Digitalising ASEAN

A Competitiveness Analysis

Editors Zhang Xuyao Tan Kway Guan

Lee Kuan Yew School of Public Policy
Asia Competitiveness Institute

NUS National University of Singapore

Digitalising ASEAN: A Competitiveness Analysis

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About ACI

The Asia Competitiveness Institute (ACI) was established in August 2006 as a Research Centre at the Lee Kuan Yew School of Public Policy (LKYSPP), National University of Singapore (NUS). It aims to build the intellectual leadership and network for understanding and developing competitiveness in the Asia region. ACI seeks to contribute to the enhancement of inclusive growth, living standards, and institutional governance through competitiveness research on sub-national economies in Asia. It identifies mitigating issues and challenges for potential public policy interventions through close collaboration with regional governments, business corporations, policy think-tanks, and academics. ACI's three key research pillars include (I) Sub-national economies level competitiveness analysis; (II) The development of digital economy and its implications in 16 Asia economies; and (III) Singapore's long-term growth strategies and public policy analysis.

ACI's value propositions may be encapsulated in its acronym:
Analytical inputs to initiate policies for policy-makers and business leaders in Asia
Capacity building to enable others through improvement in productivity and efficiency
Intellectual leadership to create pragmatic models of competitiveness and inclusive growth

Vision and Mission

- ACI's over-arching vision is to build up its research credibility with policy impact, contributing as a professional, world-class think-tank.
- ACI's mission is to establish our niche as a leading policy think-tank by identifying development trends, opportunities, and challenges among Asian economies and business corporations.
- ACI endeavours to articulate sound recommendations, promote discussion, and shape research agenda in the arena of public policy amongst Asian governments.
- ACI undertakes evidence-based analysis of public policy issues and decisions, in order to provide assessment of their effectiveness as well as economic and societal impact.

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Preface

In the wake of the global economic upheavals driven by the COVID-19 pandemic and the escalation of geopolitical tensions, the digital economy has emerged as a key component of the ASEAN economic agenda. The growing importance of the digital economy brings with it a new set of opportunities and pitfalls. These have yet to be fully understood, but will play a critical role in the path forward to ASEAN's development.

The Asia Competitiveness Institute (ACI) at Lee Kuan Yew School of Public Policy (LKYSPP), National University of Singapore (NUS), seeks to contribute to the understanding of the situation and provide meaningful research through our continuing series of annual studies on the ASEAN region. *Digitalising ASEAN: A Competitiveness Analysis* refreshes ACI's long-running annual competitiveness analysis of ASEAN economies with a new digitally-oriented angle. It dives deeply into the digital economy of the ASEAN member states as well as key Asian partners.

Notably, this book marks the release of the new ACI Digital Competitiveness Framework and ASEAN + Digital Competitiveness Index. This will supplement the long running Annual Competitiveness Index of ASEAN economies in analysing developments in the region. This new framework and index are accompanied by extensive discussions on key digital development issues. In-depth case studies are conducted regarding the digital payment systems in Singapore and Thailand as well as the digital infrastructure of Malaysia and the Philippines.

This publication hopes to provide readers with an understanding of the landscape of the digital economy in ASEAN as it enters the next phase of development. It also marks a key step in ACI's ongoing research into the economic competitiveness of ASEAN by keeping pace with the paradigm shift towards a digital economy.

Professor Paul Cheung
Director, Asia Competitiveness Institute
Lee Kuan Yew School of Public Policy
National University of Singapore

Executive Summary

2021 has tested the ability of the AMS to weather a crisis. As the COVID-19 pandemic drags on, disruptions to the global economy continue to cast a shadow upon the development of ASEAN. Amidst this, the economies of ASEAN have made the digital economy a key component of their strategy to achieve a new phase of growth and development for the region. This volume marks a significant refresh of ACI's long-running Annual Competitiveness Analysis of ASEAN economies by introducing the newly developed ACI Digital Competitiveness Framework and accompanying pilot ASEAN+ Digital Competitiveness Index and analysis. The volume analyses the key developments and issues facing ASEAN and some of its Asian partners with regards to the digital economy. Highlighting key issues of digital divides and development strategies.

The volume begins with an overview of the fundamental economic data of the AMS. The chapter analyses the data with respect to the COVID-19 pandemic and puts in context the extensive costs of the pandemic. It then presents fundamental data pertaining to the digital economy. It identifies key issues such as Digital Adoption, Digital Infrastructure, Cybersecurity and Digital Payments. Chapter 1 then conducts an in-depth case study of the development of digital payment systems in Thailand and Singapore, covering the path taken and future goals towards a regionally integrated system. The chapter rounds up with an overview of ASEAN's key digital economy policies past and present.

Chapter 2 features the 2021 edition of the ACI's Annual ASEAN Competitiveness Index. In this edition, we find little changes in the overall rankings, this is indicative of an entrenched development divide within the region. However, in delving deeper into the underlying sub-environments we observe evidence that the gap in Technological Infrastructure has narrowed. This finding is key to the broader discussion on digital economy in ASEAN. It provides empirical evidence supporting the development of the digital economy as a key strategy for the ASEAN members and prompted the development of the Framework in Chapter 3.

This chapter presents the newly developed ACI Digital Competitiveness Framework and accompanying pilot ASEAN+ Digital Competitiveness Index and analysis. It covers 6 ASEAN members and 5 partner economies. This new framework was developed in line with current leading global standards with regards to quantifying the digital economy. It compiles 61 indicators into 5 environments and 11 sub-environments to assess the strengths and weaknesses of the ASEAN+ economies. The chapter analyses each economy in the context of its socio-economic trends and policies. Most importantly it finds that the various governments are cognizant of their own weakness and have put in place policies targeting these weaknesses. This provides validation of the utility of the framework. The Chapter also presents a case study of the digital infrastructure of Malaysia and Philippines, it uses both the Competitiveness Index and Digital Competitiveness Index to conduct an analysis into both countries to explain the performance of both countries.

Acknowledgements

This year's *Digitalising ASEAN: A Competitiveness Analysis* is supervised by Dr Zhang Xuyao, led by Tan Kway Guan and supported by Kevin Chen, Ng Wee Yang and Quah Say Jye.

This book has updated the Annual ASEAN competitiveness studies with the latest available data. Our comprehensive approach to measuring competitiveness takes into account different factors that collectively shape the ability of a nation or region to achieve substantial and inclusive economic development over a sustained period. In addition, we apply a novel approach to assigning weights in the form of Shapley values to test the robustness of the findings. Furthermore, we mark a crucial paradigm shift in the analysis of the competitiveness landscape with the release of a new Digital Competitiveness Framework and ASEAN + Digital Competitiveness Index. This new direction of inquiry seeks to complement the existing studies and provide a more holistic understanding of the evolving nature of economic competitiveness.

This book would not have been possible without the support of our research and administrative colleagues. In particular, we would like to extend our sincere thanks to a competent and dedicated administrative team at ACI, including Cai Jiao Tracy, Wesley Chan, Nurliyana Binte Yusoff and Dewi Jelina Ayu Binte Johari.

We would also like to note with great appreciation the contributions from ACI Director Professor Paul Cheung and the research staff – Dr Xie Taojun, Dr Dawn Chow, Dr Ammu George, Dr Lucas Shen, Dr Zhang Chi, Cheah Wen Chong, Sky Chua Jun Jie, Ge Yixuan, Sumedha Gupta, Doris Liew Wan Yin, Lim Jing Zhi and Zhou Jingwei.

We place on record our appreciation for the encouragement of Professor Danny Quah (Dean), Professor Khong Yuen Foong (Vice-Dean, Research and Development), Kadir Suzaina (Vice-Dean, Academic Affairs), Francesco Mancini (Vice-Dean, Executive Education) and other colleagues in the Lee Kuan Yew School of Public Policy, NUS, for making this project possible.

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List of Abbreviations

ACI	Asia Competitiveness Institute
ACRF	ASEAN Comprehensive Recovery Framework
ADB	Asia Development Bank
ADIFAP	ASEAN Digital Integration Framework Action Plan
ADII	ASEAN Digital Integration Index
ADM2025	ASEAN Digital Masterplan 2025
ADTI	Asian Digital Transformation Index
AIM2020	ASEAN Information and Communications Technology Masterplan 2020
AMS	ASEAN Member States
APAEC	ASEAN Plan of Action for Energy Cooperation
ASEAN	Association of Southeast Asian Nations
BOT	Bank of Thailand (Thailand)
BRI	Belt and Road Initiative
BSBR	Bandar Seri Begawan Roadmap
CBDC	Central bank digital currency
CEPA	Closer Economic Partnership Arrangement
COT	Competitiveness over Time
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
DEP	Digital Education Program (Philippines)
DEPA	Digital Economy Partnership Agreement (Singapore)
DEPA	Digital Economy Promotion Agency (Thailand)
DGA	Digital Government Development Agency (Thailand)
DICT	Department of Information and Communications Technology (Philippines)
EIU	Economist Intelligence Unit
ESDM	Electronics System Design and Manufacturing (India)
FDI	Foreign Direct Investment
FMBC	Financial, Businesses and Manpower Conditions
GCI	Global Cybersecurity Index
GCR	Global Competitiveness Report
GDP	Gross Domestic Product
GIS	Government and Institutional Setting
GMID	Global Market Information Database
GNI	Gross National Income
GSM	Global System for Mobile Communications
GST	Goods and Services tax (Malaysia)
HKSTP	Hong Kong Science Technology Parks (Hong Kong)
ICT	Information and Communications Technology
IDI	ICT Development Index

IMF	International Monetary Fund
IOT	Internet of Things
ITAN	Infrastructure Transaction and Assistance Network
ITF	Innovation and Technology Fund (Hong Kong)
ITM	Industry Transformation Map (Singapore)
ITU	International Telecommunication Union
MAS	Monetary Authority of Singapore (Singapore)
Mbps	Megabits per second
MEXT	Ministry of Education, Culture, Sports, Science and Technology (Japan)
MLIT	Ministry of Land, Infrastructure, Transport and Tourism (Japan)
MOIT	Ministry of Industry and Trade (Vietnam)
MS	Macroeconomic Stability
NBM	National Broadband Mission (India)
NBTC	National Broadcasting and Telecommunications Commission (Thailand)
NFCP	National Fiberisation and Connectivity Plan (Malaysia)
PDP	Personal Data Protection (Vietnam)
PDPA	Personal Data Protection Act (Singapore)
POS	Point-of-sale
PPP	Public private partnership
QLID	Quality of Life and Infrastructure Development
SADEA	Singapore-Australia Digital Economy Agreement (Singapore)
TELMIN	Telecommunications and Information Ministers Meeting
TM	Telekom Malaysia (Malaysia)
UKSDEA	UK-Singapore Digital Economy Agreement (Singapore)
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNGGE	UN Group of Governmental Experts
VTL	Vaccinated travel lane (Singapore)
WCY	World Competitiveness Yearbook

Chapter 1
ASEAN's Digital Economy: An Engine for Post-Pandemic Growth

Quah Say Jye and Kevin Xian An Chen

1.1 Introduction

For the Association of Southeast Asian Nations (ASEAN), the turbulence of 2020 gave way to an equally disruptive 2021. Though the regional COVID-19 situation had largely stabilised by the end of 2020, the advent of the more-contagious Delta variant triggered a fresh wave of infections that battered healthcare institutions. This challenge, on top of domestic political crises and rising U.S.-China tensions, occupied the political energies of regional governments and once again limited the progress of development in the region.

Yet, even as the pandemic continued to take its toll, there were continual efforts to chart a path for recovery and to better position ASEAN to regain its economic momentum. One particular area of focus for policymakers was the digital economy, which promised to be an engine of economic recovery and post-pandemic growth. Therefore, this edition of the Asia Competitiveness Institute's (ACI) Annual Competitiveness Analysis on ASEAN will not only assess ASEAN Member States (AMS) through the use of the ACI's Competitiveness Framework, but will also look into the policy opportunities and challenges that underlie the region's efforts to undergo a digital transformation. Central to this is the newly developed Digital Competitiveness Framework and ASEAN+ Digital Competitiveness Index presented in Chapter 3.

ASEAN's digital economy has long been a subject of fascination by officials, not just for its economic potential but also due to its usefulness as a lifeline during crises. Indeed, the very first Telecommunications and Information Ministers Meeting (TELMIN) was convened in 2000 to discuss harnessing the sector to aid the region's recovery from the 1997 Asian Financial Crisis. Such excitement was sustained by factors such as the region's rapidly growing middle class and internet penetration. Recently, ASEAN's e-commerce growth rate was even projected to be four times faster than the grouping's overall GDP growth rate from 2018 to 2023.[1] These hopes persisted during the pandemic, with digital

[1] See Chen (2020)

services experiencing a further surge in adoption even as sectors such as tourism and hospitality faltered. As such, the digital economy was once again promoted as an economic lifeline and a central part of the ASEAN Comprehensive Recovery Framework (ACRF) at the 37th ASEAN Summit in November 2020.

However, this growth was not without its obstacles. ASEAN member states often lack the physical infrastructure necessary for their citizens to reliably and affordably access the internet, while wide disparities in their cybersecurity regulations and capacities limit the adoption of digital services due to trust issues. Both challenges were manifest in the realm of digital payments, a key accelerant for digital development; as will be discussed, both inclusivity and trust must be addressed for consumers to adopt digital services more widely. Digital payments will represent a more specific area of the digital economy that we focus on.

This chapter will profile the six biggest AMS economies (or the ASEAN-6) using available data up to 2021 to paint a broad picture of their overall economic and digital development amid the COVID-19 pandemic. It will discuss how the digital economy was a bright spot for ASEAN's economic development during this time, but how it also encountered challenges in the aforementioned areas. After zooming in on the development of digital payment ecosystems within two select countries – Singapore and Thailand – the chapter zooms out to outline how these challenges were addressed on the regional level within ASEAN policy documents. We show how these documents have evolved in their focus and priorities over the past five years. These insights will provide valuable context for subsequent chapters of this volume when considering the overall competitiveness of the ASEAN economy.

1.2 ASEAN in Numbers

To understand the scope of ASEAN's digital economy, it is prudent to begin with an overview of the region's economic development, particularly in light of the COVID-19 pandemic. The latest available annual data for several key indicators for the ASEAN region is presented above in Table 1.1, and several insights are quickly discernible. First, AMS have been traditionally reliant on trade, and the pandemic has not severed this trend. While most AMS saw trade as a percentage of their Gross Domestic Product (GDP) fall in 2020, five of the 10-member states still had this ratio exceed 100%.

Second, Foreign Direct Investment (FDI) inflows into the region fell by 25% to US$136 billion, but the reasons for these went beyond COVID-19. Malaysia, which saw FDI inflows halve, underwent a change of government in March 2020. Investors were likely to have been deterred by the fear of political instability.

Table 1.1: ASEAN Key Indicators 2020

Country	Land Area (`000 Square kilometres)	Population (millions)	Human Development Index (2019)	GDP (constant 2015 billion US$)	GDP per capita (constant 2015 US$)	Trade (% of GDP)	FDI Inflows	
							Billion US$	% of GDP
Brunei	5.77	0.45	0.84	13.43	30,718.00	99.54	0.58	4.81
Cambodia	181.04	16.34	0.59	23.01	1,374.60	140.96	3.62	13.51
Indonesia	1,916.86	270.20	0.72	1,027.60	3,756.90	28.79	18.58	1.76
Lao PDR	236.80	7.23	0.61	18.58	2,546.50	52.79	0.97	5.02
Malaysia	329.13	32.58	0.81	344.10	10,618.80	125.71	3.48	1.03
Myanmar	676.58	54.82	0.58	86.34	1,218.30	43.52	1.83	1.99
Philippines	300.00	108.77	0.72	358.29	3,269.70	44.37	6.54	1.89
Singapore	0.73	5.69	0.94	330.10	58.056.80	207.18	90.56	26.80
Thailand	513.14	68.13	0.78	432.65	6,199.20	87.48	-6.10	-1.22
Vietnam	331.24	97.58	0.70	258.51	2,655.80	200.16	15.80	5.88
ASEAN	4,491.29	661.79	N/A	2,892.61	4335.88	88.74	135.86	4.53

Sources: ASEANstats, UNDP (Accessed 1 Dec 2021), World Bank, UNCTAD (Accessed 6 Dec 2021)

Conversely, the FDI outflow from Thailand was driven by Tesco's (a British supermarket chain) divestment of its Southeast Asian operations to Thai conglomerate Charoen Pokphand for US$10.6 billion.[2] While the banning of the Future Forward party in February 2020 triggered a series of mass protests against the government, these pressures were seen as having a limited effect on investment flows.[3]

Yet the elephant in the room is the economic cost of the COVID-19 pandemic. While the first wave of the pandemic was largely contained by October 2020, Table 1.2 shows that most AMS registered negative economic growth as a result of movement restrictions and other disruptions to daily activities. Exacerbating the economic fallout was a fall in tourism receipts. AMS received an estimated US$127.3 billion in tourism receipts in 2019,[4] and the closing of borders resulted in an economic downturn that gripped several member states. Referring to Table 1.2: Thailand, where tourism and its related industries accounted for roughly 20% of the country's GDP in 2019, saw foreign arrivals plummet 83.2% in 2020 according to data from ASEANstats. This resulted in widespread business closures and employee layoffs.

[2]See UNCTAD (2021), pp.49.
[3]See Leow (2020)
[4]See World Travel and Tourism Council (2021)

Table 1.2: ASEAN Economic Indicators, 2020 – 2021

Country	GDP Growth in 2020 (%)	Tourism		Stimulus Packages	
		Tourism Arrivals (2020, millions)	Change in Arrivals from 2019 (%)	Value (Billion US$)	Value (% of GDP from WB)
Brunei	1.2	0.1	-66.7	0.3	2.3
Cambodia	-3.1	1.3	-80.3	3.1	13.5
Indonesia	-2.1	4.1	-74.5	258.4	25.1
Lao PDR	0.4	0.9	-81.3	10.0	2.2
Malaysia	-5.6	4.3	-83.5	97.9	28.5
Myanmar	-10.0	0.9	-79.5	0.6	0.9
Philippines	-9.6	1.5	-81.9	142.5	39.8
Singapore	-5.4	2.7	-85.8	93.0	28.1
Thailand	-6.1	6.7	-83.2	106.4	24.6
Vietnam	2.9	3.7	-79.4	19.8	7.7
ASEAN	-3.7	26.1	-81.8	732.0	25.3

Sources: World Bank, ASEANstats, Martinus and Seah (Accessed 6 Dec 2021)

These costs were compounded by the stimulus packages that ASEAN governments undertook to pursue aims such as providing support for unemployed individuals and relief for stricken industries. As seen in Table 1.2, AMS spent a staggering 25.3% of their collective GDP on stimulus packages, and four AMS (Malaysia, the Philippines, Singapore and Thailand) even issued stimulus packages that exceeded 25% of their GDP by May 2021. While necessary to alleviate the short-term stresses of the pandemic, these expenditures will further stress the fiscal resources available for the long-term development plans of the AMS.

Granted, by the end of 2020, it initially appeared that ASEAN was poised to emerge on the path to recovery. The Asian Development Bank (ADB) expressed caution in its GDP forecasts for Indonesia, Malaysia, and the Philippines, which were grappling with fresh COVID-19 outbreaks.[5] Nonetheless, GDP growth was expected to be strong in 2021, especially given the then-impending rollout of COVID-19 vaccines. Indonesia, Malaysia, and the Philippines were expected to rebound with growth of 4.5%, 7.0%, and 6.5% respectively on the back of recovering public investment numbers and global economic activity.[6]

[5]See ADB (2020), pp.4-5.
[6]See ADB (2020), pp.4-5.

Table 1.3: ASEAN GDP Growth Forecasts for 2021

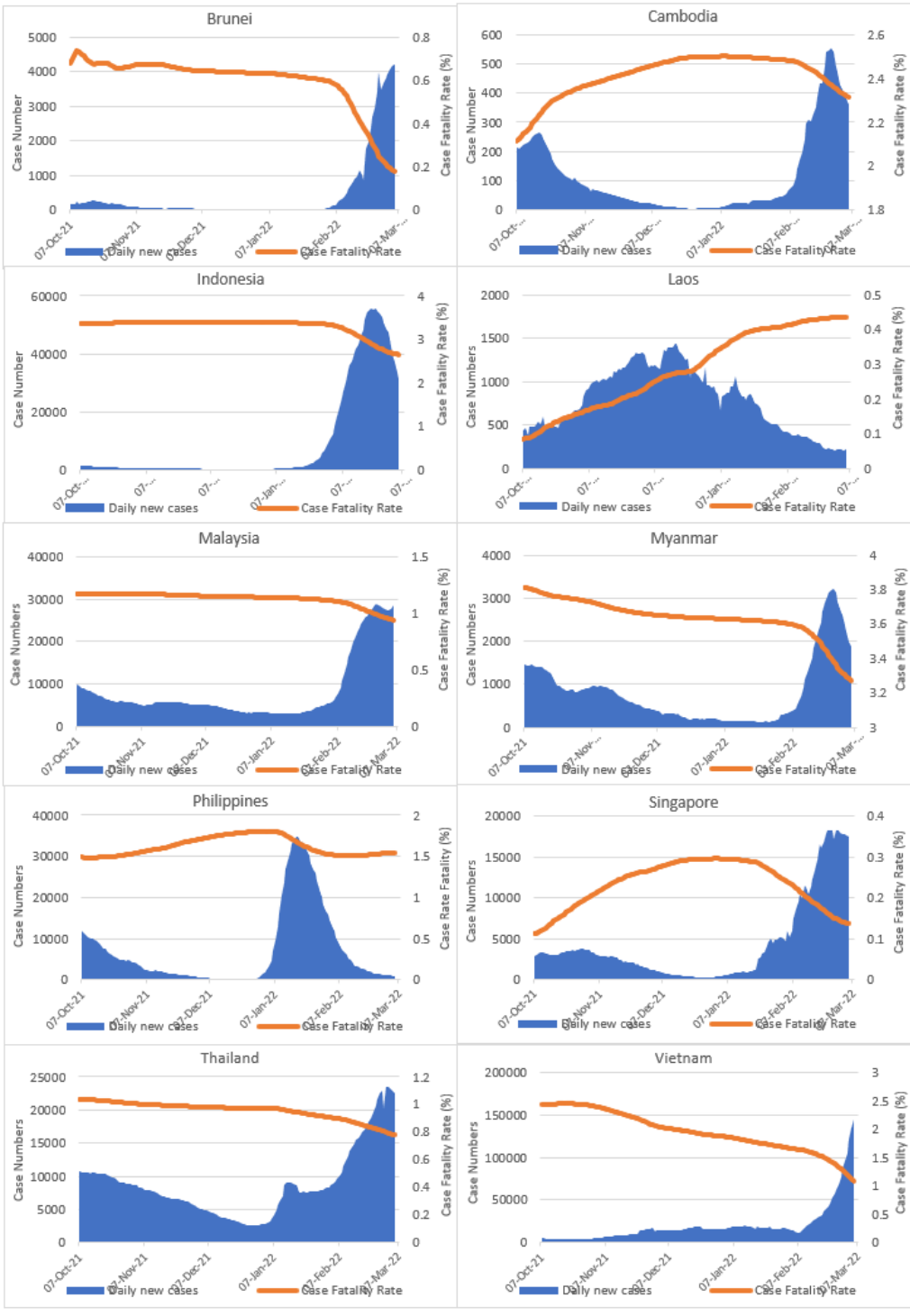
Country	ADB			WB	
	Apr Update (%)	Jul Update (%)	Sep Update (%)	Apr Update (%)	Sep Update (%)
Brunei	2.5	N/A	1.8	N/A	N/A
Cambodia	4.0	N/A	1.9	4.0	2.2
Indonesia	4.5	4.1	3.5	4.4	3.7
Lao PDR	4.0	N/A	2.3	4.0	2.2
Malaysia	6.0	5.5	4.7	6.0	3.3
Myanmar	-9.8	N/A	-18.4	-10.0	-18.0
Philippines	4.5	4.5	4.5	5.5	4.3
Singapore	6.0	6.3	6.5	N/A	N/A
Thailand	3.0	2.0	0.8	3.4	1.0
Vietnam	6.7	5.8	3.8	6.6	4.8
ASEAN	4.4	4.0	3.1	4.8	3.4

Sources: ADB, World Bank (Accessed 6 Dec 2021)

These prospects were upended by the advent of the Delta variant of COVID-19, which proved to be far more infectious than earlier variants of the disease. As a result of this variant, ASEAN states experienced severe spikes in the numbers of daily cases, hospitalisations, and deaths. Even countries such as Vietnam, which managed to remain largely unscathed by the initial wave of the virus, were not immune to this new, infectious variant. Vietnam had recorded under 4,000 cases and 35 deaths from January 2020 to April 2021, but this number leapt to over 550,000 cases and 14,000 deaths by September 2021.[7] Consequently, as shown in Table 1.3, the economic prospects of the region came under renewed pressure. While the ADB had initially predicted that the region would experience overall GDP growth of 4.4% in 2021 for an April 2021 Development Outlook, this forecast was cut to 4.0% in July, and subsequently to 3.1% in September. Singapore was the rare exception to this trend, with the ADB increasing their GDP growth projections for the AMS from April to September 2021 due to their more effective handling of the Delta variant outbreak. Though the arrival of the Delta variant was not expected to completely derail ASEAN's economic recovery, it was expected to make the process "much slower" as AMS struggled to overcome this new, virulent strain.[8]

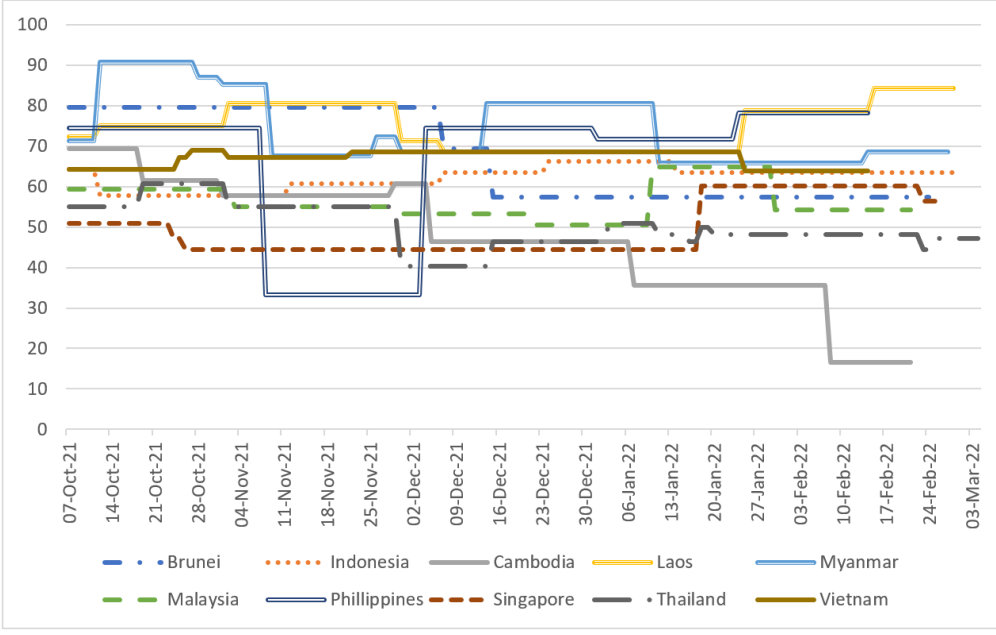
[7]See Tatarski (2021)
[8]See ADB (2021)

Figure 1.1: COVID-19 Cases in ASEAN Countries, Oct 2021 – Mar 2022



Source: Author's calculations based on data from Hale et al (2021)

Figure 1.2: COVID-19 Policy Stringency Index, 7 Oct 2021 – Latest available



Source: Hale et al (2021) accessed 11 March 2022

As this chapter is being written in early 2022, initial concerns about the Omicron variant of the virus appear to have been largely unfounded. While the variant is far more contagious than its predecessors, it is much less lethal for vaccinated populations; as Figure 1.1 shows, case fatality rates remained largely stagnant or decreased even as daily new cases soared during the height of the Omicron wave from January to February 2022, with both figures being calculated based on seven-day rolling averages. Moreover, Figure 1.2 shows variations in scores of the 10 AMS on the COVID-19 stringency index, tracking the latest measures such as the extent of school closures, workplace closures and international movement controls.

The data show that most AMS either maintained or loosened their COVID-related movement restrictions during the Omicron wave. Many states have even announced a reopening of their borders, with Thailand and the Philippines resuming quarantine-free tourist arrivals in February 2022, and Malaysia planning to follow suit in April. Vietnam lifted most restrictions on international tourists arriving in the country after 15 March 2022, though they will still be required to self-quarantine for 24 hours. Singapore is also intending to allow vaccinated visitors to skip quarantine on arrival once the omicron wave has passed, and will continue with its vaccinated travel lane (VTL) scheme with select countries in the meantime. All in all, AMS seem intent on moving beyond the pandemic to resume their economic development plans.

1.3 ASEAN Goes Online During the Pandemic

Even prior to the pandemic, ASEAN's digital economy was an area of keen interest to observers and analysts. Technological advancements and the emergence of a growing middle class among the ASEAN economies led to a rapid increase in internet users across the region between 2010 and 2019. A 2019 study found that while only 20% of the region's inhabitants had reliable internet connectivity in 2010, this proportion grew to over 60% by 2019, or roughly 360 million people.[9] Much of this was driven by mobile broadband subscriptions; Table 1.4 shows how the number of mobile and fixed broadband subscriptions among the ASEAN-6 increased significantly in a short span of two years, though mobile subscriptions grew at a much faster fate.

This growing userbase fuelled predictions that the digital economy would be an engine for economic growth. The gross merchandise value of the ASEAN digital economy, which accounts for online travel, online media, ride hailing, e-Commerce, and digital financial services, enjoyed a 33% compounded annual growth rate between 2015 and 2019, growing in size from US$32 billion to US$100 billion.[10] This figure accounted for 3.7% of Southeast Asia's GDP in 2019, or slightly more than half of the internet economy's presence as a proportion of U.S. GDP (6.5%).[11]

Growing internet penetration also encouraged governments and businesses alike to provide more digital services. Table 1.4 shows that the e-participation index and online service index increasing significantly across the ASEAN-6 from 2016 to 2018. Moreover, businesses responded to this trend as well, with the proportion of businesses that used the internet rising from around an average of 63.7% for Indonesia, the Philippines, Singapore and Thailand in 2016 to 69.4% for the same four countries two years later.

These trends were given further impetus by the COVID-19 pandemic. As ASEAN citizens were confined to their homes as part of national COVID-19 restrictions, many were forced to adopt digital solutions for daily necessities. These changes are likely to have a profound impact on the consumption habits of ASEAN citizens going forward. Granted, slight fluctuations in the e-participation and online service indices in 2020 suggest that certain ASEAN governments struggled to accommodate changes in digital habits during the pandemic. Nonetheless, digital solutions for needs such as grocery shopping and banking saw a sharp uptick during this time. It was estimated that 36% of all digital service consumers in 2020 were introduced to their services during national lockdowns, and that 94% of them intended to continue using these services after the pandemic.[12]

[9] See Google, Temasek, and Bain Company (2019), pp.9-10.
[10] Ibid, pp.7.
[11] Ibid, pp.16.
[12] See Google, Temasek, and Bain Company (2020), pp.15, 17-18.

Table 1.4: Summary Table of Select Digital Economy Indicators

Country	No. of Mobile Broadband Subscriptions (millions)			No. of Fixed Broadband Subscriptions (>10 Mbps, millions)			Internet Bandwidth Speed (Mbps)		
	2016	2018	2020	2016	2018	2020	2018	2019	2020
Indonesia	88.6	233.3	243.6	N/A	4.2	9.6	9.2	10.2	12.5
Malaysia	28.5	36.8	38.8	1.0	1.7	2.8	24.9	31.0	50.7
Philippines	56.6	86.6	N/A	N/A	8.6	N/A	9.1	10.6	15.7
Singapore	8.3	8.6	8.4	1.2	1.4	N/A	79.4	82.0	119.1
Thailand	64.0	58.1	63.1	1.0	9.0	11.5	28.7	47.5	73.1
Vietnam	43.9	68.7	78.1	5.4	12.5	16.6	18.0	N/A	N/A
Country	**E-Participation Index[1]**			**Online Service Index[2]**			**% of Businesses using the Internet**		
	2016	**2018**	**2020**	**2016**	**2018**	**2020**	**2016**	**2018**	**2020**
Indonesia	0.4	0.6	0.8	0.4	0.6	0.7	62.5	71.4	79.8
Malaysia	0.7	0.9	0.9	0.7	0.9	0.9	N/A	79.3	N/A
Philippines	0.6	0.9	0.8	0.7	0.9	0.7	77.6	81.8	87.3
Singapore	1.0	1.0	1.0	1.0	1.0	1.0	90.0	94.1	97.1
Thailand	0.6	0.7	0.8	0.6	0.6	0.8	24.5	30.1	36.6
Vietnam	0.7	0.7	0.7	0.6	0.7	0.7	N/A	65.6	N/A

Sources: ITU, UN (Accessed 6 Dec 2021), Euromonitor, IMD (Accessed 8 Dec 2021)

1.The e-Participation Index is a supplementary index to the United Nations (UN) e-Government survey that assesses the use of online services to facilitate provision of information by governments to citizens ("e-information sharing"), interaction with stakeholders ("e-consultation"), and engagement in the decision-making process ("e-decision-making"). See United Nations (2021), "e-Participation Index."

2.The Online Service Index, like the e-Participation Index, is compiled by the UN, and assesses how governments use ICT to deliver public services across a country.

1.3.1 Challenges to Digital Adoption and Focus Areas

However, this trend of online adoption is hindered by an array of issues, of which this chapter will focus on three. The first concerns the hard aspects of **digital infrastructure** – the physical Information and Communications Technology (ICT) resources such as towers that ensure fixed and mobile broadband internet access across an area. Being able to afford a stable and fast internet connection is a basic, but necessary step for individuals to be able to access digital services. The second is the area of **cybersecurity**, or "the practice of protecting critical systems and sensitive information from digital attacks".[13] This ensures that individuals will be able to utilise digital services with minimal harassment from cybercriminals, whether by means of better digital literacy or by the deterrent effect of better enforcement measures. As will be discussed in Chapter 3, infrastructure development in particular is a key shortcoming for many countries when assessing their performance for the Digital Competitiveness Index.

Digital infrastructure and cybersecurity not only affect how inclusive ASEAN's digital growth can be, but also have profound implications for the trust between consumers, merchants and other actors in the digital economy. Improving inclusivity is relatively straightforward and concerns issues such as expanding a country's telecommunications infrastructure network; yet providing more opportunities for individuals to access digital services does not necessarily equate to them becoming willing to do so, especially if said services appear alien or untrustworthy. One field where this dilemma is manifest is that of **digital payments**. Digital payments are a core component of digital economic development, creating more secure and transparent payment solutions while extending more financing options to unbanked individuals,[14] while also lowering transaction costs and offering greater security for merchants.[15] Fintech or digital companies behind the payment apps also stand to benefit from greater usage of their services.

Yet the adoption of digital payments across the ASEAN-6 remains mixed, even in countries with high levels of internet penetration and cybersecurity rankings. This suggests that more intangible factors, such as a lack of trust, are hindering greater adoption of these services and warrants a closer look at these areas. As such, it would be prudent to discuss these three features of the digital economy in this section, so as to gain a clearer understanding of the policy challenges that ASEAN governments face.

[13] See IBM (2021)
[14] See World Bank (2021)
[15] See Google, Temasek and Bain Company (2021), pp.38.

1.3.2 Digital Infrastructure

Being able to access the internet is not just a social luxury. Various studies cited in a 2018 study done by the International Telecommunication Union (ITU) observe that greater broadband penetration is directly correlated with economic growth; for example, a study of 25 OECD countries between 1996 and 2007 found that a 10% increase in broadband penetration raised per-capita GDP growth by 0.9-1.5 percentage points.[16] It is therefore heartening that the broadband penetration rate is high, particularly for mobile broadband services, with 90% of regional users accessing the internet through their mobile phones and many member states having over 100 subscriptions per 100 inhabitants.[17] This does not mean that regional governments can overlook the development of fixed broadband, given that data-intensive business applications require the support of the latter.[18] Rather, this fact places the needs and demands of ASEAN consumers in perspective.

Beneath the surface, however, there are sizable differences in the quality and coverage of digital infrastructure both among and within the AMS. The 2018 Asian Digital Transformation Index (ADTI) by the Economist Intelligence Unit (EIU) found that Singapore was the only AMS that offered widely available, fast and affordable digital connectivity, scoring 82.5 points compared to a regional average of 42.7. Malaysia came in at a distant second with 40.4 points, followed by Thailand with 26.4, Indonesia with 14.3 and the Philippines with 9.7 points.[19] There are also variations in coverage within a country, especially between rural and urban areas. In Malaysia, broadband coverage in the East Malaysian state of Sarawak increased from 14% to 78% by 2016, but questions remained over the quality of these connections.[20] In fact, a study conducted in East Malaysia in April 2020 found that 67.1% of respondents expressed dissatisfaction with unstable or slow internet connectivity, and roughly a third of respondents had to leave their homes to find stable connections.[21] These findings are broadly corroborated by our results in Chapter 3.

Overall, there are noticeable gaps in three areas: network coverage, the speed of the resulting connection, and the affordability of broadband subscriptions.

[16] See ITU (2018), pp.4.
[17] See Google, Temasek and Bain Company (2019) and ASEAN (2020b), pp. 35-36.
[18] See World Bank (2019), pp.11, 16.
[19] See EIU (2018), pp.3.
[20] See Bain Company (2018), pp.45-46.
[21] See Jalli (2020)

Coverage

Table 1.5: Network Coverage and Penetration Rate in the ASEAN-6 (2020)

Country	Coverage of Mobile Network (per 100 people)	Service Penetration Rate (% of population)
Singapore	100.0	100.0
Vietnam	99.8	99.5
Indonesia	98.7	95.6
Thailand	98.0	98.0
Malaysia	96.7	93.5
Philippines	94.0	80 (2018 Data)

Source: ITU (Accessed 6 Dec 2021)

Network coverage is perhaps the most basic factor when discussing the quality of digital infrastructure, and can be measured by the coverage of the mobile network and the internet penetration rate within a country. Data for these indicators among the ASEAN-6 is displayed in Table 1.5.

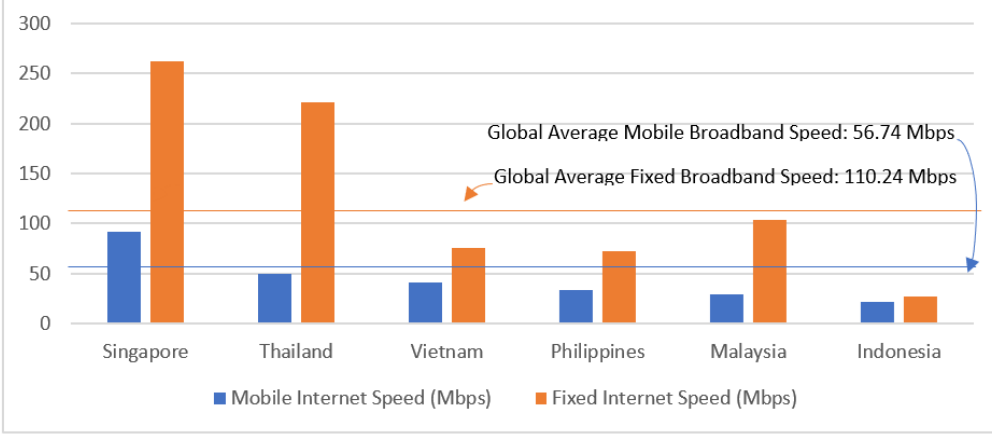
As shown in the table, Malaysia and the Philippines rank second-last [22] and last for both categories, even though their geographical circumstances pale against the challenge of connecting Indonesia's sprawling archipelago. Granted, these placements should not discount the work that has been done by both countries. For example, the share of the Malaysian population that used the internet increased from 56.3% in 2010 to 87.7% by 2020, and this is expected to grow further to 89.6% by 2025.[23] Nonetheless, this weak relative performance underscores the need for further improvements to network coverage.

One issue for consideration would be discrepancies between rural and urban network coverage. Such issues do not necessarily arise out of wilful negligence, but rather a lack of economic incentives. Due to the operating and capital costs associated with establishing new internet infrastructure, it is estimated that a single ICT tower would require 3,000 daily active users to be profitable.[24] Overcoming this challenge will require a mix of regulatory reforms from the national government, support for voluntary infrastructure sharing between companies and general support for streamlined planning and administrative processes.[25]

[22]See Chapter 3 for a dedicated case study on Malaysia and the Philippines.
[23]See Statista (2021b)
[24]See GSMA (2016), pp.7.
[25]Ibid, pp.20.

Speed

Figure 1.3: Mobile and Fixed Internet Speeds in the ASEAN-6



Source: Speedtest (Accessed 6 Oct 2021)

As the rural-urban differences in internet coverage suggest, it is not enough for network coverage to be made more widely available – these must also be stable and fast. While standard work tasks such as checking emails require little more than 1 Mbps, teleconferencing services such as Zoom require speeds of at least 1.5 Mbps to function. These needs are multiplied in multi-member households, necessitating a download speed of at least 25 Mbps in order to work from home or learn remotely.[26]

As Figure 1.3 shows, fixed and mobile broadband speeds among the ASEAN-6 are largely able to meet the minimum requirements for checking emails and accessing teleconferencing services, with even Indonesia averaging 21.96 megabits per second (Mbps) for mobile broadband and 26.95 Mbps for fixed internet speeds.

However, of the six AMS featured, only Singapore and Thailand exceed the global average speed of 110.24 Mbps for fixed broadband. In fact, Singapore is the only AMS to exceed the global average speed of 56.74 Mbps for mobile broadband. Such limitations would preclude the AMS from being able to access cutting-edge technological features such as the Internet of Things (IOT), and may even deter consumers from adopting more digital services out of frustration over slow connection speeds. Should the ASEAN-6 seek to not only recover, but thrive in the aftermath of COVID-19, it is clear that more can and should be done to improve internet connection speeds.

[26]See Gomez (2020)

Affordability

Table 1.6: Affordability of Fixed and Mobile Broadband in the ASEAN-6 (2020)

Country	Fixed Broadband (5GB)		Data-Only Mobile Broadband (1.5GB)	
	Price in US$	% of GNI per capita	Price in US$	% of GNI per capita
Singapore	35.81	0.74	17.94	0.37
Malaysia	19.64	2.19	8.21	0.91
Thailand	20.26	3.29	7.24	1.18
Vietnam	8.13	3.92	2.15	1.04
Philippines	26.14	7.85	4.53	1.36
Indonesia	34.81	10.93	4.24	1.33

Source: Alliance for Affordable Internet (Accessed 6 Oct 2021)

The third factor to consider is that of affordability. This factor is measured by first taking the average price of two baskets, one for fixed broadband (assuming a base plan of 5 gigabytes per month) and the other for mobile broadband services (1.5 gigabytes per month). This number, converted into US dollars, is then divided against the respective country's gross national income (GNI) per capita to gain a basis of comparison for broadband plan costs between countries. One of the first observations is that affordability is not just a matter of pricing in absolute terms. Table 1.6 shows that even though Singapore's broadband plans are the most expensive in the region in absolute terms at US$35.81 for fixed broadband and US$17.94 for mobile broadband, the nation-state's high GNI and low population base mean that its inhabitants spend less of their overall income on internet services. In comparison, while the price of a basic 1.5GB data-only mobile broadband plan in Indonesia would be about US$4.24, less than a quarter of the amount a Singaporean would pay, it constitutes nearly four times the proportion of Indonesia's GNI per capita as compared to Singapore's plan.

On the whole, mobile broadband plans are also shown to be much cheaper than fixed broadband plans, though it is less clear whether this explains why they are more popular than the latter, or if their popularity has led to greater competition among service providers and thus, resulted in lower prices.

1.3.3 Cybersecurity

Cybercrime is a growing global problem, as rapid digitalisation affords new opportunities for mischief. Given ASEAN's growing digital economy, its attractiveness as a target for cybercriminals will grow as well. This is especially so given how the pandemic has resulted in a surge in the adoption of digital services and remote working, with workers increasingly utilising unsecured personal devices for work and other sensitive applications. One cybersecurity company noted that they detected and blocked 382,578 mobile attacks against users in Southeast Asia in the first two quarters of 2021, a 14% increase from 2020 - in large part due to the increased usage of personal devices to access office emails, amongst other things.[27] Not only can lax cybersecurity standards cause companies to incur direct economic and business-related costs to their operations, but successful breeches can have a deterrent effect on further research and confidence. Cisco, for instance, reported that 71% of executives interviewed in 2016 said concerns over cybersecurity were hampering innovation at their firms, and 39% even noted that critical initiatives had been halted.[28]

In a worst-case scenario, it was estimated that ASEAN companies could lose up to US$750b in market capitalisation between 2017 and 2025.[29] With wide discrepancies in the cybersecurity capacities of the AMS, where some countries are especially susceptible to cybercrime, the development of the regional digital economy is not altogether secured. This is alarming for those who want to see the digital economy flourish.

Yet, the challenges surrounding efforts to improve cybersecurity in ASEAN are manifold. Three issues are discussed here - governance, capacity, and coordination.

Governance

The first is the national lack of institutional oversight and coordination. AMS have pledged to cooperate on ICT and digital development for more than two decades, beginning with the e-ASEAN Framework Agreement signed in Nov 2000. However, while they have included pledges to cooperate on cybersecurity and data protection, including the implementation of an E-Commerce Work Programme (2017-2025) which includes a regional code of conduct on dispute resolution and data protection, this has yet to materialise.[30]

[27] See Bangkok Post (2021)
[28] See Cisco (2016), pp.4.
[29] See Kearney (2018), pp.26.
[30] See ASEAN (2021c), pp.214-215.

Table 1.7: Cybersecurity Rankings and Presence of Key Institutions Across ASEAN

Country	GCI Rank (2020)	Cybersecurity Laws and Institutions (Year of Effect)			
		Cybersecurity Law	Cybersecurity Strategy	Cybersecurity Agency	Data Privacy Law
Singapore	4	Yes (2018)	Yes	Yes (2015)	Yes (2012)
Malaysia	5	Multiple laws[1]	Yes	Yes (2017)	Yes (2010)
Indonesia	24	Yes (2016)	Yes	Yes (2017)	Multiple laws[2]
Vietnam	25	Yes (2018)	Yes	Yes (2016)	Multiple laws[3]
Thailand	44	Yes (2019)	Yes	No	Yes (2019)
Philippines	61	Yes (2012)	Yes	Yes (2012)	Yes (2012)
Brunei	85	Multiple laws[4]	Yes	Yes (2008)	Multiple laws[5]
Myanmar	99	No	No	Yes (2015)	Multiple laws[6]
Lao PDR	131	No	No	Yes (2021)	Yes (2012)
Cambodia	132	No	No	Yes (1993)	Multiple laws[7]

Sources: UNIDIR, DLA Piper (Accessed 6 Nov 2021)

1. Some AMS do not have a single law to address cybersecurity. Malaysia, for example, addresses cybersecurity issues through broader legislation such as the National Security Council Act (2016), which declares security areas and the scope of powers for the National Security Council; the Personal Data Protection Act (2010), which regulates the processing of personal data in commercial transactions; and the Computer Crimes Act (1997).

2. These include Law No.11/2008 on Electronic Information and Transactions and Government Regulation No.71/2019 on Provisions of Electronic Systems and Transactions.

3. The right of privacy is enshrined in Vietnam's 2013 Constitution and 2015 Civil Code, and principles regarding personal information are included in documents such as the 2018 Cybersecurity Law.

4. These include the Computer Misuse Act of 2007, which identifies offenses pertaining to those who access or modify information on a computer without authorisation, and the Electronic Transactions Act of 2004.

5. Only applies in the context of banker-customer relationships, with the former under a legal duty to keep customer information confidential.

6. These include the Financial Institutions Law (2016), Telecommunications Law (2013) and Electronic Transactions Law (2004).

7. Data protection in Cambodia is largely handled under the country's E-Commerce law, which includes limited provisions to protect consumer data. The right to privacy is protected broadly under the Constitution as well.

Table 1.7 shows that governance on cybersecurity is still a work-in-progress at the national level. On the whole, an AMS' rank in the Global Cybersecurity Index (GCI) largely correlates with the sophistication of its cybersecurity landscape, with five of the six top-ranking AMS possessing the requisite legal frameworks and institutions. Evidently, states that rank lower on the GCI should endeavour to create new laws and policies to address their shortcomings. Yet even high-scoring states should not rest on their laurels. Malaysia, for example, lacks a comprehensive law on cybersecurity, and should work to consolidate their policy landscape to increase their resilience against cyberattacks.

Moreover, though Table 1.7 also shows that all AMS have a cybersecurity agency and seven have published their own cybersecurity strategy, their overall readiness to cooperate on cybersecurity issues is questionable. As seen from the fact that five AMS do not have a comprehensive data privacy law, some observers had warned in 2018 that it is challenging to share threat intelligence between national institutions.[31] If regional cooperation on cybersecurity is to blossom, more must be done to make sure that the groundwork, in the form of governance and policies, is sound.

Capacity

Secondly, ASEAN suffers from a lack of investment and expertise in cybersecurity. Domain observers estimated that ASEAN needs to collectively spend US$171 billion (both public and private) on cybersecurity between 2017 and 2025 to address the investment gap.[32] Compared to a global average of cybersecurity spending being 0.13% of a country's GDP, Singapore was the only AMS to spend above this proportion in 2017.[33] Still, private firms are increasing their cyber spending. 73% of businesses polled in Indonesia, Thailand, the Philippines and Singapore increased their spending during the pandemic, with 46% saying they allocated more than 50% of their total information technology budget to cybersecurity.[34] Yet, this might not be sufficient, as money must also be spent on training and capacity building. A concerning pitfall, as pointed out by the 2021 PayPal ASEAN FinTech survey, is that private firms might spend on cybersecurity for regulatory compliance instead of deterring cyberthreats. Among the respondents, the 2nd highest priority area was regulatory compliance as opposed to authentication and authorisation (4th) or threat intelligence (7th).[35]

A related challenge to the lack of investment and expertise is the talent gap. Research by the Online Trust Alliance in 2018 found that 95% of all cyber breaches could have been avoided had staff been trained in simple cyber etiquette.[36] Another report on "unlocking APAC's digital potential" found that the average employee will need to acquire 7 new digital skills to keep pace with emerging tech.[37] For example, cloud skills will likely become a requirement for jobs. The report also noted that 5.7 billion digital skill training

[31]See Kearney (2018), pp.7.
[32]Ibid, pp.31-32.
[33]Ibid, pp.10-11.
[34]See Palo Alto Networks (2020), pp.2.
[35]See PayPal (2021), pp.2.
[36]See Internet Society (2019)
[37]See Moore (2021)

sessions across the region will be needed to gain the requisite skills. This does not bode well for the region, since even Singapore, considered the most skilled economy in the region when it comes to cybersecurity, is not immune to the skills gap. The CSA reported that Singapore faced an estimated talent shortage of 3,400 cybersecurity professionals in 2020.[38] Overall, cyber risk must be viewed as more than just an IT issue. It is not just about identifying, protecting and detecting breaches, but also recovering and responding to them.[39]

Coordination

The third challenge is the lack of a regional set of policies to coordinate anti-cybercrime efforts across ASEAN. This is perhaps the most challenging weakness of the three. Unlike the EU, ASEAN's institutional structure means that it cannot legislate or mandate, it can only lead by example. Yet combatting a borderless issue such as cybercrime necessitates close coordination among AMS, such that evidence can be readily transmitted and operations coordinated for maximum efficiency.[40] This structural issue poses an important obstacle for ASEAN when dealing with cybersecurity, and it is unclear how to address this issue without calling for radical changes to the entire regional structure, and in the process sacrificing some of the region's long-cherished ideals.

The task of driving and coordinating a regional cybersecurity agenda has typically fallen to individual AMS such as Singapore and Vietnam. Singapore, for example, was particularly active during its chairmanship of the grouping in 2018, introducing a mechanism to enhance ASEAN cyber coordination after the 2018 Cyber Week and playing a big role in convincing its fellow AMS to subscribe in principle to the 11 non-binding norms of the 2015 UN Group of Governmental Experts (UNGGE) in September of that year.[41] Vietnam has also joined in, when in December 2020 they called for ASEAN+3 to complete a legal framework for cybersecurity based on voluntary codes of conduct. [42] Yet, progress on this front is slow, as debates over sovereignty and the free flow of data and information continued, and there was no consensus on how to implement key norms.

1.3.4 Digital Payments

A digital payment (sometimes called an electronic, or e-payment) can be broadly defined as a monetary transaction between two parties that occurs through a digital payment instrument without cash changing hands. At present, digital stakeholders such as Google include debit, credit and stored value cards under this definition.[43] However, it has been suggested that physical cards are an intermediate step between cash and other digital payment solutions.[44] These other solutions include: real-time funds transfer services such

[38]See Institute of System Science, National University of Singapore (2020)
[39]See Kearney (2018), pp.13-14.
[40]See Benincasa (2021)
[41]See UN (2020) and Noor (2018). See also Cyber Authority of Singapore (2021)
[42]See Vietnam Investment Review (2020)
[43]See Google, Temasek and Bain Company (2019), pp.46.
[44]See Deutsche Bank Research (2020), pp.12-14. Also, Laboure (2019), pp.32-33.

as Singapore's PayNow and Malaysia's DuitNow, which allow individuals to receive payments and to pay other parties through entering details such as the payee's mobile phone number; e-Wallets, which utilises money in a digital "wallet" to pay for goods or services, such as GrabPay and Singtel Dash; and payment facilitating apps, such as Google Pay, that allow customers to save their credit card details and use them for transactions.[45]

Digital payments offer greater efficiency, accountability and relatively lower costs as compared to cash. Due to the ease with which consumers can send and receive money via digital solutions, Boston Consulting Group estimates that moving to a cashless model would add about 1 percentage point to the annual GDP of mature economies and more than 3 percentage points to emerging economies.[46] The electronic data trail left by digital solutions offer greater accountability by ensuring that transactions are limited to the preapproved amount.[47] Moreover, while digital payments also incur processing and administrative costs, the overall costs are lower than cash payments. For example, the Global System for Mobile Communications (GSM) Association found that the cost to send money between e-wallets was 3.53% in 2020, compared to the global average cost of 6.75% for sending remittances.[48] Inherently, digital payments seem better positioned to spur economic activity and development than cash payments.

The pandemic gave rise to a surge in e-payment adoption as consumers turned to digital services driven by hygiene concerns and movement restrictions. The 2021 edition of the e-Conomy SEA report reported that e-wallet usage surged 45% from pre-COVID times, and predicted that the value of e-wallet transactions would more than double by 2025. [49] In Singapore, it was reported that PayNow transactions doubled in both volume and monetary value from 2019 to 2020 to reach 125 million transactions and S$22 billion (US$16.3 billion) respectively.[50] Similar patterns were reported across the other members of the ASEAN-6, with the Bank of Thailand (BOT) announcing that the volume of digital payments via the PromptPay platform doubled from seven million to 14.5 million in 2020,[51] and the volume of real-time payment transactions in Malaysia increasing 864% from seven million in 2019 to 68 million in 2020.[52]

There are also indications that this shift in consumer behaviour will persist after the pandemic subsides.[53] Within ASEAN, a June 2020 study by ResearchAndMarkets.com found that 62% of consumers intended to increase their usage of online payment services even after the pandemic.[54] Separately, and as mentioned earlier, the 2020 e-Conomy SEA report noted that 36% of digital service users among their ASEAN respondents were new to the service, and 90% of them intended to continue their new habits.[55] Indeed,

[45]See Moneysense (2021)
[46]See Massi et al (2019)
[47]See Nesbitt (2021)
[48]See ADB (2021), pp.14.
[49]See Google, Temasek and Bain Company (2020), pp.64.
[50]See Yong (2021)
[51]See Channel NewsAsia (2021)
[52]See Bernama (2021)
[53]See Visa (2021a), pp.6.
[54]See ResearchAndMarkets.com (2021)
[55]See Google, Temasek and Bain Company (2020), pp.9.

this preference for contactless payments that was picked up during the pandemic appears to be a global phenomenon. A 2020 survey by the European Central Bank found that 87% of respondents who had used less cash during the pandemic were "certain" or would "probably" continue to do so after its conclusion.[56] Likewise, a global survey by Visa found that 65% of respondents aimed to use contactless payments as much, or even more, than before they were vaccinated, and only 16% said they would revert to their old methods.[57]

However, cash payments remain popular because they are inclusive, established, and trusted. In countries with high rates of unbanked individuals and low card penetration, cash is the most accepted, if not the only method of payment.[58] Even in countries with high financial inclusion, it can be challenging to convince consumers to try out novel payment methods due to entrenched habits; 82% of payments in Japan, for example, still involve cash.[59] Indeed, such cases of technologically advanced countries preferring cash suggests that trust is the core issue that hinders wider digital adoption. For merchants, cash payments do not require point-of-sale (POS) terminals that can be hacked or experience technical failures.[60] For consumers who value privacy, cash offers a veil of anonymity that is missing in electronic modes of payment.[61] Indeed, a lack of trust in digital payments explains why cash is still preferred even in AMS with high proportions of banked adults. As seen in Table 1.8, the proportion of cash-on-delivery usage in Thailand and Malaysia was comparable to that in the Philippines, despite the latter having less than half the proportion of banked adults and mobile broadband penetration of the former two.

Table 1.8: Proportion of Cash-on-Delivery against Inclusivity Factors (%)

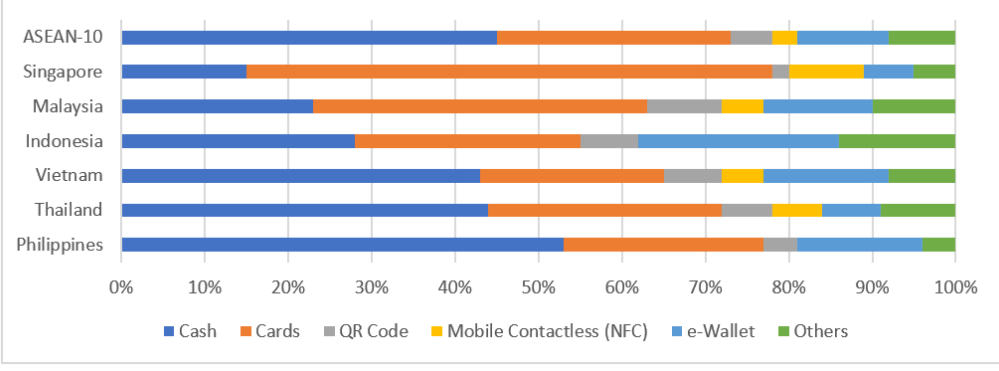
Country	Proportion of Cash on Delivery Payments	Proportion of Banked Adults	Mobile Broadband Penetration
Singapore	9.9	97.9	146.0
Malaysia	51.1	85.3	91.7
Thailand	48.5	81.6	94.7
Indonesia	65.3	48.9	34.2
Philippines	47.0	34.5	46.3
Vietnam	90.2	30.8	46.6

Sources: World Bank, Standard Charted Bank, ITU (Accessed 6 Dec 2021)

[56]See ECB (2020), pp.24.
[57]See Visa (2021b), pp.4.
[58]See Png and Tan (2020), pp.109.
[59]See Statista (2020)
[60]See Massi et al (2019)
[61]See Png and Tan (2020), pp.109-110.

The exigencies of the COVID-19 pandemic and widespread movement restrictions helped some consumers to overcome the trust gap they have with digital payments, but did not entirely wipe out the region's preference for cash. According to the 2020 Visa Consumer Payments Attitudes Survey in Figure 1.4, cash was still the preferred payment method for 45% of the survey's respondents. In fact, the proportion of the gross transaction value constituted by cash only declined slightly between 2019 and 2020, from 60% to 59%, even as the proportion of cash transactions as part of the overall volume of transactions fell from 48%, pre-COVID, to 37% in 2020.[62]

Figure 1.4: Preferred Payment Methods in the ASEAN-6 and Overall (2020)



Source: Visa (Accessed 13 Nov 2021)

Indeed, there appears to be a strong sense of inertia to adopt digital payment solutions for individuals who have, in general, not significantly embraced digital services in general. A study by the World Economic Forum found that only 24% of those who had barely digitalised their daily activities (0-25%) were interested in using digital payments, as compared to 49% for slightly digitalised individuals (26-50%) and 73% for moderately digitalised individuals (51-75%).[63] This supplements the earlier findings about new digital service users choosing to continue using said services after the pandemic subsides, and raises the worrying prospect of a widening digital divide between the digital adopters and the cash holdouts.

1.4 Case Study: A Tale of Two Payment Ecosystems – Singapore and Thailand

Keeping to the specific subject of digital payments, Singapore and Thailand are amongst Southeast Asia's two more active countries in this area. Thailand has been conspicuously active with establishing cross-border QR payment codes, while Singapore has the highest rate of digital banking in the region. Together, the two countries established the first global linkage of real-time payment systems in April 2021, a step which might come to

[62]See Google, Temasek and Bain Company (2020), pp.56.
[63]See World Economic Forum (2021), pp.21.

represent an important milestone in the advancement of the digital economy worldwide. These trends have only accelerated as a result of COVID-19, and given how they seem likely to extend to the post-pandemic world, zooming in on the development of the digital payment ecosystems in both countries seems timely, and may provide valuable lessons.

Singapore's digital payments journey illustrates the challenges that highly banked countries can face when trying to embrace new methods of payment. Singapore has promoted cashless payments since the 1980s with the introduction of GIRO transfers to pay recurring bills in 1984. The island-state also followed up with the launch of the Electronic Commerce Plan in 1998 to prioritise and structure its policies.[64] Infrastructure was a key focus of the plan when it came to the issue of payments, with the government announcing the creation of numerous security systems to try and improve consumer trust in online payments.[65] Yet the focus on infrastructure alone was not enough to convince people to convert to digital payments,[66] especially since there was no centralised body responsible for coordinating the approach or unified law to deal with payment providers. The result was a crowded payments sector with inefficient and exclusive payment options, ultimately hindering its growth for years.[67] In 2017, Prime Minister Lee Hsien Loong lamented in his National Day Rally speech that Singapore was "backward" in its digital payments landscape despite high levels of digital literacy, with 60% of transactions still conducted via cash and cheques.[68]

While recent improvements to Singapore's payments landscape can be attributed to COVID-19, this should not discount the groundwork implemented by the government since 2017. In 2019, the Singapore Parliament passed the Payment Services Bill, creating a single piece of legislation to handle payment services. The bill gave the Monetary Authority of Singapore (MAS) the power to impose technology risk management requirements on all licensees, helping to improve trust in payment solutions.[69] Singapore also launched the PayNow peer-to-peer funds transfer service in 2017, as well as the unified QR code system (SGQR) in 2018, allowing businesses to display a single label while still offering all of the various payment services in the market. By 2019, it was estimated that transactions using PayNow had increased in volume and value from 150,000 transactions and S$24 million (US$17.8 million) in its first month of operations to over 5 million transactions and S$5 billion (US$3.7 billion) from January to July 2019.[70] Moreover, over 32,000 SGQR labels were deployed across Singapore by September 2019, representing a penetration rate of about 20% of all retail acceptance points.[71]

Yet more dramatic changes took place during the COVID-19 pandemic. PayNow values and volumes doubled between 2019 and 2020, while SGQR codes had been distributed to 75% of all merchants in Singapore by October 2021.[72] MAS also observed that

[64]See Ng (2018), pp.307.
[65]See IMDA (1998)
[66]See Ng (2018), pp.307.
[67]See KPMG (2016), pp.8.
[68]See Prime Minister's Office Singapore (2017)
[69]See Allen and Gledhill (2019)
[70]See Monetary Authority of Singapore (2019)
[71]Ibid.
[72]See Monetary Authority of Singapore (2021)

the number of registrations for PayNow rose by 1.6 million users to a total of 4.9 million from 2019 to 2020, a nearly 50% increase.[73] Though cards still constitute the vast majority of transactions by volume and value, it is noteworthy that the value of card payments dropped by roughly 10% from 2019 to 2020, suggesting that higher value purchases were made using other methods. Moreover, while comprehensive data concerning e-wallet usage in 2020 is still emerging,[74] E-wallets such as GrabPay and DBS PayLah! claimed 20% of the market for online payments, compared to 45% for credit cards and 12% for bank transfers; in fact, some observers have predicted that e-wallets are on track to overtake credit cards as the most popular online payment method by 2024.[75] While it remains to be seen whether this prediction will come to pass, the tracks ahead of it has been paved by regulatory and sectoral reforms in Singapore, as well as the shock of the COVID-19 pandemic.

Thailand's digital payment journey, in comparison, placed a special premium on connecting its payment infrastructure with its neighbours. The timeline of their efforts can be found in Table 1.9. Like Singapore, Thailand started on its journey decades ago, having instituted four payment roadmaps since 2000. The fourth and current roadmap, which began in 2019, aimed to make digital payments the most preferred choice for Thai consumers by 2021 by focusing on five development frameworks: creating inter-operable infrastructure, innovation, inclusion, immunity and information.[76] Thailand also started its own peer-to-peer fund transfer service (PromptPay) in 2017, and instituted its own QR payment standard the same year. A defining focus of the fourth roadmap concerned cross-border payment services, an issue that has been consistently raised in all payment systems reports by the Bank of Thailand (BOT) since 2018.

The reason for this focus has to do with the prevalence of cross-border economic activities in the Thai economy. According to the BOT, border trade between Malaysia, Myanmar, Laos and Cambodia accounted for 1 trillion baht (US$30.0 billion) in 2017, nearly half of Thailand's trade with China for the same year (US$73.7 billion) – however, the usage of cash for the vast majority of these transactions incurred excess costs.[77] Similarly, Thailand hosted 2.1 million workers from Myanmar, Laos, and Cambodia in 2018, constituting 60% of their foreign worker population and creating strong demand for remittance services. Since traditional channels were inconvenient and expensive, the government sought more convenient digital payment methods.[78] Lastly, Thailand not only enjoyed the status of being a popular tourist destination, welcoming over 35.4 million travellers in 2017, but nine million Thai tourists also travelled to foreign countries and spent more than 300 billion baht (US$9.0 billion) that same year.[79] Promoting digital payments was

[73] See Ang (2021)

[74] See Monetary Authority of Singapore (2021). While PayNow data up until the first half of 2021 was supplied to the Singapore Parliament by the Association of Banks in Singapore, accurate data for e-money transactions is much more challenging to acquire due to it being split among several payment service licensees. As such, accurate data for e-wallet usage is only expected in 2022 when the services need to submit regulatory returns on said data.

[75] See Choy (2021)

[76] See Bank of Thailand (2019), pp.27.

[77] Ibid, pp.17.

[78] Ibid, pp.17.

[79] See Bank of Thailand (2019), pp.17.

not only a means to offer foreign visitors more payment options while in Thailand, but also to foster a more integrated ASEAN.

Table 1.9: Overview of Thailand's QR Payment and Real-Time Payment Link-Ups

Date	Country	Service Type
Oct 2018	Singapore	QR code payment link-up
Dec 2018	Japan	QR code payment link-up
Aug 2019	Singapore	Bank transfers between accounts using apps
Nov 2019	Laos	QR code payment link-up
Feb 2020	Cambodia	QR code payment link-up (reciprocal after Q3 2020)
Mar 2021	Vietnam	QR code payment link-up
Apr 2021	Singapore	Real-time payment system link-up (PayNow, PromptPay)
Jun 2021	Malaysia	QR code payment link-up (to extend to remittance later)
Aug 2021	Indonesia	Agreement to launch QR code payment link-up (2022)

Source: Asia Competitiveness Institute

This is not to say that Singapore has ignored cross-border payment arrangements - far from it. Singapore and Thailand pioneered the first inter-country real-time payment link-up in April 2021. Singapore is also in the midst of establishing a second real-time payment system link-up with Malaysia that is scheduled for launch in the fourth quarter of 2022,[80] It is also conducting a cross-border payments trial with the central banks of Australia, Malaysia and South Africa concerning central bank digital currencies (CBDCs), which are digital forms of existing currencies.[81] Both countries seek to make digital payments more convenient (by streamlining and consolidating different protocols), inclusive (by encouraging more merchants and institutions to support digital payment methods), and trusted (through government regulation of the sector). Indeed, what fundamentally differentiates Singapore's approach from that of Thailand's is the latter's more specialised push to promote cross-border payments.

Thailand still lags behind Singapore in key digital payment indicators, but its national policies position it well for future growth. As shown in Table 1.8 Thailand has roughly 20% fewer banked adults in proportion when compared to Singapore (81.6% versus 97.9%) and roughly two-thirds of the mobile broadband penetration of the latter country (94.7% versus 146%). In other words, national circumstances make digital payments less inclusive in Thailand as compared to Singapore, and it is perhaps unsurprising

[80]See Ganapathy (2021)
[81]See Reuters (2021)

that nearly three times as many Thai respondents expressed a preference for cash as a payment method when compared to Singaporean respondents in the Visa survey (15% versus 44%).[82] Security remains a pointed concern for Thai consumers as well, with a spate of online fraud incidents in October 2021 affecting nearly 10,000 credit and debit cards.[83] Nonetheless, as Thailand's indicators improve and favourable circumstances arise, so too will its digital payment proportions. Even before the COVID-19 pandemic made itself felt, it was reported by BOT Governor Veerathai Santiprabhob that the growth rate of cash usage had declined from a high of 7 to 8% per annum to 2 to 3 %, and that the rate of digital transactions per user doubled from 63 in 2019 to 135 in early 2020. [84] The BOT also announced that Thailand's digital payment volume more than doubled from February 2020 to February 2021, from 10.6 million to 22.3 million transactions per day.[85] In October 2021, the Thai central bank noted that digital payments had quadrupled from pre-pandemic levels. [86]

Overall, both Singapore and Thailand are well positioned to promote digital payments among their populations by addressing the convenience, inclusivity and security of digital payments. Yet, cultivating trust in digital technologies, as evidenced by the arduous path both countries have taken with their decades-long plans, is a more challenging factor. This is likely to have taken a hit due to the recent scandals or cases of fraud that have arisen in both countries.[87] Even as the two governments lay the path for digitalisation, this transition will not always be smooth; it cannot be rushed, and it will take time for consumers to accustom themselves to trusting new and novel technologies. This is not an issue that is specific to the two countries, but can be generalised across ASEAN.

Efforts should be undertaken by governments to encourage the use of digital payments to bolster the digital economy, despite the rate of progress being likely to be modest. In 2016, a consumer banking survey found that 54% of Malaysian respondents would not trust a financial service provider without physical branches,[88] providing one explanation why 51.1% of delivery transactions involved cash despite the country's mobile broadband penetration rate of 91.7%. Even during the pandemic, a UOB survey of ASEAN Consumer Sentiments in 2021 found that close to 90% of respondents were able to imagine a future without cash – but only when digital payment methods became more convenient to use, more widely accepted by retailers, and more secure.[89] It is questionable whether improving accessibility and inclusion alone can convince consumers to adopt digital payments. Instead, as we will explore in the next section, a more viable way forward is to focus on skills development and broader digital literacy.

[82]See Visa (2021), pp.8.
[83]See Banchongduang (2021)
[84]See Banchongduang et al (2020)
[85]See Reuters (2021)
[86]See Channel NewsAsia (2021)
[87]See Carter (2021) and Raguraman (2021)
[88]See UOB (2017), pp.6-7.
[89]See UOB (2021), pp.3.

1.5 ASEAN's Policy Response – From AIM 2020 to ADM 2025

Table 1.10: Timeline of ASEAN Digital Economy Policy Documents, 2015-2021

Date	Title
Nov 2016	ASEAN ICT Masterplan 2020 (AIM 2020)
Nov 2017	ASEAN Work Program on Electronic Commerce
Nov 2018	ASEAN Agreement on Electronic Commerce
Nov 2018	ASEAN Digital Integration Framework Action Plan 2019-2025 (ADIFAP)
Nov 2020	ASEAN Comprehensive Recovery Framework (ACRF)
Jan 2021	ASEAN Digital Masterplan 2025 (ADM 2025)
Sep 2021	The Bandar Seri Begawan Roadmap on Digital Transformation to Accelerate ASEAN's Economic Recovery and Digital Economy Integration (BSBR)

Source: Asia Competitiveness Institute

The above challenges for ASEAN's digital development have not gone unnoticed by ASEAN policymakers. They have responded with a range of policy documents to coordinate a more regional approach to developing the digital economy. Table 1.10 lists out the timeline of ASEAN's policy documents such as the ASEAN Information and Communications Technology Masterplan 2020 (AIM 2020) and ASEAN Digital Integration Framework Action Plan (ADIFAP). These aimed to promote cooperation in areas such as digital trade and data governance and were mentioned as part of ASEAN's regulatory framework on the digital economy that would underpin its recovery in the ACRF. More recently, the ASEAN Digital Masterplan 2025 (ADM 2025) and Bandar Seri Begawan Roadmap (BSBR) highlighted the greater urgency for economic recovery that emerged followed the ravages of the Delta variant, and prioritised specific areas of the digital economy that required further development.

These documents listed in Table 1.10 converge on the shared goal of furthering ASEAN's digital development, but the focus of and synergies between each document differ significantly. The masterplans, such as AIM 2020 and ADM 2025, are specific sectoral frameworks that outline a broad approach to dealing with wide-ranging development problems, as agreed upon in documents such as the ASEAN Agreement on Electronic Commerce. Action plans such as ADIFAP operate as umbrella documents for these master-

plans and their related agreements. The BSBR, by comparison, is similar to ADIFAP. It highlights the initiatives that would address the urgent task of ASEAN's economic recovery quickly and efficiently.[90] Nonetheless, there is a clear progression of ideas following the chronological release of each document that bears further elaboration.

Table 1.11: Key Outcomes and Strategic Thrusts for AIM 2020 (2015)

	Five Key Outcomes	Eight Strategic Thrusts
AIM 2020	1. An accessible, inclusive and affordable digital economy 2. Deployment of Next-Gen ICT as enablers of growth 3. Sustainable development through smart cities 4. Multiple ICT opportunities across a single regional market 5. Secure digital marketplaces, safe online communities	1. Economic integration and transformation 2. People integration and empowerment through ICT 3. Innovation 4. ICT Infrastructure development 5. Human capital development 6. ICT in the single market 7. New media and content 8. Information security and assurance

Source: ASEAN ICT Masterplan 2020 (Visited on 03/21/2022)

AIM 2020 was an ambitious document that hoped to address the long-term challenges facing ASEAN's digital development. Approved by the 15th ASEAN Telecommunications and Information Technology Ministers' Meeting (TELMIN), it contained five key outcomes, eight strategic thrusts, 16 key initiatives, and 28 action points, the main points of which are listed in Table 1.11. It is notable that the document appears to focus on both the development of digital skills among ASEAN populations (i.e. people integration and empowerment) and the construction of physical infrastructure (i.e. smart cities) to harness technological developments. In this manner, ASEAN acknowledges the two-pronged problem of building both inclusivity (through more accessible infrastructure) and trust (through education and training). This latter point would inform the development of the ASEAN Smart Cities Network under Singapore's chairmanship of the grouping from 2017 to 2018, as well as the development of institutions such as the ASEAN-Singapore Cybersecurity Centre of Excellence. These centres not only conduct research and provide training for international partners on cybersecurity policy issues, but also exchange information about open-source cyberthreats and information about potential weaknesses in cyber infrastructure.

However, as noted in the final review for AIM 2020, this broad approach contained shortcomings. First, AIM 2020 struggled to account for the wide differences in the digital development of the AMS.[91] While it correctly identified areas for improvement, the document struggled to prescribe actions that account for the circumstances of each AMS. Second, the lack of standardised statistical measures of digital development made it challenging to assess policy effectiveness; for example, increased smartphone usage could be

[90] See ASEAN Secretariat (2021b), pp.3.
[91] See ASEAN Secretariat (2020b), pp.12-13, 33

attributable to regulatory changes, or could be due to a proliferation of cheaper mobile phone models. Third, AIM 2020 adopted what the ADM 2025 authors called a "spray gun approach", in which its focus and energy were utilised inefficiently due to a lack of specificity in its project needs and prioritisation in project outcomes.[92] Furthermore, while the long-term outcomes envisioned by AIM 2020 were worthy to aspire towards, they left the document largely unable to respond to rapid technological developments. To this end, the review authors recommended shifting to a series of three-year plans instead of long-term blueprints, and to create more specific outcomes and initiatives.[93]

Table 1.12: Key Policy and Priority Areas for ADIFAP (2018)

	Five Policy Areas	Six Priority Areas
ADIFAP	1. Digital Connectivity and Affordable Access 2. Financial Ecosystem 3. Commerce and trade 4. Workforce transformation 5. Business ecosystem	1. Facilitate seamless trade 2. Protect data while supporting digital trade and innovation 3. Enable seamless digital payments 4. Broaden digital talent base 5. Foster entrepreneurship 6. Coordinate actions

Source: ASEAN Digital Integration Framework Action Plan 2019-2025 (Visited on 03/21/2022)

ADIFAP, by contrast, is an action plan that runs concurrently with other ASEAN policy documents, and puts forward outputs, timelines, and more specificity in implementing its digital development goals for ASEAN. As seen in Table 1.12, its five policy and six priority areas correspond to short-to-medium term challenges that businesses face in ASEAN, and are essentially an effort to streamline the links between past policy documents. The notion of human capital development from AIM 2020, for example, was sharpened to "[broadening] the digital talent base" and "[fostering] entrepreneurship," with a more specific list of initiatives to support such goals.

However, ADIFAP's tighter, more focused vision as compared to AIM 2020 resulted in the notable exclusion of issues such as climate change. While such topics were raised under subsequent masterplans such as ADM 2025, which linked ASEAN efforts to address climate change and grow the digital economy, Table 1.13 shows that they were conspicuously absent from ADIFAP.[94] This omission was likely by design. Action plans such as ADIFAP can be seen as supplements to the overly-broad vision of sectoral frameworks such as AIM 2020, that seek to establish a clear stance on immediately pressing issues. Furthermore, the periodic review of such action plans allows for emerging issues to be introduced into subsequent iterations of the document. With ADIFAP set for a review to account for "emerging developments in the digital ecosystem",[95] it is possible for ASEAN policymakers to establish linkages between it and ASEAN policy documents that relate

[92]See ASEAN (2021a), pp.40.
[93]See ASEAN Secretariat (2020b), pp.12-13.
[94]See Quah and Chen (2021), pp.5-6.
[95]See ASEAN Secretariat (2021b), pp.4.

to climate change, such as the ASEAN Plan of Action for Energy Cooperation (APAEC). [96]

Table 1.13: Comparison of the Priority Areas of ADIFAP and ADM 2025

ADIFAP	ADM 2025
1. Facilitate seamless trade	1. Speed ASEAN's recovery from COVID
2. Protect data and innovation	2. Increase the quality and coverage of fixed and mobile broadband infrastructure
3. Enable seamless digital payments	3. Deliver trusted services and prevent consumer harm
4. Broaden the region's digital talent base	4. Develop a competitive market for digital services
5. Foster entrepreneurship	5. Increase the supply of public e-services
6. Coordinate actions through a single body	6. Connect businesses and facilitate cross-border trade
	7. Facilitate greater participation in the digital economy
	8. Remove barriers to the use of digital services

Sources: ASEAN Digital Integration Framework Action Plan 2019-2025 and ASEAN Digital Masterplan 2025 (Visited on 03/21/2022)

This need to address emerging issues was readily apparent in ADM 2025, which was created in 2021 to lay out a path for ASEAN to recover from the COVID-19 pandemic by leveraging the digital economy. As outlined in Table 1.13, ADM 2025's priorities largely concern challenges that limit the adoption of digital services by consumers, making the digital economy more accessible and inclusive for ASEAN consumers. For example, the digital infrastructure gap in ASEAN became more urgent in the context of the pandemic, as a lack of investment in fixed and mobile broadband infrastructure has inhibited would-be consumers from accessing online services. Moreover, the third priority area of preventing consumer harm places the broader issue of cybersecurity in the more specific context of building consumer trust. While the economic costs of cyberattacks ostensibly remain a concern for ASEAN governments, such incidents can also have a negative impact on public confidence in digital services.

ADM 2025's people-centric focus can be seen as an evolution of the objectives of AIM 2020, albeit within the boundaries outlined by ADIFAP. An issue of note is how both AIM 2020 and ADM 2025 looked at the issue of skill gaps within ASEAN. Given the sophistication of parts of the digital economy, skilled labour is crucial to ensure that digitisation efforts bear fruit. AIM 2020 looked to addressing skill gaps through labour migration, or "cross-border flows of ICT professionals in order to identify and address skill gaps" under initiative 5.1.1.1 of the fifth Strategic Thrust."[97] This ostensibly displays the logic of skills and technology transfers, as professionals bring with them skills that will pass on to the local population. ADM 2025, however, took a different route and downplayed labour mobility. Instead, it calls for the establishment of "Centres of Excellence" to provide training for local labour. [98] There are several ways that this shift might be explained, including the global rise in global nativism. Nonetheless, the priorities of ADM 2025 sharpen the

[96] See Quah and Chen (2021), pp.5-6.
[97] See ASEAN Secretariat (2020b)
[98] See ASEAN Secretariat (2021a), pp.65.

goals that AIM 2020 laid out in its envisioning of a digitalised ASEAN, while remaining within ADIFAP's goals of broadening the region's digital talent base and fostering entrepreneurship.

It was under ADM 2025's goals and Brunei's chairmanship of ASEAN in 2021 that the BSBR was formulated to provide an even more prioritised map to expedite the grouping's digitalisation. As seen in Table 1.14, the BSBR contains three effective phases (Recovery (2021-2022), Acceleration (2022-2024), and Transformation (2025)), and eschews new prescriptions for achievable initiatives that are already underway. For example, the aim to have inter-operable cross-border digital payments across ASEAN by 2024 is a relatively realistic goal, with Thailand alone boasting QR code payment agreements with at least six of its nine ASEAN partners.[99] The BSBR also seeks to undertake reviews of ongoing frameworks such as ADIFAP to adjust delivery timelines and incorporate new priorities, and to finalise the inaugural report on the ASEAN Digital Integration Index (ADII).[100]

Table 1.14: Overview of the BSBR

Phase	Description
Recovery (2021-2022)	1) Adopt Interoperable and Secure Digital Solutions to Facilitate Cross-Border Travel
	2) Strengthen the Coordinating Mechanism and Capacities on Digital Transformation
	3) Adopt the Work Plan to Facilitate the Implementation of the ASEAN Electronic Commerce Agreement
	4) Review DIFAP 2019-2025
	5) Finalise the 1st Report of ASEAN Digital Integration Index
Acceleration (2022-2024)	1) Accelerate Existing Work on Trade Facilitation and Digitalisation
	2) Implement Interoperable Cross-Border Digital Payments in ASEAN
	3) Establish an ASEAN One-Stop IP Service and Information Platform
	4) Conduct a Study on Establishment of an ASEAN Digital Economy
Transformation (2025)	1) Work Towards the Adoption of the ASEAN Digital Economy Framework Agreement

Source: The Bandar Seri Begawan Roadmap (Visited on 03/21/2022)

While these initiatives might appear underwhelming compared to the scale and ambition of ASEAN's preceding digital policy documents, such a conclusion overlooks the utility of a realistic assessment of ASEAN's digital development goals. It should be noted that the BSBR is not intended to be an exhaustive policy roadmap. Its streamlined of-

[99]See Quah and Chen (2021), pp.12. Thailand's QR code arrangements will ultimately allow Thai users to use their Thai payment apps to scan and pay using QR codes from other countries and vice versa. The countries it has linked up with include Singapore (Oct 2018), Laos (Nov 2019), Cambodia (Feb 2020), Vietnam (Mar 2021), Malaysia (Jun 2021) and Indonesia (Aug 2021, to be activated in Q1 2022).

[100]See ASEAN Secretariat (2021b), pp.4.

ferings omit direct efforts to "broaden the region's digital talent base" (included in ADIFAP), for example, or to "facilitate greater participation in the digital economy" (included in ADM 2025). Yet this is by design. The BSBR, in its own words, "does not intend to supersede existing action items across various ASEAN digital plans," but instead aims to draw attention to items that would have a particularly strong impact on expediting the region's recovery from COVID-19.[101] Moreover, by calling for the completion of earlier reports and the commissioning of further studies, the BSBR also addresses AIM 2020's lack of appreciation for standardised statistical measures of digital developments in ASEAN, and creates resources for the future leaders of the grouping to understand the complexities of coordinating development strategies for the region.

1.6 Concluding Remarks

This chapter aims to point out the potential of ASEAN's digital economy, but also acknowledge the potential obstacles to its growth. In particular, inclusivity and trust are conditions that have important implications for the development of the digital economy – yet promotion of the latter is usually lacking. Notwithstanding differences in the stages of development of individual member states, it is easier to improve inclusivity through better physical infrastructure than it is to foster trust. The mindset and behavioural shift needed for the latter goal requires governments to actively court consumers through policies and incentives. Though the strategic priorities of recent ASEAN policy documents suggest that regional policymakers are aware of this challenge, building trust in the use of digital services remains a work in progress.

These observations are supported and expanded upon by the findings of the Digital Competitiveness Index, which will be discussed further in Chapters 2 and 3. With a focus on five different environments (Digital Outputs, Institutional Capacity, Digital Infrastructure, Core Inputs and Digital Utilisation), the Index also discusses the topics of digital infrastructure, cybersecurity and digital payments that were discussed in this chapter. Moreover, by looking at these environments as a whole, the Index offers a more well-rounded appreciation of the state of an ASEAN member state's digital development, and what it should focus its policy efforts on in the future.

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[101] See ASEAN Secretariat (2021b), pp.3.

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