries need to adopt strategies to foster the inclusive growth of the digital economy for the benefit of society.

**TABLE 4.1 Highlights from digital economy masterplans in Southeast Asia**

|  |   |
|--|---|
| <p><b>BRUNEI DARUSSALAM</b></p> <p>The mid-term development strategy of Wawasan Brunei 2035 fosters:</p> <ul style="list-style-type: none"> <li>• ICT competency programs conducted by the Authority for Info-Communications Technology Industry of Brunei Darussalam (AITI). The program gives subsidized training courses for local citizens in relevant ICT skills and knowledge, with the objective of empowering the non-ICT job seekers with basic ICT literacy</li> <li>• Development of opportunity centers as a one-stop business service to help SMEs in the business start-up process</li> </ul>  | <p><b>CAMBODIA</b></p> <p>Cambodia recently announced targets for the digital economy by 2023:</p> <ul style="list-style-type: none"> <li>• Expanding broadband coverage up to 100 percent in urban areas and 70 percent in rural areas</li> <li>• Formulate a strategy for Tech Startup, MSMEs Go For Digital, Online Crowdfunding Platform, and Digital Skills</li> </ul>   |
| <p><b>INDONESIA</b></p> <p>Indonesia has announced a number of initiatives that push government programs and collaboration with industries to improve the country's positioning in global economy:</p> <ul style="list-style-type: none"> <li>• Infrastructure development, including that of ICT</li> <li>• E-commerce roadmap 2017-2019 that focuses on seven action programs: facilitation of funding, tax incentives customer protection, skills development, logistics system, acceleration of communication infrastructure, and cybersecurity</li> <li>• Revitalization of vocational education</li> <li>• Completion of Indonesia's broadband plan that connects all of Indonesia's main islands with fiber-optic cables by end of 2019</li> <li>• Support 8 million SMEs to be digitally empowered, as 57 million Indonesian SMEs account for 60 percent of the GDP</li> </ul> | <p><b>LAO PDR</b></p> <p>The government has initiated ICT Vision 2030, which requires its administration to:</p> <ul style="list-style-type: none"> <li>• Improve ICT-related policies, with specific focus on broadband connectivity</li> <li>• Increase investment in ICT by enhancing public-private partnership, supporting SMEs and connecting the rural population</li> <li>• Promote local content and capacity building</li> <li>• Engage in regional collaboration through ASEAN and work closely with UN</li> </ul> |
| <p><b>MALAYSIA</b></p> <p>Digital Malaysia has been established as a strategy to achieve tangible outcomes:</p> <ul style="list-style-type: none"> <li>• Raise Malaysia's ICT contribution to 17 percent of gross national income from 9.8 percent</li> <li>• Raise its position in the Digital Economy Rankings to the top 20 from 36th position</li> <li>• To be within the top 10 economies in the World Competitiveness Yearbook, from 16th position in 2012</li> <li>• This initiative has been renewed with the Digital Malaysia 354 Roadmap that identifies three ICT focus areas, five sub-sectors and four Digital Malaysia communities. The DM354 Roadmap will focus on big data analytics and education, amongst other sectors</li> </ul>   | <p><b>MYANMAR</b></p> <p>The country's Digital Economy Development Committee (DEDC) aims to establish:</p> <ul style="list-style-type: none"> <li>• Data ID Card system, digital government strategy, and e-government system</li> <li>• Digital Economy Master Plan</li> <li>• Universal Service Fund (USF) with two main programs: ICT infrastructure roll-out and ICT capacity building</li> </ul>   |

(continued on next page)

**TABLE 4.1 Highlights from digital economy masterplans in Southeast Asia (continued)**

|   |   |
|---|---|
| <p><b>PHILIPPINES</b></p> <p>The national digital strategy focuses on improving Internet connectivity across the country by reducing the geographical digital divide and ensuring affordability. It has set clearly defined targets on this front including:</p> <ul style="list-style-type: none"> <li>• Universal broadband access for all public schools by 2016</li> <li>• All central business districts to have broadband coverage with average download speeds of 20 Mbps by 2016</li> <li>• Broadband access with average download speed of at least 2 Mbps for 80 percent of household customers throughout the country by 2016</li> <li>• The Government also aims to upgrade and improve government ICT infrastructure and procedures to allow for integrated government operations</li> </ul> | <p><b>SINGAPORE</b></p> <p>The iN2015 masterplan has been issued to make the transition into “An Intelligent Nation, A Global City, Powered By Infocomm.” The blueprint sets out clear objectives and targets including:</p> <ul style="list-style-type: none"> <li>• To be number one in the world in harnessing infocomm to add value to the economy and society</li> <li>• To realize a twofold increase in the value-add of the infocomm industry to S\$26 billion</li> <li>• To realize a threefold increase in infocomm export revenue to S\$60 billion</li> <li>• To create 80,000 additional jobs</li> <li>• To achieve 90 percent home broadband usage</li> <li>• To achieve 100 percent computer ownership in homes with school children</li> </ul>   |
| <p><b>THAILAND</b></p> <p>The Thailand Digital Economy and Society Development Plan was launched in 2014 to achieve address development challenges and adapt and seize economic opportunities. The plan is being realized over a 20-year time frame through four phases: (1) Digital foundation; (2) Inclusion; (3) Full Transformation; and (4) Global Digital Leadership. Focusing specifically on digital economy, Thailand’s priorities include the following areas:</p> <ul style="list-style-type: none"> <li>• Promoting online community stores</li> <li>• Coaching SMEs to go online</li> <li>• Developing digital clusters</li> <li>• Push digital technology start-ups for innovative products and services</li> </ul>   | <p><b>VIETNAM</b></p> <p>Digital economy strategy was issued in 2015 to achieve outcomes by 2020. This strategy includes the following objectives and actions:</p> <ul style="list-style-type: none"> <li>• Push online presence for 60 percent of the country’s businesses</li> <li>• 80 percent of companies should allow customers to order through mobile apps or Internet sites</li> <li>• 30 percent of the population should be shopping online and electronic payments should be available for 70 percent of utilities and at all supermarkets</li> <li>• Allocate US\$1 million to startups, allowing new companies to apply for up to 70 percent of their capital needs from the government</li> <li>• Enhance trust from customers</li> <li>• Protect intellectual property rights, create a national management system for e-billing, prepare students for the digital economy, and pass regulation on mobile apps and mobile commerce</li> </ul> |

Sources: Brunei Darussalam Country Note from the Economic Outlook for Southeast Asia, China and India 2014: Beyond the Middle-Income Trap, Indonesia Ministry of National Planning and Development/Bappenas, Indonesia Government Regulation 74/2017 on e-Commerce, Tech in Asia, ASEAN Economic Community Strategy Center, Myanmar Ministry of Public Transport and Communication, ASEAN Digital Economy: Executive Brief, Thailand Ministry of ICT, Bloomberg.  
See Annex 2 for more detailed descriptions of the national digital economy masterplans of Thailand, Vietnam, Malaysia, and Indonesia.

## Features of Digital Economy Plans

**These broad policy documents share some similar characteristics.** First, they reflect a strong top-down approach to driving digital transformation, with the central government playing the primary role in improving access to services and resources, and providing financing from public budgets to promote private sector development. In addition, these masterplans attempt to provide a strategic vision for the country’s digital transformation, highlight key ways to tackle barriers and facilitate growth, and provide

guidelines for implementation of initiatives, to varying degrees. These masterplans also typically involve a time period within which the initiatives are to be achieved, though only a few explicitly mention how these targets will be evaluated at the end of the timeframe.

**The scope of the plans vary, however, from facilitating the development of the entire digital economy, to focusing more narrowly on e-commerce.** Thailand's strategy stands out as potentially the widest in scope and coverage, with broad objectives aimed at facilitating the development of the entire digital economy. Modelled after Japan's Society 5.0, Thailand's digital economy masterplan is situated within an even wider Thailand 4.0 initiative, which includes a wide range of programs, such as the government's public sector digitalization initiative and other efforts to entrench the use of technology in society. The expansive nature of Thailand 4.0 carries the risk of complicating efforts to implement specific programs and ensure adequate oversight, while potentially creating overlapping initiatives. In addition, the public has raised concerns regarding the considerable access that government officials have to obtain private information of businesses and the public without their knowledge or permission. On the other hand, the masterplans of Indonesia, Malaysia, and Vietnam focus explicitly, at least for the time being, on developing the e-commerce sector. This signals that e-commerce remains their top priority for the digital economy, and signals a willingness within government to support the sector in its nascent stages. These masterplans therefore attempt to address the specific barriers faced by e-commerce in the region; namely, poorly designed and inefficient transport networks, challenges in adopting e-payment methods, and limited human resources. They also provide a broad framework to tackle existing policy gaps such as taxation of e-commerce goods and services, as well as provide a basis for governments to develop a more assertive approach to foster awareness of e-commerce's potential among local companies and consumers.

**The plans include varying levels of detail on targets and timelines, which are essential for providing a framework to effectively monitor implementation.** Malaysia's plan has made the most progress in developing specific targets and timelines. Its masterplan identifies the agency in charge of specific measures, key performance indicators, targets, as well as baseline statistics for comparison. It is also notable for including a rough implementation plan, reporting and governing structure, and agencies in charge of each initiative. The masterplan includes mid- as well as long-term targets, as well as a specific private sector committee of stakeholders from which the government can seek advice. Malaysia also consulted with over 100 stakeholders from 54 public and private organizations in devising its plan and related programs. Indonesia's approach to targets is similar to that of Malaysia, in that the version of the masterplan circulated amongst government agencies includes soft deadlines for each target area. However, unlike Malaysia, these targeted deadlines do not seem to be publicly available in Indonesia. On the other end of the spectrum, the Thai and Vietnamese strategies contain no specific implementation plan or prioritization for operationalizing the initiatives identified. In general, across the region there is limited use of feedback mechanisms that allow stakeholders to be involved in monitoring the implementation of digital economy plans.

**A number of themes are common among the masterplans, including skills, support for entrepreneurship, consumer safety, and payments.** There is general recognition of the need to strengthen the building blocks of the digital economy by investing in skills and education, and in boosting support for entrepreneurship and innovation. The masterplans that focus specifically on e-commerce contain similar priorities to address payment networks, delivery and logistics services, consumer protection, and cybersecurity. Apart from Indonesia, no country's plan mentions the need to resolve current ambiguities in the taxation of e-commerce. Yet, while the masterplans may suggest similar goals, they also highlight different priorities. Indonesia's masterplan contains strong signals of the government's interest in levelling the playing field for local companies, through tax policies and funding initiatives for local digital economy

companies. Meanwhile, Malaysia's strategy goes beyond supporting domestic players within its own borders. It contains initiatives to promote Malaysian companies internationally and to transform Malaysia into a regional e-fulfillment hub through incentives for domestic and foreign investment. On the other hand, Thailand's plan strikes a balance in efforts to develop its homegrown industry and close partnerships with foreign investors to further develop its domestic market. At the other end of the spectrum, Vietnam's masterplan contains very few specifics on targets and priorities, and sets no clear timelines for the fulfilment of the initiatives outlined.

**The governance structures for implementation of these masterplans also differ substantially.** While they all involve a large number of government agencies implementing specific initiatives, the strength of institutional coordination and oversight vary widely. In Thailand and Malaysia, entirely new agencies have been established to lead and coordinate the digital economy efforts. Examples of implementation arrangements in different countries include the following:

- **Thailand.** The launch of the digital economy strategy led to the dismantling of the Ministry of Information and Communication Technology (MICT), and the introduction of a new ministry – the Ministry of Digital Economy and Society (MDES). The MDES will have an expanded mandate to not only address information technology implementation but to also cover the development of economic and social aspects of digital technologies. The MDES will also include oversight of the new Digital Economy and Society Committee tasked with setting new policy and guidelines under Thailand 4.0, as well as the newly-formed Government Committee for Cyber- Security under the proposed Cybersecurity Act and the revised Computer Crimes Act. Both committees are to be chaired by the Prime Minister.
- **Malaysia.** The National E-Commerce Council (NeCC), comprising various ministries and agencies, was established to drive the implementation of the roadmap towards doubling Malaysia's e-commerce growth rate and reach a GDP contribution of RM211 billion by 2020. The Council, as well as the line agencies tasked with implementing the reforms, were directed to report directly to the Prime Minister on their progress, budget spending, and to provide feedback on quantitative and qualitative targets.
- **Indonesia.** Oversight of the e-commerce masterplan is shared between two key agencies; namely, the Coordinating Ministry of Economic Affairs and the Ministry of Communication and Information Technology (MOCIT). In addition, Indonesia is the only country that has included the role of subnational governments in supporting the implementation of the masterplan, though no specific details on this are readily available.
- **Vietnam.** The Vietnam E-Commerce and Digital Economy Agency under the Ministry of Industry is responsible for coordinating and implementing an e-commerce strategy. Few concrete steps have been taken to date to ensure the implementation and coordination of initiatives by line agencies. In many circumstances, line agencies have continued to work on the tasks under their purview. For example, while Vietnam Customs and the Ministry of Finance have been working together on a payment system for collecting customs duties and electronic taxation, there have been no efforts to align this with the government's overarching digital economy strategy. The main reason for the lack of coordination is the absence of political leadership on digital economy issues. While the Ministry of Information and Communications' Digital Economy Agency has recently been given the responsibility of drafting guidelines to propose an implementation plan, without the endorsement and commitment from higher levels; namely, at the level of deputy prime minister or prime minister, and the designation of a coordinating taskforce, the plans are likely to go unrealized.

## Digital Entrepreneurship

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**A common feature of the plans, as well as high-level government statements, is the desire to foster digital entrepreneurship.** While this is not consistently defined, it is assumed that this normally refers to supporting the growth of start-ups in the ICT sector, or in firms that help spread the use of digital technology through the economy more widely.

**Strengthening the enabling environment for the digital economy, including by addressing the barriers identified in this report, benefits small and large firms alike.** Analysis of the barriers to digital entrepreneurship has identified the issues examined in detail in this report – including broadband connectivity; skills; and various aspects of the business environment, including data privacy and cybersecurity, along with other less digitally-specific factors – as the key barriers to digital entrepreneurship (van Welsum 2016<sup>68</sup>). Policy and regulatory areas that improve competition and lower barriers to entry are likely to have disproportionate benefits for small firms, by ‘levelling the playing field’ to compete against larger incumbents.

**Beyond improving the wider enabling environment, many countries are interested in improving the ‘digital entrepreneurship ecosystem’.** The factors that are important for creating a conducive arrangement for digital startups includes the wider business environment (as noted above), as well as access to staff with a skill mix appropriate for the digital economy. In addition, governments are increasingly interested in issues more specific to digital startups, including access to finance for entrepreneurs in this field; awareness-raising on the possibilities that exist in the digital economy; or targeted financial or other support from the government to help firms grow.

**A challenge for governments wanting to support digital entrepreneurship is balancing support to strengthen the foundations for the digital economy, along with the wider business environment, with an active role providing targeted support for digital startups.** A recent World Bank report on Malaysia’s digital economy identified a number of priorities for the government in supporting entrepreneurship (including on education system reforms, improving investor attractiveness, and strengthening the data regulatory environment). It also found that a wide range of government support programs for entrepreneurship had helped “plant the seeds of digital entrepreneurship”, but overlapping mandates and activities made it difficult for the private sector to find its role. Instead, the report recommended that the government shift its focus to addressing structural reforms, especially to address supply-side factors like access to skills and finance, while avoiding crowding out private investment, channeling government funds into ineffective programs, or putting burdensome regulations in place<sup>69</sup>.

**Singapore provides another example of how governments in the region are approaching digital entrepreneurship support.** In recent years the Singapore government has been strengthening various government programs that support SMEs to ensure that they provide effective support for the digital economy (see Box 4.1). Singapore has pursued a coordinated approach across government agencies, working with industry associations and SME support centres (among others) to support technology adoption and skill upgrading in SMEs. A key lesson from Singapore’s experience is that these programs were not a substitute for wider structural reforms, and the government has remained sharply focused on strengthening digital connectivity, providing a supportive wider investment climate, and implementing various digital economy-related laws and regulations.

68 Van Welsum, Desiree. 2016. Enabling digital entrepreneurs (English). World Development Report background papers. Washington, D.C. : World Bank Group.

69 World Bank Group. 2018. Malaysia’s Digital Economy: A New Driver of Development. Washington, DC: World Bank

**BOX 4.1**

## Singapore's Experience in Nurturing Digital Entrepreneurs – Emerging Lessons

**The challenge:** Building a sustainable supporting ecosystem for digital adoption and innovation at the SME level in an economy that has relied on multinational corporations (MNCs) and GLCs<sup>70</sup> as the main drivers for economic growth. As of 2017, SMEs<sup>71</sup> make up more than 99 percent of Singaporean enterprises and contribute nearly half of Singapore's GDP. Forty-eight percent of total SME revenues are derived overseas, reflecting greater internationalization.<sup>72</sup>

**Multiple agencies involved:** The delivery model of Singapore's startup promotion and innovation agencies is heavily centralized within its economic agencies under the Ministry of Trade and Industry, and draws on the strengths of its robust institutions and its notoriously competent bureaucracy. It is premised on strong inter-agency coordination between two key implementing agencies, the Economic Development Board (EDB) and Enterprise Singapore (ESG). More generally, as in Japan, the government underwrites consultancy and other services to resolve progressively more sophisticated problems.

**Illustrative programs:** Singapore's primary agency in charge of supporting tech startups is ESG, which provides assistance to SMEs at various stages of their growth, through a comprehensive suite of assistance programs.

### **Capabilities/Productivity Improvement<sup>73</sup>**

ESG manages the Local Enterprise Association Development (LEAD) program, which partners with industry associations to fund broad initiatives to improve the capabilities of their members. Over a dozen industry associations have participated so far. LEAD is complemented by the Capability Development Program (CDP), which directly assists SMEs to improve capabilities at the enterprise or strategic grouping level. The Global Immersion Program (GIP) from the Workforce Development Agency (WDA) is another government initiative that was established to equip startups and SMEs with the required skills and mindset to compete well internationally. It focuses on facilitating cross-border expansion for companies, as well as to train a pool of Singaporean executives and managers who are able to lead such efforts effectively. In addition, ESG's Capability Development Grant (CDG) supports SMEs to take on upgrading projects across 10 key business areas such as product development, productivity, branding, and marketing.

### **Technology Adoption Program (TAP)<sup>74</sup>**

Led by the Agency for Science, Technology and Research (A\*STAR), the US\$51 million program was launched in 2013 to help SMEs in their efforts to transform their business models by making technology more accessible. To date, over 4000 companies have been engaged under TAP, with 1,200 technology adoptions by companies, achieving at least 20 percent in productivity improvements. An example is a Singapore toymaking SME, which worked with the Singapore Institute of Manufacturing (SIMTech) to deploy an RFID-based inventory management system to track and account for its equipment, reducing the man-hours required for managing inventory by 75 percent. SIMTech has

Source: Authors

also worked with Singapore Airlines Engineering and local SMEs in the aerospace cluster to help them diversify beyond their traditional precision engineering capabilities to design and manufacture aerospace components. This is an example of a cluster setting, where a large local company like SIA Engineering with a group of small SMEs can help raise capabilities and develop new revenue lines.

**Emerging lessons:**<sup>75</sup> A critical element contributing to the success of Singapore’s approach is the strong level of coordination between government agencies. In addition, support programs are systematically aligned to the position of the firm’s stage of development, ensuring that the SME has available a broad menu of policy instruments tailored to its needs to support and finance upgrading. Support begins with ESG-focused direct assistance and gradually involves other economic agencies to increase firms’ capabilities, matchmaking with MNCs or large local organizations (LOs) and efforts to identify new markets for expansion or further R&D. At a higher level of sophistication, SMEs can access A\*STAR, which provides a broad range of instruments to support technological upgrading.

**Challenges:** Singapore’s entrepreneurship and innovation programs have adopted a strong top-down approach. While this has the advantage of ensuring coordination across government agencies, it has limited the involvement of business chambers and trade associations in the design and implementation phase of these initiatives. This has led to increasing criticism that programs are not sufficiently demand-driven or effectively tailored to meet the needs of SMEs.<sup>76</sup> The ultimate target set by EDB of facilitating joint R&D has not been realized. Another concern raised by the private sector is that it also remains to be seen if buyer-supplier relations facilitated by government programs will last, especially in the face of limited priority for MNCs to localize inputs in a costly and resource-constrained Singapore economy. Moreover, the process of qualifying new suppliers, which often typically involve capability transfer and development, as well as the production of a prototype or sample, often involve a substantial financial and intellectual commitment, affecting complex global supply chains – a cost that many MNCs chose not to bear.<sup>77</sup>

**Other challenges:** The cost of innovating in Singapore remains high, due to expensive land resources and the limited size of the workforce. Singapore SMEs also face challenges in attracting top talent, with MNCs and the civil service remaining the most preferred employers amongst Singaporeans. Recent efforts to tighten immigration flows have sharply affected SMEs who rely on the regional workforce for low- and medium-skilled workers. The constraints of a small domestic market are exacerbated by SMEs’ limited resources for internationalization. Regional expansion thus provides an opportunity to overcome constraints faced in Singapore. Almost half of Singapore’s SMEs expect revenue growth to be driven by overseas expansion, but face challenges in financing and lack expertise in foreign markets.

70 The definition of GLCs covers companies in which the government through Temasek Holdings, another government agency or another GLC, is the controlling shareholder (15 percent or more of voting shares, per the definition of Singapore’s stock exchange). They are active in many sectors of the economy, especially strategically-important sectors including telecommunications, media, public transportation, defense, port, and airport operations. In addition, the GLCs are also present in many other sectors of the economy, including banking, shipping, airline, consumer/lifestyle, infrastructure, and real estate. GLCs operate on a commercial basis and compete on a generally equal basis with private businesses, both local and foreign.

71 As of April 2011, the Singapore government has changed its definition of SMEs as an enterprise with an annual sales turnover of under S\$100 million (US\$71.4 million), or that employs less than 200 workers.

72 SME Development Survey by DP Information Group for the period of 2009, 2010 and 2011 and SME index released by the Singapore Business Federation (SBF).

73 <https://www.spring.gov.sg/developing-industries/industry-initiatives/lead/pages/local-enterprise-and-association-development.aspx>

74 <https://www.spring.gov.sg/developing-industries/industry-initiatives/pages/technology-adoption-programme.aspx>

75 Yahya, Faizal, Zhi Yang Chang, Yan Hao Ng, and Meng Wah Tan. 2016. “Supporting a Dynamic SME Sector: Challenges Faced by SMEs in Singapore.”

76 Institute of Policy Studies Singapore, Lee Kuan Yew School of Public Policy, National University of Singapore.

77 Based on interviews conducted with the SME Committee of the Singapore Business Federation in August 2017.

78 From interview of SMEs facilitated by the Singapore Business Federation in August 2017.

## Digital Government and Digital ID

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**Digital government initiatives have direct impacts on the growth of the digital economy.** They also have indirect effects, for example in the ways in which digitizing government service delivery raises digital awareness and literacy. The direct impacts are through the ways in which digital government initiatives facilitate the adoption of digital technology by the private sector. This section focuses on digital ID as a case study, but other examples include the development of online business registration platforms, the shift from paper-based to online systems for government approvals of cross-border trade shipments, or facilitating online payments by and to government.

**One of the most important areas of digital government that supports the growth of the digital economy is the provision of digital ID – indeed the lack of a digital ID prevents people from participating fully in the digital economy.** Trust has historically been based on familiarity and reputation (e.g. a friend of a friend), and then progressed with the need for greater formality into the use of physical foundational (e.g. an ID card or birth certificate) or functional IDs (e.g. passport). Today's age of digital economies and wider societies have created a need for digital ID systems that facilitate reliable authentication of a person's unique identity on demand, and to bind a user of an online transaction with their 'real world' or legal identity. The emergence of e-commerce and IoT has also created a need for verifiable digital identities not just for people, but also for legal entities and devices. Interoperability of digital IDs across borders can accelerate economic integration and create opportunities for new markets. It is for these reasons that digital ID systems are widely-recognized as a foundation for the development of e-government, e-commerce, and the digital economy, both within and across countries (World Bank 2016a, pp. 194-7), and why some communities are calling for a 'digital identity revolution' (World Economic Forum 2018).

**Digital ID is also associated with advancing a range of rights and other development outcomes, including comprehensive social safety nets, streamlining public administration, financial inclusion, and the empowerment of women and girls.** Accessing public and private sector services typically requires someone to prove who they are (e.g. the Know Your Customer (KYC) requirements for opening a bank account or registering a SIM card) and asserting identity with a foundational ID is linked with securing property rights. For example, India's digital ID system – known as Aadhaar – has directly led to the opening of over 150 million new bank accounts, many of which were for people who were previously unable to open one (World Bank Group 2018x). Thailand's digital ID system provided a basis for the government to realize universal health coverage (UHC) within three years. In recognition of these benefits, all countries have committed through the target 16.9 of the Sustainable Development Goals to, "by 2030, provide legal identity for all, including birth registration".

**ASEAN member states are at different levels of development of their foundational ID systems, which largely reflects their overall levels of economic development.** The only ASEAN member state without a foundational ID system (the Philippines) enacted legislation in July 2018 to establish one. Coverage of foundational IDs is relatively high in the remaining nine – at close to or well above 90 percent, apart from Lao PDR at 41 percent. Half (Brunei, Indonesia, Malaysia, Singapore, and Thailand) have fully digitized their foundational ID system and have established an associated public key infrastructure (PKI), and the foundational ID is widely used in public and private sector face-to-face transactions, including ubiquitous use of the unique ID number. All of these systems, except for Singapore's, use smartcards with data such as private keys and biometrics stored on the chip. Cambodia, Lao PDR, and Viet Nam are currently piloting digitized foundational ID systems. Myanmar has listed the development of a digital ID system as one of twelve priorities in its national economic policy.



**TABLE 4.2** Snapshot of ID systems in ASEAN member states

| Country     | Foundational ID system? | Digitized foundational ID system? | Digital ID (Authentication for online transactions)? | Coverage (adults) <sup>78</sup> | Notes  |
|-------------|-------------------------|-----------------------------------|--|---------------------------------|--|
| Brunei      | Yes                     | Yes                               | See note   | n/a                             | Digital ID system for public sector transactions is being developed; Coverage likely to be over 90%  |
| Cambodia    | Yes                     | Partially                         | -  | 89%                             |  |
| Indonesia   | Yes                     | Yes                               | -  | 90%                             |  |
| Lao PDR     | Yes                     | Partially                         | -  | 41%                             |  |
| Malaysia    | Yes                     | Yes                               | -  | n/a                             | Coverage likely to be over 90%   |
| Myanmar     | Yes                     | -                                 | -  | 89%                             |  |
| Philippines | In progress             | -                                 | -  | n/a                             | PhilSys, a digital ID system for public and private sector transactions, is being developed  |
| Singapore   | Yes                     | Yes                               | Yes (SingPass)                                       | 95%                             | SingPass is only for public sector transactions; NDI, a new digital ID system for public and private sector transactions, is being developed |
| Thailand    | Yes                     | Yes                               | See note   | 99%                             | A digital ID system for public and private sector transactions is being developed  |
| Vietnam     | Yes                     | Partially                         | -  | 94%                             |  |

**Only Singapore has realized a digital ID system that facilitates online transactions, which is currently being upgraded.** Singapore's current digital ID system (SingPass) is limited only to accessing government services, but a new National Digital Identity (NDI) system, built on top of the existing foundational ID system, is being developed for both public and private sector transactions. Modeled on Estonia's e-ID, which facilitates a wide range of transactions from accessing personal health records to online voting, the NDI is one of five priority activities of its Smart Nation vision. Importantly, the NDI will enable use of different types of credentials (e.g. phones, cards, or watches) and will be designed as a platform with interoperability with a wide range of use cases, including to enable service providers to build their applications on top. The Singapore government also has ambitions for the NDI to facilitate transactions outside of Singapore, including within ASEAN and with the European Union. The NDI is expected to become fully operational by 2020.

78 Source: 2017 Global Findex Survey (World Bank)

**Brunei, Thailand, and the Philippines are taking active steps to develop digital ID systems, with similar ambitions to enable transactions across borders in other ASEAN member states.** Brunei's proposed digital ID system is currently only envisioned for government services. Thailand's proposed 'Digital ID Platform' will launch its pilot in 2018 with eight initial use cases related to taxation, online banking, insurance, and student loans. Thailand's Digital ID Platform is being designed to be able to onboard citizens of other ASEAN countries, which means they will be able to authenticate themselves for online transactions with Thailand-based firms and government agencies. The Philippines' digital ID system – to be known as PhilSys – is expected to begin its nationwide registration in 2019.

**The lack of digital ID systems in other ASEAN member states has hampered development of the digital economy at national levels, as well as at the regional level.** Without the ability to reliably authenticate customers online, public and private sector service providers are either investing in their own siloed means of authentication for online services, taking identity-related risks in the services they offer online, or only providing low risk services through online channels. It is not unknown in Indonesia or Malaysia, for example, for people to have to physically visit a bank branch or government office to show their national ID cards to complete some transactions. Similarly, the lack of cross-border interoperability of existing digital ID systems makes it very difficult for e-commerce across borders to flourish. The European Union's regulations for electronic identification and trust services for electronic transactions in the internal market – known as eIDAS – offers a useful example for how digital ID systems can be used for cross-border transactions without the need for a central system.

#### BOX 4.2

## Digital ID Case: eIDAS – The European Union's Cross-Border Digital ID Scheme

**eIDAS provides a predictable regulatory environment to enable secure and seamless electronic interactions between businesses, citizens, and public authorities in the European Union.** It ensures that people and businesses can use their national electronic identification schemes (eIDs) to access public services in other EU countries where eIDs are available. eIDAS also creates a European internal market for electronic Trust Services (eTS) by ensuring that they will work across borders and have the same legal status as traditional paper-based processes. eID and eTS are key enablers for secure cross-border electronic transactions and central building blocks of the European Digital Single Market.

**The eIDAS Network consists of a number of interconnected eIDAS-Nodes, one per participating country, which can either request or provide cross-border authentication.** Service Providers (public administrations and private sector organizations) may then connect their services to this network by connecting to the eIDAS node, making these services accessible across borders and allowing them to enjoy the legal recognition brought by eIDAS.

**As noted above, digital government initiatives have direct impacts on the digital economy in other ways beyond this case study on digital ID – the digitization of government payments is another example.** Globally, the digitization of government payments has already had a significant impact on financial inclusion, with 140 million people having opened their first financial account to receive payments – many of these through digital means. For example, among account holders in Thailand, 14 percent opened their account to receive a government transfer. Other governments in Southeast Asia have the opportunity to support the growth of the digital economy, while also boosting financial inclusion, by digitizing government payments. In the Philippines, 6 million unbanked people receive government payments in cash, 58 percent of whom own a mobile phone; as do 4 million unbanked people in Vietnam, 72 percent of whom own a mobile phone (Demirgüç-Kunt, et al. 2018). It is notable that the adoption of digital ID facilitates this process, as government-issued digital IDs can boost financial inclusion by helping to meet KYC and other regulatory requirements.

## Regional Initiatives Related to the Digital Economy

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**Each of the foundations for the digital economy assessed in Chapters 2 and 3 have important regional dimensions.** This section briefly sets out the key aspects of cooperation in two regional forums (ASEAN and APEC) that have implications for the growth of the digital economy in Southeast Asia. However, this section does not provide an exhaustive overview of the issues, although this is an area where further detailed analysis is required. For example, as an extension of the data privacy and protection laws identified in Chapter 3, analysis is required of the potential for establishing a more coherent regional approach to these laws.

**Regional integration has long been an economic priority for Southeast Asian countries, given their outward economic orientation – and this is reflected in regional plans and policies on the digital economy.** ASEAN in particular has been the forum for a variety of efforts by governments in the region to develop a more integrated regional digital economy. However, these efforts are still at a relatively early stage. High-level political commitment to developing an open, integrated regional digital economy will be important – backed up by concrete initiatives to address barriers and bottlenecks across the region to digital economy growth.

## Evolution of ASEAN Efforts

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**ASEAN is well-positioned to support the region's digital economy by encouraging its members to develop the necessary infrastructure for ICT development, and to cooperate in building open digital markets across the region, by reducing barriers and harmonizing regulations.** Developing the digital economy will also strengthen ASEAN's overall objective of promoting regional economic integration. To its credit, ASEAN's approach to supporting digital economy growth has evolved in line with recent trends. While the first ASEAN ICT Masterplan (AIM2015) focused on upgrading ICT infrastructure, regulations, skills, and collaboration to improve digital inclusion, the second ASEAN ICT Masterplan (2016-2020) (AIM2020) has shifted focus towards supporting the region's transformation to the digital economy, developing human capacity, facilitating the emergence of a single integrated market, talent and participation, and building a digital environment that is safe and trusted. (See Annex 3 for a summary of the AIM2020 Masterplan.) In addition to AIM2020, the Master Plan on ASEAN Connectivity 2025 aims to establish an ASEAN digital data governance framework that will promote competitiveness, inclusiveness, and a greater sense of community. ASEAN Connectivity 2025 will also support efforts to build a coherent framework for personal data protection, by enhancing coordination across many sectors and providing details on the approach to ensure success.

**High-level ASEAN agreements, notably the 2015 and 2025 Economic Blueprints, demonstrate a broadening of the vision for the digital economy in the region.** The 2015 version focused on the transactional aspects of e-commerce and emphasized the need to develop a regional legal infrastructure to facilitate the online trade in goods, including by establishing consumer protection measures, online dispute resolution mechanisms, and harmonized principles for electronic contracting. The 2025 Blueprint builds on this to emphasize financial integration and the development of retail payment systems to bolster cross-border online transactions. It also acknowledges that e-commerce requires innovative ways of protecting and promoting the interests of consumers, in addition to the legal frameworks described in the 2015 Blueprint. This in turn requires comprehensive national and regional consumer protection systems enforced through effective legislation, redress mechanisms, and public awareness. The establishment of an ASEAN consumer protection framework is regarded as a key strategic measure, particularly in e-commerce.

**However, as Southeast Asian governments intensify cooperation on the digital economy at the ASEAN level, there is scope to go further than in the existing Blueprints, especially in terms of detailed actions, timelines, and targets.** There are no monitoring or ranking mechanisms to evaluate progress at the national or regional level of developing critical enablers, such as sustainable spectrum policies, privacy laws, data protection, or incentives to support universal broadband access, mobile financial services, e-commerce, and other key areas of the digital economy. Though the current approach recognizes the importance of regulatory harmonization, it offers no concrete principles for how regulations need to be extended and harmonized to create a single digital market, including by taking interim steps such as developing a common standard that applies to digital services, similar to the EU's privacy directive or the streamlined sales tax system in the United States for cross-state e-commerce transactions. There is also scope to draw clearer links between digital economy efforts and longstanding ASEAN priorities in areas such as trade facilitation. The ASEAN E-commerce Consultative Committee offers a forum to pursue this (see Table 4.3).

**TABLE 4.3 Elements of the ASEAN E-Commerce Work Program 2017-2025<sup>79</sup>**

| Themes   | Initiatives  | Output  | Implementing Bodies          |
|--|--|---|------------------------------|
| <b>INFRASTRUCTURE</b>  |  |   |                              |
| <b>1. Region-wide Accessibility of Broadband Infrastructure</b>                                  | 1.1 Identify gaps in Internet access, affordability and network interoperability   | Mapping of priority locations requiring broadband deployment for private sector participation               | TELSOM                       |
|  | 1.2 Promote affordable access to international mobile roaming services in ASEAN  | Adoption of an ASEAN framework to provide affordable intra-ASEAN mobile voice, SMS and dataroaming services | TELSOM                       |
|  | 1.3 Provide broadband access to rural and under-served areas   | Development of next generation Universal Service Obligation (USO) and telecenter frameworks                 | TELSOM                       |
| <b>4. Conducive Environment to Foster the Growth of e-Marketplace &amp; e-Commerce Platforms</b> | 2.1 Develop ASEAN guidelines on accountability and responsibilities of online intermediaries (platform providers)  | Guidelines developed  | ACCEC                        |
|  | 2.2 Develop coordination mechanisms to enhance enforcement of intellectual property rights in the digital environment  | Coordination mechanism developed  | AWGIPC                       |
| <b>EDUCATION AND TECHNOLOGY COMPETENCY</b>   |  |   |                              |
| <b>3. Human Capacity Development Programmes Instituted</b>                                       | 3.1 Develop skills at all levels to maximize competency in e-commerce for relevant-industry regulators, consumer protection officials, and law enforcement officials   | Sectoral Roadmaps on Capacity Building Developed  | All relevant sectoral bodies |
|  | 3.2 Disseminate to business, especially MSMEs, best practices in the use of the Internet for the improvement of their business, including essential tools for business management, as well as information on the available training providers and their range of courses | Information/educational materials and programmes developed  | ACCMSME                      |
|  | 3.3 Provide education to the public with regard to safe use of the Internet, on the availability of self-regulatory options, screening and filtering technologies, and dispute resolution mechanism  | Educational materials and programmes developed  | ACCP                         |

(continued on next page)

<sup>79</sup> The Work Programme is divided into different segments, based on the different mandates of the sectoral bodies and the strategic measures under the AEC Blueprint 2025, keeping in mind that not all measures may fall neatly under the purview of particular sectoral bodies and there may be cross-cutting issues. As work progresses, the elements or initiatives may be updated and other sectoral bodies identified.

**TABLE 4.3 Elements of the ASEAN E-Commerce Work Program 2017-2025 (continued)**

| Themes  | Initiatives   | Output   | Implementing Bodies |
|---|---|--|---------------------|
| <b>CONSUMER PROTECTION</b>  |   |  |                     |
| <b>4. Consumer Rights Principles for On-line B2C Recognized</b>                                 | Integrate e-commerce considerations into the ASEAN High-level Consumer Protection Principles  | E-Commerce considerations are reflected in the ASEAN Consumer Protection High-Level Principles   | ACCP                |
| <b>5. Code of Conduct for On-line Business Developed</b>  | Develop guidelines/code of good on-line business practice based on self-regulation best practices   | Guidelines developed   | ACCP                |
| <b>6. Consumer Rights Awareness Enhanced</b>  | Conduct regular consumer rights awareness training for consumers and consumer associations  | Consumers are aware of on-line rights as illustrated under the ASEAN Consumer Empowerment Index  | ACCP                |
| <b>7. Availability of Alternative Dispute Resolution (ADR)/On-line Dispute Resolution (ODR)</b> | Establish ADR mechanisms, including online dispute resolution systems, to facilitate the resolution of claims over e-commerce transactions, with special attention to low-value or cross-border transactions based on the best practice for fair, easy-to-use, transparent, and effective ADR mechanisms. | ASEAN ADR and ODR mechanism developed  | ACCP                |
| <b>8. Regional/ International Cooperation Enhanced</b>  | 8.1 Develop ASEAN Guidelines on Cross-Border B2C Complaints   | Guidelines are adopted by ASEAN  | ACCP                |
|   | 8.2 Develop a framework of cross-border cooperation in addressing consumer protection issues  | Framework of Cooperation Adopted   | ACCP                |
|   | 8.3 Develop informal/formal mechanisms for cross-border cooperation such as an MOU  | ASEAN adopts an informal/formal regional mechanism of cooperation on cross-border complaints handling  | ACCP                |
|   | 8.4 Participation in the UN Inter-Governmental Experts Consumer Protection Law (IGE Consumer Protection)  | Participate in the UN IGE Consumer Protection Meetings   | ACCP                |
|   | 8.5 Regular interaction with international organisations conducted regularly to enhance understanding, learn best practices   | Interaction with UNCTAD/OECD (seminars/workshops)  | ACCP                |
| <b>MODERNIZING THE LEGAL FRAMEWORK</b>  |   |  |                     |
| <b>6. Updated e-Commerce Legal Framework</b>  | Voluntary internal and peer reviews of national laws/regulations on e-commerce  | National laws and regulations on e-commerce covering the legal status of electronic transactions/contracts, the legal status of the e-commerce platform providers/operators and merchants, electronic signatures, online consumer protection, and personal data protection reviewed. | ACCP<br>ACCEC       |

(continued on next page)

**TABLE 4.3 Elements of the ASEAN E-Commerce Work Program 2017-2025 (continued)**

| Themes   | Initiatives   | Output  | Implementing Bodies |
|--|---|---|---------------------|
| <b>7. Transparent National Laws and Regulations on e-Commerce</b>                            | Provide comprehensive updated information on domestic e-commerce-related laws and regulations   | The information is publicly available in the ASEAN Trade Repository   | ACCEC               |
| <b>SECURITY OF ELECTRONIC TRANSACTIONS</b>   |   |   |                     |
| <b>8. Coherent &amp; Comprehensive Framework for Personal Data/Privacy Protection</b>        | Identify best practices in Personal Data Protection (PDP) to promote the implementation of ASEAN PDP Framework  | Best practices identified   | TELSOM              |
| <b>9. Interoperable, Mutually Recognized, and Secure Electronic Authentication Mechanism</b> | Study suitable mechanisms for authentication of electronic signatures and trade documents, based on internationally recognized practices  | Voluntary adoption of the electronic authentication mechanisms for cross-border electronic trade documents  | TELSOM              |
| <b>10. International Cooperation amongst Cybersecurity Agencies</b>                          | Establish an international coordination mechanism amongst cybersecurity agencies to share best practices, exchange information on policies, strategies and cooperate in response to cybersecurity incidents | Coordination mechanism institutionalized  | TELSOM              |
| <b>COMPETITION</b>   |   |   |                     |
| <b>11. A level playing field in the e-commerce sector</b>                                    | Build and strengthen capacity of competition authorities to identify/detect and address anti-competitive activities in the e-commerce sector  | 1. Competition assessment framework for competition issues in e-commerce sector developed<br>2. Training programmes and educational materials developed | AEGC                |
| <b>LOGISTICS</b>   |   |   |                     |
| <b>12. Improve ASEAN logistics services to facilitate e-commerce</b>                         | Coordination with relevant ASEAN sectoral bodies and logistics service providers to identify measures to improve ASEAN logistics services' support for e-commerce   | Stocktaking conducted and recommendations developed   | ACCEC               |
| <b>E-COMMERCE FRAMEWORK</b>  |   |   |                     |
| <b>13. ASEAN Agreement on E-Commerce</b>   | Review of the elements of ASEAN e-commerce framework and develop an ASEAN agreement on e-commerce   | ASEAN agreement on e-commerce signed  | ACCEC               |

**In implementing the priorities of the ASEAN E-commerce work program, it will be essential for ASEAN committees and groups to include an appropriate mix of policymakers from relevant ministries.** It will be important to ensure that representatives from the ICT sector, as well as those coming from the perspective of trade, finance, innovation, SMEs, and education, all participate. The ASEAN E-Commerce Work Program includes an interdisciplinary set of priorities that cuts across various agency purviews, including Customs, trade facilitation, law (for consumer protection and data privacy issues), and ICT. It also recognizes that there are important cross-cutting issues that may not fall neatly into any particular sectoral bodies, and which require collaboration between agencies. As work progresses, the elements or initiatives may need to be updated and other sectoral bodies identified. While it is still early days to assess the effectiveness of the framework, it is an encouraging sign that ASEAN is building a strong foundation on the core issues that affect all its members, regardless of their level of development, and that a platform has been provided to bring countries together to identify priorities on several of the key building blocks for the digital economy in the region.

## The Role of Asia-Pacific Economic Cooperation (APEC)

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**Although it does not include all Southeast Asian countries, APEC has an important role in facilitating regional consensus on key digital economy enablers.** APEC has made more rapid progress than ASEAN in developing specific, in-depth guidelines, principles, and capacity-building programs to facilitate the adoption of digital economy principles (especially in key areas such as data privacy, cybersecurity, electronic trade, digital infrastructure, and MSME development). APEC economies adopted a Blueprint for Action on Electronic Commerce as early as at the 1998 APEC Summit. This was followed by the e-APEC Strategy and the Statement to Implement APEC Policies on Trade and the Digital Economy, which were endorsed by APEC leaders in 2001 and 2002, respectively. The relative maturity of discussions at the regional level on the digital economy through APEC presents an opportunity for deeper learning between APEC and ASEAN, especially to explore the relevance of these principles for ASEAN as it works to develop a common, unified approach to issues like data privacy (see below).

**Regional coherence in data privacy regulation is an area where APEC has made significant progress.** The APEC Privacy Framework was agreed in 2004, aiming to provide a basis for a regional approach to promote accountable and responsible transfers of personal information between APEC economies. In order to help participating economies to implement the framework, APEC launched the Data Privacy Pathfinder project, which resulted in the APEC Cross-Border Privacy Rules (CBPR) System being agreed in 2007 (see Box 5.1).

**Another area where APEC has made progress is in fostering the digital economy through cross-border technical standards convergence.** The APEC TEL Mutual Recognition Agreement (APEC TEL MRA), endorsed in 1999, provides for manufacturing and testing of telecommunications products in one country, and offering them for sale in any country covered by the MRA without further testing. Efforts such as this have helped lower barriers of trade for telecommunications equipment, complementing efforts to reduce tariffs on IT goods through multilateral initiatives, notably the World Trade Organization Information Technology Agreement.



**BOX 4.3**

## APEC and Data Privacy

**The APEC experience in developing Cross-Border Privacy Rules (CBPR) provides valuable lessons for Southeast Asia.** This voluntary scheme laid out guidelines for participating businesses in APEC to develop and implement data privacy policies consistent with the CBPR, and have their compliance requirements reviewed by an APEC-recognized accountability agent before getting certified. While the CBPR system is not meant to replace domestic laws, its framework approach makes compatibility with many individual economies' data privacy regimes possible. The system is also designed in a way to promote compliance by participating economies and businesses, through a certification system. Overall, the implementation scheme helps to promote consumer trust by ensuring that businesses adhere to minimum standards under the privacy framework, and provides an incentive for APEC member countries to promote the CBPR. While only three economies are officially participating in the CBPR, eight economies – Canada, Mexico, New Zealand, Australia, Japan, Singapore, the Republic of Korea, and the United States – have signed onto the Cross-Border Privacy Enforcement Arrangement (CPEA), which allows for information-sharing among domestic privacy enforcement authorities. More economies are voluntarily providing progress on their individual action plans to implement the APEC Privacy Framework domestically. In addition, countries in the region could benefit strongly from APEC's efforts to promote regulatory harmonization between APEC and other regions, such as the EU. Efforts by APEC's Data Privacy Subgroup (DPS) to establish a joint working group with its EU counterparts could further facilitate data flows to the EU countries and provide opportunities to grow the digital economy beyond the region. ASEAN member states could explore putting similar frameworks in place.

Source: Authors

## Conclusion

**The preceding two chapters have reviewed major policy and regulatory issues that Southeast Asian countries must address – both individually and collectively – in order to strengthen the enabling environment for the digital economy.** Table ES.1 highlighted the key issues for those countries with the least-developed digital economies in the region (Lao PDR, Myanmar, and Cambodia); the more developed, larger middle-income countries (Vietnam, Malaysia, Thailand, and Indonesia); and for the region. While further analysis is required for individual countries in light of this regional overview, previous chapters have highlighted a number of general challenges facing countries in the region.

**While almost all ASEAN countries have developed high-level plans for the digital economy, these generally need to be translated into detailed, time-bound action plans, with clear monitoring frameworks put in place.** In some countries, the scope for the plans could be expanded to include all enablers in the digital economy, helping prevent siloed approaches to policymaking. Institutional

mechanisms for overseeing implementation and governance of these strategies will also need to evolve to better promote inter-agency coordination and involve private sector perspectives.

**The development of national digital economy strategies in most countries in the region is a positive first step which can be leveraged more effectively.** They provide an important signaling effect that highlight the importance of digital adoption and transformation. However, the ambitious goals contained in these masterplans would benefit from being rooted in a robust assessment of where the market is adjusting well to digital transformation and, in this light, where government intervention would be most useful and where it is not required. This would help frame a more targeted approach that would be less challenging to implement and help establish a logical sequence for the implementation of various initiatives. Furthermore, given the crucial role the private sector plays in advancing digital economy growth and innovation, its perspectives should be sought at every stage of national digital economy strategies, from conception through to implementation and monitoring, including through the establishment of more effective consultation and feedback mechanisms.

**Government strategies on the digital economy must include a strong implementation plan that incorporates concrete targets, timelines, and institutional coordination to ensure delivery and accountability.** These plans must be tailored to the unique political economy conditions in each country, and include the necessary level of political leadership to catalyze action. A solid strategy is thus not the sum of discrete policy and regulatory components, but rather facilitates the development of a coherent and coordinated system of implementation.

**The overall approach by governments needs to remain nimble in the light of rapid technological advancement, while recognizing elements of policy and regulatory continuity.** Given the rapidly-changing digital landscape, the appropriate role of government in the economy is not a static concept; instead, it must evolve with emerging needs. As governments attempt to implement ambitious programs, they will have to ensure that policy frameworks remain flexible and adaptable. At the same time, many of the elements of the policy and regulatory framework for the digital economy remain the same or similar to those that have been considered important since serious policy discussions on the 'Internet economy' or e-commerce began in the 1990s – for example, the need for a legal regime that protects personal data; or the need to protect individual consumer interests in the face of rapidly changing technology.

**At the regional level, the vision of an open, integrated Southeast Asian digital economy is a compelling one.** Regional cooperation, most obviously through ASEAN, can help realize greater digital economy growth in each country as well as collectively. Regional institutional mechanisms can be leveraged to address many of the challenges that hamper the enabling environment for digital economy growth in individual Southeast Asian countries and spur the benefits of deeper integration between national economies. In many of the issues identified in Chapters 2 and 3 of this report, there would be strong benefits to greater regional cooperation in areas like data privacy (to improve coherence of legal frameworks); cybersecurity (to prevent and respond to threats; or consumer protection (to improve cross-border appeal and redress mechanisms), among others. Identifying concrete measures that can be taken in these areas is an important area for future research and policy cooperation in Southeast Asia.

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# Conclusion



**This report has surveyed the state of the digital economy in Southeast Asia and the foundations for future growth.** Beyond the specific policy issues identified in Chapters 2 and 3 as highlighted in the Executive Summary, three broad themes emerge from the report as areas that warrant further attention. The first of these is the opportunity presented by the digital economy and the need for further attention to its foundations; the second is managing the various risks associated with the growth of the digital economy; and the third is on the inclusiveness of the digital economy.

**The digital economy is widely seen as presenting significant opportunities to drive growth in the region and build on the development gains achieved by the region in recent decades.** As the state-of-play analysis in Chapter 2 highlighted, the region already has world-leading levels of usage of the Internet, reflecting a high level of technology awareness. While the signs of growing digitalization are widespread in the region, it is important to go beyond the most visible aspects of this, such as smartphone and social media usage, to understand the extent to which digital transformation is occurring in economies at a more fundamental level. Here, there are indications that business use of digital technology is lagging its potential, despite high profile private sector success stories in areas like e-commerce. Growing awareness of this potential is a leading contributor to the proliferation of digital economy plans and strategies in the region.

**Taking advantage of this opportunity will require a concerted effort by the region's governments, both individually and collectively, to strengthen the foundations for the digital economy.** This report has surveyed the current situation and identified priorities in five areas: connectivity; digital payments; logistics; digital skills; and cross-cutting digital policies and regulations. Across all areas, governments have a central role in providing a regulatory environment that is conducive for further growth – in some cases, there are regulatory gaps that need to be filled (e.g. with regards to consumer protection or data privacy); in others, regulation could be adjusted to more effectively achieve policy goals (e.g. cross-border data localization); and in others, the best role for government may be to step back and allow the private sector to innovate and invest in digitalization. The development and implementation of national and regional digital economy plans could be improved, and in many cases there is a need to shift from high-level planning to strengthened coordination across governments, bringing the private sector into aspects of the implementation and monitoring of these plans, and pursuing concrete initiatives to address policy and regulatory blockages. Beyond setting the overall policy and regulatory framework that affects the foundations for the digital economy, governments have a direct role to play, including through digital entrepreneurship programs, and digital government initiatives.

**The challenges that the region faces in responding to risks associated with the growth of the digital economy is the second emerging theme.** While this report focuses on the opportunities that the growing digital economy presents, governments, businesses, and citizens alike are increasingly concerned with various risks associated with digitalization. Some – like inadequate protection of personal data, cybersecurity threats – are directly linked to the technologies associated with the digital economy. Others relate to the new types of business models developing in the digital economy: for example, the challenges presented to the protection of consumer rights in an environment where buyers and sellers are physically separated, and increasingly in different countries. Similarly, while the use of digital payments is boosting financial inclusion, consumer adoption is growing at a slow pace in the region, in part due to perceived risks and lack of trust of new payments systems. Each section of the report has considered potential responses to these challenges – but it also needs to be acknowledged that further analysis at the country level on these risks and the appropriate responses is required.

## Conclusion

**Other risks are longer-term, with the nature of the risks and the appropriate responses less well-defined.** For example, automation is widely perceived as presenting a risk of increased unemployment, but what little evidence there is on this for the region is mixed, and there has not been sustained research and policy consideration on the appropriate response in terms of skills training, the nature of the education system, and social safety nets. Although not considered in this report, governments are concerned that e-commerce is eroding the tax base, and policy responses in the region are evolving.

**Similarly, growing concerns about the risks presented by using the Internet to spread misinformation could lead to responses that restrict the potential of the Internet as a means of open exchange of ideas and information.** The discussion on data flows and cybersecurity highlighted that heavy restrictions on the use of the Internet, for example through data localization requirements, is unlikely to protect citizens' interests, and entails negative impacts on digital economy growth.

**As these examples illustrate, whether the risks are more immediate or longer-term, governments will need to exercise caution that their responses are well-targeted and evidence-based.** By maximizing the potential for the digital economy to boost inclusion, and responding appropriately to the risks presented by the growth of the digital economy, the region will further strengthen its capacity to benefit economically from digitalization.

**Finally, digitalization offers various ways to boost the inclusiveness of economies, but not all citizens and business have the same opportunity to participate.** The rapidly-decreasing cost of broadband (especially mobile broadband) is helping more people access information and connect to economic opportunities. In many ways, it is changing the way markets operate: for example, e-commerce is bringing entrepreneurs into international trade in ways that could not have been possible without the growth of e-commerce platforms. At the same time, it is important to realize that the opportunities presented are not uniformly accessible across Southeast Asia, and that there are wide variations within and between countries. Within countries, there are still significant disparities in the cost and quality of Internet access – most visible between the central and peripheral regions of large, geographically-dispersed countries like Indonesia; but also apparent between urban and rural areas of countries like Thailand, Vietnam, and Malaysia. Similarly, the wide discrepancies in quality and affordability of Internet access between countries also needs to be addressed to boost the inclusiveness of the digital economy in the region. While the digital economy can help create new opportunities to overcome barriers in the offline economy, those that lack adequate connectivity or the skills to participate risk being left behind.



