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ASEAN DIGITAL INTEGRATION INDEX

MEASURING DIGITAL INTEGRATION TO INFORM ECONOMIC POLICIES

August 2021

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ACRONYMS

4IR	The Fourth Industrial Revolution
ACCEC	ASEAN Coordinating Committee on Electronic Commerce
ACCMSME	ASEAN Coordinating Committee on Micro, Small and Medium Enterprises
ACDD	ASEAN Customs Declaration Document
ACGM	ASEAN Central Bank Governors' Meeting
ACRF	ASEAN Comprehensive Recovery Framework
ACSS	ASEAN Community Statistical Systems
ADGMIN	ASEAN Digital Ministers' Meeting
ADGSOM	ASEAN Digital Senior Officials' Meeting
ADII	ASEAN Digital Integration Index
AITI	Brunei Darussalam Authority for Info-communications Technology Industry
AMS	ASEAN Member States
ARTA	The Philippines Anti-Red Tape Authority
ASEAN	Association of Southeast Asian Nations
ASEAN Cyber-CC	ASEAN Cybersecurity Coordination Committee
ASPEC	ASEAN Patent Examination Cooperation
ASPEC AIM	ASPEC Acceleration for Industry 4.0 Infrastructure and Manufacturing
ASW	ASEAN Single Window
ASYCUDA	Cambodia Automated System on Customs Data
AWGIPC	ASEAN Working Group on Intellectual Property Cooperation
BBVA	Banco Bilbao Vizcaya Argentaria
BDCB	Brunei Darussalam Central Bank
BOL	Bank of Lao PDR
BSP	Bangko Sentral ng Pilipinas
CADT	Cambodia Academy of Digital Technology
CO	Certificate of Origin
CRISP	ASEAN Cybersecurity Resilience and Information Sharing Platform
CSB	Cyber Security Brunei
DEPA	Thailand Digital Economy Promotion Agency
DESI	European Union Digital Society and Economy Index
DFTZ	Malaysia Digital Free Trade Zone
DIF	Digital Integration Framework
DiGiX	BBVA Digitization Index
DII	Tufts University Digital Intelligence Index
DO	Delivery Order
DOE	The Philippine Department of Energy
DTN	Digital Technology Network
e-AH	electronic Animal Health
e-CO	electronic Certificate of Origin
e-FS	electronic Food Safety
e-KTP	Indonesia electronic Kartu Tanda Penduduk (Resident Identity Card)
e-KYC	electronic Know-your-Client

e-Phyto	electronic Phytosanitary
EU	European Union
Findex	World Bank's Global Financial Development
GDCE	Cambodia General Department of Customs and Exercise
GDP	Gross Domestic Product
ICT	Information Communication Technology
ID	Identity Document
IP	Intellectual Property
IT	Information Technology
KYC	Know Your Customer/Client
LaPASS	Lao Payment and Settlement System
LaPNET	Lao National Payment Network
MCI	Singapore Ministry of Communications and Information
MCSS	Malaysia Cyber Security Strategy
MDES	Thailand Ministry of Digital Economy and Society
MERRP	Myanmar Economic Resilience and Reform Plan
MIC	Viet Nam Ministry of Information and Communications
MMQR	Myanmar Quick Response
MOOC	Massive Open Online Courses
MOTC	Myanmar Ministry of Transport and Communications
MOU	Memorandum of Understanding
MPT	Ministry of Posts and Telecommunications
MPTC	Cambodia Ministry of Post and Telecommunications
MSMEs	Micro, Small, and Medium Enterprises
NDID	Thailand National Digital Identity
NDTP	Thailand National Digital Trade Platform
NEA	Vietnam National Electronic Authentication Centre
NEHEMIA	Philippine Project National Effort for the Harmonization of Efficient Measures of Inter-related Agencies
NFCP	Malaysia National Fiberisation and Connectivity Plan
NLE	Indonesia National Logistics Ecosystem
NSW	National Single Window
NTP	Singapore Network Trade Platform
OIP	Singapore Open Innovation Platform
PCT – ASPEC	Patent Cooperation Treaty-ASPEC
PDPA	Personal Data Protection Act
PDPO	Brunei Darussalam Personal Data Protection Order
PhilID	Philippine ID
PhilSys	Philippine Identification System
PNPKI	Philippine National Public Key Infrastructure
PREMS	The Philippine Renewable Energy Market System
PSN	Philippine Identification System Number
QR	Quick Response
QRIS	Quick Response Indonesian Standard

R&D	Research and development
RE	Renewable Energy
RPS	The Philippine Renewable Portfolio Standards
SADIF	Cambodia Smart Axiata Digital Innovation Fund
SBV	The State Bank of Vietnam
SingPass	Singapore Personal Access
SME	Small and Medium-sized Enterprise
SPBE	Indonesia Sistem Pemerintahan Berbasis Elektronik (e-Government)
STEAM	Science, Technology, Engineering, Arts and Mathematics
STEM	Science, Technology, Engineering, and Mathematics
TELSOM	ASEAN Telecommunications and Information Technology Senior Officials Meeting
UN-GGE	United Nations Group of Governmental Experts
WC-FINC	ASEAN Working Committee on Financial Inclusion
WIPO	World Intellectual Property Organization

FOREWORD

The Association of South-East Asian Nations (ASEAN) is at a critical moment in the development and integration of its digital economy, which is predicted to add an estimated USD1 trillion to ASEAN's GDP over the next ten years. In addition to being vital to the region's economic growth, digital technologies have become ever more important during the COVID-19 pandemic, helping to fight against the coronavirus and ease its adverse impacts. Digital tools, services, and platforms have helped business stay afloat through e-commerce and individuals connected to each other and services they need. The ASEAN region must continue to leverage the potential of its digital economy to drive economic recovery efforts.

The ASEAN Coordinating Committee on Electronic Commerce (ACCEC) coordinated ASEAN's multi-sectoral efforts in developing the ASEAN Digital Integration Index (ADII), an index to measure the digital integration implementation across the ASEAN region. This first ADII Report presents an opportunity for ASEAN to take stock of the digital economy through data and analysis of priority areas of the ASEAN Digital Integration Framework in each ASEAN Member State and the region. By identifying and accelerating improvements to ASEAN's most crucial digital integration priority areas, ASEAN can propel its regional digital economy forward. Further, the Report will help synchronize and coordinate ASEAN member states' efforts thereby bolstering the competitiveness of the region in the new global digital economy.

ASEAN is pleased to jointly develop this report with technical assistance from the USAID through its ASEAN-USAID Inclusive Growth in ASEAN through Innovation, Trade and E-Commerce (IGNITE) project and the U.S. Department of State through U.S.-ASEAN Connect Digital Economy Series. Through this critical initiative, ASEAN is well-positioned to build a more robust and integrated regional digital economy.

H.E. Satvinder Singh
Deputy Secretary-General for ASEAN Economic Community

1 EXECUTIVE SUMMARY


Even before the onset of the COVID-19 pandemic, the importance of digital technologies and the role they play in digital transformation and integration was a priority for the Association of Southeast Asian Nations (ASEAN) policymakers as a means of capturing new economic opportunities by improving ASEAN’s digital economy and infrastructure. The COVID-19 crisis has since become the impetus for policymakers to urgently accelerate digital integration and promote digital transformation. Not only have digital technologies provided a means for authorities to effectively respond, monitor, and control the spread of the virus, they have also enabled society and the economy to resume some degree of social and economic activity amidst restrictions on travel and physical activities. Given the extensive impact the COVID-19-driven ‘turn to digital’ has had in elevating digital transformation to the forefront, it has become ever more crucial to ensure the alignment and sustainability of digital integration efforts across the region as ASEAN seeks to capitalize on these opportunities.

The inaugural ASEAN Digital Integration Index (ADII) offers a starting point for ASEAN to begin reviewing the progress in implementing the ASEAN Digital Integration Framework (DIF), as well as developing a way forward on accelerating digital transformation in line with COVID-19 recovery efforts and strengthening resilience towards a single digital community for the digital-driven future. The main goal of the ADII Report is to present the key findings of this first iteration and highlight initial next steps that ASEAN can take to strengthen regional digital integration efforts.




How does ASEAN fare on the ADII Pillars?



Table 1 presents an overview of the ADII pillar scores, its ranking according to its score within the six pillars, and key takeaways for each pillar. A more detailed analysis on the regional scores is elaborated in Section 2 of this report. To support better understanding of digital integration developments in the region, country-focused overviews of individual ASEAN Member States (AMS), including ADII scores, are presented in Annex A: Country Findings.

Table 1: ASEAN Digital Integration Index Pillar Scores¹

ADII Pillars	Scores / 100	Rank	Key Takeaways
<p>Pillar 1</p>  <p>Digital Trade & Logistics</p>	55.27	4	<ul style="list-style-type: none">ASEAN’s logistics services fare well which remain crucial to support and enable digital trade. While digital trade is still nascent in ASEAN, it is crucial for AMS to agree on digital trade priority areas to align and coordinate the use of digital technologies in trade processes and related sectors.

¹ Each pillar has been normalized to a total score of 100 points representing different sets of distinct indicators which are not directly comparable across pillars. The rank indicates each pillar’s score in comparison across the other five pillars’ score to demonstrate which pillars are performing better in and which lag behind.

ADII Pillars	Scores / 100	Rank	Key Takeaways
			<ul style="list-style-type: none"> There continues however, to be sizeable room for growth within all indicators to better support digital trade, particularly the opportunities for trade and custom processes to increase adoption of digital technologies and to take better advantage of international standards and best practices in trade documents and procedures.
Pillar 2  Data Protection & Cybersecurity	62.81	2	<ul style="list-style-type: none"> ASEAN has done well in enhancing its ability to protect data and manage cyber risks, building trust and promoting use of digital technologies and participation in the digital economy. However, it is crucial that data protection and cybersecurity frameworks are regularly reviewed and updated to remain relevant in the ever-evolving digital economy. There is also an urgent need to enhance technical cybersecurity capabilities and bolster regional/international cooperation to manage transborder cyber threats.
Pillar 3  Digital Payments & Identities	58.84	3	<ul style="list-style-type: none"> Legal frameworks which support electronic transactions are well developed, but there remains a large gap in the adoption of digital financial services. Stakeholders need to better promote awareness and use of digital financial services. Digitalized ID systems have been or are in the process of being deployed across ASEAN. The next stage of focus should be to better capitalize on national digital identity programs to enable the use of more digital transactions.
Pillar 4  Digital Skills & Talent	48.21	6	<ul style="list-style-type: none"> There is an urgent need for ASEAN to bolster efforts to promote Science, Technology, Engineering, and Mathematics (STEM) education, and foster employment opportunities in digitally related and knowledge-based industries to ensure digital readiness of the future workforce. Nevertheless, there appears to be a good foundation for improvement, including interest to acquire digital skills, and high level of multi-stakeholder collaboration in R&D between business, academia, and government.

ADII Pillars	Scores / 100	Rank	Key Takeaways
<p>Pillar 5</p>  <p>Innovation & Entrepreneurship</p>	49.32	5	<ul style="list-style-type: none"> ASEAN as a region scores low in terms of the proportion of GDP spent on R&D while intellectual property protection frameworks also are insufficient. Although the intellectual property protection legislations are in place, there still appears to be a gap in terms of transparency and coordination of enforcement efforts. If unaddressed, lack of domestic resources or protection for innovation will significantly limit the ability of innovators to create new products and services. It remains relatively easy to start a business in ASEAN with high growth potential for domestic companies and where venture capital funding is fairly available. However, domestic regulations risk discouraging innovation and limiting entrepreneurship if the right policies and resources to foster and support innovation are not forthcoming.
<p>Pillar 6</p>  <p>Institutional & Infrastructural Readiness</p>	62.85	1	<ul style="list-style-type: none"> Digital infrastructure is competently deployed across the region. Yet, there is still room for improvement, including the need to ensure universal digital inclusion so that nobody gets left behind and is unable to effectively participate in the digital economy and society. Governments are making good progress in deploying e-government services and will need to continue leading by example for industry to follow, including enhancing regulatory and legislative frameworks for greater digital innovation.

How does ASEAN fare within the Asia Pacific?

To better assess ASEAN's digital integration efforts, the scores of several Asia-Pacific (APAC) economies were computed using the ADII indicators and methodology. This allows a comparable gauge of ASEAN's digital integration efforts in relation to other countries. Annex B includes further analysis on this. Key points include:

- Compared to some of the region's key trading partners, ASEAN appears to still have some significant catching-up to do. Upon a total score of a 100 points, Australia, China, Japan, New Zealand, and South Korea all score 70 points and above, while ASEAN underperforms in comparison at only slightly above 56 points. The gap between ASEAN and the identified benchmark countries should however, not come as a surprise given the diverse composition of ASEAN with different countries at varying levels of development as compared to other more

developed benchmarked countries. Nevertheless, these benchmark countries represent a yardstick to strive towards, to ensure ASEAN’s competitiveness in the APAC region.

- ASEAN fares comparatively well in Pillar 6 (Institutional & Infrastructural Readiness) where scores are competitive with the other benchmark countries—even exceeding that of Australia, China, and Japan.
- While Pillar 2 (Data Protection & Cybersecurity) is ASEAN’s second highest-performing pillar, it still trails significantly behind the level of other benchmark countries, indicating that ASEAN still has a way to go in promoting trust and safety in the digital space.
- The use of digital payments and national digital identity is still at an early stage in ASEAN, with room to grow as other more advanced countries are already demonstrating higher use and adoption rates.
- The dearth of digital skills and talent appears to be a collective challenge for all—which may lead to a global contest for a small pool of available talent if domestic institutions are unable to groom sufficient new resources, or to retain them.

Key Recommendations

The ADII was conceptualized as a means for policymakers in ASEAN to assess and evaluate the region’s digital integration efforts based on the six priorities identified in the DIF. The results of the ADII show that digital integration in ASEAN is ongoing although there remains significant room for improvement, particularly for capacity building and the promotion of innovation and entrepreneurship. ASEAN has also been making major strides in creating a safer digital space and organizing its institutional and infrastructural frameworks to support the digital economy, which should not be discounted as key foundations for digital economy growth and regional integration.

As a starting point for assessing digital integration, ASEAN needs to ensure that its ongoing efforts continue to be measured over time so as to competently and effectively track progress through future iterations of the ADII, ideally with nationally collected data that adheres to coordinated and agreed upon definitions, methodologies, and approaches.

Table 2 presents an overview of key recommendations, which are further explained in Section 4 of this report.

Table 2: Recommendations for ASEAN

Focus Areas	Recommendations
Pillar 1: Digital Trade & Logistics	<ol style="list-style-type: none"> 1. Better enable digital trade and logistics, to promote interoperable trade across ASEAN: Enhance the use of digital technologies across trade and custom processes and to ensure relevant harmonized standards are available to support market integration, building upon the “ASEAN Guidelines for Harmonization of Standards”, to reduce costs and improve trade process efficiencies, particularly as part of the ASW.

Focus Areas	Recommendations
	<p>2. Enhance collaborations with private sector to align infrastructure and logistics deployment with digital trade targets: Plan for digital trade holistically including the deployments of physical infrastructure and integration of logistical networks through closer cooperation with the private sector.</p>
<p>Pillar 2: Data Protection & Cybersecurity</p>	<p>3. Foster a safe, trusted, and compatible digital space through greater awareness and capacity-building: Review and update their data protection frameworks to ensure they remain suitable for the digital economy, and to do so in open, collaborative manners through consultation across different stakeholder groups.</p> <p>4. Cooperation is integral to creating a resilient regional cyberspace: Continue to affirm and commit to sharing information and helping one another in combating cyber threats while implementing a coordinated regional approach towards enhancing cybersecurity.</p>
<p>Pillar 3: Digital Payments & Identities</p>	<p>5. Integrate and facilitate use of national digital ID programs to transact online: Develop and deploy national digital ID programs which are interoperable across public and private sector transactions, and across ASEAN, to promote use and adoption. This will also help reduce confusion with users only needing to rely on their national digital IDs to conduct online transactions.</p> <p>6. Explore the development of an interoperable ASEAN digital platforms, including establishing a network of interconnected real-time retail payment systems across ASEAN: Expand the number of cross-border linkages between real-time retail payment systems of AMS to empower individuals and businesses to conduct swift, seamless, and secure cross-border transactions at low cost, using convenient proxies such as mobile phone numbers, business registration numbers, and potentially national digital IDs.</p>
<p>Pillar 4: Digital Skills & Talent</p>	<p>7. Prioritize development of digital skills and capabilities, and formal employment opportunities that leverage digitalization: Direct and prioritize educational resources urgently towards STEM courses and ensure equal learning opportunities for all to ensure digital skill programs are extended beyond urban city centers and better enable the upskilling of resources in rural areas.</p> <p>8. Collaborate with private sector to better identify digital skillsets which are in demand: Work with private sector to</p>

Focus Areas	Recommendations
	<p>better develop the necessary labor policies to competently address the digital skills gap and identify the required skillsets for domestic market demands.</p>
<p>Pillar 5: Innovation & Entrepreneurship</p>	<p>9. Establish a conducive ecosystem for the creation and innovation of new goods and services: Cultivate a more adventurous and creative approach through a collaborative ecosystem that has more resources deployed towards R&D efforts.</p> <p>10. Ensure emerging digital economy regulations do not unnecessarily restrict the ability of SMEs to expand and grow: Consider the effect of any planned digital economy regulation on SMEs to ensure such frameworks are fit-for-purpose and do not inadvertently affect or discourage SMEs from participating in the digital economy.</p>
<p>Pillar 6: Institutional & Infrastructural Readiness</p>	<p>11. Capitalize on ASEAN’s institutional and infrastructure readiness to better coordinate digital efforts across region: Progress towards the implementation of coordinated digital integration efforts across ASEAN, even while there remains room for improvement in AMS institutional and infrastructure efforts.</p>
<p>Coordination and Alignment on Digital Integration Efforts across ASEAN Bodies/Groups</p>	<p>12. Closer collaboration across ASEAN Sectoral Bodies and Working Groups to avoid duplication of resources and implement central mechanism to track and assess goals and objectives across all ASEAN projects: Streamline approaches in digital integration efforts cutting across all sectors of the economy to avoid overlap and optimize the use of limited resources.</p> <p>13. Explore engaging dialogue partners on collaborative digital programs including the sharing of best practices and interoperable digital trade: Identify priority sectors to engage and learn from dialogue partners to improve ASEAN digital integration both within ASEAN and cooperatively with international partners.</p>
<p>ASEAN Statistical Measurement Capability</p>	<p>14. Expand ASEAN Community Statistical System’s (ACSS) continued efforts to align key statistical areas: Empower the ACSS Committee to take the lead in developing and coordinating between AMS on how to delineate and measure their digital economies accordingly.</p>

2 OVERVIEW OF ADII

The inaugural ASEAN Digital Integration Index (ADII) is developed by AMS to help build ASEAN capacity in tracking and assessing the progress made in the implementation of the ASEAN Digital Integration Framework (DIF).²

The ADII is a composite index comprised of six pillars that align with the six key priority areas identified by the DIF (Refer to Table 3 below). Each pillar consists of five indicators, with the data retrieved from a range of third-party data sources. Each indicator is normalized and scored on a scale of 20 points, with each pillar's indicators adding up to a final pillar score up to 100 points. For a closer look at the methodology of the third-party indicators used for the first iteration of the ADII, please refer to Annex C: Methodology.

Table 3: ADII Pillars Mapped Against DIF Priority Areas

DIF PRIORITY AREA	ADII PILLAR
<i>Priority Area 1</i> Facilitate seamless trade	<i>Pillar 1</i> Digitally Enabled Trade & Logistics
<i>Priority Area 2</i> Protect data while supporting digital trade and innovation	<i>Pillar 2</i> Data Protection & Cybersecurity
<i>Priority Area 3</i> Enable seamless digital payments	<i>Pillar 3</i> Digital Payments & Identities
<i>Priority Area 4</i> Broaden the digital talent base	<i>Pillar 4</i> Digital Skills & Talent
<i>Priority Area 5</i> Foster entrepreneurship	<i>Pillar 5</i> Innovation & Entrepreneurship
<i>Priority Area 6</i> Coordinate actions	<i>Pillar 6</i> Institutional & Infrastructural Readiness

The indicators selected were based on six key criteria:

- I. Relevance—where data is clear, accurate, and relevant to the DIF's priority areas;
- II. Accessibility—where data is easily accessible and is freely and/or openly available;
- III. Coverage—where data must cover at least 8 of the 10 AMS;
- IV. Timeliness—where updated datasets are used with data published from at least 2017 onwards;
- V. Consistency—relying on databases that are published regularly; and
- VI. Transparency—using data from reputable sources that publish their respective methodologies.

While there may be no one ideal indicator or database that aligns and measures the DIF perfectly today, the ADII offers a means to help gauge the impact of AMS' policies and initiatives. The ADII is however limited by what data is readily available and accurately collected and regularly published by third-party data sources. This may inadvertently restrict what updates subsequent editions of the ADII are able track and assess. To better track progress, AMS need to consider aligning policies, regulations, and implementation on priority areas that:

² ASEAN (2019) ASEAN Digital Integration Framework, <https://asean.org/storage/2019/01/ASEAN-Digital-Integration-Framework.pdf>







1. ASEAN and AMS can proactively measure; and
2. Will continue to be relevant and useful to the DIF and the implementation of other current and future ASEAN initiatives.

3 ADII FINDINGS

The overall ADII Pillar scores, presented in Table 4 below, indicate that ASEAN fares strongest in Pillar 6, i.e., ensuring the institutional frameworks and infrastructure are ready for digital integration. The limitation of Pillar 6, however, is in providing an adequate measure of the degree of coordination within ASEAN on implementing the DIF. On the other end, Pillar 4, i.e., enhancing digital skills and talent, is in urgent need of improvement, with the lack of a capable digital workforce risks being the biggest factor impeding digital integration and growth if not addressed promptly.

ASEAN ADII SCORES

Table 4: ASEAN ADII Pillar Scores

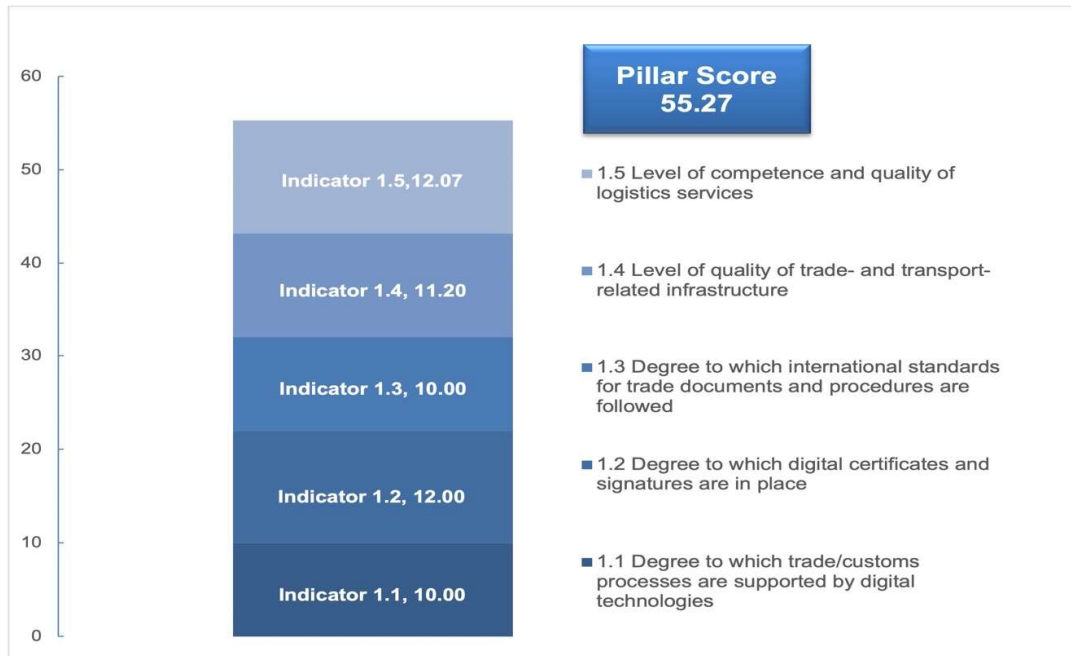
	Pillar 1	Pillar 2	Pillar 3	Pillar 4	Pillar 5	Pillar 6
						
	Digital Trade & Logistics	Data Protection & Cybersecurity	Digital Payments & Identities	Digital Skills & Talent	Innovation & Entrepreneurship	Institutional & Infrastructural Readiness
Scores /100	55.27	62.81	58.84	48.21	49.32	62.85

ADII PILLAR 1—DIGITALLY ENABLED TRADE & LOGISTICS

Digitally enabled trade and logistics facilitate seamless trade across ASEAN

Digital integration requires reliable physical infrastructure and favorable trade policies to facilitate seamless, digitally enabled trade flows across ASEAN. The rapid pace of digital transformation is impacting all facets of trade. It enables the movement of goods across borders as well as the flow of new, data-driven digital services. In this context, it is critical for AMS to rapidly modernize digital trade platforms and processes, including the digitalization of physical infrastructure, the integration of logistical networks, and the alignment of trade policies to fully take advantage of digital trade opportunities in ASEAN. Digital trade is still nascent in ASEAN. It is critical that AMS agree on digital trade priority areas to focus on and how to enable and coordinate on trade processes and related sectors. As a key component of digital economies, seamless and digitally enabled trade is crucial for the region to effectively grow and expand.

Figure 1: Pillar 1—Digitally Enabled Trade & Logistics Scores



Pillar 1 of the ADII measures the extent of digital technologies (and complementary infrastructure) that are being used to facilitate trade. This includes digital technologies used by traders and customs authorities, the acceptance and use of digital signatures, the use of international standards for trade documents and procedures, infrastructure connecting and facilitating trade across borders, and the competence and quality of logistics services which support trade including multimodal transport operators and customs brokers.

As

Figure 1 demonstrates, the use of digital technologies for customs and trade processes is the least-performing indicator, alongside the use of international standards for trade at half the maximum score. While this implies ASEAN is at a less mature stage, it also means that there is room for up to double the growth³ in efficiencies and cost-savings brought about by digital adoption. The range of digital technologies measured include the use of electronic documents for pre-arrival processing, e-payments facilities, single windows supported by information technology, IT systems capable of accepting and exchanging data electronically, and automated processes. Likewise, there is a big disconnect in terms of the use of international trade standards related to trade documents and procedures which continue to restrict interoperability and risk increasing compliance costs. The Digital Trade Standards and Conformance Working Group (DTSCWG) is working hard to address these gaps and working across a range of digital trade standards which facilitate digital transactions, digital trade logistics and delivery, and digital trust.

While all AMS have launched their respective National Single Windows (NSW), they are at different phases, with the full operation of the regional ASEAN Single Window (ASW) still a work in progress. The ASW continues to make good progress, such as the live exchange of the ASEAN Trade in Goods Agreement (ATIGA) electronic Certificate of Origin (CO) form and the exchange of the ASEAN Customs Declaration Document (ACDD) amongst five AMS already—Cambodia, Myanmar, and Singapore since December 2020 and followed by Malaysia and Thailand from March 2021.⁴

Although more than half of the AMS are already accepting the use of digital certificates and signatures, there remain some in ASEAN who are taking a longer time to update their legislation to accept digitally verifiable documents and adopt the corresponding digital technologies to use them. Nevertheless, this needs to and can be accelerated, as evident from the way COVID-19 has been a catalyst for greater (and quicker) acceptance of digital certificates and signatures.

Lastly, it remains important for AMS to ensure that physical infrastructure and complementing logistics support are capable of facilitating digital trade—for example sufficient roads and networks for the supply of goods and services ordered through digital platforms. Cost-effective and closer public-private partnerships on logistics and infrastructure development will be crucial where many of the companies involved are from the private sector and increasing information sharing will help ensure expansions and improvements are aligned with digital trade plans and targets. The implementation of the Master Plan on ASEAN Connectivity 2025 and the ASEAN Digital Master Plan 2025 adopted in January 2021, will be instrumental in promoting further development of both physical and institutional connectivity and will complement the efforts of the DIF.⁵ Developing economies tend to still depend heavily on traditional operators rather than international freight operators which may not serve their markets while landlocked Lao PDR is also primarily dependent on international transit routes through its neighbors. It is critical that efforts to improve

³ This is based on the scores for indicators I.1 and I.3 which are half the maximum score.

⁴ ASEAN, What is the ASEAN Single Window, <https://asw.asean.org/>

⁵ ASEAN (2016) Master Plan on ASEAN Connectivity 2025, <https://asean.org/storage/2016/09/Master-Plan-on-ASEAN-Connectivity-20251.pdf>

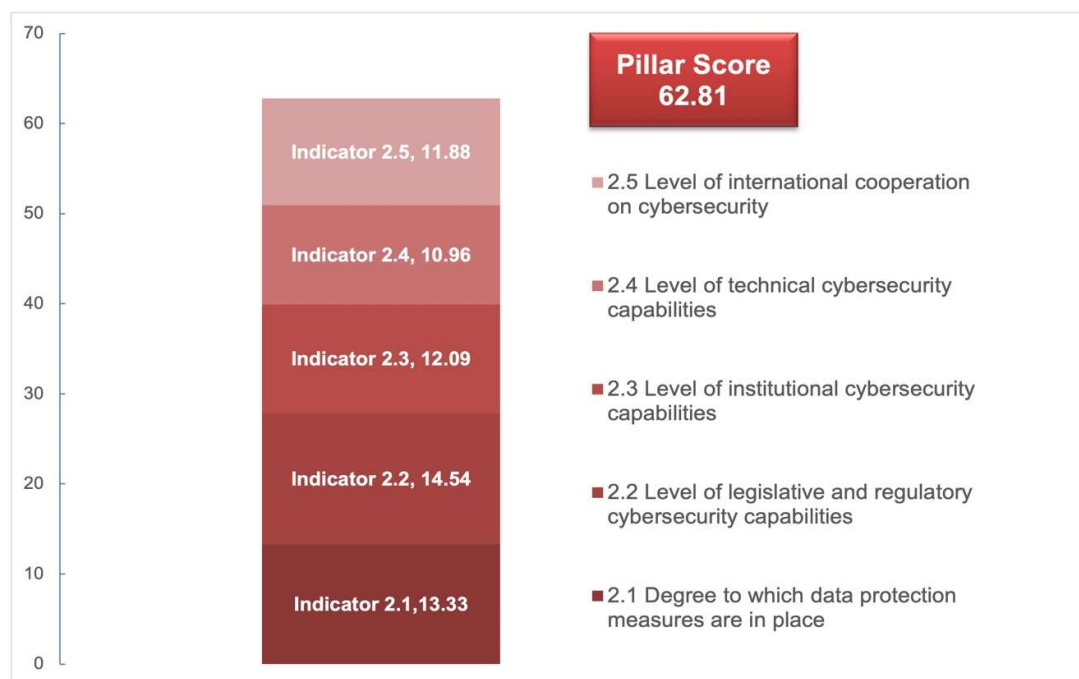
physical and logistical infrastructure are all aligned to optimize implementation in ASEAN.

ADII PILLAR 2—DATA PROTECTION & CYBERSECURITY

Robust data protection and cybersecurity support digital trade and innovation

Globalization and digitalization have led to greater connectivity, which in turn has rapidly increased the quantities of data being accessed, transferred, and exchanged both within and between countries. Digital integration requires consumer and business data to flow safely, securely, and responsibly across territories and jurisdictions. ASEAN has recognized this as a priority under the ASEAN Framework on Digital Data Governance which strives to promote intra-ASEAN data flows and drive digital economy growth. From manufacturing and services to agriculture and retail, all sectors increasingly rely on data to plug in to global value chains and contribute to the global economy. It is thus essential for AMS to have cybersecurity, privacy, and other frameworks in place that protect and secure data. This is not only in the interest of digital businesses and their business models, but also for citizens, whose personal data (everything from biometrics to Internet surfing habits) powers data-driven platforms and services.

Figure 2: Pillar 2—Data Protection & Cybersecurity Scores



Pillar 2 aligns with DIF Priority Area 2 on the importance of protecting data while supporting digital trade and innovation. It measures the degree to which data protection measures are in place among AMS, the levels of legislative and regulatory cybersecurity capabilities, institutional cybersecurity capabilities, technical cybersecurity capabilities, and the level of international cooperation on cybersecurity.

At present, Pillar 2 is the second highest ranking pillar in the ADII, and a testament to the ongoing efforts AMS have taken to build trust and promote the safe use of digital technologies. However, as Pillar 2 represents a critical foundation of the digital economy, the promotion of trust and safety, ASEAN cannot be complacent on this factor and should continually enhance efforts towards achieving an even higher

score. ASEAN's digital economy is still in its early stages and vulnerable to emerging risks and security threats.

As

Figure 2 highlights, AMS perform well in establishing legislative and regulatory cybersecurity capabilities and putting data protection measures in place. Since 2020, Malaysia, Singapore, the Philippines, and Thailand already have comprehensive general data protection laws in place, while the other six are pending passage or covered within various legislations.⁶

Likewise, ASEAN Digital Senior Officials' Meeting (ADGSOM), formerly ASEAN Telecommunications and Information Technology Senior Officials Meeting (TELSOM), have also made progress on the ASEAN Framework on Digital Data Governance, which aims to align baseline principles and standards for data protection, advance digital innovation and the use of open and big data, and facilitate data flows.⁷ In particular, the ASEAN Data Management Framework and the Model Contractual Clauses for Cross Border Data Flows were approved by the 1st ASEAN Digital Ministers' Meeting (ADGMIN) in January 2021.⁸

In addition, the Terms of Reference of the Digital Technology Network (DTN), a regional coordination mechanism amongst national cybersecurity agencies, was approved at the 6th ASEAN Central Bank Governors' Meeting (ACGM), with the signing of the Memorandum of Understanding (MoU) to operationalize information sharing among DTN members via the ASEAN Cybersecurity Resilience and Information Sharing Platform (CRISP) nearly finalized, demonstrating considerable effort to cooperate as a region.

However, data protection and cybersecurity are continuously ongoing processes. To facilitate regional growth and build regional synergies, ASEAN will need to foster an environment that allows the safe and secure flow of data while still ensuring data protection remains aligned and interoperable within the region amidst ever-changing threats. To support the development of such a regional regulatory environment, AMS need to make sure their domestic data protection laws are updated regularly to remain relevant to the digital economy, such as enacting coherent and simple rules to both enable and protect cross-border data flows, clear obligations and responsibilities defined for data processors and data controllers, transparent data breach notification process, and others.

The lowest indicator in Pillar 2 relates to technical cybersecurity capabilities which suggests that while legislation and regulation of cybersecurity is on track to support digital integration, the actual implementation of cyber threat detection systems and the capability to handle cyber risks are still crucially lagging behind and will require significant improvement. Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam have already developed national strategies related to cybersecurity and can do more to promote regional alignment and assist other AMS which have yet to craft their own cybersecurity roadmaps or

⁶ TRPC (2020) TRPC Data Protection Index 2020, https://trpc.biz/old_archive/wp-content/uploads/TRPC_DPI2020.pdf

⁷ ASEAN (2018) Framework on Digital Data Governance, https://asean.org/storage/2012/05/6B-ASEAN-Framework-on-Digital-Data-Governance_Endorsedv1.pdf

⁸ ASEAN (2021), ASEAN Data Management Framework, https://asean.org/storage/2-ASEAN-Data-Management-Framework_Final.pdf

implementation strategies. The ASEAN Ministerial Conference on Cybersecurity in 2020 highlighted the importance of developing and implementing a coordinated regional approach towards cybersecurity capacity building to equip AMS with the necessary policy, operational, and technical capabilities to manage cybersecurity risks.⁹ There is a critical need for ASEAN to continue to act on these statements to strengthen their cybersecurity capabilities sooner rather than later, as the threats and risks are increasing exponentially each day.

The last consideration is for increased international cooperation on cybersecurity, as the global, cross-border nature of cyber threats means ASEAN needs to enhance cooperation on tackling cyber threats not just as a region, such as through the ASEAN Cybersecurity Coordination Committee (ASEAN Cyber-CC), but also with other international parties to effectively respond and manage growing cyber risks. One big step forward is how AMS will adopt and implement the 11 norms of responsible state behavior in cyberspace from the 2015 UN Group of Governmental Experts (UNGGE) Consensus report.¹⁰ While AMS participation in international forums such as the Financial Services Information Sharing and Analysis Centre (FS-ISAC) CERES (Central banks, Regulators, and Supervisory entities) Forum, and BIS Cyber Resilience Coordination Centre (CRCC) remain meaningful, the benefits of important sharing and exchange through international cooperation need to be extended across all sectors of the economy where cyber threats can, and will, target all industries as they continue to embrace digitalization.

The constantly evolving cybersecurity environment has increasingly encouraged organizations to rely on the use of international cybersecurity standards and best practices to address these dynamic cyber threats. In the absence of international collaboration on cybersecurity, for ongoing and future initiatives ASEAN may want to consider taking advantage of such standards, which have been developed through multi-stakeholder, open, and consensus-based processes.

⁹ CSA (2020) Opening Speech by Mr S Iswaran, Minister for Communications and Information, Minister-in-Charge of Cybersecurity, at the ASEAN Ministerial Conference on Cybersecurity 2020, <https://www.csa.gov.sg/news/speeches/asean-ministerial-conference-on-cybersecurity-2020>

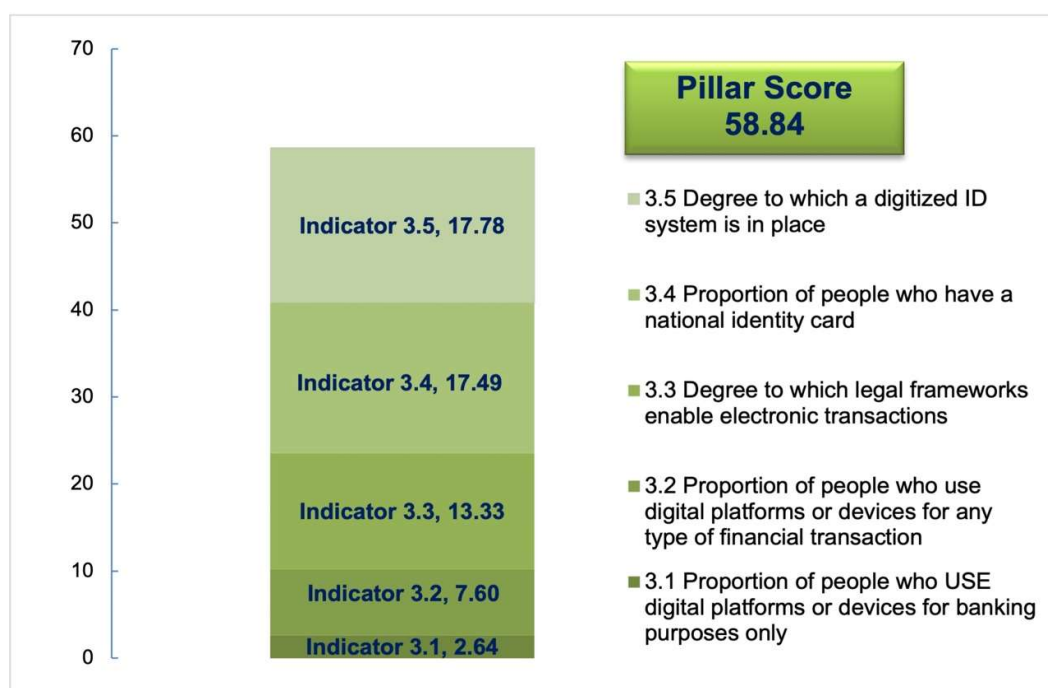
¹⁰ CSA (2020) Opening Speech by Mr S Iswaran, Minister for Communications and Information, Minister-in-Charge of Cybersecurity, at the ASEAN Ministerial Conference on Cybersecurity 2020, <https://www.csa.gov.sg/news/speeches/asean-ministerial-conference-on-cybersecurity-2020>

ADII PILLAR 3—DIGITAL PAYMENTS & IDENTITIES

Use of digital financial services and identities to enable seamless payments

Digital integration requires reliable and interoperable digital financial services that enable secure digital transactions across platforms. Digital/electronic payments, for instance, are becoming increasingly prevalent, thanks to the rapid surge in the ownership of mobile devices. Likewise, digital identity frameworks allow populations to take part in the digital economy—whether it is sending/receiving cross-border remittances, making online purchases, or using digital government services. Getting payment platforms to “understand” each other and to be “interoperable” is thus vital to ASEAN’s rising digital economies, both within and across national ‘borders’. Achieving regional interoperability requires coordination among multiple stakeholders, a conducive legal and regulatory framework, the support of policymakers and overseers, commercially viable business models, and technological solutions (ideally based on international standards). Only then will populations within and between AMS be able to transact and gain access to new social and economic possibilities.

Figure 3: Pillar 3—Digital Payments & Identities Scores



* Missing data was normalized to ensure consistency in overall scoring and ensure countries were not penalized for missing data.

The indicators in Pillar 3 look at the adoption and use of digital financial services including for banking and other types of financial transactions, as well as whether there are legal frameworks and policies which enable electronic transactions. Pillar 3 also assesses the proportion of national identity adoption as well as the degree to which a digitized identity system is in place. National IDs remain important to allow citizens to prove who they are and allow them to participate in legitimate transactions and the formal financial sector. Digital IDs further enable citizens to verify their

identities digitally and gain access to online services such as e-government services and even to open a bank account without needing to visit a physical bank. The COVID-19 pandemic has accelerated the impetus for banks to allow for remote onboarding which has also expanded the ability for governments to distribute disbursement aids electronically allowing for faster and wider reach while complying with physical and social distancing requirements.

However, as indicators 3.1 and 3.2 in Figure 3 reveal, the adoption of digital financial services is still at a very dismal level in ASEAN for use in banking, and slightly better for all types of transactions—despite the legal frameworks which support electronic transactions being largely present in ASEAN today. This vast gap signifies that more needs to be done, and urgently, to promote awareness of the benefits of digital financial services and encourage usage across the region to bridge this gap. To better address this gap, the ASEAN Working Committee on Financial Inclusion (WC-FINC) is also doing its part to promote digital awareness and knowledge, such as through the development of a Policy Note on Digital Financial Literacy to create a greater understanding among ASEAN members of the concept, coordination, development, and implementation of various digital financial education and literacy initiatives.¹¹

Regionally, a critical enabler is the alignment of national frameworks to drive cross-border demand and incentivize innovation such as the linkage of real-time retail payment systems between Singapore’s PayNow and Thailand’s PromptPay, the first of what is envisaged to be an interconnected network of linkages across ASEAN. The region could also leverage Project Nexus, a recently launched blueprint by the BIS Innovation Hub for building a global payments network through multilateral connectivity of countries’ real-time payment systems, to achieve this outcome.¹² The endorsement of the Implementing Policy Guidelines for the ASEAN Payments Policy Framework for Cross-Border Real-Time Retail Payments, completed at the 16th ASEAN Finance Ministers’ and Central Bank Governors Meeting (AFMGM), as well as the adoption of international standards such as ISO 20022 for both retail and large-value payment systems, will further advance regional payment connectivity and incentivize use through safety and convenience.¹³

Successful implementation and utilization of cross-border digital financial services is critically premised on trust, underpinned by robust personal data protection and security of systems across the region; and as highlighted earlier under Pillar 2, there is still room for improvement for ASEAN.

In terms of national digital identities, ASEAN is performing appreciably well, with the majority of AMS having a digitalized ID system in place, while the proportion of users with national identity cards is also high. ASEAN will, however, want to track the progress of the national digital identities in terms of adoption as well to gauge the results of its implementation. ASEAN will want to continue to ensure its digitalized ID systems are streamlined to consolidate the number and types of IDs into a single

¹¹ AFI (2020) AFI kicks off ASEAN digital financial literacy workshop, <https://www.afi-global.org/newsroom/news/afi-kicks-off-asean-digital-financial-literacy-workshop/>

¹² BIS (2021) Nexus: a blueprint for instant cross-border payments, <https://www.bis.org/about/bisih/topics/fmis/nexus.htm>

¹³ ASEAN (2020) Chairman’s Statement of the 37th ASEAN Summit: Cohesive and Responsive, https://www.asean2020.vn/xem-chi-tiet/asset_publisher/ynfVWm23dDfpd/content/chairman-s-statement-of-the-37th-asean-summit-cohesive-and-responsive

ID—nationally in the first instance but potentially at the regional level as well. This will help to significantly reduce confusion and promote ease of use, and correspondingly adoption, by enabling the use of a single ID for *all* types of transactions.

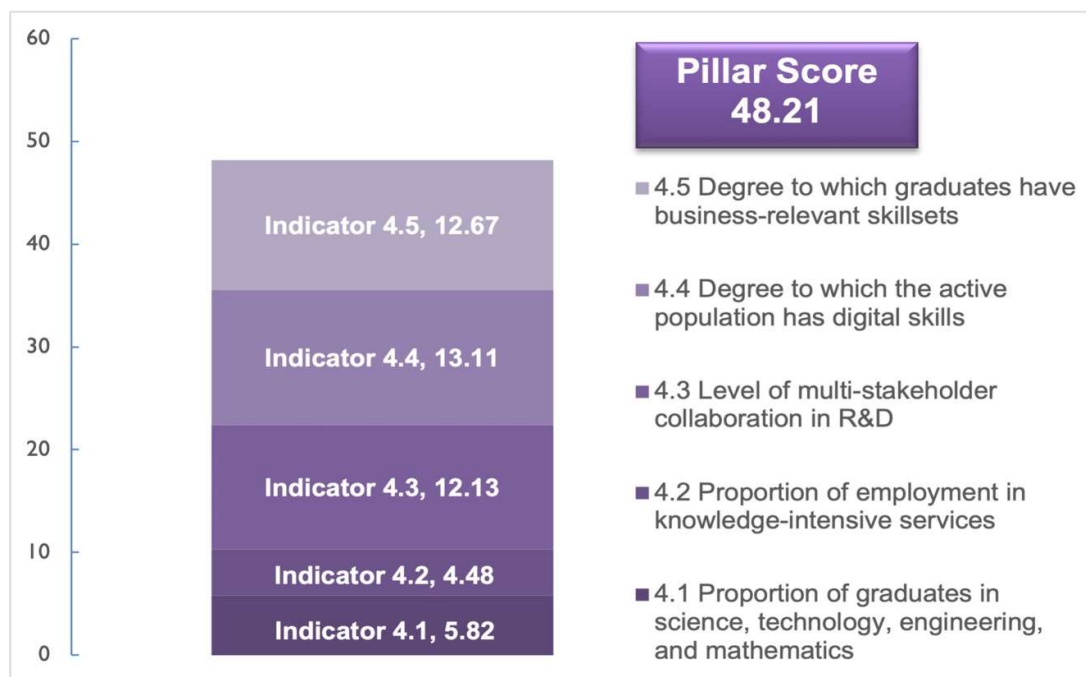
The next stage forward will be enabling citizens to use their national digital IDs to perform more transactions conveniently and safely across both public and private services—an endeavor countries like Indonesia, Malaysia, and Singapore are already embarking on. This will help create a virtuous cycle encouraging more use and the creation of new services.

ADII PILLAR 4—DIGITAL SKILLS & TALENT

Enhancing digital skills and talent across ASEAN

Digital integration requires a skilled and trained workforce that is capable of driving and sustaining the digitalization of key economic sectors. Indeed, the effectiveness of policies that enable the digital economy hinges on populations having the corresponding knowledge and skills. This includes everything from technical skills and competencies to develop and maintain complex ICT systems and platforms, to digital literacy and capacity to use and apply digital technologies to their full potential. From coding courses in schools to training and upskilling programs in workplaces, AMS must prepare citizens and businesses to both contribute to and benefit from fast-evolving digital environments. This includes partnering with the private sector to design relevant digital skills roadmaps and accelerating the roll-out of these programs for prioritized sectors.

Figure 4: Pillar 4—Digital Skills & Talent Scores



* Missing data was normalized to ensure consistency in overall scoring and ensure countries were not penalized for missing data.

ASEAN will require a digitally skilled and trained population to drive and sustain its digital integration efforts particularly as ASEAN continues to develop its Consolidated Strategy on the Fourth Industrial Revolution (4IR) for ASEAN. Pillar 4 assesses the current level of skills and competencies by looking at the proportion of graduates in science, technology, engineering, and mathematics (STEM) as well as the proportion employed in knowledge-intensive services. The level of multi-stakeholder collaboration involved in R&D is also taken into account to measure the degree to which ideas are shared and collaborated upon. Lastly is the measure of digital skills by the population and business-relevant skillsets of graduates.

As the *lowest* performing pillar in the ADII, this is the pillar which ASEAN needs to prioritize urgently. ASEAN needs to bolster efforts in cultivating digital skills and talent, in particular, the promotion of STEM education and ensure that it leads to a proportionate take up of employment in digital-related and knowledge-based industries. While a significant proportion of ASEAN's economy is still involved in manufacturing, trade, and agriculture, technological advancements are now readily available to enhance productivity, cost-efficiencies, and expand market reach and access throughout *all* economic sectors. The risk for ASEAN is that the workforce is not ready to take advantage and integrate the use of digital technologies in these traditional sectors. As illustrated in

Figure 4, the score for the degree of graduates with business-relevant skillsets is more than double the score of STEM graduates which means STEM educational promotion and awareness needs further improvement to keep up with government policies to improve the uptake of STEM courses.

The silver lining is that although the proportion of STEM graduates is low, the active population is already demonstrating sufficient digital skills such as using a computer, basic coding, and digital reading. So, while they may not be formally trained, the gap is being bridged by a combination of self-learning and hands-on experience by users in their everyday life. The level of multi-stakeholder collaboration in R&D also scores highly which indicate good levels of cooperation and collaboration between business, academia, and government. The challenge for ASEAN is rapidly ramping up skills and graduates in STEM to be able to actively participate in these endeavors.

Recognizing the need to urgently upgrade digital skills and capabilities, ASEAN has already expressed its commitment to continue to prepare and develop human resources in ASEAN for the changing world of work to keep pace with digital transformation and in anticipation of 4IR.¹⁴ Efforts such as the Go Digital ASEAN: Digital Skills for ASEAN Rural MSMEs and Underemployed Youth initiative being co-developed by the ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME), The Asia Foundation, and Google as part of the Action Agenda on Digitalisation of ASEAN MSMEs through Capacity Building Initiatives also provide a good foundation for digital capacity development of low-resourced priority groups that should be capitalized upon to ensure a reduction of the digital gap that allows ASEAN be better placed for digital integration.

Acknowledging that there will be a gap between implementation before the results of these efforts become apparent, ASEAN will need to keep close tabs to ensure these human resource development programs conducted both by ASEAN and its private-partnership efforts are conducted effectively, but also exercise patience to allow such policy interventions to properly take effect and remain aligned with industry demands.

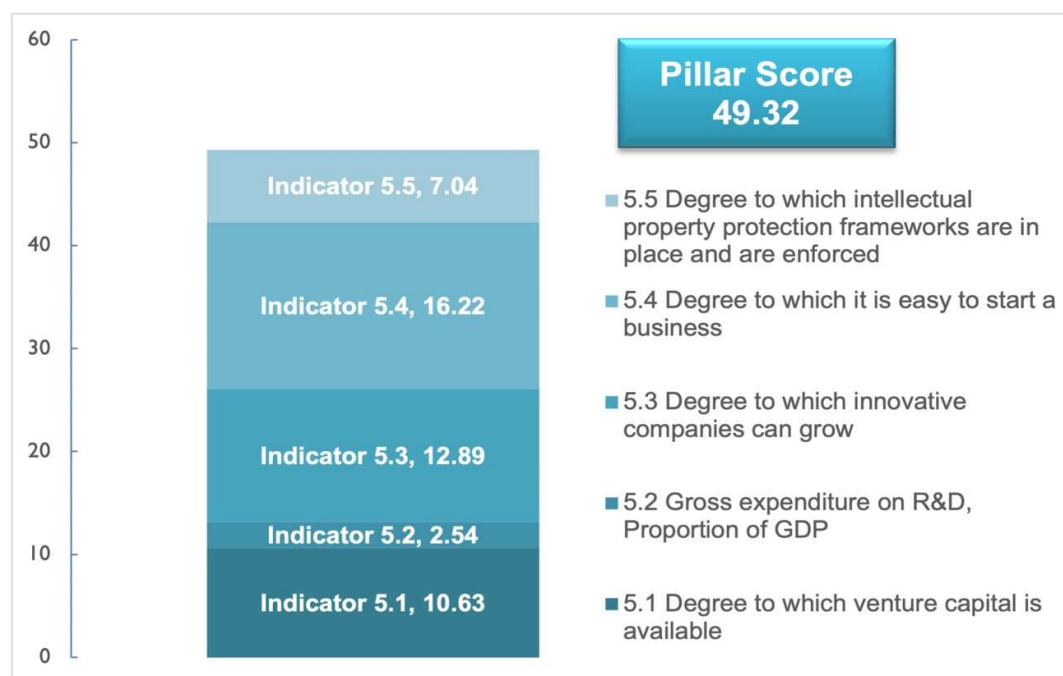
¹⁴ ASEAN, World Bank, Unicef (2019) ASEAN High-level Meeting on Human Capital Development, <https://www.unicef.org/eap/media/4371/file/Human%20capital.pdf>

ADII PILLAR 5—INNOVATION & ENTREPRENEURSHIP

Creating conducive environments and ecosystems to foster innovation and entrepreneurship

Digital integration requires a conducive business environment in which budding digital enterprises can grow into a dynamic, innovative business ecosystem. In a fast-transforming digital world, competitiveness is no longer just about attracting talent and investment, it is also about driving, fostering, and supporting innovation. From start-ups to government bodies, organizations must be able to think critically and solve problems creatively. Together, these abilities contribute to a country's overall resilience, adaptability, and competitiveness. This includes assisting budding digital enterprises as they navigate the business ecosystem and contribute to digital integration—from the ease of starting a business to complying with digital regulations.

Figure 5: Pillar 5—Innovation & Entrepreneurship Scores



* Missing data was normalized to ensure consistency in overall scoring and ensure countries were not penalized for missing data.

Pillar 5 focuses on evaluating how well the environment in ASEAN promotes innovation and entrepreneurship—the availability of venture capital, the proportion of GDP used on R&D, how easy or challenging it is for innovative companies to grow, how easy it is to start a business including the procedures required to start up and formally operate an industrial or commercial business, time and costs to complete these procedures, and the paid-in minimum capital requirement, and how intellectual property creation is encouraged and protection is facilitated via a conducive IP ecosystem in the region.

In the second lowest performing pillar in the ADII, ASEAN scores very inadequately in terms of the proportion of GDP spent on R&D. This illustrates that there are still very few resources prioritized for investing into domestic innovation. At the same

time, intellectual property protection frameworks are also insufficient which restricts the incentives of innovators and investors to create new products and services in ASEAN. While all AMS have set up their respective intellectual property offices and have the necessary intellectual property protection legislations in place, more can be done to protect copyrights related to digital use such as web hosting, streaming, and linking; enact digital rights management legislation; and improve transparency and coordination on trade-related intellectual property infringement and enforcement efforts.

While AMS are in the midst of implementing the ASEAN Intellectual Property Rights Action Plan 2016-2025, they need to review how they may increase intellectual property resources dedicated to digital creation and innovation.¹⁵ The endorsement of the ASEAN Handbook on IP Enforcement at the 61st ASEAN Working Group on Intellectual Property Cooperation (AWGIPC) Meeting, and publication of the Business Guide to Intellectual Property (IP) Institutions, Laws and Filing Process and the Handbook on IP Commercialisation under the ASEAN-Australia-New Zealand Free Trade Area (AANZFTA) Economic Cooperation Support Program (AECSP) are steps in the right direction, however resources also need to be channeled towards more active promotion.¹⁶ In this regard, the AWGIPC has taken efforts to regularly share IP-related information and resources via the ASEAN IP Portal to promote IP awareness.¹⁷

On a positive note, it remains relatively easy to start a business in ASEAN, with high growth potential for innovative companies and where venture capital funding is fairly available. The challenge therein for AMS is to be able to bridge this gap and channel more resources to promote innovation and entrepreneurship by dedicating more funding to R&D and to enhance intellectual property frameworks so businesses and innovators are better incentivized to take advantage of the conducive business environment. On this note, the AWGIPC promotes usage of the ASEAN Patent Examination Cooperation (ASPEC), which is the first regional patent work-sharing program among nine participating AMS IP Offices to support businesses seeking IP protection in the region.¹⁸ The program allows applicants in participating countries to obtain corresponding patents faster and more efficiently by sharing the patent search and examination results. To keep abreast with the rapid technological advancements and to better serve the needs of the business and innovation communities, the ASPEC program has been expanded to include the ASPEC Acceleration for Industry 4.0 Infrastructure and Manufacturing (ASPEC AIM) and Patent Cooperation Treaty-ASPEC (PCT-ASPEC) service offerings.

The pandemic has resulted in an even greater push for digital cooperation amongst AMS. In support of the ASEAN Comprehensive Recovery Framework (ACRF), ASEAN should continue to develop digital platforms and infrastructure to enhance the delivery of regional IP services and resources via a centralized digital portal (for

¹⁵ ASEAN, ASEAN IPR Action Plan 2016-2025, <https://www.aseanip.org/Resources/ASEAN-IPR-Action-Plan-2016-2025>

¹⁶ ASEAN (2020) ASEAN Intellectual Property Rights Enforcement Handbook, https://www.aseanip.org/Portals/0/ASEAN%20IPR%20Enforcement%20Handbook_with%20ISBN%20and%20Logo%20Final.pdf; ASEAN (2019) Business Guide to IP Institutions, Laws and Filing Processes In AANZFTA Parties, [https://www.aseanip.org/Portals/0/IP-Final-Guide-Dec-6%20\(2019\).pdf](https://www.aseanip.org/Portals/0/IP-Final-Guide-Dec-6%20(2019).pdf); ASEAN (2019) Handbook on IP Commercialisation: Strategies for Managing IPRs & Maximising Value, [https://www.aseanip.org/Portals/0/Handbook-IP-Commercialization-Strategies-for-Managing-IPRs%20\(2019\).pdf](https://www.aseanip.org/Portals/0/Handbook-IP-Commercialization-Strategies-for-Managing-IPRs%20(2019).pdf)

¹⁷ ASEAN IP Portal, <https://www.aseanip.org>

¹⁸ The participating AMS IP Offices are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam.

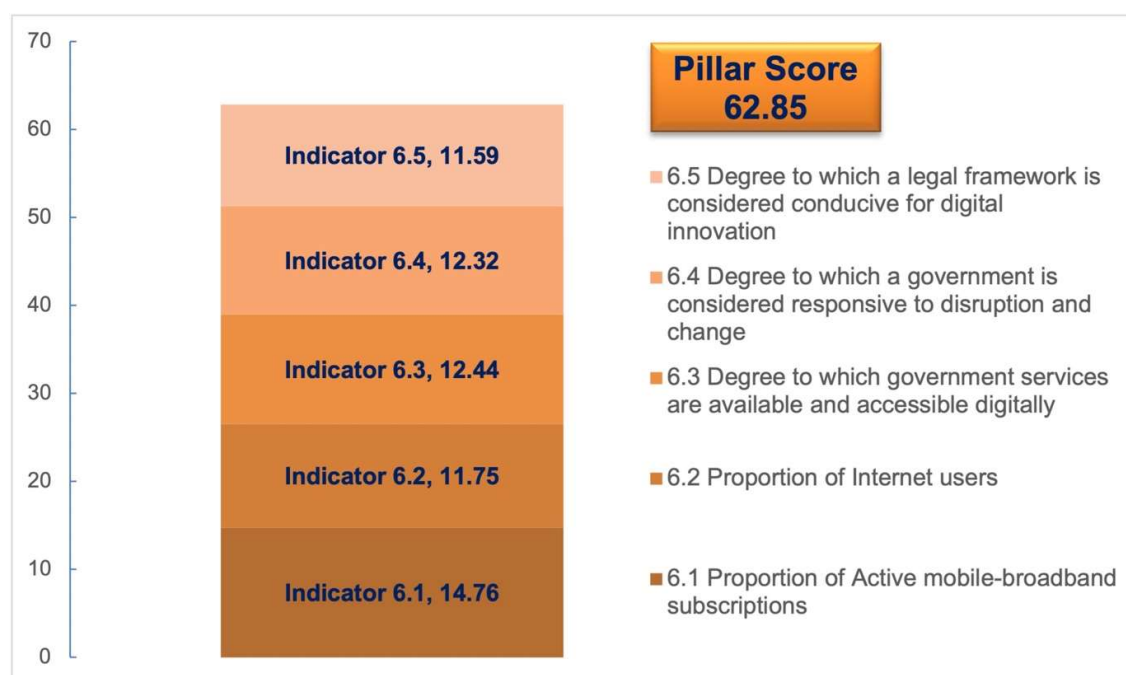
example, leveraging the existing ASEAN IP Portal) to enhance information sharing and collaboration across ASEAN.

ADII PILLAR 6—INSTITUTIONAL & INFRASTRUCTURAL READINESS

Readying to drive and coordinate actions for digital integration

Digital integration requires AMS to be digitally ready—both in terms of availability of digital infrastructure and adoption of technology across the public sector (regulators, policymakers, institutions). Indeed, digitally enabled economies have both the material and the organizational ability to drive and sustain digital transformation at all levels of society. Quantifying this ability entails observing the quality of digital infrastructure and the digital readiness of institutions. Together, these elements are indicative of AMS' capacity to effectively enable the coordination of public- and private-sector initiatives, as well as their openness to driving cooperation across regional/global initiatives.

Figure 6: Pillar 6—Institutional & Infrastructural Readiness Scores



* Missing data was normalized to ensure consistency in overall scoring and ensure countries were not penalized for missing data.

Pillar 6 assesses the availability of digital infrastructure and the adoption of technology across public sector institutions to drive and coordinate digital integration in ASEAN. It looks at the proportion of active mobile-broadband subscribers and Internet users across ASEAN, as well as the availability and accessibility of government services digitally. It also evaluates ASEAN governments' responsiveness to disruption and change, and whether legal frameworks are conducive for digital innovation.

Pillar 6 is the best performing pillar for ASEAN in the ADII, and although it does not precisely measure the ability of AMS to coordinate actions, it does evaluate the readiness of AMS for digital integration—a precursor for the effective prioritization, coordination, and tracking across different objectives and timelines of the DIF.

As

Figure 6 illustrates, there is a very active mobile broadband user base in ASEAN, which is a testament to the efforts in expanding both mobile 3G and 4G coverage across ASEAN, and dynamic mobile population. However, good coverage does not mean universal coverage, and there remain segments of the population which are unconnected to the Internet or lack the necessary skills to effectively participate in a digital economy. Acknowledging previous and ongoing efforts by ADGSOM in developing the ASEAN Framework on Universal Service Obligation 2.0 and working with AMS to map out the priority locations requiring broadband deployment and private sector participation across the region, it is imperative that ASEAN and AMS continue enhancing efforts towards universal coverage and inclusion to ensure everyone in ASEAN is digitally included and able to participate in the digital economy. At the same time, many AMS are already looking towards 5G deployment, which creates a real risk of exacerbating the digital divide, widening social and economic inequality between digital economy participants and non-participants.

The efforts of AMS in rolling out e-government services appear to be making progress and faring reasonably well as shown by indicator 6.3. However, there is still room for improvement, and it remains important for AMS governments to lead by example and demonstrate both the importance of digital transformation and digital integration, and how to go about doing so. At the same time, governments need to continue to adapt to the pace of technological advancement to both be adopters, as well as enablers of innovation.

A conservative approach from ASEAN is still evident from the lowest score for indicator 6.5, the degree to which a legal framework is considered conducive for digital innovation. One means of better fostering experimentation and risk-taking is for AMS to expand or introduce the use of regulatory sandboxes (apart from fintech) which can offer a balance of promoting innovation and experimenting in a secure environment. This allows for start-ups and new entrants to innovate more freely while also providing assurance that new services are safe before being commercially launched. At the same time, existing regulations and legislation need to be reviewed if they remain fit for the ever-growing digital economy, and if not, how must they be updated, or where new flexible regulations are necessary to be enacted.

The next step for ASEAN after bolstering its institutional and digital infrastructure is to set quantifiable targets and timelines for its domestic and regional digital integration implementation alongside a monitoring mechanism to evaluate and assess progress of ASEAN's initiatives. While the ADII provides a high-level and broad means for measuring digital integration across ASEAN, it also remains vital for individual AMS to assess their own domestic positions to invoke meaningful change and be ready, and willing, to coordinate regionally.

4 CONCLUSION AND RECOMMENDATIONS

CONCLUSION

The first edition of the ADII offers a starting point for ASEAN to assess its current digital integration efforts. As the ADII highlights, ASEAN has been making good progress in several areas in terms of digital integration, particularly in fostering institutional and infrastructural support to digital transformation and enhancing coordination both domestically and regionally. The relatively favorable performance in the data protection and cybersecurity scores is also an important finding which nevertheless illustrates the need to bridge the vast gap in terms of the technical aspects of cybersecurity skills across ASEAN. Of greatest urgency, however, is the need to prioritize digital skills and human capacity development which threaten to impede ASEAN's digital integration efforts if left unaddressed.

With the impact of the COVID-19 pandemic still unfolding, AMS will need to ensure their efforts towards digital integration and transformation are not disrupted but in fact fortified and accelerated to enhance inclusive recovery efforts given the renewed sense of urgency in accelerating digitalization as a means of building resilience and boosting economic competitiveness. AMS need to continue to build on the efforts laid out in the ACRF and capitalize on the momentum to push for greater cooperation and alignment in their digital transformation and integration efforts.

However, ASEAN's digital integration progress can only be effectively tracked when there is regular monitoring and assessment, such as through an annual ADII published to track and compare scores from previous years. One limitation of the current edition of the ADII is that it relies on the efforts and regularity of third-party sources for data and updates. As it stands, some of these existing sources leveraged have data gaps as they may not cover all 10 AMS. Through development and discussions with AMS, these data gaps and the importance of measuring and tracking data have been brought to light, with AMS sharing their efforts to conduct their own studies using similar methodologies to supplement data gaps. At the same time, sectoral bodies such as the WC-FINC have developed their own surveys on financial inclusion and digital financial service usage which can supplement or complement the findings of future iterations of the ADII.

Further, while the ADII does offer AMS a general glimpse of how ASEAN fares in terms of digital integration, there remains limitations to holistically measuring ASEAN's efforts and progress. Many of the findings presented in the ADII are the results of AMS efforts throughout the years, some of which began before the DIF was developed. And while the ADII may reveal gaps and areas for AMS to prioritize and enhance efforts, it takes time for new policies to be implemented and take effect, and for the resulting impacts to be properly measured and quantified. It is critical that regular and sustained assessments of digital integration are conducted, to ensure consistency and continuity in the measurement of policy impacts. To further provide granularity and accuracy of assessment, quantifiable targets and timelines should be identified for all ASEAN initiatives, possibly with a central, open monitoring mechanism established in the near future.

The indicators used in the ADII were all chosen based on the six criteria of relevance, accessibility, coverage, timeliness, consistency, and transparency. However, they may not always be the most suitable indicators in assessing ASEAN's digital integration efforts or the results of ASEAN's regional initiatives over time. Technological advancements continue to surge ahead, with organizations around the world finding new means and measures to assess these changes. The ADII has been designed as a living index that ASEAN should regularly revisit to assess: (i) how global and regional trends are impacting digital integration efforts, and (ii) how best to adapt to these changes in ASEAN.

To ensure the ADII remains accurately representative of AMS' evolving needs and priorities, the ACCEC meetings will continue to provide an important platform to regularly highlight key issues or trends that may impact digital integration and discuss how they should be reflected in future iterations of the ADII.

RECOMMENDATIONS

There is no single common indicator to be singled-out as the least performing indicator across all AMS, neither is there an indicator in which AMS commonly perform the best. This is demonstrative of the varying levels of development across ASEAN, and how different AMS excel across different areas. Even so, the recommendations provided below identify areas where all AMS need to continue to act and build on the existing digital integration and transformation momentum, and if necessary, devote more resources and prioritization to. It will also be useful for AMS to conduct their own individual comprehensive self-assessments to take into consideration their own domestic strengths and weaknesses to best figure out how to dedicate their resources accordingly.

Focus Areas	Recommendations	Priorities
Pillar 1: Digital Trade & Logistics	<ol style="list-style-type: none"> Better enable digital trade and logistics, to promote interoperable trade across ASEAN: Enhance the use of digital technologies across trade and custom processes and to ensure relevant harmonized standards are available to support market integration, building upon the “ASEAN Guidelines for Harmonization of Standards”, to reduce costs and improve trade process efficiencies, particularly as part of the ASW. Enhance collaborations with private sector to align infrastructure and logistics 	<ul style="list-style-type: none"> Indicator 1.1: Align priority areas of digital trade and associated sectors to enable better prioritization of resources. Indicator 1.3: Promote and ensure relevant harmonized standards are available to support market integration in the area of digital trade. Indicator 1.4: Increase collaboration across domestic ministries, facilitating digital planning ministries' coordination with trade-related and infrastructure planning

Focus Areas	Recommendations	Priorities
	<p>deployment with digital trade targets: Plan for digital trade holistically including the deployments of physical infrastructure and integration of logistical networks through closer cooperation with the private sector.</p>	<p>departments, and coordinating digital trade implementation with the necessary supporting infrastructure.</p>
<p>Pillar 2: Data Protection & Cybersecurity</p>	<p>3. Foster a safe, trusted, and compatible digital space through greater awareness and capacity-building: Review and update their data protection frameworks to ensure they remain suitable for the digital economy, and to do so in open, collaborative manners through consultation across different stakeholder groups.</p> <p>4. Cooperation is integral to creating a resilient regional cyberspace: Continue to affirm and commit to sharing information and helping one another in combating cyber threats while implementing a coordinated regional approach towards enhancing cybersecurity.</p>	<ul style="list-style-type: none"> • Indicator 2.3: Articulate cybersecurity strategies with clear implementation plans on enhancing human capacity, technical ability, and acquiring assistance from private sector. • Indicator 2.4: Dedicate more resources to improve technical cybersecurity capabilities across ASEAN for consumers, businesses, and governments, to ensure users have the necessary and adequate skills to manage and protect against cyber risks. • Indicator 2.5: Continue to promote and foster cooperation on cybersecurity and collaborate with international or transnational agencies on the crackdown of global cyber threats.
<p>Pillar 3: Digital Payments & Identities</p>	<p>5. Integrate and facilitate use of national digital ID programs to transact online: Develop and deploy national digital ID programs which are interoperable across public and private sector transactions, and across ASEAN, to promote use and adoption. This will also help reduce confusion with users only needing to rely on their national digital IDs to conduct online transactions.</p> <p>6. Explore the development of an interoperable ASEAN digital</p>	<ul style="list-style-type: none"> • Indicator 3.1: Promote mobile banking to enhance financial inclusion and using tiered KYC to allow more flexibility when onboarding smaller, lower risk participants. • Indicator 3.2: Pursue linkages of AMS' real-time retail payment systems in order to establish ASEAN-wide payments connectivity, with government taking the lead in enabling and subsidizing use.

Focus Areas	Recommendations	Priorities
	<p>platforms, including establishing a network of interconnected real-time retail payment systems across ASEAN: Expand the number of cross-border linkages between real-time retail payment systems of AMS to empower individuals and businesses to conduct swift, seamless, and secure cross-border transactions at low cost, using convenient proxies such as mobile phone numbers, business registration numbers, and potentially national digital IDs.</p>	<ul style="list-style-type: none"> • Indicator 3.3: Coordinate and complement the use of national digital IDs for e-government services with more efficient (faster results) and subsidized (cheaper) transactions when using digital payments to promote use.
<p>Pillar 4: Digital Skills & Talent</p>	<p>7. Prioritize development of digital skills and capabilities, and formal employment opportunities that leverage digitalization: Direct and prioritize educational resources towards STEM courses and ensure equal learning opportunities for all to ensure digital skill programs are extended beyond urban city centers and better enable the upskilling of resources in rural areas.</p> <p>8. Collaborate with private sector to better identify digital skillsets which are in demand: Work with private sector to better develop the necessary labor policies to competently address the digital skills gap and identify the required skillsets for domestic market demands.</p>	<ul style="list-style-type: none"> • Indicator 4.1: Review employment policies, as necessary, to promote the use of digital technologies and foster job creation for digitally skilled graduates. • Indicator 4.2: Collaborate with private sector to foster the necessary supply of ICT skills through internships, on-the-job training, and reskilling opportunities. • Indicator 4.3: Promote multi-stakeholder participation involving academia, private sector, and public sector in R&D efforts with government taking the lead to identify priority digital sectors.
<p>Pillar 5: Innovation & Entrepreneurship</p>	<p>9. Establish a conducive ecosystem for the creation and innovation of new goods and services: Cultivate a more adventurous and creative approach through a collaborative ecosystem that has more resources deployed towards R&D efforts.</p>	<ul style="list-style-type: none"> • Indicator 5.2: Foster close collaborations between government, academia, and industry to develop unique and relevant uses cases for ASEAN, particularly in anticipation of Industrial Revolution 4.0 using 5G, artificial intelligence, and

Focus Areas	Recommendations	Priorities
	<p>10. Ensure emerging digital economy regulations do not unnecessarily restrict the ability of SMEs to expand and grow: To take into consideration the effect of any planned digital economy regulation on SMEs to ensure such frameworks are fit-for-purpose and do not inadvertently affect or discourage SMEs from participating in the digital economy.</p>	<p>others. Government needs to encourage and promote investment in these identified use cases.</p> <ul style="list-style-type: none"> • Indicator 5.5: Bolster intellectual property frameworks and enforcement to better incentivize and protect innovators by enhancing transparency and coordination across intellectual property agencies and law enforcement efforts.
Pillar 6: Institutional & Infrastructural Readiness	<p>11. Capitalize on ASEAN’s institutional and infrastructure readiness to better coordinate digital efforts across region: Progress towards the implementation of coordinated digital integration efforts across ASEAN, even while there remains room for improvement in AMS institutional and infrastructure efforts.</p>	<ul style="list-style-type: none"> • Indicators 6.4 and 6.5: Better alignment and enablement of data transfers flows alongside the ASEAN Cross-border Data Flows Mechanism and the ASEAN Personal Data Protection Framework. • Indicators 6.4 and 6.5: Align approaches towards emerging digital economy issues, such as digital platform regulation.
Coordination and Alignment on Digital Integration Efforts across ASEAN Bodies/Groups	<p>12. Closer collaboration across ASEAN Sectoral Bodies and Working Groups to avoid duplication of resources and implement central mechanism to track and assess goals and objectives across all ASEAN projects: Streamline approaches in digital integration efforts cutting across all sectors of the economy to avoid overlap and optimize the use of limited resources.</p> <p>13. Explore engaging dialogue partners on collaborative digital programs including the sharing of best practices and interoperable digital trade: Identify priority sectors to engage and learn from dialogue partners to</p>	<ul style="list-style-type: none"> • A key priority is the efforts towards economic recovery following the aftereffects of the COVID-19 pandemic and aligning of projects with the ASEAN Comprehensive Recovery Framework (ACRF). • Conduct holistic review of existing ASEAN initiatives to streamline resources and initiatives to better utilize resources for digital integration and COVID-19 recovery. • A central means of tracking and assessing project implementation and objectives should be collectively explored by the various sectoral bodies

Focus Areas	Recommendations	Priorities
	<p>improve ASEAN digital integration both within ASEAN and cooperatively with international partners.</p>	<p>and working groups as it is also critical in determining leakages and identifying bottlenecks and areas which may require higher prioritization in the long-run. This monitoring and assessment mechanism can be operationalized through an interactive dashboard.</p>
<p>ASEAN Statistical Measurement Capability</p>	<p>14. Expand ASEAN Community Statistical System’s (ACSS) continued efforts to align key statistical areas: Empower the ACSS Committee to take the lead in developing and coordinating between AMS on how to delineate and measure their digital economies accordingly.</p>	<ul style="list-style-type: none"> • While this first edition of the ADII has relied on third-party databases for data, ASEAN may want to look to develop their own measurement tools which could be more suitable for ASEAN digital integration priorities, and to help plug any data gaps.

ANNEX A: COUNTRY FINDINGS

This section explores individual AMS findings, looking at their strengths and weaknesses based on their ADII scores, and highlighting some examples of good or more prominent initiatives that they have implemented, or are looking to implement, which will boost their digital integration efforts under the various Pillars. This section also indicates where there were data gaps identified through the development of the ADII and recognizes the efforts taken by AMS to plug these gaps, either in this or future iterations of the ADII.

BRUNEI DARUSSALAM

Table 5: Brunei Darussalam Scores







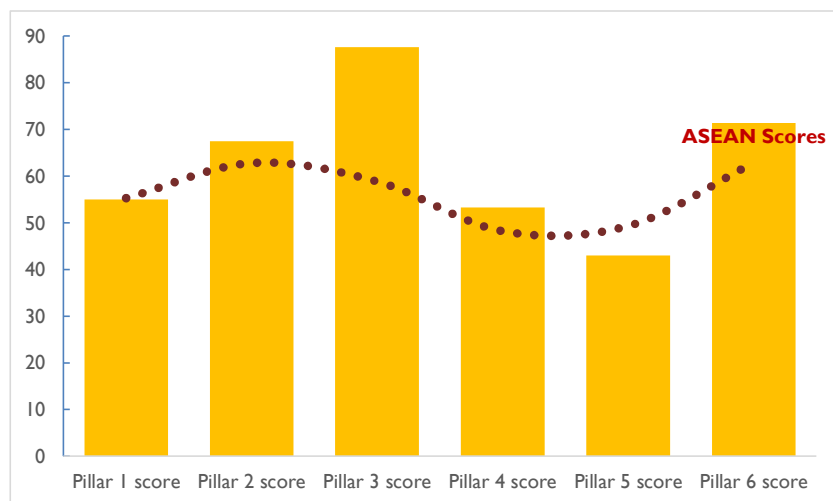
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
Brunei Darussalam Scores	54.97	67.46	87.56	53.31	42.99	71.42
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 7: Brunei Darussalam and ASEAN Scores



Brunei Darussalam's digital integration fares admirably well with four Pillars scoring above the regional ADII scores.

The best performing pillar for Brunei Darussalam is in Pillar 3 on Digital Payments and Identities, where although data for Brunei Darussalam is not included in the World Bank's Global Financial Development (Findex) Database report, supplementary data provided by the Department of Economic Planning & Statistics demonstrated a

significantly high level of national ID adoption in Brunei Darussalam.

There were, however, some data gaps on measuring digital banking and transaction use. Acknowledging the limitations of not being able to adequately track and measure financial inclusion and, transactions comparatively based on the same methodology adopted in the Findex, the Brunei Darussalam Central Bank (BDCB) is currently assessing and evaluating with other relevant government agencies on these issues in Brunei Darussalam more accurately. The 2018 E-commerce Survey performed by the Authority for Info-communications Technology Industry (AITI) nevertheless reveals high degrees of e-commerce and digital payments usage with 84% of respondents indicating the use of a credit or debit card for online purchases followed by 36% using online bank transfers and 27% using e-wallets.¹⁹

¹⁹ AITI (2018) E-commerce Survey for Consumers in Brunei Darussalam 2018 Report, <https://www.aiti.gov.bn/Shared%20Documents/ECOMM%20Survey%20Report%20v14.pdf>

The lowest performing pillar is Pillar 5 on Innovation and Entrepreneurship which is likely to see progress within the next couple of years where Brunei Darussalam has, on 4 June 2020 launched its first Digital Economy Masterplan 2025 which outlines key strategic objectives for Brunei Darussalam to achieve its goals and support the objectives of the Nation's aspirations, the Wawasan 2035.²⁰ The Digital Economy Masterplan 2025 has identified four Strategic Thrusts, namely Industry Digitalization, Government Digitalization, A thriving Digital Industry and Manpower and Talent Development. In addition, Brunei Darussalam has also established the Council for Research and Advancement of Technology and Science (CREATES). The establishment of CREATES will help to support the development and growth of Science, Technology and Innovation activities in Brunei Darussalam, driving economic and social development towards realizing the vision of Wawasan 2035 to have educated and highly skilled people in high quality of life and dynamic and sustainable economy.

Brunei Darussalam's Digital Trade and Logistics under Pillar 1 still has room for improvement, and although Brunei Darussalam has already accepted the use of electronic signatures since 2001 with the passage of the Electronic Transaction Act, there continues to be a lack of official direction on the use of international trade standards and best practices related to trade.

Under Pillar 2 on Cybersecurity, Brunei Darussalam has established the Cyber Security Brunei (CSB) as the national cyber security agency since 1 August 2020, where CSB is serving as the administrator that monitors and coordinates national efforts in addressing cyber security threats and cyber-crime as well as aiding or assisting the government in formulating policies and legislation related to Cyber Security and Cyber-Crime.²¹ CSB has three cyber security services namely—Brunei Computer Emergency Response Team (BruCERT);²² National Digital Forensic Laboratory;²³ and the Cyber Watch Centre.²⁴ The establishment of the CSB is in line with the Digital Economy Masterplan 2025 where cybersecurity has been identified as one of the Strategic Enablers.²⁵ From 20 May 2021 to 23 June 2021, AITI issued a Public Consultation Paper to seek feedback on the proposed Personal Data Protection Order (PDPO) for the private sector in Brunei Darussalam.²⁶

In terms of Pillar 3 and Digital Payments, following up on the launch of its financial regulatory sandbox in 2017 and the establishment of the Fintech Unit, BDCB launched the Digital Payment Roadmap for Brunei Darussalam 2019-2025 in 2019 which focuses on balancing regulation and innovation, adoption of an open digital payment, and public awareness and education.²⁷ A National Payment Hub will also be developed as part of the initiatives under the roadmap.²⁸ The roadmap is in line with the strategies presented in the Financial Sector Blueprint 2016-2025 and the goals of Wawasan 2035. These initiatives have paved way to make options for digital payments—online and mobile banking, QR codes mobile payments, e-commerce—more available in the country and has demonstrated Brunei Darussalam's commitment to advancing financial innovation and digital finance.

Under Pillar 4 which looks at Digital Skills development, the Ministry of Education focused on enhancing the digital readiness of the teachers and school Leaders, digital competencies for students, as well as ensuring equitable access to digital learning. In progressing towards the acquisition of 4th Industrial Revolution skills, the Ministry's Science, Technology and Environmental Partnership (STEP) Centre provides a value added platform for schools and assists teachers in encouraging and increasing the involvement of students in quality STEAM (Science, Technology, Engineering, Arts and Mathematics)

²⁰ MTIC (2020), <http://www.mtic.gov.bn/Lists/News/New/ItemDisplay.aspx?ID=714>

²¹ Cyber Security Brunei, <https://www.csb.gov.bn/about>

²² Cyber Security Brunei, BruCERT, <https://www.csb.gov.bn/brucert>

²³ Cyber Security Brunei, National Digital Forensic Laboratory, <https://www.csb.gov.bn/national-digital-forensics-laboratory>

²⁴ Cyber Security Brunei, Cyber Watch Centre, <https://www.csb.gov.bn/about-cyberwatch-centre>

²⁵ Digital Economy Masterplan, <http://www.mtic.gov.bn/DE2025/documents/Digital%20Economy%20Masterplan%202025.pdf>

²⁶ AITI (2021) Public Consultation Paper On Personal Data Protection For The Private Sector In Brunei Darussalam, https://www.aiti.gov.bn/SiteCollectionDocuments/Event/PCP_PersonalDataProtectionPrivateSector_20052021_final2.pdf

²⁷ AMBD (2018) Digital Payment Roadmap for Brunei Darussalam 2019-2025, <https://www.ambd.gov.bn/Site%20Assets%20%20Slider%20Home%20Page/DPR%202019-2025.pdf>

²⁸ BBYB (2020), <http://borneobulletinyearbook.com.bn/visitor-information-2/>

activities and programs.²⁹ The Ministry continues encouraging students to participate in programs and activities that will further expose their interest and understanding in STEAM.³⁰

Brunei Darussalam also scores well in the Institutional and Infrastructural Readiness Pillar 6 which acknowledges the efforts Brunei Darussalam has made in its digital economy plans, such as the Wawasan 2035 and National Development Plan which lay the foundation for Brunei Darussalam's digital economy.³¹ Since 13 July 2011, the e-Darussalam account, a single nationwide digital authentication key for access to multiple online services provided by the government, have been made available for citizens.³²

Brunei Darussalam continues to progress its journey towards digitalization with the launch of the Digital Economy Masterplan 2025, where it continues to lead by example by taking a whole-of-nation approach with full engagement and participation from the government, industry players, and society, as key drivers to propel Brunei Darussalam to the status of a Smart Nation. The Strategic Enablers of the Digital Economy Masterplan 2025 are the Smart Nation Platform, Digital Data Policy and Governance Framework, Policy and Regulatory Framework in line with innovation and technological trends, Cybersecurity, Research and Development and Innovation in Digital Technologies.³³

²⁹ Brunei Darussalam Ministry of Education,

[http://www.moe.gov.bn/SitePages/Science%20Technology%20Environment%20Partnership%20Centre%20\(STEP%20Centre\).aspx](http://www.moe.gov.bn/SitePages/Science%20Technology%20Environment%20Partnership%20Centre%20(STEP%20Centre).aspx)

³⁰ University Technology Brunei, <http://www.utb.edu.bn/early-exposure-to-stem/>

³¹ Wawasan Brunei 2035, <http://www.wawasanbrunei.gov.bn/en/SitePages/faq.aspx>

³² Pelita Brunei, <http://www.pelitabrunei.gov.bn/Arkib%20Dokumen/2011/Julai/PB160711.pdf>

³³ Digital Economy Masterplan, <http://www.mtic.gov.bn/DE2025/documents/Digital%20Economy%20Masterplan%202025.pdf>

CAMBODIA

Table 6: Cambodia Scores







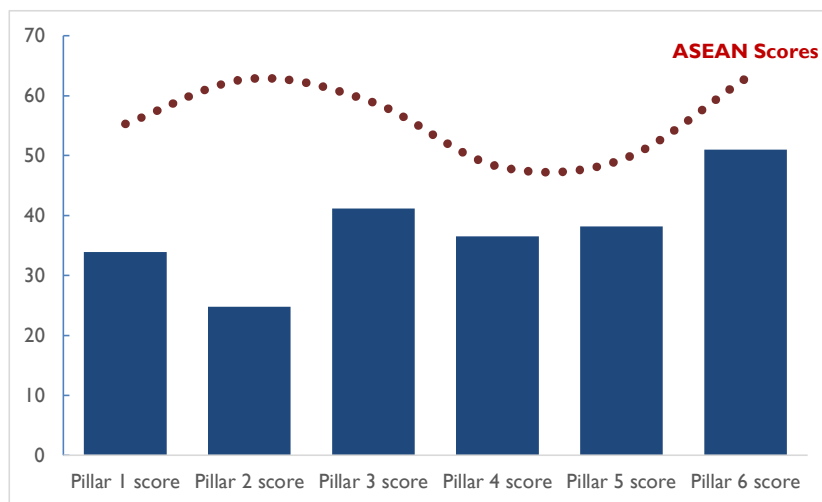
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
Cambodia Scores	33.91	24.76	41.20	36.56	38.19	50.97
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 8: Cambodia and ASEAN Scores



Cambodia's digital integration has significant room for improvement to catch-up with the regional digital integration efforts.

While Cambodia scores the highest in Pillar 6 on Institutional and Infrastructural Readiness, it trails behind the region's average and suggest a need for collective improvements across its efforts. These include promoting and deploying digital infrastructure nationwide and promoting the availability and use of online services

with the government leading by example. The Single Portal which has already onboarded six ministries and state institutions allows for more efficient services, such as e-business registrations leading to shorter timeframes for acceptance are a step in the right direction, and the government is planning to continue to incorporate more departments into the system.³⁴

Cambodia will want to bolster efforts in particular on Pillar 2 on Data Protection and Cybersecurity, which represents it lowest faring pillar. The Draft law on Cybersecurity is currently being developed by the Ministry of Post and Telecommunications (MPTC) and will pave the way to better manage cybersecurity risks of Critical Information Infrastructure (CII) while the Personal Data Protection Law is also next on the agenda. The long overdue Cybercrime Law may help bolster its legislative capabilities but will require more consultations with industry and other stakeholders to be effective and representative of the industry's and citizen's concerns. At the same time, and what is a common challenge for all AMS, will be in working with industry to better develop technical capabilities in cybersecurity.

Further encouraging developments are the approval of the E-commerce Law and the Consumer Protection Law in 2019.³⁵ The E-commerce Law will regulate all types of e-transactions in Cambodia including the use

³⁴ The Phnom Penh Post (2020) Companies flock to Single Portal registration platform, <https://phnompenhpost.com/business/companies-flock-single-portal-registration-platform>

³⁵ Tilleke & Gibbins (2019) Cambodia Enacts a New E-commerce Law and a Consumer Protection Law, <https://www.tilleke.com/resources/cambodia-enacts-new-e-commerce-law-and-consumer-protection-law>

of electronic communications, signatures, records, and evidence.³⁶ The E-commerce Law also contains data protection and cybersecurity requirements on all e-commerce businesses.

The sole data gap for Cambodia was for indicator 5.5 relating to the “Degree to which intellectual property protection frameworks are in place and are enforced”. Through the assistance of Cambodia this data gap was addressed through the sharing of relevant legislation and efforts to determine Cambodia’s score. The future of intellectual property development in Cambodia looks encouraging where Cambodia has been boosting its efforts to promote the importance of intellectual property, particularly on the National Policy on Promotion of One Village One product to encourage SMEs and startups to innovate in Cambodia and using their province unique offerings to develop a geographical indication as a comparative advantage.³⁷

In terms of Digital Trade under Pillar 1, the General Department of Customs and Excise of Cambodia (GDCE) has been undertaking various reform and modernization programs to improve its operational ability and better facilitate trade including introducing the use of automated customs processing system Automated System on Customs Data (ASYCUDA) since 2008 to facilitate export, import, and goods in transit which has now been implemented at all ports and checkpoints.³⁸ The GDCE launched the Cambodia National Single Window (NSW) in 2019 with the objectives of linking the ASYCUDA World System with the NSW to streamline trade.³⁹ GDCE is also looking at the use of e-customs technologies to simplify and automate international trade procedures to expedite the movement, clearance, and release of goods, including goods in transit.⁴⁰

Under Pillar 3 on Digital Payments, the launch of the National Bank of Cambodia blockchain-based, peer-to-peer payment and money transfer platform called Project Bakong is also promising for the use of digital financial services.⁴¹ Supporting the use of instant mobile payments, QR code use, and digital wallets, more than 20 financial institutions have already partnered to participate in the system, with many more expected to join.

More can be done to improve human capacity and digital literacy under Pillar 4 where the Cambodia Academy of Digital Technology (CADT) under the MPTC) has been set up to provide formal training, research and education on ICT in Cambodia. The CADT also leads the country’s R&D efforts in ICT technologies works to coordinate between public and private industry to help empower SMEs.

Cambodia’s Innovation and Entrepreneurship efforts under Pillar 5 appear to be largely led by industry, such as organizations like Smart Axiata which regularly partners with the government on events such as the Digital Cambodia event to raise awareness and build human capacity on ICTs. Smart Axiata also runs the Smart Axiata Digital Innovation Fund (SADIF) which is a USD5 million venture capital fund to help spur the digital ecosystem in Cambodia.⁴²

³⁶ Lexology (2020) What Cambodia’s New Law on Electronic Commerce Means for Business, <https://www.lexology.com/library/detail.aspx?g=442bd243-f5af-4002-a3b4-b4d8c4e24f39>

³⁷ OVOP National Committee Cambodia, <https://www.facebook.com/OVOPnationalcommittee/cambodia/>

³⁸ Sok Kha (2019) Digital Trade Facilitation in Cambodia: Progress and Future Priority, <https://sokkha.com/2019/11/12/digital-trade-facilitation-in-cambodia-progress-and-future-priority/>

³⁹ GDCE (2020) National Single Window, <http://www.customs.gov.kh/trade-facilitation/national-single-window/>

⁴⁰ Sok Kha (2019) Digital Trade Facilitation in Cambodia: Progress and Future Priority, <https://sokkha.com/2019/11/12/digital-trade-facilitation-in-cambodia-progress-and-future-priority/>

⁴¹ Coindesk (2020) Cambodia Central Bank Launches Bakong Blockchain Payments System, <https://www.coindesk.com/cambodia-launches-bakong-blockchain-payments>

⁴² Smart, What is SADIF?, <https://sadif.com.kh/>

INDONESIA

Table 7: Indonesia’s Scores







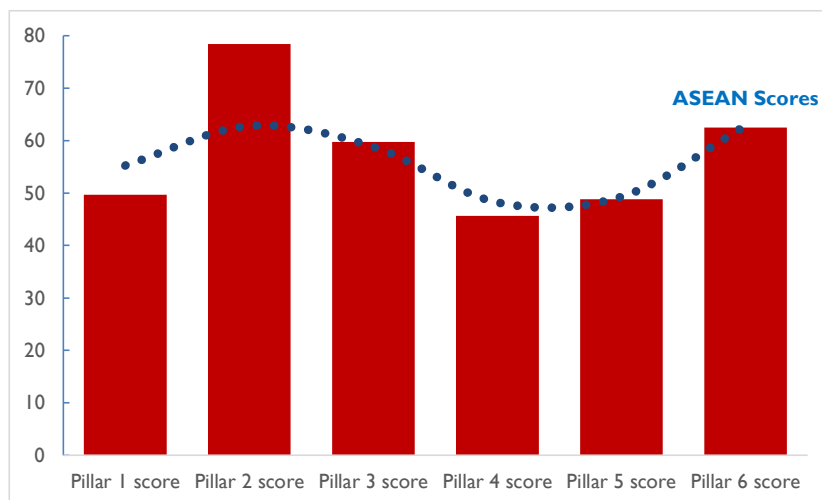
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
Indonesia Scores	49.67	78.43	59.73	45.64	48.81	62.44
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 9: Indonesia and ASEAN Scores



Indonesia fares commendably well in its digital integration with a few of its Pillar scores above the regional scores, and the others closely aligned to the regional performance.

Indonesia performs the best within its scores for Pillar 2, acknowledging the efforts of the government in shoring up its Data Protection and Cybersecurity legislative, institutional, and technical capabilities. Indonesia’s personal data protection regulations are currently encapsulated within the Regulation of Minister of

Communications and Informatics Number 20 of 2016 regarding Personal Data Protection in Electronic Systems as well as Government Regulation Number 71 of 2019 regarding Electronic System and Transaction Operations. However, Indonesia needs to build on these efforts, such as on its Data Protection and Cybersecurity bills which have yet to be passed, and further development and implementation of its cybersecurity strategy.

Contrastingly, Pillar 4 is the least performing pillar for Indonesia. Following the Indonesian government’s efforts to address the digital gap, the results of its efforts to foster digital literacy and capacity will take some time to bear fruit. To address the digital talent gap, the Indonesian government has taken a number of measures to help existing workers transition to new, technology-driven jobs, and equip future workers with the skills and knowledge to find a place in an increasingly automated workplace. For example, the Ministry of Communications and Informatics has continued to run its yearly Digital Talent Scholarship and is also working with several online marketplaces including Bukalapak, Tokopedia, Shopee, and OLX to conduct training workshops for SMEs to build their digital skills, sell their products online, and use digital payments. The ministry, together with relevant parties, also leads the MSMEs Scale-up Facilitation Program, a continuation of the MSMEs Go Online program in 2016–2020 that successfully onboarded more than eight million MSMEs in marketplaces. In addition, it is targeting to scale up 33,000 micro and small businesses to medium enterprises in 2020–2024. Bank Indonesia has also partnered with a number of AI companies to conduct training workshops for its staff, including sessions on the interactions between machine-learning processes and financial risk management.⁴³ The Ministry of Education has also explored the use of Massive Open Online Courses (MOOC) to improve delivery of educational courses and training

⁴³ Bank Indonesia, www.bis.org/ifc/publ/ifcb50_01.pdf

programs. The Kamp Kreatif SMK Indonesia (KCSI) program started in 2019 also aims to implement the latest technologies to improve the learning 's quality and innovation of Vocational High Schools including the use of online videos and provide access to experts across different fields. However, with at least seven government agencies implementing digital talent initiatives independently, there risks duplication and inconsistency in approach and may do better with a coordinating body to help coordinate actions more collaboratively.

At the same time there remains scope for government to collaborate more with the private sector as companies launch research laboratories to build homegrown expertise and attract foreign specialists. For example, e-commerce platform Bukalapak has collaborated with the Bandung Institute of Technology (ITB) to launch an AI research center to nurture the country's own AI engineering talent.⁴⁴

Under Pillar 1, Indonesia has also undertaken systematic efforts to reduce constraints to trade and streamline procedures at the border. The launch of the Indonesia National Single Window (INSW) in 2007 has been a prominent government agenda which enables streamlined interaction among 18 government agencies and allows for the online processing of customs documentation, applications for licenses, and duty payments. Strengthening cooperation in the area of data integration with other countries has also become a focus of the INSW, marked with the exchange of trade related documents electronically with AMS, namely electronic Certificate of Origin (e-CO), Customs Declaration Document (ACDD), e-Phytosanitary (e-Phyto) Certificate, e-Animal Health (e-AH) Certificate, and e-Food Safety (e- FS) Certificate.⁴⁵ The successful operation of the INSW system is demonstrated through a user satisfaction analysis where 95% of users indicated trusting the security of the web portal, 91% satisfied with the simplification of procedures (and resulting cost and time savings), and 84% satisfied with the efficiency of the system in providing up-to-date information.⁴⁶

In response to high logistic costs, Indonesia launched the so-called National Logistics Ecosystem (NLE) platform in 2020, an electronic data interchange which will synchronize the flow of international goods and documents from the arrival to end customers. The platform is expected to reduce logistic costs and improve logistic performance in Indonesia by eliminating duplication and repetition of logistic business process and increasing efficiency of distribution of goods, e.g. implementation of online single submission and single inspection by Customs and Quarantine Agencies, online Delivery Order (DO), integrated online payment, and auto-gate implementation. Various trade facilitation initiatives are also initiated by Customs, for example, e-CO data exchanged with several bilateral partners, such as China and South Korea through INSW, and the expansion of customs automation, including through the implementation of electronic customs declaration that adopts the concept of digital certificate and signature. The ongoing trade facilitation reform agendas which put take advantage of digitalization have resulted in a steady improvement of trade performance in Indonesia, where the Time Release Study (TRS) conducted in 2020 showed that the average time required to release goods in Indonesia was reduced by 8.58% compared to 2018.

In terms of Pillar 3, Indonesia has issued its e-KTP (Resident Identity Card) system to enhance Indonesian public service and further digital transformation efforts, although, use is still at its early stages. In June 2020, Dukcapil signed MoUs with 13 financial institutions, including mobile payment service providers and peer-to-peer lending platforms, to grant access to the GOI's civil registry data, expediting data verification, reducing chances of fraud, and accelerating financial inclusion.⁴⁷ This has also allowed the national digital identity system, e-KTP, to go beyond being used as verification for the issuance of documents, to support the provision of more digital services. Bank Indonesia issued BI Regulation on Payment Systems (PS) at the end of 2020 as part of the payment system regulatory reform which aims to improve the use of PS and promote innovation opportunities finding a balance between maintaining financial system stability and

⁴⁴ Jakarta Post (2019) Bukalapak Launches Innovation Center at ITB, <https://www.thejakartapost.com/news/2019/02/04/bukalapak-launches-innovation-center-at-itb.html>

⁴⁵ National Single Window Agency (2020) About Single Window, <https://www.insw.go.id/index.php/home/menu/sw>

⁴⁶ Revista Espacios (2019) User Satisfaction Analysis of Indonesia National Single Window (INSW) Web Portal, <http://www.revistaespacios.com/a19v40n40/a19v40n40p24.pdf>

⁴⁷ The Jakarta Post (2020) Thirteen financial institutions get access to government's civil registry database, <https://www.thejakartapost.com/news/2020/06/12/thirteen-financial-institutions-get-access-to-governments-civil-registry-database.html>

integrity while taking advantage of the developments of the digital economy and digital finance through an activity-and-risk-based approach from the previous institution-based approach. BI Regulation on PS will strengthen regulation on, among others, access and exit policy, operation, innovations in PS technology, infrastructure development, supervision, and data and/or information. The implementation of QRIS (Quick Response Indonesian Standard), geared at increasing interoperability and interconnectivity between payment service providers in Indonesia and preventing fragmentation of the sector, requires all QR code payment systems to be standardized based on the international EMVCo standard. QRIS supports digital payments for MSMEs, donation, e-retribution, parking, and various other transactions—and it has been well received and relatively successful; by the end of 2020, 6 million merchants had adopted QRIS. Indonesia is aiming to double the rate of QRIS adoption by the end of 2021.

Indonesia's Pillar 5 scores are very close to the regional performance, where the country's efforts have led to the emergence of several unicorns, including Go-Jek, Tokopedia, and Traveloka and where the number of start-ups is expected to rise 20-30%.⁴⁸ The government has been a key factor in promoting innovation and is expecting to create 1,000 new technopreneurs with a total business valuation exceeding USD10 billion under its e-commerce roadmap.⁴⁹

In relation to Pillar 6, Indonesia has introduced key digital government plan Presidential Regulation No. 95/2018 on SPBE (PR95/2018), which requires all government agencies to implement SPBE—or e-government.⁵⁰ This initiative aims to integrate all agencies, ministries, and institutions into a single, unified network in which data and documents flow freely. Amidst the accelerated turn to digital, integration of SPBE services should be an implementation priority. Indonesia has also introduced a One Data policy which to provide an interoperable platform for ministries and agencies to share data amongst themselves and with the public. Nevertheless, progress has been slowed by several factors areas that should be focused on include bridging the gap in the differing levels of digital data governance adoption by the relevant agencies, the central-regional digital gap, and the general lack of data standardization across government.⁵¹ In addition, alignment between the SPBE and One Data policies should also be evaluated to ensure greater interoperability and digital integration.

⁴⁸ TNW (2019) An entrepreneur's guide to Indonesia's startup scene, <https://thenextweb.com/podium/2019/06/20/an-entrepreneurs-guide-to-indonesia-startup-ecosystem/>

⁴⁹ Jakarta Post (2016) Indonesia wants to lead the region in e-commerce, <https://www.thejakartapost.com/news/2016/11/11/indonesia-wants-to-lead-the-region-in-e-commerce.html>

⁵⁰ Government of Indonesia, <https://sipuu.setkab.go.id/PUUdoc/175612/Perpres%20Nomor%2095%20Tahun%202018.pdf>; Ministry of Administrative and Bureaucratic Reform, www.menpan.go.id/site/berita-terkini/babak-baru-sistem-pemerintahan-berbasis-elektronik

⁵¹ The Jakarta Post, <https://www.thejakartapost.com/news/2020/08/06/data-standardization-poses-challenge-for-satu-data-indonesia-plan.html>

LAO PDR

Table 8: Lao PDR Scores







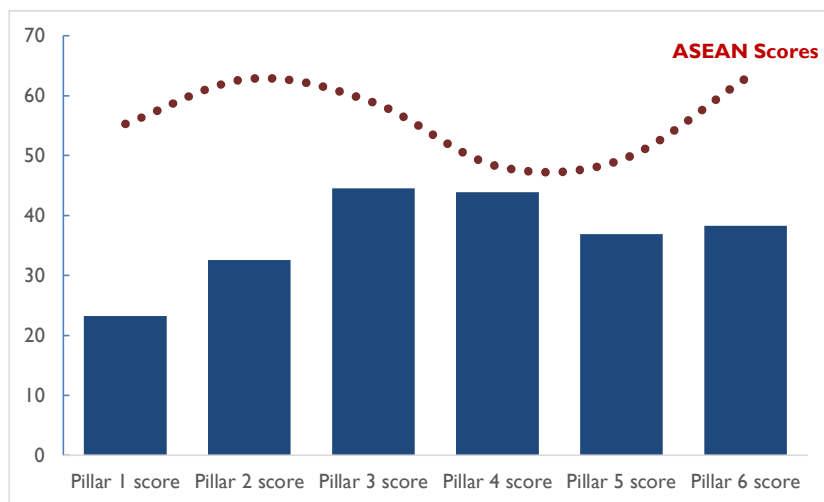
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
Lao PDR Scores	23.22	32.58	44.53	43.89	36.91	38.27
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 10: Lao PDR and ASEAN Scores



Lao PDR’s individual digital integration scores continue to trail behind regional averages. There is room for improvement in all Pillars.

The highest scoring pillar for Lao PDR is Pillar 3 on Digital Payments and Identities which are expected to improve significantly as its identity and payment implementations further take shape. To improve citizens’ access to various public services, Lao PDR has been piloting digitized foundational ID systems.⁵² In June 2018, the Ministry of Science and

Technology signed an MoU with the Lina Network for the deployment of digital identity using Blockchain.⁵³

To broaden access and usage of an efficient, integrated and reliable digital payment system, the BOL authorized the establishment of the Lao National Payment Network (LAPNet) in April 2019 which saw the collaboration of Union Pay and seven major banks in Lao PDR to enable customers of the participating banks to make inter-bank payment transfers and transactions.⁵⁴ Another major step taken by the BOL to enhance digital payments is the roll-out of the Lao Payment and Settlement System (LaPASS) in June 2020, which allows real time settlement of payments and cheque clearing.⁵⁵ In January 2020, the Payment Systems Department of the BOL also introduced a QR Code standard for peer-to-peer transfers, payments for domestic and international products and services in physical stores and e-commerce, tax payments to the government, and e-donations.⁵⁶

While Pillar 1 on Digital Trade and Logistics is the lowest performing pillar for Lao PDR, there are notable developments which promise to improve the scores in future assessments. The Lao National Single

⁵² World Bank (2019) The Digital Economy in Southeast Asia Strengthening the Foundations for Future Growth, <http://documents1.worldbank.org/curated/en/328941558708267736/pdf/The-Digital-Economy-in-Southeast-Asia-Strengthening-the-Foundations-for-Future-Growth.pdf>

⁵³ Viet Nam News (2018) Laos moves towards application of e-governance, <https://vietnamnews.vn/world/450234/laos-moves-towards-application-of-e-governance.html>

⁵⁴ Open Development Laos (2019) Lao banks partner in integrated payment system, <https://laos.opendevlopmentmekong.net/news/laos-banks-partner-in-integrated-payment-system/>

⁵⁵ J&C Group (2020) BOL Launches Real Time Financial System, <https://jclao.com/bol-launches-real-time-financial-system/>

⁵⁶ Xinhua News (2020) Lao central bank launches QR code payment standard, http://www.xinhuanet.com/english/2020-01/30/c_138743047.htm

Window (NSW) system has been upgraded and operated at the Lao-Thai Friendship Bridge checkpoint since February 2020 to link up with the online payment system to facilitate tax collection.⁵⁷ All vehicle imports and exports are required to submit relevant documentation through the one-stop Tax System from March and other government agencies handling imports and exports will be able to use the system.

The E-signature Law was enacted in mid-2019 to enable greater participation of the private sector in B2B and B2G e-commerce and promote the use of digital government services. The E-Signature Law builds upon the digital signature requirements set out in the Electronic Transactions Law and regulates simple electronic signatures, digital electronic signatures as well as digital seals. The e-signature certificate will have the same legal status as signatures and seals put on paper documents to facilitate electronic transactions. Nevertheless, the MPT has yet to issue the required certificates and should expedite the application process and speed up the roll out of e-signature certificates.⁵⁸

A single data point for Indicator 5.5 was missing on the “Degree to which intellectual property protection frameworks are in place and are enforced”. Through the assistance of Lao PDR this data gap was addressed through the sharing of relevant legislation and efforts to determine Lao PDR’s score.

In terms of Data Protection and Cybersecurity under Pillar 2, the government has enacted the Law on Prevention and Combating of Cyber Crime in 2015 and the Electronic Data Protection Act in 2017 to strengthen cybersecurity and protection of personal information. While there is no overarching law on data protection, the Electronic Data Protection Act governs how electronic information shall be collected, used, or disclosed. The regulation applies to both domestic and foreign data users provided that they conduct business or operate in Lao PDR. The Act not only includes general clauses on electronic data protection, but also introduces key provisions on consent requirements, best practices related to data transfer, retention, data erasure and breach notification. However, the regulation does not contain any provisions for cross-border transfers of data.

As is the case with other AMS, Lao PDR needs to improve its efforts on Digital Skills and Talent under Pillar 4 where organizations such as Aide et Action have been working since 2018 to integrate the use of digital technologies in schools to expose and teach students how to use devices and software.⁵⁹ However, more still needs to be done, particularly in rural and remote schools which lack access to such resources.

While scores under Pillar 5 may appear low at present, they are likely to improve with more efforts such as those by Tohloa and Lao Telecom to set up a start-up center and promote innovation and use of ICTs in Lao PDR.⁶⁰ The young demographic will also be key in championing entrepreneurship and innovation in Lao PDR.

To enhance its e-government under Pillar 6 on Institutional and Infrastructural Readiness, the Laos Ministry of Science and Technology has chosen Unitel to act as a consultant to build e-government and other smart projects under the national digital transformation strategy.⁶¹ At the same time Lao PDR will need to work with telecommunication providers to improve coverage and adoption of Internet services.

⁵⁷ J&C Group (2020) Lao Vehicle Imports, Exports To Be Processed Using Single Customs Window, <https://jclao.com/lao-vehicle-imports-exports-to-be-processed-using-single-customs-window/>

⁵⁸ DFDL (2020) Validity of Electronic Signatures: Overview of e-signatures regime in South East Asia, <https://www.vatupdate.com/wp-content/uploads/2020/04/2020-04-09-Validity-of-electronic-signatures-in-South-East-Asia.pdf>

⁵⁹ Aide et Action (2019) Laos – Access to digital tools improves children’s knowledge, <https://seac.aide-et-action.org/laos-technology/>

⁶⁰ Investvine (2019) Laos Set To Build Up A Startup Community, <https://investvine.com/laos-set-to-build-up-a-startup-community/>

⁶¹ OpenGov (2020) Vietnam supports Laos’ digital transformation, <https://opengovasia.com/vietnam-supports-laos-digital-transformation/>

MALAYSIA

Table 9: Malaysia Scores







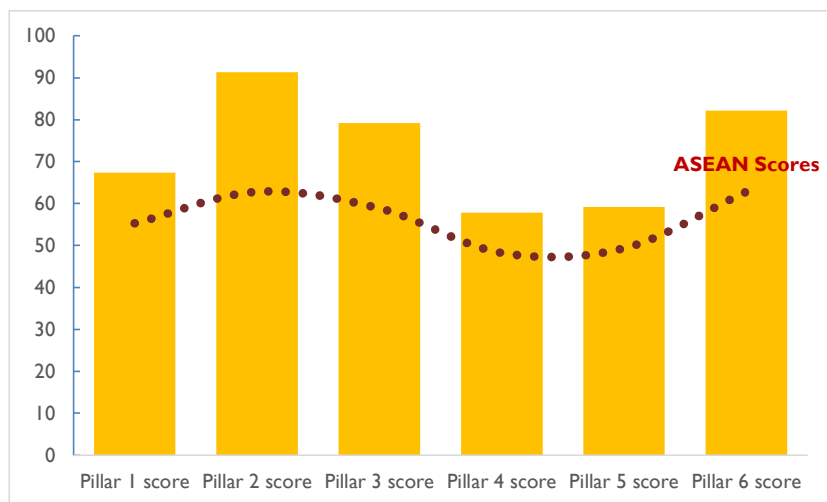
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
Malaysia Scores	67.35	91.27	79.20	57.85	59.22	82.18
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 11: Malaysia and ASEAN Scores



Malaysia fares outstandingly well with all its scores faring above the regional ADII average.

Malaysia does exceptionally well in Pillar 2 on Data Protection and Cybersecurity. The Personal Data Protection Act 2010 (PDPA) was passed in 2010, and came into force in 2013, while the government consulted in February 2020 on revisions to update the PDPA to consider digital developments around the world. These included looking at several aspects including among

other things, defining obligations for data processors, introducing a right to data portability, appointing a Data Protection Officer to oversee organizational data protection, data breach notifications, transfers of personal data outside of Malaysia, implementing privacy by design, and processing of personal data in cloud computing use.⁶² The purpose of the review is to continue to strengthen Malaysia’s protection of personal data, taking into consideration emerging economic, social, and technological issues as well as to align with evolving laws in other jurisdictions—although the results of that consultation have yet to be announced.⁶³

Malaysia has also made commitments to ensure data flows under the Comprehensive Trans-Pacific Partnership (CPTPP) agreement. Article 14.11 commits members to ensuring that data can flow easily for business activity, and Article 14.13 prohibits the imposition of data localization requirements. However, clear timelines for ratification and implementation have not been set.

The Malaysian government has also launched the Malaysia Cyber Security Strategy (MCSS) 2020-2024, allocating USD2 billion to enhance cybersecurity preparedness.⁶⁴ The policy rests on 5 pillars: effective governance and management, strengthening legislative framework, catalyzing innovation and latest

⁶² PDP (2020) Review of Personal Data Protection Act 2010 (Act 709),

https://www.pdp.gov.my/jdpdv2/assets/2020/02/Public-Consultation-Paper-on-Review-of-Act-709_V4.pdf

⁶³ Rahmat Lim & Partners (2020) Malaysian Personal Data Protection Commission consults on proposed amendments to Personal Data Protection Act 2010, https://www.rahmatlim.com/publication/articles/15095/my_malaysian-personal-data-protection-commission-consults-on-proposed-amendments-to-personal-data-protection-act-2010

⁶⁴ Malaysia Cybersecurity Strategy 2020-2024, <https://asset.mkn.gov.my/wpcontent/uploads/2020/10/MalaysiaCyberSecurityStrategy-2020-2024.pdf>

technology, capacity building and global collaboration. The progressive policy cements Malaysia's ongoing efforts to upgrade its cybersecurity. Globally it ranks 8th in the Cybersecurity Index, scoring highest in the organizational pillar, where the National Cyber Security Agency (NACSA) leads and coordinates all cybersecurity initiatives.⁶⁵

The lowest scoring Pillar for Malaysia is Pillar 4 indicating more has to be done to build the necessary human capacity to allow Malaysia to fully take advantage of its digital integration efforts. In this regard, building agile and competent digital talent has been identified as one of the key thrusts of the Malaysia Digital Economy Blueprint (MyDIGITAL) issued in February 2021 with 13 strategies earmarked to be implemented in the next 5 years.⁶⁶ As for the efforts in promoting digital payments under Pillar 3, 70% Malaysian now prefer to shop at retail outlets where merchants accept digital payments and the use of digital wallets is expected to overtake cash by 2021.⁶⁷ This has been due to the government's efforts to promote digital payments adoption with the central bank, Bank Negara Malaysia taking the lead on fostering developments in e-payments infrastructure and strengthening public awareness and confidence on the use of digital payments.⁶⁸ It has also introduced forward looking policy initiatives such as the released electronic Know-your-Client (e-KYC) guidelines⁶⁹ as well as preparations to issue five digital banking licenses.⁷⁰

Related to Pillar 1 on Digital Trade, Malaysia has launched its Digital Free Trade Zone (DFTZ) since 2017 to make cross-border trade more accessible to SMEs and to attract regional e-commerce transshipment investments into Malaysia.⁷¹ The DFTZ is led by the Malaysia Digital Economy Corporation (MDEC) and includes collaborative efforts amongst various ministries and agencies, industry stakeholders and e-commerce enablers such as Alibaba.

In terms of Digital Identity under Pillar 3, the Malaysian government has also mandated the Ministry of Communications and Multimedia (KKMM) to lead the National Digital Identity (NDI) initiative. It is now seeking to ask citizens if they would use NDI in different scenarios such as electronic health records, financial institution eKYC, e-commerce and pension authentication, and government online services.

In line with Pillar 5 on Innovation and Entrepreneurship, the Malaysia Digital Economy Corporation (MDEC) has implemented several initiatives to support entrepreneurship and attract investors, including MSC Malaysia which offers special status for local and foreign ICT-related businesses granting a wide-range of incentives, rights, and privileges.⁷² For SMEs there are multiple programs and grants that support digital transformation. Corporations are supported through the DTAP, Digital Manufacturing Hub⁷³ and the Cybersecurity Skill-Up programs.⁷⁴ Bank Negara Malaysia has also established the SME Automation and Digitalisation Facility (ADF) in March 2020, with an allocation of MYR1 billion to encourage SMEs across all sectors to automate processes and digitalize their operations to increase productivity and efficiency.⁷⁵

To improve national connectivity in relation to Pillar 6 and infrastructural readiness, the government launched the National Fiberisation and Connectivity Plan (NFCP) in 2019 to reduce the digital divide in Malaysia through expansion in coverage, and improvement in the quality of fixed and mobile broadband.⁷⁶ In 2020, RM3bn were allocated for the rollout of six initiatives of the NFCP. Through these initiatives, there will be direct benefits to the ecosystem comprising communications service providers, local contractors, infrastructure and equipment manufacturers and solutions providers. It is estimated that there will be about

⁶⁵ ITU (2018) Global Cybersecurity Index 2018 https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-GCI.01-2018-PDF-E.pdf

⁶⁶ EPU (2021) Malaysia Digital Economy Blueprint, <https://www.epu.gov.my/sites/default/files/2021-02/Malaysia-digital-economy-blueprint.pdf>

⁶⁷ JPMorgan (2019) E-commerce Payments Trends: Malaysia, <https://www.jpmorgan.com/merchant-services/insights/reports/malaysia>

⁶⁸ BNM (2011) Financial Sector Blueprint 2011-2020, <https://www.bnm.gov.my/-/financial-sector-blueprint-2011-2020>

⁶⁹ BNM (2020) Digital on-boarding policy to enable account opening anytime, anywhere, <https://www.bnm.gov.my/-/digital-on-boarding-policy-to-enable-account-opening-anytime-anywhere>

⁷⁰ OpenGov (2019) Malaysia to Issue 5 Digital Banking Licences, <https://opengovasia.com/malaysia-to-issue-5-digital-banking-licences/>

⁷¹ MDEC, Digital Free Trade Zone, <https://mdec.my/digital-economy-initiatives/for-the-industry/entrepreneurs/dftz/>

⁷² MDEC, MSC Malaysia, <https://mdec.my/what-we-offer/msc-malaysia/>

⁷³ MDEC, Digital Manufacturing Hub, <https://mdec.my/digital-economy-initiatives/for-the-industry/corporations/digital-manufacturing-hub/>

⁷⁴ MDEC, Cybersecurity, <https://mdec.my/digital-economy-initiatives/for-the-industry/entrepreneurs/cybersecurity/>

⁷⁵ BNM Measures to Address COVID-19 Impact, <https://www.bnm.gov.my/o/covid-19/index.html>

⁷⁶ National Fiberisation and Connectivity Plan, <https://www.nfcpc.my/>

20,000 new jobs created in the 5-year implementation period.⁷⁷ The government has also allocated MYR20 million to accelerate the Digitalization of Government Services Delivery initiative under the country's National Economic Recovery Plan (PENJANA) and aligned with the Public Sector ICT Strategic Plan.⁷⁸

⁷⁷ MCMC (2020), Press Release: RM3 Billion Allocated For The Rollout Of NFCP Initiatives Throughout 2020, www.mcmc.gov.my/en/media/press-releases/press-release

⁷⁸ New Strait Times (2020) Mohd Zuki: Digitalisation makes for fast and easy govt services, <https://www.nst.com.my/news/nation/2020/07/607816/mohd-zuki-digitalisation-makes-fast-and-easy-govt-services>

MYANMAR

Table 10: Myanmar Scores







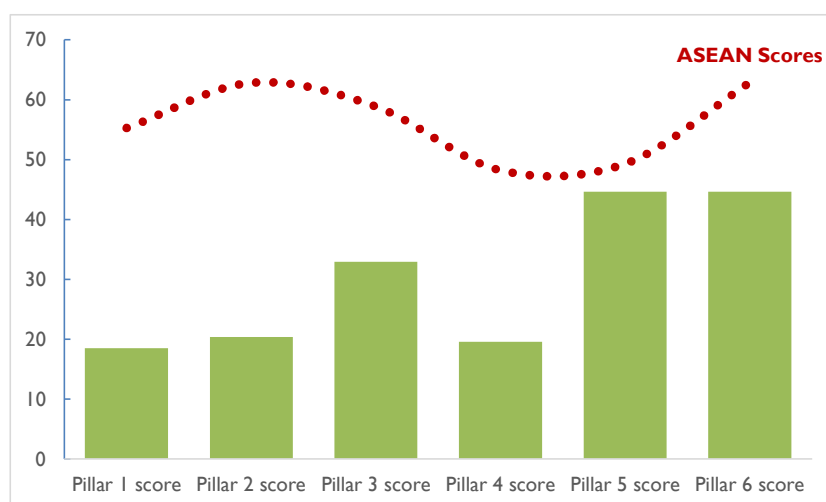
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
Myanmar Scores	18.51	20.41	32.93	19.58	44.65	44.60
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 12: Myanmar and ASEAN Scores



Myanmar's digital integration scores lag behind ASEAN's regional scores indicating that there is much room for improvement and catching up for Myanmar to do.

Myanmar's highest scoring pillar is in Pillar 5 for Innovation and Entrepreneurship. While Myanmar is not synonymous with fostering innovation and start-up development, the government is channeling resources towards economic development and prioritizing the development of the digital economy

through the Myanmar Economic Resilience and Reform Plan (MERRP) which is due to be the core blueprint for economic development moving forward from 2020.⁷⁹ This is expected to come hand-in-hand with digital government related policies and regulatory frameworks such as on cybersecurity, data protection and e-commerce.

To better promote innovation, the government of Myanmar has reformed its intellectual property rights legislation to align more closely with international norms including its Industrial Design Law and Trademark Law (including Geographical Indications), Patent Law, and Copyright Law. The new laws are expected to come into force once the President issues the notification of enactment, and the Ministry of Commerce will take on the role of implementing agency. The implementing rules and regulations are currently being developed.

The Intellectual Property Central Committee was also formed in March 2020 to supervise all intellectual property related matters, while the National Intellectual Property Strategy and Policy has been drafted with the assistance of the WIPO and is currently being reviewed for approval.

Alongside the lowest pillar score in Pillar 1 on Digital Trade and Logistics, it has been noted, however, that Myanmar's lack of cybersecurity regulations, or any substantive personal data protection laws, stand as an impediment to its digital integration efforts.

⁷⁹ Bangkok Post (2020), Myanmar maps out recovery and reform, <https://www.bangkokpost.com/business/2024039/myanmar-maps-out-recovery-and-reform>

Myanmar had the greatest number of missing indicators at eight, with all but one coming from the World Economic Forum's Global Competitiveness Report 2019. This has been recognized by stakeholders in the government and which have indicated their intentions to collect the data in the future.

In relation to Data Protection and Cybersecurity in Pillar 2, the government has discussed the implementation of a Cyber Law governing cybersecurity and data protection since 2018.⁸⁰ However, while drafts of the law have reportedly been prepared, overall progress on developing the law appears to have stalled. Of note have been indications that the proposed Cyber Law covered Cybersecurity, e-government and e-Commerce together.⁸¹ In February 2020, then State Counsellor Daw Aung San Suu Kyi announced that further laws on cybersecurity and data security would be promulgated to facilitate the swifter rollout of e-government services.⁸² And while there is no general data protection law in Myanmar, elements of data protection are covered within "the Myanmar Official Secret Act", "the Telecommunication Law", "the Electronic Transaction Law" and "the Law for Protection of Personal Privacy and Personal Security of Citizens".⁸³ On 15 February 2021, the amendment of Electronic Transactions Law was adopted and includes a new article on "Personal Data Protection".

There are also meaningful measures taken towards digital payments under Pillar 3, with the COVID-19 Economic Relief Plan emphasizing the importance of Digital Payments, accelerating a trend which began prior to the pandemic, with company registrations, tax payments, enrolment in government universities, and building permit applications being possible through online payments.⁸⁴ On the horizon is the development of a standardized QR code system, MMQR code endorsed by local banks, international payment schemes, e-money issuers and the Myanmar Payments Union. The MMQR code is set to be based on EMVCo specifications with customizations for Myanmar.

Various other revisions to the existing CBM-NET mobile payment infrastructure are also described within the NPSS 2020-2025, most of which are designed to improve inter-bank interoperability in line with international standards and introduce improvements to systems such as the country's Real-Time Retail Payments systems. CBM-NET 2 was officially launched in November 2020.

Likewise, under Pillar 3, progress on the development of Digital IDs has proceeded apace, with efforts ongoing throughout 2018-2019 to implement reliable databases of biometric data.⁸⁵ In May 2019, the Ministry of Labour, Immigration and Population (MoLIP) announced that it had successfully digitized the information of approximately 1.3 million citizens, in an effort to reduce the risk of personal information loss due to the use of outdated and at-risk record keeping formats, and to create the conditions for the issuing of digital National Registration Cards.

Scores under Digital Skills and Talent under Pillar 4 are still low and remain an area in dire need of improvement to help better realize the country's digital economy potential. To do so, the Ministry of Education is working with organizations such as Ooredoo Myanmar and Google to launch digital literacy and digital citizenship trainings nationwide to upskill and improve the ability of both students and teachers in using digital technologies.⁸⁶

In relation to Pillar 6, the Ministry of Transport and Communications (MOTC) announced in November 2020 that it would draft a new, updated e-Governance Master Plan (2021-2025) to guide the transition of major public and administrative functions online and offer more e-government services. The first e-Governance Master Plan was launched in 2016 and resulted in the launching of the Myanmar National Portal and the

⁸⁰ Myanmar Times (2018), Govt considering new cyber law, minister says, <https://www.mmtimes.com/news/govt-considering-new-cyber-law-minister-says.html>

⁸¹ Myanmar Centre for Responsible Business (2019), Submission to MOTC Consultation, <https://www.myanmar-responsiblebusiness.org/pdf/2019-01-28-Submission-MOTC-Consultation.pdf>

⁸² State Counsellor's Office (2020), State Counsellor Pushes For Speeding Up E-Governance Plans To Ensure Development, <https://www.myanmarstatecounsellor.info/scen/node/2086>

⁸³ MLIS, <https://www.mlis.gov.mm/>

⁸⁴ Yangon City Development Committee (2019), Yangon Building Permit System, <https://ybpc.ycdc.gov.mm/>

⁸⁵ Myanmar Times (2019), Govt begins digitizing personal information for ID cards, <https://www.mmtimes.com/news/govt-begins-digitizing-personal-information-id-cards.html>

⁸⁶ Ooredoo (2019) Ooredoo Myanmar and the Ministry of Education Collaborate with Google for a Digital Literacy and Digital Citizenship Training Program Nationwide, https://www.ooredoo.com/en/media/news_view/ooredoo-myanmar-and-the-ministry-of-education-collaborate-with-google-for-a-digital-literacy-and-digital-citizenship-training-program-nationwide-2/

establishment of servers and web-hosting services at data centers, with access provided by ministries. The new plan will see many of these services upgraded to cloud-based solutions, with the MOTC also overseeing the establishment of an e-government integrated data center.

THE PHILIPPINES

Table 11: The Philippines Scores







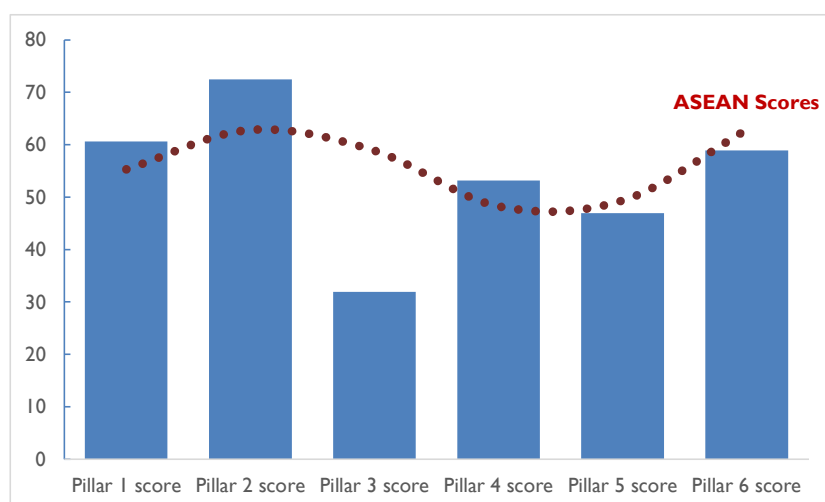
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
The Philippines Scores	60.61	72.49	31.89	53.13	46.93	58.89
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 13: The Philippines and ASEAN Scores



The Philippines fares comparably well in its digital integration with three of its Pillar scores performing above the regional level.

The highest scoring pillar for the Philippines is for Pillar 2 on Data Protection and Cybersecurity. The Philippines was the front runner in ASEAN in enacting its Data Privacy Act in 2012, while its National Cybersecurity Plan 2022 launched in 2017 takes reference from international best practices such as the National Institute of Standards

and Technology (NIST) Cybersecurity Framework.

The Philippines had two indicators with missing data, namely indicators 3.4 and 3.5 relating to the proportion of people who have a digital ID card, and the degree to which a digitized ID system is in place, respectively. This is also the lowest performing pillar for the Philippines on Digital Payments and Identities. The legal frameworks for electronic transactions have been partially implemented in the Philippines, however the proportion of people who use digital payments and digital banking is still at a low level. Although the missing data did not contribute to a lower score for the Philippines,⁸⁷ it also does not give due credit to the Philippines's implementation of its Philippine Identification System (PhilSys) which aims to consolidate and centralize all personal information of Filipino citizens and resident aliens with a unique Philippine ID (PhilID) and PhilSys Number (PSN) to authenticate their identity in all government and private sector transactions. PhilSys is further expected to simplify transactions and eliminate bureaucratic hurdles that prevent access to government and financial services due to lack of proper identification. The project consists of four phases between January 2019 and December 2022. Though the COVID-19 pandemic delayed rollout, phase three begun in 2020 Q4 with a goal to initially register five million heads of low-income households, with the majority of Filipinos expected to be registered by the end of 2022.⁸⁸ The first step of the PhilSys registration process exceeded expectations with over one million registrations in the first week, compared to an original target of about 700,000.⁸⁹ As of June 2021, 697,110 PhilIDs have been

⁸⁷ Missing data is not used in the calculation of ADII scores

⁸⁸ PSA (2020) PhilSys, <http://www.psa.gov.ph/philsys>

⁸⁹ Inquirer (2020) IM Pinoys apply for PhilSys ID, <https://newsinfo.inquirer.net/1351496/1m-pinoys-apply-for-philsys-id>

processed, 45.5% of which had been delivered nationwide.⁹⁰ Once mass registration is completed, phase four will involve providing PSNs to newborns, though the original timeline of July to December 2022 may be pushed back following delays from the pandemic.⁹¹

At the same time under Pillar 3, Digital Payments are set to improve following the initiatives of the Bangko Sentral ng Pilipinas (BSP) such as eGov Pay, an e-payments platform for citizens and businesses to pay taxes and other government fees. The platform is intended to streamline government collections, help plug tax leakages, create an audit trail, and enhance transparency.⁹² As of October 2020, over 280 government agencies and local government units have started using eGov Pay. Since its introduction, the system had a 688% increase in transaction volume as of end June 2020.⁹³ The national QR code standard (QR Ph) was launched in 2019 to further promote interoperability and use of e-payments through mandating adoption of the standard by payment system participants.⁹⁴ The standard was formulated by PPMI and aligned with international standards. The BSP has also been working with other ASEAN central banks to create a regionally interoperable QR system, though no substantive updates have been provided since early 2020.⁹⁵

Under Digital Trade in Pillar 1, following the signing of ASEAN Single Window (ASW) agreement, the Philippines launched the first phase of its own National Single Window (NSW) in 2009. In 2017, TradeNet.gov.ph was designated to serve as the Philippines' NSW platform, but the government still maintains two separate systems—the legacy NSW and the more current TradeNet which is managed by DOF. At end 2019, the Philippines went live on ASW via TradeNet.⁹⁶ In 2021, the Bureau of Customs (BOC) has fully implemented the exchange of electronic Certificate of Origin (e-CO) in all of the ports and subports of entry nationwide. It is also scheduled to join the ASEAN Member States in the electronic exchange of the ASEAN Customs Declaration Document (ACDD) in 2021.

The onboarding of all 76 Trade Regulatory Government Agencies (TRGAs) in the TRADENET System is supported by the Anti-Red Tape Authority (ARTA) as the NSW-TWG Vice Chair for Onboarding Matters, and the BOC Management Information System and Technology Group (MISTG) as the NSW-TWG Vice Chair for Technical Matters. As of August 2021, a total of 10 TRGAs are onboarded in the live environment of TradeNet. The remaining TRGAs are expected to onboard pursuant to the Ease of Doing Business and Anti-Red Tape Advisory Council Resolution No. 12, Series of 2020, and Memorandum Circular No. 2021-01 re: mandatory onboarding of TRGAs to the with TradeNet System.

To enhance Digital Literacy and Skills in relation to Pillar 4, the government has proposed the Philippine Digital Workforce Competitiveness Act to provide access to all locals regardless of gender or age, will have access to digital skills and competencies trainings.⁹⁷ To coordinate planning and implementation, the Inter-Agency Council for Development and Competitiveness of the Digital Workforce will be established. Not only is the Act envisioned to upgrade the ability of Filipinos, it will also encourage entrepreneurship and innovation. This relates to Pillar 5 where the President has signed the Philippine Innovation Act to empower the creation of the National Innovation Council (NIC) to steer the whole-of-government coordination and collaboration towards the country's innovation goals, priorities, and long-term national strategies through the formulation of the National Innovation Agenda and Strategy Document (NIASD).⁹⁸

Under Pillar 6 which looks at institutional readiness, the government has launched the Project National Effort for the Harmonization of Efficient Measures of Inter-related Agencies (NEHEMIA). Project NEHEMIA is a sectoral-based initiative to streamline government processes and reduce regulatory burden on citizens

⁹⁰ Latest updates provided by the Philippines.

⁹¹ NEDA (2019) Gov't On Track With National ID Implementation, <https://www.neda.gov.ph/govt-on-track-with-national-id-implementation/>

⁹² OpenGov (2019) Bangko Sentral ng Pilipinas and Industry launch EGov Pay and QR Ph, <https://opengovasia.com/bangko-sentral-ng-pilipinas-and-industry-launch-egov-pay-and-qr-ph/>

⁹³ Newsbytes (2020) BSP wants entire gov't bureaucracy to use EGov Pay facility, <https://newsbytes.ph/2020/10/29/bsp-wants-entire-govt-bureaucracy-to-use-egov-pay-facility/>

⁹⁴ BSP (2019) BSP Circular No. 1055, <https://www.scribd.com/document/493535461/BSP-Circular-1055>

⁹⁵ Manila Times (2020) BSP eyes interoperable QR system in SE Asia, www.manilatimes.net/2020/02/10/business/business-top/bsp-eyes-interoperable-qr-system-in-se-asia/682013/

⁹⁶ ASEAN Single Window (2020) Philippine General Information, <https://asw.asean.org/index.php/nsw/philippines/philippines-general-information>

⁹⁷ Business Mirror (2020) Bridging the digital skills divide, <https://businessmirror.com.ph/2020/09/17/bridging-the-digital-skills-divide/>

⁹⁸ NEDA (2019) The Philippine Innovation Act, <https://www.neda.gov.ph/the-philippine-innovation-act/>

and businesses, led by the Anti-Red Tape Authority (ARTA). The project was launched in March 2020 with a target to reduce time, cost, and procedures by 52% within 52 weeks. Thus far, NEHEMIA has helped push disparate elements of the government bureaucracy to work together, with one key policy to streamline the common tower permitting process issued in July 2020. From an e-government perspective, ARTA is currently undertaking a logistics sector program that would create a unified QR code to serve as a pass-through permit and allow e-payments, which is expected to be implemented in 2021.⁹⁹ In an effort to promote transparency and accountability, facilitate ease of doing businesses, and provide the framework for smart cities, digitalization efforts by government agencies are also evident in unlikely sectors such as Energy. For instance, the Energy Virtual One-Stop Shop (EVOSS) is a web-based monitoring system developed by the Department of Energy (DOE) for energy applications and serves as a repository of project-related information and permits issued. The DOE has also developed the Philippine Renewable Energy Market System (PREMS), an online enterprise platform that ensures that industry participants comply with the Renewable Portfolio Standards (RPS) requirements and other policy mechanisms provided for by the Renewable Energy Law by automating the main functions of the RE Registrar.

⁹⁹ PIA (2020) Implementation of QR code for logistics sector eyed for 2021, <https://www.pna.gov.ph/articles/1119153>

SINGAPORE

Table 12: Singapore Scores







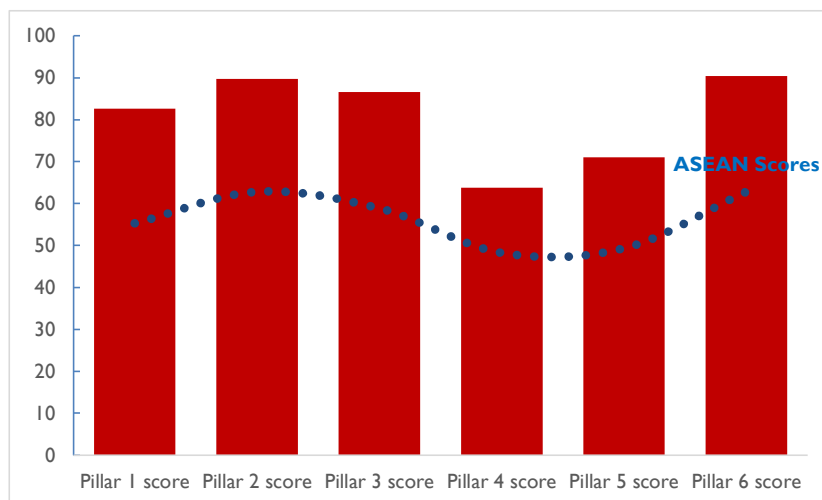
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
Singapore Scores	82.64	89.70	86.60	63.79	71.08	90.36
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 14: Singapore and ASEAN Scores



Singapore does exceptionally well in its digital integration with its Pillar scores all faring better than the regional average scores.

Singapore fares the highest in Pillar 6 for its good standing for Institutional and Infrastructural Readiness. The efforts made by the Singapore government are evident through Singapore’s digital government process to lead by example, such as updating its procurement process to enable and encourage the use of government cloud services. This

mindset shift has been adopted by a number of agencies to date. 12 public agencies have adopted the outcome-based approach by issuing a total of 21 challenges on Open Innovation Platform (OIP) and Innoleap, both virtual crowdsourcing platforms. Further, GovTech has awarded 17 companies in a co-development tender to support public agencies that are embarking on agile development projects.

The lowest performing pillar for Singapore is Pillar 4 on Digital Skills and Talent, and the Singapore government is already taking steps to address this gap. The Ministry of Communications and Information’s (MCI) 2018 Digital Readiness Blueprint sets out recommendations for building digital readiness,¹⁰⁰ and in February 2021 President Halimah Yacob launched the Digital for Life Movement which supports ground-up efforts to co-create solutions that enable all Singaporeans to benefit from digital technologies, equip them with digital skills and bridge the digital divide. The movement is part of a wider national effort to bring together the people, private and public sectors to foster digital skills, cyber-wellness and equal access among all Singaporeans. To uplift digital literacy skills and transform the digital workforce, the Infocomm Media Development Authority (IMDA), in collaboration with the Ministry of Education as well as industry and community partners, introduced programs to provide students with opportunities to develop coding and computational thinking skills. In addition, beyond efforts to widen the pool of talent in universities (where the pipeline has tripled over the last few years), the government has introduced a suite of continuing education training programs. Specifically, the Tech Skills Accelerator company-led training programs, where the government partners industry players, will help grow the tech talent pool in Singapore, and aims to create 6,250 job opportunities over the next two years.¹⁰¹

¹⁰⁰ MCI (2018) Digital Readiness Blueprint, <https://www.mci.gov.sg/en/portfolios/digital-readiness/digital-readiness-blueprint>

¹⁰¹ MTI (2021) Speech by MOS Alvin Tan during Ministry of Trade and Industry’s Committee of Supply Debate, <https://www.mti.gov.sg/Newsroom/Speeches/2021/03/Speech-by-MOS-Alvin-Tan-at-COS-2021>

Central to Singapore's efforts to support its digital trade efforts in relation to Pillar 1, Singapore has launched its Network Trade Platform (NTP) which is a one-stop trade and logistics ecosystem that supports digitalization efforts and connects different trade value chain participants in Singapore and abroad. In addition, Singapore has TradeNet, its National Single Window for trade declaration. TradeNet provides a single platform for the trade and logistics community to fulfil all import, export, and transshipment regulatory requirements.¹⁰²

Singapore fares appreciably well in other aspects, such as on data protection under Pillar 2 where Singapore's Personal Data Protection Act was amended to more adequately respond to and safeguard consumers' in the digital age and keep pace with technological advances and new business models.¹⁰³ Amendments balance consumer needs with innovation, and include: i) mandatory data breach requirements (if breach is likely to result in significant harm or impact, or is of a significant scale); ii) risk assessment requirement; iii) data portability obligation; iv) enhanced spam requirements; v) increased financial penalty cap; and vi) enhanced consent exceptions which facilitate data processing to enable innovation and meet consumer needs.

At the same time, regarding Cybersecurity under Pillar 2, a number of high-profile hacks have led the government to ramp up resources and processes to strengthen cybersecurity.¹⁰⁴ In particular, Singapore has been pushing for a set of common norms, rules, and standards governing security in cyber-space.¹⁰⁵ The Smart Nation and Digital Government Office (SNDGO) has taken this further and implemented new processes to address data incidents, including establishing the Government Data Security Contact Centre (GDSCC) in April 2020, and requiring all agencies to carry out cyber and data security incident exercises annually from March 2021. Noting that Singapore residents' cyber hygiene practices could be improved,¹⁰⁶ the Cyber Security Agency of Singapore (CSA) launched Singapore's Safer Cyberspace Masterplan 2020, which sets out a number of initiatives that aim to: i) secure core digital infrastructure; ii) safeguard cyberspace activities; and iii) empower a cyber-savvy population.¹⁰⁷

Regarding Pillar 3 on Digital Identity capabilities, the National Digital Identity (NDI) initiative was announced in 2018 to update and upgrade the capabilities of SingPass (Singapore Personal Access).¹⁰⁸ Since 2018, over 100 businesses have integrated with the NDI platform and close to 450,000 transactions are made on the platform each month. Due to its success, the SingPass app is set to become the main gateway to access government services, with plans to phase out physical tokens by April 2021 (which currently represent only 2% of logins).¹⁰⁹

Singapore scores well under Pillar 5 for Innovation and Entrepreneurship where its open economy and ease of doing business have played a key role in attracting investment and for global companies to set up base and enable knowledge and technological transfers. At the same time, the government's focus on digitally driven initiatives and nationwide technological adoption helps develop a supportive ecosystem for companies and organizations to experiment and create new and innovative solutions.

¹⁰² Singapore Customs, <https://www.customs.gov.sg/businesses/national-single-window/overview>

¹⁰³ MCI (2020) Amendments will strengthen consumer protection and support business innovation, <https://www.mci.gov.sg/pressroom/news-and-stories/pressroom/2020/11/amendments-to-the-personal-data-protection-act-and-spam-control-act-passed>

¹⁰⁴ The Straits Times (2018) Personal info of 1.5m SingHealth patients, including PM Lee, stolen in Singapore's worst cyber attack, www.straitstimes.com/singapore/personal-info-of-1.5m-singhealth-patients-including-pm-lee-stolen-in-singapores-most

¹⁰⁵ The Straits Times (2019) Singapore's cyber security chief says international norms, partnerships are key issues, www.straitstimes.com/singapore/singapores-cyber-security-chief-says-international-norms-partnerships-are-key-issues

¹⁰⁶ Channel News Asia (2020) More than a quarter of Singapore residents suffered at least 1 cybersecurity lapse in past year: CSA survey, <https://www.channelnewsasia.com/news/singapore/csa-survey-2019-cyber-security-mobile-phones-data-passwords-13040438>

¹⁰⁷ CSA (2020) Deputy Prime Minister Heng Swee Keat launches Singapore's Safer Cyberspace Masterplan 2020, <https://www.csa.gov.sg/news/press-releases/safer-cyberspace-masterplan-launch>

¹⁰⁸ GovTech (2020) SingPass, <https://www.tech.gov.sg/products-and-services/singpass/>

¹⁰⁹ OpenGovAsia (2020) SingPass mobile app to become main gateway to access government services, <https://www.opengovasia.com/singpass-mobile-app-to-become-main-gateway-to-access-government-services/>

THAILAND

Table 13: Thailand Scores







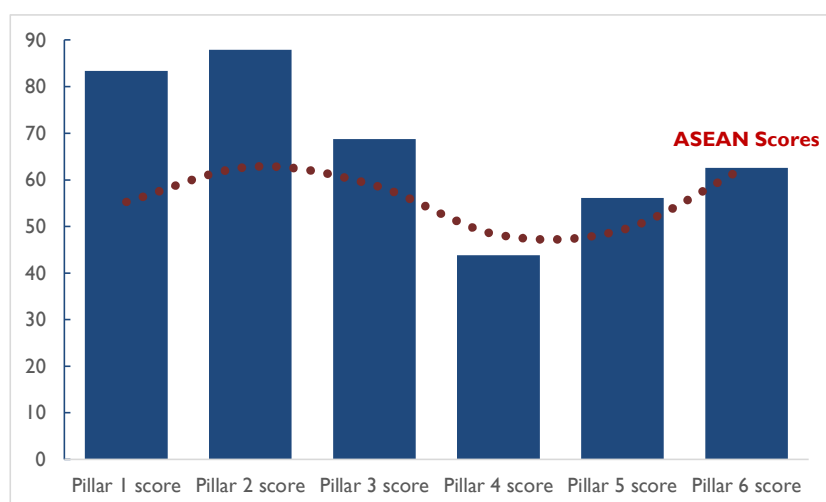
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
Thailand Scores	83.34	87.91	69.73	43.76	56.09	62.61
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 15: Thailand and ASEAN Scores



Thailand performs strongly in its digital integration efforts with the majority of its Pillars performing above the regional average scores.

Thailand's highest performing pillar is Pillar 2 on Data Protection and Cybersecurity. While Thailand in May 2019 passed the Personal Data Protection Act (PDPA), the compliance date of the PDPA has been delayed to June 2022 to grant businesses sufficient time to comply, given the need to prioritize response to disruptions caused by COVID-

19.¹¹⁰ In July 2020, the Thai government issued an interim Notification on Personal Data Security Standards B.E. 2563 (2020) as a stop-gap measure until June 2022 when compliance with the PDPA becomes mandatory. The Notification sets out minimum security controls and measures for data controllers to implement to safeguard personal data.¹¹¹ Thailand's Cybersecurity Act came into effect in 2019 to assist Critical Information Infrastructure (CII) Organizations in protecting, coping with, and mitigating cyber threats, as well as protecting the country's digital infrastructure where the National Cybersecurity Agency (NCSA) is tasked with implementing the Act.

Under Pillar 6 which looks at institutional readiness, since 2018, Thailand launched the 20 years Digital Economy and Society Development Policy which is the national policy for encouraging the use of digital technology in the development of infrastructure, innovation, information, workforce, and other resources, in a bid to mobilize national economic and social development. Furthermore in October 2019, Thailand announced the Digital Government Development Roadmap 2020-2022 which seeks to integrate the use of digital technologies into government operations and services.¹¹² This roadmap added new priorities to the Thai government's previous Digital Government Development Plans for 2017-2021 and 2016-2018 including promoting data exchange among agencies and, use of open government data, supporting digital businesses, and promote public participation through digital technologies.¹¹³ This roadmap, would, in line

¹¹⁰ Tilleke & Gibbins (2021) Personal Data Protection Act: Royal Decree Extends Compliance Date to June 1, 2022, <https://www.tilleke.com/insights/personal-data-protection-act-royal-decree-extends-compliance-date-to-june-1-2022/>

¹¹¹ Lexology (2020) PDPA Update: Thailand Issues Security Standards for Personal Data, <https://www.lexology.com/library/detail.aspx?g=ff9ae411-9205-4ba7-a1f5-b7bcc44c0a2b>

¹¹² Bangkok Post, <https://www.bangkokpost.com/business/1768429/state-agencies-to-become-digitalised-by-2022>

¹¹³ Digital Government Agency (DGA), <https://www.dga.or.th/policy-standard/policy-regulation/dga-019/dga-024/dga-029/>

with directives established in the Digital Government Act, commit Thailand to the full digitalization of all government services by 2022.

Under Pillar 1 on Digital Trade, the Thailand National Digital Trade Platform (NDTP) was established under the Office of the Public Sector Development Commission (OPDC) in September 2019 as a one-stop centralized system for digital trade data that adopts international standards.¹¹⁴ The objective is to connect the NDTP to the National Single Window (NSW) to synchronize import-export data from the Customs Department, export agents, freight forwarders, the shipping and airline industries and 36 other government agencies that provide trade-related licensing or certification. In its first phase, the NDTP will seek to digitalize trade documents such as purchase orders, invoices, and sea waybills.¹¹⁵ The cross-sector NDTP trade platform is being developed in close cooperation with the private sector through industry body the Joint Standing Committee of Commerce, Industry and Banking, which concluded a trial of blockchain technology on the platform.¹¹⁶

Regarding Pillar 3 on Digital Identity, in June 2018, the Thai government initiated work on the National Digital Identity (NDID) platform with a view of boosting digital transactions and reducing e-payment fraud. The NDID platform is implemented by the National Digital ID Company Limited as a joint venture between domestic private banks, specialized financial institutions, securities companies, asset management companies, life insurance companies, general insurance companies, electronic payment services providers, the Stock Exchange of Thailand, and Thailand Post comprising 69 companies in total to facilitate the secure exchange of user data using blockchain and facial recognition technology. ETDA has partnered with payments start-up Omise on the platform and has created the National Digital ID Company Limited to develop and operate the NDID system.¹¹⁷ Application of the NDID has however thus far has been limited to uses for customer verification by the financial services sector, and there are plans to expand services to cover juristic person and government sectors. In terms of digital payments, PromptPay was launched in 2016 where the government worked with the Bank of Thailand to create an integrated digital payment infrastructure for use through mobile devices and online platforms. As of May 2021, PromptPay had 57.7 million user registrations where daily transactions averaged 22.8 million.¹¹⁸

The Digital Skills gap in relation to Pillar 4 continues to be a big challenge in Thailand, and is one of the three main challenges in Thailand for digital transformation according to a Deloitte survey.¹¹⁹ To address this gap and to reach its goals of achieving 10,000 Thai start-ups by 2037, the Ministry of Commerce is working with industry leaders such as Google to help small businesses and other organizations learn digital skills in topics including e-commerce.¹²⁰ At the same time however, the government needs to be focusing its efforts towards IR4.0 upskilling to ensure Thailand's workforce can keep face with labor demands for the Fourth Industrial Revolution. This task is being performed by the Digital Economy Promotion Agency (DEPA), established in 2017, whose mandate includes supporting and promoting digital innovation development, including the importance of future skills development, such as coding, and has collaborated with line agencies to organize and conduct trainings to bridge the skills gap among the workforce, students, and elders. DEPA has also launched the Digital Startup Fund to provide angel funding for startups across a range of sectors to help develop the local startup ecosystem.

Digital skills play a key part in promoting innovation and entrepreneurship under Pillar 5 and relatedly the Ministry of Digital Economy and Society (MDES) has exceeded its target to complete conducting trainings for more than one million people to promote ICT usage and enhance digital literacy through its Net Pracharat project.¹²¹ Following the broadband network expansion through the Net Pracharat project to

¹¹⁴ Office of the Public Sector Development Commission (2019) Government and non-government agencies prepare to drive the development of the Thailand National Digital Trade Platform, <https://opdc.go.th/content/NTg5MQ>

¹¹⁵ RYT9 (2019) The prime minister pushes the development of international digital trading platforms as a national agenda, <https://www.ryt9.com/s/iq03/3039882>

¹¹⁶ NTT Data (2019) JSCCIB of Thailand and NTT DATA Collaborate in Trial Deployment of Blockchain Technology under National Digital Trade Platform Project, <https://www.nttdata.com/th/en/news/2020/january/jscceb-of-thailand-and-ntt-data-collaborate-in-trial-deployment-of-blockchain-technology>

¹¹⁷ OpenGov (2018) ETDA Thailand initiates National Digital ID project to promote online transactions, <https://opengovasia.com/etda-thailand-initiates-national-digital-id-project-to-promote-online-transactions/>

¹¹⁸ BOT (2021) Payment Data Indicators, May 2021,

www.bot.or.th/English/PaymentSystems/Publication/payment_data_indicators/Documents/Payment%20Data%20Indicators_BOT%20Website_Mar2021_ENG.pdf

¹¹⁹ Bangkok Post (2020) A better digital future, <https://www.bangkokpost.com/business/1992755/a-better-digital-future>

¹²⁰ Devdiscourse (2020) New Google program to help Thai small businesses learn digital skills, <https://www.devdiscourse.com/article/technology/1186419-new-google-program-to-help-thai-small-businesses-learn-digital-skills>

¹²¹ The Village Broadband Internet Project (Net Pracharat) (2018), <https://www.netpracharat.com>

provide Internet access to villages in Thailand, villagers were also provided digital literacy training. This was performed through three steps of first training 1,033 trainers who then returned to their communities to train 100,466 community leaders, and lastly where community leaders in turn trained the villagers with 1,244,633 villagers ultimately benefiting. Extending from the Net Pracharat Project, MDES established the Digital Volunteer Network to promote local community businesses and improve the quality of life through the use of digital technology to increase incomes, educational quality, public health, agriculture, e-commerce, and access to government service. These programs under the government's Digital Thailand transformation roadmap aim to not only enable the Thai population with the right skills for the digital age, but to also be able to use what they have learnt to create new innovative and entrepreneurship solutions in Thailand.

VIETNAM

Table 14: Vietnam Scores







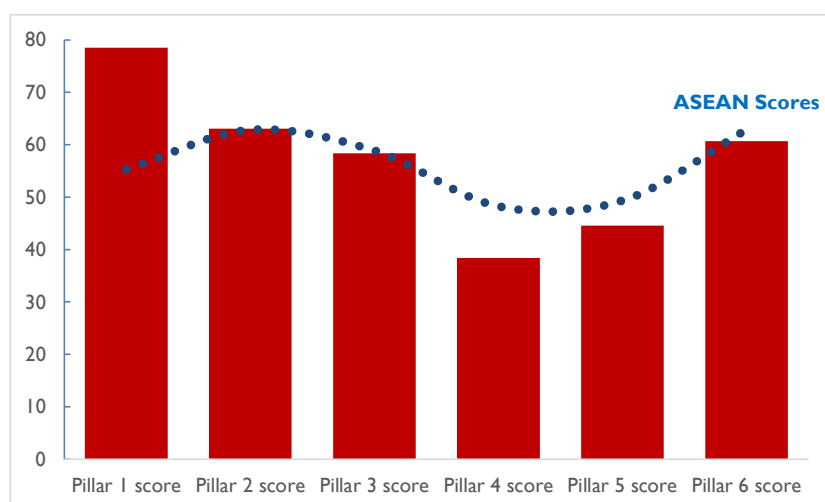
	Pillar 1  Digital Trade & Logistics	Pillar 2  Data Protection & Cybersecurity	Pillar 3  Digital Payments & Identities	Pillar 4  Digital Skills & Talent	Pillar 5  Innovation & Entrepreneurship	Pillar 6  Institutional & Infrastructural Readiness
Vietnam Scores	78.50	63.05	58.33	38.38	44.55	60.72
ASEAN Scores	55.27	62.81	58.84	48.21	49.32	62.85

Figure 16: Vietnam and ASEAN Scores



Vietnam fares competently in its digital integration where it has a few Pillars which perform better than the regional average scores.

Vietnam scores the highest under Pillar 1 among its six pillar scores, as the government has been working at a fast clip to integrate as many administrative procedures as possible into their National Single Window (NSW) and the related ASEAN Single Window (ASW) projects. As of September 2020, Vietnam's NSW—and by extension the ASEAN ASW—

had connected over 200 administrative procedures from 13 ministries,¹²² which has greatly sped up customs clearance by 7 to 8 days, and has saved more than USD2,000 per day in storage fees per shipment of goods.¹²³

Vietnam legally recognized digital signatures and established in the Law on E-Transaction No. 51/2005/QH11, which permits their use for businesses while trading. The National Electronic Authentication Centre (NEA) under the Ministry of Information and Communication (MIC) recognizes 16 public digital certificate providers who are qualified as Certification Authorities. On 14 November 2020, the MIC released a draft revision to the E-Transaction Law, widening its scope to include broader recognition of the use of digital certificates on a wider range of official documents.¹²⁴

Although Pillar 4 is Vietnam's lowest scoring pillar, the government has set in motion plans for capacity-building for STEM and digital skills within the overall masterplan for Vietnam's digital transformation, the Prime Minister's Decision No. 749/QD-TTg of June 3, 2020 National Digital Transformation Program up to 2025, with a vision to 2030.¹²⁵ The MIC has released a draft proposal for awareness raising, and skills

¹²² Vietnamnet (2020) Hundreds of administrative procedures connected to National Single Window, <https://vietnamnet.vn/en/politics/hundreds-of-administrative-procedures-connected-to-national-single-window-676024.html>

¹²³ Vietnamnet (2020) National Single Window system honoured at Sao Khue Awards 2020, <https://vietnamnet.vn/en/sci-tech-environment/national-single-window-system-honoured-at-sao-khue-awards-2020-645420.html>

¹²⁴ Vietnamnet (2020) Law on electronic transactions to be amended, <https://vietnamnet.vn/en/sci-tech-environment/law-on-electronic-transactions-to-be-amended-688526.html>

¹²⁵ Chinh Phu (2015) The Government's regular meeting No 36a/NQ-CP of Government : Resolution on e-Government, http://www.chinhphu.vn/portal/page/portal/chinhphu/hethongvanban?class_id=269&mode=detail&document_id=182216

training and developing human resources for national digital transformation to 2025 with a vision to 2030.¹²⁶ Its objectives are that in order to ensure that Vietnamese agencies, organizations and enterprises accelerate digital transformation through creating and equipping digital transformation knowledge, digital skills, and technology.

Under Pillar 2 on Data Protection and Cybersecurity, Vietnam has a draft Personal Data Protection decree, which was released for discussion in February 2020.¹²⁷ However, it has not been finalized, and there are many provisions within the Law on Cybersecurity which are duplicated in the draft. Vietnam's Law on Cybersecurity was drafted by the Ministry of Public Security (MPS), who released it in June 2018 after approval by the National Assembly.¹²⁸ It came into full force on 1 January 2019. Amongst other things, the law required all businesses to host their data within Vietnamese borders, and also required that all businesses must have a local representative office in Vietnam.

Under Pillar 3 on Digital Payments, to ensure that Vietnamese continue to have digital access to finance, and to strengthen the security of digital transactions, the State Bank of Vietnam (SBV) have been steadily working on revisions and improvements to their policies. In particular, the SBV has been particularly responsive during the COVID-19 pandemic crisis, quickly updating policies where necessary. In December 2020, the SBV approved Circular 16/2020/TT-NHNN as a regulatory change to Circular 23 of 2014 guiding the opening and use of payment accounts at payment service providers, to allow banks to apply for eKYC process to open payment accounts, instead of the traditional face-to-face process. In addition, SBV is in the drafting process of Decree on cashless payment to replace for Decree 10/12012/ND-CP.

Likewise, under Pillar 3 on Digital Identities, Vietnam is rolling out the issuance of a National Digital Identity Smart Card.¹²⁹ Currently, multiple forms of identity are being used in Vietnam, but by 2021, the National Population Database would have been established, and the national identity card database will be connected to it. The current plan will integrate the current 80 million records of Vietnamese citizens (out of a total population of 95 million) who have been issued new national identity smart cards, into the population system. The full issuance of these national identity smart cards—and therefore complete enrollment onto the database—is anticipated in July 2021.¹³⁰

While Vietnam's score under Pillar 5 fares below the regional average, the government has been working on restructuring its economy to reshape its innovation ecosystem, including increasing state expenditures related to science and technology, and prioritizing firms investing in science and technology.¹³¹ At the same time the government has been making considerable effort to incentivize Vietnamese students and workers who have gone overseas to return to share their experiences and help to develop the local tech community.

To improve its Institutional readiness in terms of Pillar 6, the government has steadily been promoting e-government initiatives over the last 20 years in the form of various circulars and regulations. However, implementation has been slow due to the regulatory sprawl where digital strategies continue to cut across multiple disciplines and ministry silos, and the government needs to enhance its efforts to better coordinate cross-agency and cross-country interoperable e-government implementation. The silver lining from the COVID-19 pandemic is the recognition of the urgency to accelerate these efforts.

¹²⁶ MIC (2020) LẤY Ý KIẾN NHÂN DÂN VỀ DỰ THẢO VĂN BẢN QUY PHẠM PHÁP LUẬT "DỰ THẢO QUYẾT ĐỊNH CỦA THỦ TƯỚNG CHÍNH PHỦ VỀ VIỆC PHÊ DUYỆT ĐỀ ÁN "NÂNG CAO NHẬN THỨC, ĐÀO TẠO KỸ NĂNG VÀ PHÁT TRIỂN NGUỒN NHÂN LỰC CHUYỂN ĐỔI SỐ QUỐC GIA ĐẾN NĂM 2025, ĐỊNH HƯỚNG ĐẾN NĂM 2030"", https://mic.gov.vn/Pages/DuThaoVanBan/XemYKienDongGop.aspx?iDDTVB_DuThaoVanBan=2033&replyUrl=/pages/duthaoovanban/danh sachduthaoovanban.aspx

¹²⁷ Chinh Phu, http://chinhphu.vn/portal/page/portal/chinhphu/congdan/DuThaoVanBan?pirefl35_27935_135_27927_27927.mode=detail&pirefl35_27935_135_27927_27927.id=3368

¹²⁸ Allens, Vietnam Laws Online Database, Law on Cybersecurity, <https://data.allens.com.au/pubs/pdf/priv/cupriv22jun18.pdf>

¹²⁹ Vietnam Times (2020) Multiple information electronic ID cards to be reviewed for issuing in Vietnam, <https://vietnamtimes.org.vn/multiple-information-electronic-id-cards-to-be-reviewed-for-issuing-in-vietnam-23580.html>

¹³⁰ Hanoi Times (2020) Vietnam plans to issue electronic ID card with multiple information, <http://hanoitimes.vn/vietnam-plans-to-issue-electronic-id-card-313880.html>







¹³¹ Nesta (2020) Understanding Innovation Policymakers in Vietnam, <https://www.nesta.org.uk/report/understanding-innovation-policymakers-vietnam/vietnams-innovation-system-glance/>

ANNEX B: INTERNATIONAL BEST PRACTICES

Comparing ASEAN's Efforts with Others in APAC

In the absence of longitudinal data to evaluate how ASEAN has fared and progressed in its digital integration efforts, one means is to compare ASEAN against other countries' scores to determine how ASEAN performs in comparison.

Table 15: ASEAN vs. Benchmark Countries Scores

	 Pillar 1 Digital Trade & Logistics	 Pillar 2 Data Protection & Cybersecurity	 Pillar 3 Digital Payments & Identities	 Pillar 4 Digital Skills & Talent	 Pillar 5 Innovation & Entrepreneurship	 Pillar 6 Institutional & Infrastructural Readiness
ASEAN	55.27	62.81	58.84	48.21	49.32	62.85
Australia	90.72	90.77	88.00	52.99	66.30	60.87
China	86.50	75.73	74.73	64.76	68.74	53.63
Japan	93.36	90.93	82.00	54.77	77.32	60.67
New Zealand	92.04	85.91	90.33	55.70	65.84	63.90
South Korea	89.28	88.42	81.42	53.77	77.92	63.59

Several of ASEAN's key trading partners were identified to conduct a simple comparative analysis with the findings shown in Table 15. While ASEAN appears to noticeably lag behind Australia, China, Japan, New Zealand, and South Korea across almost all pillars, ASEAN in fact performs better under Pillar 6, outpacing Australia, China, and Japan in terms of Institutional and Infrastructural Readiness.

In other areas, including Pillar 1 on Digital Trade and Logistics, Pillar 3 on Digital Payments and Identities, and Pillar 5 on Innovation and Entrepreneurship ASEAN is significantly trailing behind the implementation and progress of the other countries, indicating a need to urgently catch-up in these areas.

In ASEAN's second highest-performing Pillar 2 on Data Protection and Cybersecurity, although ASEAN appears to be faring well within its own ADII scores, in comparison with other countries it trails more significantly, suggesting a larger gap which ASEAN will need to crucially bridge.

Lastly under Pillar 4 on Digital Skills and Talent, ASEAN does not fare too far off from the other countries which indicate a collective challenge on building human

capacity for digital economy participation. This dearth of digital skill talent will create a more competitive challenge to secure and retain a digital workforce of the future. In today's highly mobile and global workforce and ASEAN will need to bolster its efforts to attract the best talent, and avoid a brain drain.

Examples of Other Global Digital Integration Assessment Efforts

Globally, there are other efforts by governments, businesses, and academia which have approached the similar issue in assessing and tracking digital economy integration and development across different nations. The three indexes listed below are intended to measure digital integration via slightly different lenses. These indexes are published regularly to offer reference points to track progress which is key in assessing success and identifying gaps and bottlenecks.

European Union Digital Society and Economy Index (DESI)

The European Commission has published the Digital Economy and Society Index (DESI) since 2014. The DESI is intended to measure the progress made by European Union (EU) Member States towards developing digital economies and societies. It addresses five principal policy areas, which group a total of 37 indicators. The five areas are:

- i) Connectivity: addressing fixed broadband take-up, fixed broadband coverage, mobile broadband coverage and broadband prices;
- ii) Human Capital: addressing Internet user skills;
- iii) Use of Internet: addressing the extent of citizen utilization of internet services and online transactions;
- iv) Integration of Digital Technology: addressing business digitization and e-commerce; and
- v) Digital Public Services: addressing e-government

The indicators from the DESI are compiled and collated by Eurostat as it coordinates across Union level statistical activities and ensures they are produced according to established rules and statistical principles as defined in the European statistics Code of Practice.¹³²

BBVA Digitization Index (DiGiX)

The research arm of Spanish financial services company Banco Bilbao Vizcaya Argentaria (BBVA) has published the Digitization Index (DiGiX) since 2016. DiGiX seeks to capture the progress of digitization across 99 developed and developing countries. DiGiX assesses these countries using 19 indicators grouped into six dimensions, which are further grouped into three broad categories—supply conditions, demand conditions, and institutional environment. DiGiX's six dimensions are:

- i) Infrastructure: addressing mobile network coverage, internet bandwidth and internet server facilities;

¹³² Eurostat, <https://ec.europa.eu/eurostat/web/main/about/overview/co-ordination-role>

- ii) Users Adoption: addressing mobile and fixed broadband subscriptions, digital skills and internet usage;
- iii) Enterprises Adoption: addressing innovation ecosystem components and innovative companies;
- iv) Government Adoption: addressing e-participation;
- v) Regulation: adaptability and efficiency of legal frameworks in the context of digital matters, burden of government regulation and conflict of interest regulation; and
- vi) Affordability: assessing baskets of low and high usage data and voice, and data-only mobile broadband

The DiGiX's indicators are retrieved from 'multiple public official data sources'.

Tufts University Digital Intelligence Index (DII)

The Fletcher School at Tufts University collaborated with Mastercard to produce the Digital Intelligence Index (DII), which assesses digital competitiveness, digital trust, and responsible data use across 90 economies, which are divided based on their performance. The latest DII is the third iteration, with publications in 2014, 2017, and 2020. The DII utilizes a "Digital Evolution scorecard" assessing 160 indicators across four key drivers. These drivers are:

- i) Supply Conditions: addressing digital infrastructure;
- ii) Demand Conditions: addressing willingness and ability to participate in the digital ecosystem;
- iii) Institutional Environment: addressing the state of regulatory environments and government policy with regards to digital issues; and
- iv) Innovation and Change: addressing availability of talent, industry collaboration with academia and industry, and quantum of digital services and products created

Tufts works with Mastercard, Akamai, Globalwebindex, Blue Triangle and PCRI as "data partners" to collate data for its indicators.

ANNEX C: METHODOLOGY

ADII INDICATORS

The ADII encompasses a wide range of indicators that measure the effective use of digital technologies to enable everything from digital business models to digital government services.

The indicators presented in this document were selected based on six key criteria:

Relevance

Indicators in each ADII pillar must have data that is relevant to each DIF priority area respectively. Data relevance provides a clear and accurate snapshot of the topic at hand and makes it easier to develop impactful strategies based on the information they convey.

Accessibility

The indicator must have data that is easily accessible. Whether it is a detailed report, a downloadable data file, or a dedicated micro-site, the data must be freely and/or openly available. This is to ensure that any other person or organization can access the same datasets.

Coverage

The indicator must have data for at least 8 of the 10 AMS. Any bigger gap in data coverage makes it difficult for overall scores to be accurate or representative. This is to ensure that the data effectively guides the policy recommendations that will be produced.

Timeliness

The indicator must have up-to-date data, or at least be published from 2018 onwards. Most of the databases retained use data from 2018, and only some very rare cases use 2017 data. This is to ensure that the data reflects current realities as closely as possible.

Consistency

The indicator must come from databases that are published regularly. Even if the methodology evolves over the years, it is important that the data used today is still available tomorrow. This is to ensure continuity and sustainability in future iterations of the ADII.

Transparency

The indicator must be from a reputable source that shares its approach and methodology. Whether it comes from an international organization or a private entity, the detailed methodology must be published to ensure that scoring mechanisms are impartial and objective.

PILLAR INDICATORS

PILLAR 1—DIGITALLY ENABLED TRADE & LOGISTICS			
INDICATOR	DESCRIPTION	NOTES	SOURCE
1.1	Degree to which trade/customs processes are supported by digital technologies	Aggregated indicator that measures the extent to which customs and logistics are fully supported by digital and automated procedures.	<ul style="list-style-type: none"> OECD Trade Facilitation Indicators (combination) Data available for all AMS Link
1.2	Degree to which digital certificates and signatures are in place	Measures the extent to which electronic signatures and digital certificates are available and used.	<ul style="list-style-type: none"> OECD Trade Facilitation Indicators Data available for all AMS Link
1.3	Degree to which international standards for trade documents and procedures are followed	Measures the extent to which trade documents and procedures follow international standards.	<ul style="list-style-type: none"> OECD Trade Facilitation Indicators Data available for all AMS Link
1.4	Level of quality of trade- and transport-related infrastructure	Measures the quality of connecting infrastructure and its ability to facilitate trade across borders.	<ul style="list-style-type: none"> World Bank, Logistics Performance Index (LPI) Data available for all AMS Link
1.5	Level of competence and quality of logistics services	Measures the competence and quality of logistics services (e.g., transport operators, customs brokers, etc.).	<ul style="list-style-type: none"> World Bank, Logistics Performance Index (LPI) Data available for all AMS Link

PILLAR 2—DATA PROTECTION & CYBERSECURITY			
INDICATOR	DESCRIPTION	NOTES	SOURCE
2.1	Degree to which data protection measures are in place	Aggregated indicator that assesses the existence of a personal data protection law and the security safeguards it contains to appropriately protect against loss and unauthorized access.	<ul style="list-style-type: none"> The TRPC Data Protection Index 2020 (combination) Data available for all AMS Privately owned database, but full dataset and methodology available Data from a first-edition report, but will be published on a regular basis Link
2.2	Level of legislative and regulatory cybersecurity capabilities	Aggregated indicator that assesses the existence of laws on cyber-crime and of regulations dealing with cybersecurity.	<ul style="list-style-type: none"> United Nations, ITU - Global Cybersecurity Index (combination) Data available for all AMS Some data available within the report, detailed dataset available upon request Link
2.3	Level of institutional cybersecurity capabilities	Aggregated indicator that assesses the ability, willingness, and commitment towards a national strategy for cybersecurity, including the existence of a government agency or body devoted to driving cybersecurity at a national level.	<ul style="list-style-type: none"> United Nations, ITU - Global Cybersecurity Index (combination) Data available for all AMS Some data available within the report, detailed dataset available upon request Link
2.4	Level of technical cybersecurity capabilities	Aggregated indicator that assesses the existence of a CIRT/CERT/CSIRT with national responsibility, as well as the ability, willingness, and commitment to applying international cybersecurity standards.	<ul style="list-style-type: none"> United Nations, ITU - Global Cybersecurity Index (combination) Data available for all AMS Some data available within the report, detailed dataset available upon request Link
2.5	Level of international cooperation on cybersecurity	Aggregated indicator that assesses the ability, willingness, and commitment to cooperate with foreign entities on cybersecurity.	<ul style="list-style-type: none"> United Nations, ITU- Global Cybersecurity Index (combination) Data available for all AMS Some data available within the report, detailed dataset available upon request Link

PILLAR 3—DIGITAL PAYMENTS & IDENTITIES

INDICATOR	DESCRIPTION	NOTES	SOURCE	
3.1	Proportion of people who use digital platforms or devices for banking purposes only	Measures the share of adults (respondents aged 15 years and older) who have used a mobile phone or the internet to make a payment, to make a purchase, or to send or receive money through their financial institution account in the past 12 months.	<ul style="list-style-type: none"> World Bank, Global Financial Development (Findex) database Does not include data for Brunei Darussalam 	Link
3.2	Proportion of people who use digital platforms or devices for any type of financial transaction	Measures the share of adults (respondents aged 15 years and older) who made or received digital payments in the past 12 months (who reported using mobile money, a debit or credit card, or a mobile phone to make a payment from an account, or reported using the internet to pay bills or to buy something online).	<ul style="list-style-type: none"> World Bank, Global Financial Development (Findex) database Does not include data for Brunei Darussalam 	Link
3.3	Degree to which legal frameworks enable electronic transactions	Measures the extent to which a country has laws and regulations enabling domestic and cross-border electronic transactions (i.e. e-commerce or e-transaction laws that recognize electronic data/document from trading partners).	<ul style="list-style-type: none"> UN Global Survey on Digital and Sustainable Trade Facilitation Data available for all AMS 	Link
3.4	Proportion of people who have a national identity card	Measures the share of adults (respondents aged 15 years and older) who possess a national identity card (electronic or otherwise).	<ul style="list-style-type: none"> World Bank, Global Financial Development (Findex) database Does not include data for Brunei Darussalam and the Philippines 	Link
3.5	Degree to which a digitized ID system is in place	Measures the existence and usage of a national digital ID system.	<ul style="list-style-type: none"> World Bank, Identification for Development (ID4D) global dataset Does not include data for Philippines 	Link

Note: The Global Financial Development (Findex) Database does not include data for Brunei Darussalam and the Philippines

PILLAR 4—DIGITAL SKILLS & TALENT

INDICATOR	DESCRIPTION	NOTES	SOURCE	
4.1	Proportion of graduates in science, technology, engineering, and mathematics	Measures the share of graduates from science, technology, engineering, and mathematics programs as a percentage of all tertiary-level graduates.	<ul style="list-style-type: none"> UNESCO UIS database Data available for all AMS Some data before 2018 	Link
4.2	Proportion of employment in knowledge-intensive services	Measures the share of managers, professionals, technicians, and associate professionals (including legislators and senior officials) as a percentage of total people employed.	<ul style="list-style-type: none"> WIPO, Global Innovation Index (GII) database 2020 Data available for all AMS 	Link
4.3	Level of multi-stakeholder collaboration in R&D	Measures the extent to which companies collaborate in sharing ideas and innovating, and businesses and universities collaborate on research and development.	<ul style="list-style-type: none"> World Economic Forum (WEF), Global Competitiveness Report 2019 Does not include data for Myanmar 	Link
4.4	Degree to which the active population has digital skills	Measures the extent to which extent the active population possesses sufficient digital skills (e.g. computer skills, basic coding, digital reading).	<ul style="list-style-type: none"> World Economic Forum (WEF), Global Competitiveness Report 2019 Does not include data for Myanmar 	Link
4.5	Degree to which graduates have business-relevant skillsets	Measures the extent to which graduating students from secondary education and university possess the skills needed by businesses.	<ul style="list-style-type: none"> World Economic Forum (WEF), Global Competitiveness Report 2019 Does not include data for Myanmar 	Link

Note: The World Economic Forum (WEF) Global Competitiveness Report 2019 does not include data for Myanmar

PILLAR 5—INNOVATION & ENTREPRENEURSHIP

INDICATOR	DESCRIPTION	NOTES	SOURCE	
5.1	Degree to which venture capital is available	Measures how easy it is for start-up and entrepreneurs with innovative but risky projects to obtain equity funding.	<ul style="list-style-type: none"> World Economic Forum (WEF), Global Competitiveness Report 2019 Does not include data for Myanmar 	Link
5.2	Proportion of GDP expenditure on R&D	Measures the total domestic intramural expenditure on R&D during a given period, as a percentage share of GDP.	<ul style="list-style-type: none"> WIPO, Global Innovation Index (GII) database 2020 Data available for all AMS 	Link
5.3	Degree to which innovative companies can grow	Measures the extent to which new companies with innovative ideas are able to grow rapidly.	<ul style="list-style-type: none"> World Economic Forum (WEF), Global Competitiveness Report 2019 Does not include data for Myanmar 	Link
5.4	Degree to which it is easy to start a business	Measures the procedures officially required for an entrepreneur to start up and formally operate an industrial or commercial business, as well as the time and cost to complete these procedures and the paid-in minimum capital requirement.	<ul style="list-style-type: none"> World Bank, Ease of Doing Business Index 2020 Data available for all AMS 	Link
5.5	Degree to which intellectual property protection frameworks are in place and are enforced	Aggregated indicator that measures the extent to which intellectual property is effectively protected through specific laws, bodies, and regulations.	<ul style="list-style-type: none"> Global Innovation Policy Center (GIPC), International IP Index (IIPi) 2020 Does not include data for Cambodia, Lao PDR, Myanmar¹³³ 	Link

Note: 1. The World Economic Forum (WEF) Global Competitiveness Report 2019 does not include data for Myanmar.

2. The Global Innovation Policy Center (GIPC), International IP Index (IIPi) 2020 does not include data for Cambodia, Lao PDR and Myanmar

PILLAR 6—INSTITUTIONAL & INFRASTRUCTURAL READINESS

INDICATOR	DESCRIPTION	NOTES	SOURCE	
6.1	Proportion of Active mobile-broadband subscriptions	Measures the number of data and voice mobile-broadband subscriptions and data-only mobile-broadband subscription per 100 inhabitants.	<ul style="list-style-type: none"> ITU, Measuring the Information Society Report 2018 Data available for all AMS 2018 data (2020 data available upon request) 	Link
6.2	Proportion of Internet users	Measures the share of individuals accessing the Internet in the last three months, no matter the location or the device from which it is accessed.	<ul style="list-style-type: none"> ITU, Country ICT Database Data available for all AMS 	Link
6.3	Degree to which government services are available and accessible digitally	Measures the quality, usability, and accessibility of governments' online services, resources, and portals.	<ul style="list-style-type: none"> UN E-Government Survey 2020 Data available for all AMS A composite score comprising multiple scoring criteria (individual scoring data not made available) 	Link
6.4	Degree to which a government is considered responsive to disruption and change	Measures a country's business community's perception of its ability to prepare for the future thanks to forward-looking policymakers and visionary institutions.	<ul style="list-style-type: none"> World Economic Forum (WEF), Global Competitiveness Report 2019 Does not include data for Myanmar 	Link
6.5	Degree to which a legal framework is considered conducive for digital innovation	Measures a country's business community's perception of how fast the legal framework can adapt to digital business models (e.g. e-commerce, sharing economy, fintech, etc.).	<ul style="list-style-type: none"> World Economic Forum (WEF), Global Competitiveness Report 2019 Does not include data for Myanmar 	Link

Note: 1. The World Economic Forum (WEF) Global Competitiveness Report 2019 does not include data for Myanmar.

¹³³ Indicator 5.5 is the only one that uses a database for which data is only available for 7 AMS.

ADII SCORING MECHANISM

INDICATOR SCORES

Each indicator value will be normalized to be scored out of a scale of 20. A specific normalization method can be used to normalize each type of data being used.

- Percentages (i.e., The share of a given population that uses the internet)

In country “X”, 59.6% of the population uses the internet, while in country “Y”, the number is 89.9%. The following formula allows to normalize “59.6” and “89.9” from their original scale of 100 to a new scale of 20:

COUNTRY “X”: $(59.6 / 100) * 20 = 11.92$
COUNTRY “Y”: $(89.9 / 100) * 20 = 17.98$

In this scenario, Country “X” scores 11.9 out of 20 for this indicator, and Country “Y” scores 17.9.

- Raw values (i.e., The volume of mobile money transactions in a given country)

Raw, numerical indicators require more complex normalization. Internet speeds or numbers of transactions, for instance, are measured in absolute values with no maximum value limitations (Country “X” may have 450,547 internet transactions, while country “Y” may have 345).

In cases where the data range is very large, absolute values can be transformed into natural logarithmic values, and then normalized to a scale comprised between 0 and 20.

The logarithmic values can then be normalized to a new scale using the following formula (where the “maximum” and “minimum” values are defined based on the dataset’s natural dispersion):

$$\text{Normalized value} = \left(\frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} \right) \times 20$$

Using the examples presented above, the two data points after natural log transformation are 13 (country “X”) and 5.8 (country “Y”). Using “15” as the “maximum” value and “0” as the “minimum” value, the formula can be applied thusly:

Country “X”:

$$\left(\frac{13 - 0}{15 - 0} \right) \times 20 = 17.3$$

Country “Y”

$$\left(\frac{5.8 - 0}{15 - 0} \right) \times 20 = 7.7$$

In this scenario, Country “X” scores 17.3 out of 20 for this indicator, and Country “Y” scores 7.7.

- Survey scores (i.e., The score attributed to a given country based on the existence of a type of regulation)

Survey scores can be normalized to a scale out of 20 regardless of their original scale. The World Economic Forum (WEF), for example, scores countries on a scale from 1 (very poor performance) to 7 (very strong performance), while some of the OECD’s Trade Facilitation Indicators (TFIs) are scored from 0 (“no regulation in place”) to 2 (“yes, a regulation exists”).

WEF normalization: If Country “X” scores 5.4 out of 7 and Country “Y” scores 3.3 out of 7, the following formula can be used to normalize the WEF score:

Country "X": $(5.4 / 7) * 20 = 15.42$
Country "Y": $(3.3 / 7) * 20 = 9.42$

In this scenario, Country "X" scores 15.4 out of 20 for the WEF indicator, and Country "Y" scores 9.4.

OECD normalization: If Country "X" scores 2 out of 2 and Country "Y" scores 1 out of 2, the following formula can be used to normalize the OECD score:

Country "X": $(2 / 2) * 20 = 20$
Country "Y": $(1 / 2) * 20 = 10$

In this scenario, Country "X" scores 20 out of 20 for the OECD indicator, and Country "Y" scores 10.

PILLAR SCORES

Pillar scores are the simple sum of indicator scores, normalized to be scored out of a scale of 100. This allows a consistent scoring mechanism across pillars regardless of their total number of pillars.

If, for example, pillar 1 has 3 indicators and pillar 4 has 7 indicators, the normalization formula will keep their total scores comparable:

Pillar 1: Non-normalized score: 34.4 out of 60
Normalized score: $(34.4 / 60) * 100 = 57.3$ out of 100

Indicator 1.1: 15.5 / 20
Indicator 1.2: 12.3 / 20
Indicator 1.3: 6.6 / 20

Pillar 4: Non-normalized score: 79.9 out of 140
Normalized score: $(79.9 / 140) * 100 = 57.07$ out of 100

Indicator 4.1: 3.4 / 20
Indicator 4.2: 15.6 / 20
Indicator 4.3: 12.7 / 20
Indicator 4.4: 18.9 / 20
Indicator 4.5: 14.9 / 20
Indicator 4.6: 9.8 / 20
Indicator 4.7: 4.6 / 20

In this scenario, pillar 1 has a score of 57.3 out of 100, and pillar 4 scores 57.0.

COUNTRY SCORES

For each AMS, the Total ADII score will be the normalized sum of ADII components (normalized scores for both indicators and pillars) on a scale of 100.

REGION SCORES

Once the Total ADII score of each country has been calculated and normalized on a scale of 100, a simple average provides the regional ASEAN score.

ADII DATA COMPLETION EXERCISE

This first iteration of the ADII uses data points from third-party data sources which does not include scores from some AMS. A Data Completion Exercise was conducted between 2 to 9 December 2020 to provide AMS with the opportunity to complete the ADII dataset, i.e. fill in

missing values in the indicators that were used to construct the ADII. This exercise provided support to AMS to help identify suitable alternatives utilizing similar methodologies as those in the third-party databases the ADII is based on to help complete missing values.

Data which has provided through this exercise is marked by an * to indicate that these values come from the Data Completion Exercise.

In cases where AMS did not have suitable domestic data to be used in place of the missing data, the missing values have been marked as Not Available (“NA”). In such cases, the final pillar scores will be normalized to a total score of “100” where the NA score will not be used to compute the final score.