Asia Pacific AI Readiness Index

2021

Contents

1. Executive Summary

Artificial Intelligence (AI) is expected to contribute approximately USD15.7 trillion to global GDP by 2030, up from USD2 trillion in 2019.[1] From healthcare, financial services, agriculture, and education, to telecommunications, advertising, and automotive industries, AI is transforming a wide range of industries and sectors. The AI market in the Asia Pacific region is expected to grow to USD136 billion by 2025.[2]

At Salesforce alone, we are delivering around 120 billion AI-powered predictions every day, up from 6.5 billion predictions in October 2019.

Given the transformative potential of AI, it is both urgent and necessary to examine the ways in which economies in the region are preparing to adopt and implement AI, and highlight the policies and approaches that are being employed to enable AI-based products, applications, and techniques to emerge and grow.

The 2021 Asia Pacific AI Readiness Index (the Index) is the second edition following its initial publication in 2019. The Index has been developed to assess the readiness of consumers, businesses, and governments to adopt, deploy and integrate AI technologies, across eleven economies in the region. Commissioned by Salesforce and prepared by Access Partnership, this edition includes Japan, New Zealand, and Vietnam in addition to the original eight economies covered – Australia, Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore, and Thailand. In addition to examining how these economies fare relative to each other, the report provides an in-depth look at Singapore as it continues to successfully drive AI adoption, and offers recommendations for enhancing government, business, and consumer readiness to help maximise the use of AI in a safe, transparent, and unbiased manner. The Index reveals that:

1. Covid-19 has accelerated investment in AI and AI readiness across all economies.

Singapore, Japan, Hong Kong, and Australia rank the highest in the Index, whereas overall readiness has increased for all eleven economies, compared to the 2019 edition of the Index. Singapore has achieved the top spot in government, business and consumer readiness, a reflection of its conducive and forward-looking policy and regulatory environment, that is successfully maximising the impact of AI and other emerging technologies on its economy.

2. Governments continue to be at the forefront of these efforts.

Governments across the eleven economies have understood the transformative potential of AI on society and the economy, and readiness levels have increased. While in some growing economies such as Thailand, Philippines and Vietnam, governments are in the process of developing broad, overarching national policies to drive AI readiness and regulate its deployment, in others such as Japan and Singapore, whole-of-government strategies are guiding the development of AI ecosystems, and coordinating initiatives and partnerships between stakeholders from the private sector, academia, and civil society.

3. AI is ubiquitous in Asia Pacific economies across both public and private sectors.

Across the region, AI is now ubiquitous, and its usage is being established rapidly. It is transforming the way businesses, consumers and governments transact and interact. Businesses of all sizes are utilising AI to improve competitiveness, optimise processes, automate tasks, and reduce costs. It is also enabling governments to improve efficiencies in resource allocation and delivery of

public services to citizens. For instance, it is supporting regulators in Singapore to integrate AI-powered regulatory technologies into their oversight regimes for listed companies.[3] During the pandemic we have seen AI create new products and services – from identification of disease clusters, and prediction of future outbreaks, to staff training, customer engagement, and smart recruitment processes.

4. International cooperation on AI frameworks, principles and standards is growing.

Economies studied in this report are engaged in at least one of the many AI frameworks launched by regional, international, and multilateral organisations in which they are members. For instance:

- ASEAN – of which Singapore, Malaysia, Indonesia, Philippines, and Vietnam are members – through multiple initiatives has recognised the importance of AI and other data-based technologies.
- G20 – of which Australia, Indonesia, India and Japan are members – has adopted a set of non-binding AI Principles to ensure AI is developed in a human-centric manner.[4]
- OECD – of which Australia, Japan, New Zealand are members – have adopted the OECD Principles on AI to help member economies formulate consistent and concerted public policies and strategies on AI.[5] It has also launched its AI Policy Observatory to facilitate dialogue and share best practices on AI policies.
- The UN and World Bank also have several ongoing projects and programs related to AI.
- Global Partnership on AI, of which Australia, India, Japan, New Zealand, and Singapore are members – aims to encourage the ethical and responsible use of AI through research and applied activities.[6]

In addition, economies are increasing participation in regional and international standards-setting. For example, Singapore, Australia, and Japan are participating members of the International Organisation of Standard (ISO)'s ISO/IEC JTC1/SC 42 on Artificial Intelligence. In addition, Indonesia, New Zealand, and the Philippines hold observatory status.

5. Investments in data availability, and data management protocols are crucial to further drive AI readiness improvements.

AI technologies require a steady stream of reliable, actionable, and secure data to learn and function. While digital transformation efforts have led to an overwhelming supply of data, both governments and businesses are often challenged in effectively tracking, capturing, storing, and aggregating data in a way that informs AI systems. The Index highlights that top ranking economies have successfully instituted data governance and management protocols.

Cross-border data transfers are equally important for driving AI readiness. Therefore, legal, and regulatory clarity especially in the context of data localisation measures is crucial for AI development.

2. Main Findings

As shown below in Figure 1, Singapore retains its top position in the overall Asia Pacific AI readiness ranking, with Japan ranked second, closely followed by Hong Kong and Australia.[7]

All economies that appeared in the 2019 report have shown an improvement in overall scores, indicating increased AI readiness throughout the region. However, apart from Singapore, the other five ASEAN economies all rank below the average score of 52.9. India, by contrast, is above the average and yet it still had the biggest drop in rankings – from 3rd to 6th position. Indonesia's overall score has improved slightly from 2019 but remains at the bottom of the AI Readiness Index.

Figure 1: Asia Pacific AI Readiness Index – Overall Scores and Ratings

Table 1 provides a detailed breakdown of scores with respect to the three components of AI Readiness. Standing out, Singapore comes on top in all three measurements; below this, however, the rankings change quite significantly:

Consumer readiness: Thailand (63.9) takes the second spot, only slightly ahead of Hong Kong (63.1), and Singapore further ahead than the two (65.9).

Business readiness: Japan (48.4) and India (47.3) both vie with Singapore (49.7) for top spot with only fractional differences separating the three.

Government readiness: Singapore also takes the top spot, however, Australia in second (74.2) and Japan in third (71.6) are both significantly behind the leader, Singapore (81.5).

The differences in scores across the three components is quite telling for the emphasis being given to AI developments in each country. This is explored in greater detail in the remainder of Section 2.

Governments in Singapore, Australia and Japan have allocated significant funding to invest in AI technologies and AI capabilities and have developed national strategies and guidelines that provide a clear roadmap to harness the benefits. The disparity between top performers and the lowest-ranked economies is more prominent in government readiness, while the consumer segment of Asia Pacific economies shows similar levels of understanding and willingness to adopt AI technologies.

Table 1: Asia Pacific AI Readiness Index – Consumer, Business, and Government Scores and Rankings Table 4: Correlations between CBDFI and Selected Economic Indicators

Ranking	Consumer Readiness (Score, / 100)	Business Readiness (Score, / 100)	Government Readiness (Score, / 100)
1	Singapore (65.9)	Singapore (49.7)	Singapore (81.5)
2	Thailand (63.9)	Japan (48.4)	Australia (74.2)
3	Hong Kong (63.1)	India (47.3)	Japan (71.6)
4	Philippines (61.8)	Hong Kong (45.4)	Hong Kong (69.3)
5	Malaysia (58.7)	New Zealand (41.7)	New Zealand (66.3)
6	India (58.3)	Australia (41.5)	Malaysia (57.1)
7	Indonesia (53.5)	Vietnam (39.9)	India (55.0)
8	-	Malaysia (39.4)	Vietnam (46.7)
9	-	Philippines (36.6)	Thailand (45.0)
10	-	Thailand (35.6)	Indonesia (43.3)
11	-	Indonesia (29.9)	Philippines (40.4)

Note: Australia, Japan, New Zealand, and Vietnam did not have assessment of four indicators – Consumer Awareness, Consumer Understanding, Consumer Sentiment and Consumer Willingness. They have not been included in the consumer readiness rankings.

Correlation analysis

Correlation analysis was conducted to better understand the nature and strength of the relationship between measures of economic performance, indicators of technological advancement and key components of AI readiness.

The results, as illustrated in Table 2, highlight that both overall AI readiness and government AI readiness have a significant positive relationship with GDP per capita, and availability, usage, and adoption of technologies. The relationship is strongest with GDP per capita and availability of the latest technology. This is in line with our results for overall readiness in Figure 1, and government readiness rankings in Table 1. High-income economies, with high levels of Internet and mobile phone penetration, and broadband coverage will have greater AI readiness.

For the private sector, the results are more surprising – business AI readiness only has a significant correlation with GDP per capita, and the correlation with technology adoption and availability of latest technology is not significant.

Table 2: Asia Pacific AI Readiness Index – Breakdown of Correlations (Pearson, Sig. 2-Tailed)

	GDP (Constant 2010 USD million)	GDP per capita (Constant 2010 USD)	Availability of Latest Technology	Business Technology Absorption	ICT Usage	Ease of Starting a Business
Overall Readiness Pearson Correlation Sig. (2-Tailed) N	.288 .390 11	.873** .000 11	.839** .001 11	.655* .029 11	.716* .013 11	.629 .038 11
Consumer Readiness Pearson Correlation Sig. (2-Tailed) N	-.510 .242 7	.641 .121 7	.573 .179 7	.378 .403 7	.647 .117 7	.584 .169 7
Business Readiness Pearson Correlation Sig. (2-Tailed) N	.412 .207 11	.620* .042 11	.552 .078 11	.283 .398 11	.423 .194 11	.407 .214 11
Government Readiness Pearson Correlation Sig. (2-Tailed) N	.244 .470 11	.947** .000 11	.854** .001 11	.677* .022 11	.793** .004 11	.732* .010 11

Note: * indicates the correlation is significant at the 0.05 level – Sig. (2-Tailed); ** indicates the correlation is significant at the 0.01 level – Sig. (2-Tailed)

Source: GDP/GDP per capita: World Bank database; Availability of Latest Technology: World Economic Forum, Global Competitiveness Report; Business Technology Absorption Index: World Bank, Global Information Technology Report; ICT Usage: ITU, ICT Development Index; Ease of Starting a Business: World Bank, Ease of Doing Business Index.

2.1 Government Readiness

Government readiness assesses the preparedness of the public sector in enabling the development of AI through implementation of ICT policies that encourage adoption of advanced technologies in government services, promote open data, and foster AI research capabilities.

Figure 2 shows the government readiness rankings of eleven economies with Singapore, Australia and Japan taking up the top three spots, followed by Hong Kong, New Zealand, Malaysia, and India in the middle of the pack. Vietnam, Thailand, Indonesia, and the Philippines continue to stay at the lower end of the spectrum.

Although government readiness levels have increased in all economies, the inequality in government AI readiness between the high and low scorers is consistent with the 2019 edition of the Index. Those at the bottom have made slower progress in strengthening the technology sector, improving the access to data, and investing in R&D, hence readiness levels remain lower.

Figure 2: Government Readiness – Overall Scores (/100)

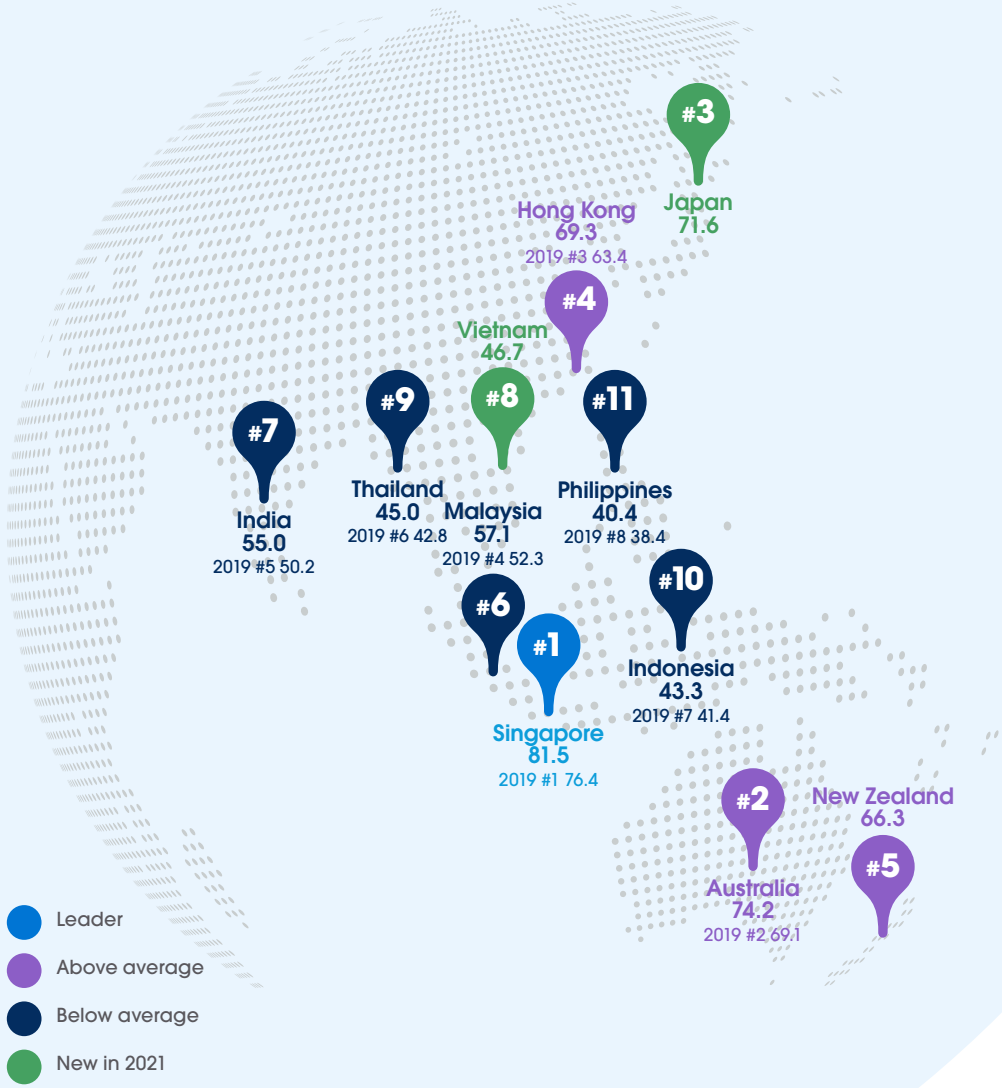


Table 3 provides more detailed readiness scores across each of the eight indicators, normalised to a maximum score of ten. Revealing the relative strengths and weaknesses of each economy, it highlights that Singapore leads in digital transformation of the public sector and with a high level of digital inclusion. Australia's largest asset is its data policy that has made all non-sensitive data open and freely available on its Porta.[8]

Emerging Asia Pacific economies including Vietnam, Indonesia, Thailand, and the Philippines have made steady progress in their migration towards digital government and uptake of digital technologies in the public sector. The COVID-19 pandemic has accelerated digital transformation efforts. For instance, Vietnam has put a sharper focus on bringing public services online and making them available on mobile devices. It launched the National Public Service Portal in 2019, and since then it has brought more than 2,700 services online. It is also streamlining service delivery, as some services were only partially digitalised, for example forms could be downloaded but still had to be submitted online, while integrating digital identity and authentication processes for logging into the Portal.

Indonesia is a little further behind in the digitalisation of public services but has made significant progress. Population administrative services (family cards and birth certificates) were brought online in 2019 through the Department of Population and Civil Registration (Dukcapil) Go Digital initiative. In the last year, Dukcapil has fast-tracked this initiative and services are being implemented across districts and cities.

In comparison to 2019, there has also been an increase in the number of countries publishing or developing AI strategies and guidelines. For instance, Indonesia launched a national AI strategy that will guide AI efforts between 2020 and 2045;[9] Philippines has launched a National AI Roadmap and aims to establish a private sector-led National Centre for AI Research (NCAIR); Thailand has drafted an AI Ethics Framework; Japan developing AI Governance Guidelines for Implementation of AI Principles; and New Zealand has begun development of a National AI Strategy.[10] Despite these positive developments, there remains a lot of ground to cover in the creation of a conducive policy and regulatory environment that enhances AI governance, facilitates open data and R&D in AI.

Table 3: Government Readiness – Detailed Scores (/10)

Government Readiness Indicators								
Country	Digital Evolution Index	Digital Government	E-Participation/ Digital Inclusion	Global Open Data Index	Human Capital and Research	H-index for AI publications	Laws Relating to ICTs	Importance of ICTs to Government Vision of the Future
Australia	8.0	8.8	5.8	7.9	5.9	9.8	6.9	6.1
Hong Kong	8.8	7.8	5.4	5.1	4.8	9.5	7.3	6.7
India	4.7	6.4	5.4	4.7	3.2	7.9	6.0	5.7
Indonesia	4.8	6.5	5.0	2.5	2.1	1.7	5.9	6.3
Japan	7.8	8.8	6.7	6.1	4.7	9.2	6.9	7.0
Malaysia	6.9	6.9	5.8	1.0	4.6	4.7	7.7	8.0
New Zealand	8.0	8.1	5.8	6.8	5.4	4.2	7.3	7.4
Philippines	4.4	6.6	3.8	3.0	2.4	1.1	5.3	5.7
Singapore	9.9	9.4	8.3	6.0	6.0	9.1	8.1	8.4
Thailand	5.3	7.2	3.8	3.4	3.0	2.6	5.1	5.6
Vietnam	4.7	6.3	5.0	-	2.6	2.4	5.6	6.1

Overall, there has been improvement in government readiness across all the economies examined in both periods with top scorers showing the most prominent progression in the areas of digital evolution and digital government. Open data policy and long-term strategies to build up technological research capabilities and AI talent are the two areas that require government attention.

Box 1 highlights the Australian government's efforts in building readiness for AI adoption and implementation.

Box 1: Australian Government's Approach to AI

Australia is rapidly developing its AI industry, and the government continues to play a key role in building AI capabilities, and advancing its development, use and implementation.

In 2019, the Australian government developed an AI Roadmap which highlights standards for AI and the strategic importance of Australia's international engagement and alignment.[11] Australia has also developed an Ethics Framework to guide businesses and governments looking to design, develop and implement AI, so as to ensure that the public will trust these developments.[12] The government has an 'AI Action Plan', which sets out a vision for Australia to be a global leader in developing and adopting trusted, secure and responsible AI.

Investing and Building Capabilities

In the 2021-2022 budget, the government committed AUD124 to support AI in Australia. Specifically, it will invest AUD53.8 million to create the National Artificial Intelligence Centre, and four Digital Capability Centres to lay the foundations for an AI ecosystem. The Centre aims to increase business readiness for AI, and provide targeted support to SMEs looking for talent, knowledge, and the tools to adopt AI. The Digital Capability Centres will, on the other hand, focus on building capabilities in specific applications of AI such as robotics or assisted manufacturing.[13] Even as the Australian government has increased the scope and scale of investments in AI in recent years, a total investment of AUD124 million over four years should be compared to other developed economies. For instance, in 2017 Singapore earmarked SGD150 million over five years in its AI Strategy, Korea earmarked KRW2.2 trillion in investments till 2022 in its AI R&D Strategy, France allocated EUR1.5 billion over five years in the 2018 Strategy for AI, and in 2018 Taiwan identified NTD36 billion over four years in its AI Action Plan.[14]

Alignment to International Standards

Australia has been playing an active role in international standards setting for AI. Standards Australia developed a Standards Roadmap to provide guidance in developing standards and enhancing safety and trust for citizens and consumers. While Australia is a participant of the international standard committee ISO/IEC JTC 1/SC 42[15], there is further opportunity for it to increase cooperation with other economies, particularly regionally, and encourage adoption of standards in targeted industries and areas of high growth.

International Cooperation

Australia has also signed international agreements with several countries, including India and Singapore, to increase cooperation on AI. In June 2019, the G20 of which Australia, is a member – adopted a set of non-binding AI Principles to ensure AI is developed in a human-centric manner.[16] It is also one the founding members of the Global Partnership on AI, launched in 2020. The Partnership aims to encourage the ethical and responsible use of AI, and Australia will be part of research and practical implementation activities connected with priority areas.[17]

2.2 Business Readiness

Business readiness assesses the degree to which the private sector is prepared to adopt and deploy AI. Evaluating capabilities guides organisations in bridging gaps and making timely resource allocations to facilitate the use of AI technologies.

Figure 3 below shows the business readiness rankings of eleven economies with Singapore, Japan, and India taking up the top three spots, followed by Hong Kong, New Zealand, Australia, Vietnam, and Malaysia, in the middle of the pack. The Philippines, Thailand, and Indonesia continue to be placed at the lower end of the spectrum.

Singapore has retained the top position in the region, with businesses across financial services, healthcare, tourism, and transport and logistics sectors well equipped to adopt AI. Its overall readiness has however decreased marginally. In Japan, AI adoption has mainly focused on industrial automation, and expanding to healthcare, mobility, and tourism sectors. Similarly, India in third position, is seeing growing adoption of AI in IT services, financial services, and retail sectors, and its business readiness score has increased on the back of improvements in the business environment and availability of funding for AI development and experimentation.

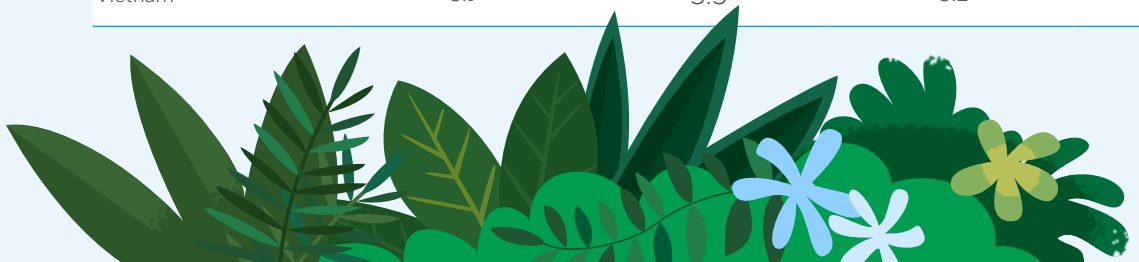
Figure 3: Business Readiness – Overall Scores (/100)

Table 4 details the scores for each of the six indicators, normalised to a maximum score of ten. Singapore is ahead of other countries in digital adoption by businesses, supported by developed physical infrastructure, and enabling regulations that encourage competition and incentivise firms to invest in efficient digital technologies. It has also surpassed other countries in business sophistication indicator which captures the conduciveness of firms to innovation activity, and knowledge and technology outputs, which measures the inventive and innovative activities by firms. However, on the creative outputs indicator, Singapore scores relatively low, overtaken by Hong Kong which has continued to demonstrate strength in intangible assets such as global value of 5,000 most valuable brands, and creative goods and services, such as print and other media, and creative goods exports.[18]

Australia has shown the highest decrease in business readiness scores, dropping from third spot in 2019 to sixth in 2021. Surveys indicate a decrease in initiatives that drive innovation among Australian businesses. For instance, 40 percent of businesses interviewed had implemented just one innovation initiative.[19]

Table 4: Business Readiness – Detailed Scores (/10)

	Business Readiness Indicators						
Country	Digital Adoption Index (Business)	Business Sophistication	Knowledge and Technology Outputs	Creative Outputs	Employment Susceptible to Automation	Number of AI Start-Ups	Venture Capital Availability
Australia	7.7	3.0	3.0	3.7	4.4	2.1	5.0
Hong Kong	8.5	4.5	2.4	6.2	2.8	0.7	6.7
India	5.0	2.9	3.5	2.1	4.3	9.4	6.0
Indonesia	4.2	1.8	1.8	1.8	5.6	0.3	5.4
Japan	7.6	5.7	4.6	3.7	4.9	1.2	6.1
Malaysia	5.5	3.8	3.1	3.4	4.9	0.3	6.6
New Zealand	7.7	3.8	3.1	3.5	4.6	0.3	6.1
Philippines	5.7	3.9	3.5	2.4	4.9	0.1	5.1
Singapore	8.5	6.1	4.6	4.0	2.6	2.1	6.9
Thailand	5.7	3.5	2.9	2.7	4.4	0.2	5.4
Vietnam	5.9	3.5	3.2	3.3	7.0	0.4	4.7



Examining the subset of countries from the ASEAN region, highlights that Singapore alone comes in the top five, with all other ASEAN economies remaining below the Asia 11 average. The results, consistent with the 2019 edition of the Index, indicate that the private sector in Indonesia, Malaysia, Philippines, Thailand has shown only minor improvements in enhancing their preparedness for AI adoption.

On venture capital availability, Singapore was behind Malaysia in 2019, but has now overtaken it, signifying an increase in capital availability. This is beneficial for AI start-ups in Singapore, as well as the rest of ASEAN, as the venture capital firms are not only able to provide greater access to investment, but also technical expertise and guidance.

Box 2 highlights AI adoption in the agricultural sector of Japan and reveals how it is breaking down barriers to high growth and productivity.

Box 2: AI's Transformational Impact on Agriculture in Japan

Society 5.0 is a socio-economic ideal that guides and underpins all of Japan's technology-based policies and programs.[20] It envisions embedding technological innovations into the economy, effectively building a 'super-smart' society that can serve as a road map for the rest of the world.[21]

While often overshadowed by the more technologically advanced manufacturing sector, agriculture in Japan is undergoing significant transformation. The sector is aiming to reach JPY2 trillion by 2025, but labour-intensive practices and low productivity remain challenges for agricultural businesses.[22]

AI can help farmers in detecting crop diseases, provide health and nutrition status of livestock, and offer insights on water, fertilizer, and pesticide usage. In Japan, an IT and network solutions company NEC has partnered with food manufacturer KAGOME to launch CropScope, an AI-powered system that uses sensor data and satellite images to help farms visualise tomato growth, monitor soil conditions, and receive specific farming recommendations. The system collects a wide-range of data about weather, soil, and water and aids farmers in reducing costs and maximising the productivity of their crops.

In the case of CropScope, these benefits extend to the entire supply chain. For instance, tomato processors can benefit from lower procurement costs, helping them minimise storage and handling costs.[23]

A further targeted impact is the role that AI can play in mitigating the trends of increasing urbanisation and population ageing in the agriculture sector. Japan is facing acute labour shortages in agriculture, with 60 percent of farmers above the age of 65.[24]

For agriculture businesses in Japan, reduced input costs and entry barriers resulting from the adoption of AI can help increase competition in the sector and maintain stability in supply chains.

2.3 Consumer Readiness

Consumer readiness is measured through key indicators that examine the general public's levels of awareness, understanding, adoption, and usage of AI products and services. Assessments of the accessibility of technology more generally, and the degree to which it has been adopted, are also considered. Measuring the willingness to use and trust AI technologies helps organisations deploy AI technologies that meet users' expectations, while establishing a baseline understanding of technological adoption helps to provide context and inform how quickly AI technologies can be rolled out to ever wider populations.

Figure 4 shows that Singapore ranks highest, followed by Thailand and Hong Kong. Singapore's rise to the top is attributable to its high levels of technological access, as represented in its world-class network coverage and high proportion of households with internet access. During the COVID-19 pandemic, the government made efforts to bridge the digital divide by setting up the SG Digital Office and providing affordable devices and internet access to low-income families, seniors, and MSMEs. In addition, the high degree of technological adoption and participation in Singapore, has been facilitated by strong ICT skills.

Figure 4: Consumer Readiness – Overall Scores (/100)

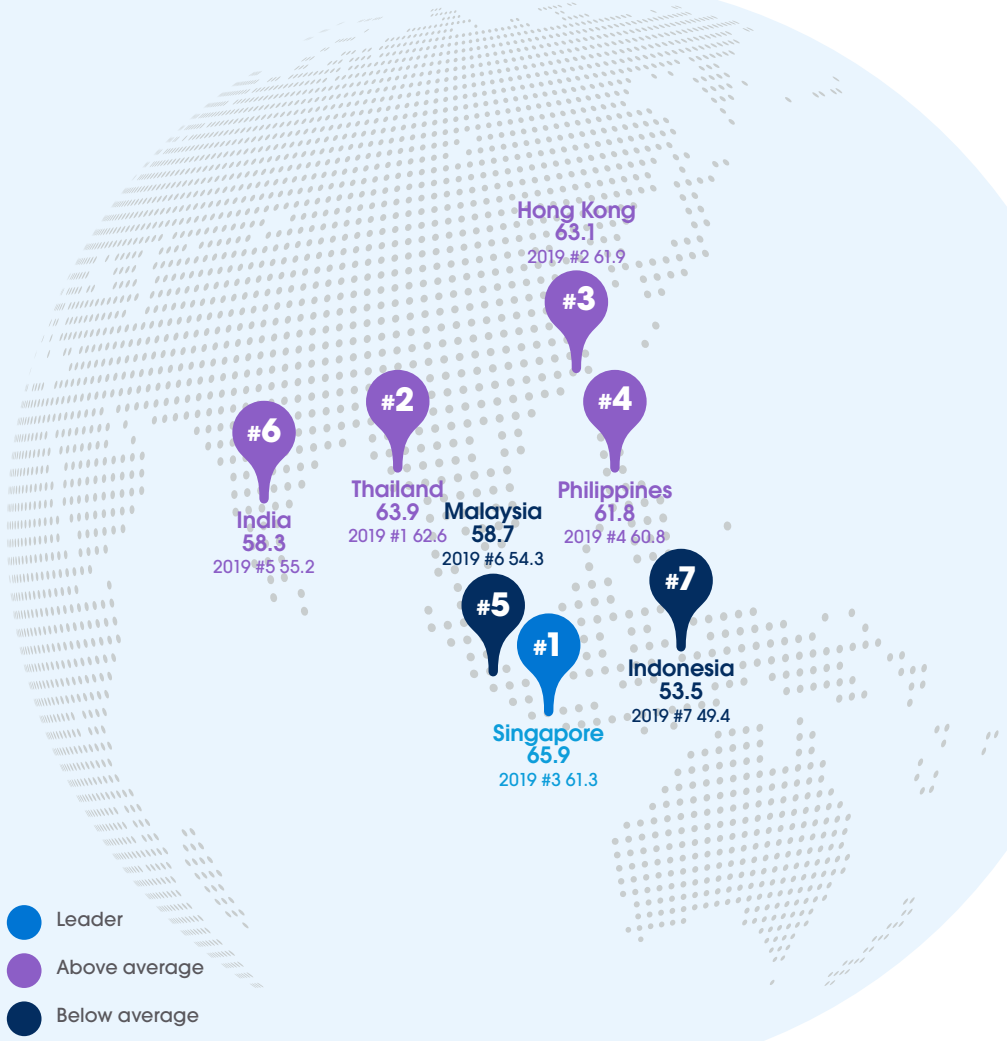


Table 5 details the scores for each of the six indicators, normalised to a maximum score of ten. As in the 2019 edition, Thailand and Hong Kong remain high performers in AI readiness, with both countries notably maintaining more positive consumer sentiment towards AI than Singapore. However, positive sentiments do not necessarily lead to higher understanding or willingness to use AI. Hong Kong for instance scored high in consumer awareness (8.9), and relatively high in consumer sentiment (5) as well, but the lowest among all countries in willingness to use AI (5.3).

The technology access indicator reveals sizable disparities in access to technological resources, which can prove challenging to the rollout of AI initiatives, despite high consumer awareness of the benefits of AI more generally. Similar disparities can also be seen in the adoption of technology more generally across different economies, suggesting that some may have longer to go than others in preparing their populations to address an AI-powered world.

Table 5: Consumer Readiness – Detailed Scores (/10)

Consumer Readiness Indicators						
Country	Technology Access	Technology Adoption	Consumer Awareness of AI	Consumer Understanding of AI	Consumer Sentiment about AI	Consumer Willingness to Use AI
Hong Kong	8.9	7.2	8.9	2.6	5.0	5.3
India	6.0	3.7	7.8	3.7	6.4	7.5
Indonesia	6.3	5.2	5.7	2.3	5.0	7.5
Malaysia	7.5	7.0	6.7	2.3	4.7	7.0
Philippines	5.2	5.9	8.8	4.9	5.0	7.3
Singapore	9.0	7.9	8.9	2.8	4.5	6.4
Thailand	7.9	5.9	6.8	3.1	6.9	7.8

The technology access and adoption indicators add an entirely different dimension to considerations of how consumers can respond to AI, beyond their attitudes towards it. India, for example, scores well on both consumer awareness of AI and consumer willingness to use AI but faces a challenge in implementing AI. Attention should continue to be paid to the relatively low levels of consumer understanding and sentiment towards AI even in more technologically advanced economies like Singapore and Malaysia. Box 3 presents a short analysis of Thailand's successful approach towards raising awareness and understanding of AI.

Box 3: Thailand Building AI Understanding and Awareness Through Public-Private Partnerships

Thailand has seen tremendous growth in its technology sector in recent years. High levels of AI adoption is visible in the sectors of e-commerce, manufacturing, agriculture, smart cities, vehicles, fintech and education.

Thailand's high scores on consumer readiness can in part be attributed to a public-private partnership approach taken by the Thai government. There are several initiatives that have enhanced readiness for AI across the economy:

- 45 multi-sectoral organisations, including universities, government agencies and private companies have come together to establish the 'Thai AI Consortium'. The collaboration will increase AI capacity in education and workforce and build an effective ecosystem for AI in the country.[25]
- The Office of the Vocational Education Commission (OVEC) is partnering with private sector entities to boost STEM skills and spearhead the use of new technologies like AI, automation, and robotics.[26]
- The Digital Economy Promotion Agency (DEPA) is collaborating with leading technology companies to create a learning curriculum that will produce 40,000 digital and high-tech workers by 2022.[27] DEPA is also rolling out AI programs in universities across Thailand.[28]
- The Digital Government Development Agency (DGA) has launched the country's first National AI Centre, to bring together experts from the tech community, NGOs, academic as well as the public sectors. In addition to fostering networks and systems for AI adoption, and creating platforms for government agencies to seek AI solutions for their services, the centre will prioritise upskilling the public sector workforce on AI and data analytics.

Initiatives such as these are contributing to a growing understanding of the potential of AI. A Salesforce report examining consumer attitudes and trust towards artificial intelligence in Asia has shown that 70 percent of the consumers in Thailand feel positively about AI.[29]

To further drive AI development and adoption, Thailand must develop clear strategies and guidelines at the national level, and improve the regulatory environment for data protection. Additionally, increasing strategic coordination between existing initiatives and developing success metrics to evaluate and assess progress will deliver outsize results and returns.

3. Market Highlight: Singapore

Singapore has one of the region's most progressive and conducive approaches to AI development, regulation, and promotion. The public sector's institutional stability and continuity have allowed it to experiment and collaborate with the private sector at an ever-increasing pace and scale when it comes to digitisation, and the deployment of AI in particular.

It has again topped the Asia Pacific AI Readiness Index, and in a change from 2019, achieved the top position across the consumer, business, and government readiness indices. Singapore's improvement in terms of consumer readiness is attributable to its high levels of technological adoption and access, which allow it to roll out AI initiatives quickly and efficiently to potential consumers. Strong government-wide advocacy of smart nation projects, pushed out through the ongoing efforts of the Smart Nation and Digital Government Group (SNDGG), and the National AI Strategy (Box 4) have been impactful in improving adoption and access.[30] For example, the Singpass (Singapore personal access) digital identity platform facilitates access to over 340 government agencies and private sector services. It is being extended to develop the National Digital Identity (NDI) Platform, which will offer greater security and convenience to citizens and businesses.[31] In addition, the Digital Readiness Blueprint has identified Digital Access, Literacy and Participation as key elements enabling wider use of technology. The Blueprint has outlined strategic directives which aim to vouch for the principles of inclusivity and accessibility.[32]

Box 4: National AI Strategy

In 2019, SNDGO (Smart National Digital Government Office) released the National AI Strategy identifying five AI projects of national importance, in the transport and logistics, smart cities and estates, healthcare, education and safety and security sectors. It aims to catalyse a whole-of nation effort involving Singaporean citizens, businesses, researchers, and the government in facilitating the deployment of AI.

The Strategy also establishes a National AI Office under the SNDGO to coordinate the agenda for AI, acting as a liaison between the government, the research community and industry stakeholders. The Strategy itself identifies a core AI Deployment Loop of three interconnected processes which mutually support each other in a virtuous cycle – Problem Definition, Development and Testing, and Scaling.

Following the government's lead, the private sector has continued the integration of AI tools and solutions into business processes. A survey had found that half of the IT professionals surveyed in Singapore had said that their employers were accelerating the roll-out of AI tools due to the COVID-19 pandemic.[33] The private sector is also investing significantly in AI research and development, and upgrading of skills. For instance, Salesforce Research Asia in Singapore is training up to 100 postgraduate students over three years from the National University of Singapore, Singapore Management University and Nanyang Technological University in various fields of AI, including natural language processing and deep learning.[34]

The Singapore government's commitment to AI remains strong. It has for instance:

- Enabled data availability through the Open Data Portal. The Portal captures data from 70 public sector agencies, and explains it through data visualisations and analysis to make it relevant and understandable to the public.[35]
- Facilitated data sharing between government and private sector through the Data Innovation Programme Office (DIPO).[36] DIPO is working with the industry and government agencies to ensure availability of public and private sector data, build a steady pipeline of talent and research capabilities, and robust infrastructure for data exchange.[37]
- Committed SGD500 million to funding activities related to AI under the Research, Innovation and Enterprise 2020 Plan.[38]
- Built a strong Intellectual Property (IP) regulatory framework that has given companies the confidence that their innovations will be protected.

The Digital Government Blueprint has also called for wider use of AI in public sector work, which may in tandem with the Singapore government's well optimised pipeline of digital solutions result in the rollout of more AI solutions at the ministry and agency level over coming years.[39]

In the 2019 version of this report, it was recommended that Singapore strengthen AI-specific data protection policies; build a regional hub for AI research centres; enhance initiatives to build a homegrown pool of diverse AI talent; and incentivise creativity and innovation. In the interim, Singapore has enhanced AI-related efforts in a number of areas. For instance, in January 2020, Singapore's Personal Data Protection Commission (PDPC) and Infocomms and Media Development Authority (IMDA) updated the model Artificial Intelligence Governance Framework.[40] The updated framework integrates industry examples, and introduces additional tools to enhance usability, such as an implementation and self-assessment guide for organisations, and released a compendium of use cases.[41] New measures have also been introduced to help ensure algorithmic transparency. This ongoing effort reflects a strong commitment to continued engagement on AI governance principles, and simultaneously address data protection approaches.

Singapore has also built on its commitments to the AI Apprenticeship Programme and 100 Experiments (100E) programmes since their introduction in 2017 and 2018. They have been expanded notably integrating material and strategic input from private sector partners.[42]

Singapore has successfully leveraged its highly skilled population and technical infrastructure to attract investment in research and development. Established ventures such as NEC's Advanced Centre for Experimentation, the Alibaba-NTU Joint Research Institute, and the Salesforce Research Asia among others.[43]

Moving forward, we recommend Singapore adopt the following measures to bolster its AI efforts and initiatives:

- **Expand participation in regional and international standards-setting exercises:** Singapore can contribute meaningfully to international standards-setting exercises on AI to establish regional and even global thought leadership. Positive movement in this direction is represented in Singapore's recent transition from observer to participant status in the International Organisation of Standard (ISO)'s ISO/IEC JTC1/SC 42 on Artificial Intelligence,[44] as well as by OECD's publication on the extensive AI policy information and development in Singapore.[45]
- **Continue investments in AI Skills:** A skills gap could hamper Singapore's aspirations for AI development and use. It should continue to invest in initiatives to encourage the development of AI Skills. Initiatives should focus on the training of young professionals, as well as quick and efficient upskilling of mid-career professionals. Collaborations with the private sector shall be key to understanding in-demand skills, to better aligning training programmes.
- **Enhance AI provisions in Digital Economy Agreements:** Having signed the Digital Economy Partnership Agreement with New Zealand and Chile, and separately with Australia, while also currently negotiating with the United Kingdom and Vietnam, Singapore is a pioneer in setting digital trade rules. While the Singapore-Australia Digital Economy Agreement (SADEA) and Digital Economy Partnership Agreement (DEPA) include provisions on promoting the adoption of AI ethics and governance frameworks, efforts should be made to include them in future agreements as well. Digital Economy Agreements can serve as a template for other countries in the region, and stand to play a vital role in aligning AI governance frameworks, and accelerating the adoption and use of AI across jurisdictions.

4. Recommendations

The Index illustrates that the preparedness for AI varies significantly across the Asia Pacific region, demonstrating the different emphasis and initiatives that governments are taking to promote and progress their AI agendas. In some economies, such as India and the Philippines, business or consumer AI readiness is higher than government readiness; while in others, such as Australia and New Zealand, the government is leading the way. Several factors can be seen to explain the different levels of readiness ranging from investment, skills and capabilities to the enabling policies and regulations being introduced. Key recommendations that can help each country maximise the use of AI in a safe, transparent, effective, and unbiased manner are discussed below.

National AI Strategy

The governments of Singapore and Japan are investing heavily in building ecosystems in which AI companies and their innovative business models can grow and mature.[46] They have developed a national strategy providing a clear, coherent, and comprehensive whole-of-government strategy that guides and accelerates concerted efforts, coordinates initiatives, and sustains collaboration across existing institutions, newly formed government bodies and the private sector.

Develop AI Principles

Organisations across the Asia Pacific have published or are in the process of publishing AI Principles. Developing and publishing such principles can ensure that organisations can show exactly how they are using AI, namely, where the data is coming from and how it is being used. Such principles can help meet regulatory and ethical objectives and build trust and confidence.[47] AI Principles around the world can be classified into eight themes: privacy, accountability; safety and security; transparency and explainability; fairness and non-discrimination; human control of technology; professional responsibility and promotion of human value. Salesforce research shows that 90 percent of consumers believe that companies have a responsibility to improve the state of the world.

Grow AI Ecosystems

In order to leverage AI effectively, a number of initiatives are required to support it. Foremost among them is the analysis and sharing of data. In many organisations, data sits in silos with fragmented ownership. Ensuring non-sensitive data is accessible and open in a secure manner is vital for development of AI ecosystems. As is the facilitation of cross border data flows, which governments influence through regulation. This will foster innovation, build AI expertise, and encourage organisations to consider practical AI solutions to global challenges.

Boost AI Talent

Cultivating and attracting skilled AI talent is a concern for all countries in the region. In a recent survey by Kearney, more than 85 percent of respondents (businesses and government organisations) across Singapore, Malaysia, Indonesia, Thailand, Vietnam, and the Philippines, highlighted challenges in finding and attracting technical talent that can work on AI-related activities.[48]

Across key economies in the region, Salesforce has found data analytics and AI as the most highly demanded skills by organisations.[49] Some notable training examples include Singapore TechSkills Accelerator (TeSA) and the Professional Conversion Programmes (PCP), and Philippines Department of Science and Technology (DOST) program to train 20,000 data scientists and AI engineers (since 2019) to foster a community of data scientists and analysts.

Ensure Trust in AI

Privacy and security are central to the development, deployment of AI. Consumers also increasingly expect personalisation of services. In The Trust Imperative 2.0, Salesforce and Boston Consulting Group (BCG) have found 87 percent of consumers expecting to be engaged proactively in the delivery of government services, through notifications or information based on customer specific situations.[50] Trust can be built in by developing products and services which have "privacy by design," and "ethics in design". In addition, conducting regular privacy impact assessments, and communicating these findings, as well as the safeguards put in place to ensure privacy and appropriate data use, are critical to building trust in AI.

According to a Salesforce-commissioned YouGov survey[51], 62 percent of managers believe embracing AI is important to their organisation's ability to survive and stay competitive. Organisations need to be constantly thinking about what the potential intended and unintended consequences are of what they are developing. Having a dedicated team focused in this area, through an Office of Ethical and Humane Use[52] or for the government the notion of an AI Safety Commissioner[53] could bring additional benefits.

Apply AI for Social Good

AI has the potential to address the world's most challenging social problems. Some of the problems AI could help address are contained in 17 of the UN's Sustainable Development Goals, designed to be a blueprint to achieve a better and more sustainable future. This means using AI beyond automation and efficiency all sorts of challenges whether it be addressing poverty, disease, environmental and educational challenges. Organisations need to consider applying AI for Social good within existing programs.

Appendix I. Methodology

The AI Readiness Index is a composite index that measures different components of AI frameworks and ecosystems. It combines qualitative research and quantitative modelling to demonstrate how business and government leaders can better focus the efforts and resources they are devoting to AI.

Since no exact measurements of readiness exist specifically for AI, the Index uses 21 proxy indicators clustered into three key dimensions:

- Consumer readiness (6 indicators): How consumers perceive, understand, and trust AI. This is important to assess the short- and long-term effectiveness of AI programs and initiatives.
- Business readiness (7 indicators): How the private sector – start-ups, SMEs, and enterprises – are equipped to adopt AI. This is important to understand businesses' ability to drive and sustain the growth of AI.
- Government readiness (8 indicators): How the public sector – regulators, policymakers, institutions, and organisations – are enabling AI through funds and frameworks. This is important to evaluate governments' ability to make AI a key driver of economic growth and competitiveness.

Table 6: AI Readiness Index – Breakdown of Indicators and Sources

Government Readiness Indicators		
Digital Evolution Index	Measures governments' digital readiness by assessing their competitiveness and trust in the global digital arena.	Tufts University, Digital in the Time of COVID, 2020
Digital Government Score	Measures national digital government readiness and development across ten indicators and 35 sub-indicators.	Waseda University, IAC 15th Digital Government Survey, 2020
E-Participation/Digital Inclusion sub-index	Measures ICT-supported participation in government and governance processes including administration, service delivery, decision-making, and policy-making.	Waseda University, IAC 14th Digital Government Survey, 2018
Global Open Data Index	Measures the free and open publication of government data.	Open Knowledge Network, Global Open Data Index, 2016
Human Capital and Research	Measures the level of government spending and support on skills, training, science, and research.	Cornell University, INSEAD, and the World Intellectual Property Organisation (WIPO), Global Innovation Index, 2020
H-Index for AI Publications	Measures the productivity and the citation impact of a scientific publication.	Scimago Journal & Country Rank, 2020
ICT related laws	Measures the level of development of a country's laws relating to the use of ICTs (e.g., e-commerce, digital signatures, consumer protection).	World Economic Forum, Global Information Technology Report, 2016
Importance of ICTs to Government Vision of the Future	Measures the extent to which the government has a clear implementation plan for utilising ICTs to improve the country's overall competitiveness.	World Economic Forum, Global Information Technology Report, 2016

Business Readiness Indicators		
Digital Adoption Index (Business)	Measures businesses' adoption of digital technologies, including number of secure servers, download speeds, and 3G coverage.	World Bank, Digital Adoption Index, 2016
Business Sophistication	Measures the extent to which firms are conducive to innovation activity.	Cornell University, INSEAD, and the World Intellectual Property Organisation (WIPO), Global Innovation Index, 2020
Knowledge and Technology Outputs	Measures firms' and countries' ability to create, impact, and diffuse knowledge.	Cornell University, INSEAD, and the World Intellectual Property Organisation (WIPO), Global Innovation Index, 2020
Creative Outputs	Measures firms' and countries' ability to create and market innovative physical and digital products.	Cornell University, INSEAD, and the World Intellectual Property Organisation (WIPO), Global Innovation Index, 2020
Share of Employment Susceptible to Automation	Percentage share of employment that can be computerised.	International Labour Organisation (ILO), World Bank, PwC, Commonwealth Scientific and Industrial Research Organisation, SCMP, University of Oxford, Sustainable Business Council
Number of AI Start-Ups	Measures the number of active companies headquartered in a country and categorised as "artificial intelligence".	Tracxn
Venture Capital Availability	Measures the ease with which start-up entrepreneurs with innovative and risky projects can obtain equity funding.	The Global Competitiveness Report 2019
Consumer Readiness Indicators		
Technology Access	Measures the fundamental level of ICT in countries, including communications infrastructure and affordability.	Portulans Institute, Network Readiness Index 2020
Technology Adoption	Measures how individuals use technology and how they leverage their skills to participate in the network economy.	Portulans Institute, Network Readiness Index 2020
Consumer Awareness of AI	Measures consumer familiarity with AI.	Salesforce, AI in Asia: Trust, Understanding and the Opportunity to Re-Skill, 2018
Consumer Understanding of AI	Measures consumer understanding of AI and its long-term implication.	Salesforce, AI in Asia: Trust, Understanding and the Opportunity to Re-Skill, 2018
Consumer Sentiment about AI	Measures consumer outlook towards AI, trust in it and potential impact.	Salesforce, AI in Asia: Trust, Understanding and the Opportunity to Re-Skill, 2018
Consumer Willingness to use AI	Measures consumer desire and preparedness to use specific AI technologies.	Salesforce, AI in Asia: Trust, Understanding and the Opportunity to Re-Skill, 2018

The Index covers 11 Asia Pacific economies: Australia, Hong Kong, India, Indonesia, Japan, Malaysia, New Zealand, the Philippines, Singapore, Thailand, and Vietnam. All scores for the indicators are normalised to 10, while the overall total is normalised to 100 for comparison.

Some of the consumer readiness indicators were not available for Australia, Japan, New Zealand, and Vietnam. Hence they have been excluded from the consumer readiness rankings. Their scores are, however, available for the business and government readiness dimensions, allowing complete comparisons for all 11 economies.

Where available, the most recent data has been used. All data is publicly available and accessible online in the sources and URLs presented above.

Appendix II. References

1 PricewaterhouseCoopers (2019) PwC's Global Artificial Intelligence Study: Exploiting the AI Revolution, https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html

2 asmag.com (2018) APAC artificial intelligence market shows huge growth potential, https://www.asmag.com/showpost/30393.aspx

3 Straits Times (2021), SGX to use AI, other tech solutions for oversight of listed companies, https://www.straitstimes.com/business/companies-markets/sgx-to-use-ai-other-tech-solutions-for-oversight-of-listed-companies

4 Ministry of Foreign Affairs of Japan (2019) G20 Ministerial Statement on Trade and Digital Economy, https://www.mofa.go.jp/files/000486596.pdf

5 Organisation for Economic Co-operation and Development, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449

6 The Global Partnership on Artificial Intelligence, https://gpai.ai/

7 Details of the methodology and full explanation of indicators is provided in Appendix I.

8 Australia Open Data Portal, https://data.gov.au/

9 Jakarta Post (2020) Indonesia sets sights on artificial intelligence in new national strategy, https://www.thejakartapost.com/news/2020/08/13/indonesia-sets-sights-on-artificial-intelligence-in-new-national-strategy.html

10 AI Forum New Zealand (2021) Building better AI in Aotearoa, https://aiforum.org.nz/2021/05/17/building-better-ai-in-aotearoa/

11 Commonwealth Scientific and Industrial Research Organisation (CSIRO) (2019) Australia's AI roadmap launched: Solving problems, growing the economy and improving our quality of life, https://research.csiro.au/robotics/australias-ai-roadmap-launched-solving-problems-growing-the-economy-and-improving-our-quality-of-life/

12 Department of Industry, Science, Energy and Resources (DISER) AI Ethics Framework, https://www.industry.gov.au/data-and-publications/building-australias-artificial-intelligence-capability/ai-ethics-framework

13 Australia's Digital Economy (2021) Artificial Intelligence, https://digitaleconomy.pmc.gov.au/fact-sheets/artificial-intelligence

14 CIFAR (2020) Building an AI World – Report on National and Regional AI Strategies, https://cifar.ca/wp-content/uploads/2020/05/buildinganaiworld_eng.pdf

15 International Organisation for Standardization ISO/IEC JTC 1/SC 42, Artificial Intelligence, https://www.iso.org/committee/6794475.html

16 G20, www.mofa.go.jp/files/000486596.pdf

17 Oxford Insights (2020) Government AI Readiness Index 2020, https://www.oxfordinsights.com/government-ai-readiness-index-2020

18 Cornell University, INSEAD, and the World Intellectual Property Organisation (WIPO), Global Innovation Index, 2020, https://www.globalinnovationindex.org/analysis-economy

19 Retail World (2018), Study finds that Australian businesses aren't doing enough when it comes to innovation, https://retailworldmagazine.com.au/study-finds-that-australian-businesses-arent-doing-enough-when-it-comes-to-innovation/

20 Cabinet Office Japan, www8.cao.go.jp/cstp/english/society5_0/index.html

21 United Nations Educational, Scientific and Cultural Organization (UNESCO), https://en.unesco.org/news/japan-pushing-ahead-society-50-overcome-chronic-social-challenges

22 British Broadcasting Corporation (BBC) How technology is transforming Japan's agriculture, http://www.bbc.com/storyworks/future/the-technology-transforming-agriculture/how-technology-is-transforming-japans-agriculture

23 APEC Business Advisory Council (ABAC) (2020) Artificial Intelligence in APEC, https://ncapec.org/wp-content/uploads/2020/11/ABAC-AI-Report.pdf

24 Embassy of Switzerland in Tokyo, Science and Technology Office, www.stofficetokyo.ch/sites/default/files/2018-11/SmartAgricultureJapan2018.pdf

25 Bangkok Post (2021) The time is now ripe to boost AI development, https://www.bangkokpost.com/opinion/opinion/2051915

26 Nation Thailand (2018) Student tech education boosted to prepare 4.0 workforce, https://www.nationthailand.com/in-focus/30351928

27 Thailand 4.0, https://thaiembdc.org/2019/06/17/tech-giants-helping-to-train-thai-digital-workforce

28 GovInsider (2021) How Thailand is using YouTube to reskill its workforce, https://govinsider.asia/smart-gov/jakkanit-kananurak-depa-how-thailand-is-using-youtube-to-reskill-its-workforce/

29 Asiaone (2018) Asian Consumers Positive About Artificial Intelligence And Willing To Upskill To Future-Proof Their Careers, https://www.asiaone.com/business/asian-consumers-positive-about-artificial-intelligence-and-willing-upskill-futureproof

30 Smart Nation Singapore (Accessed 2021), About SNDGG, https://www.smartnation.gov.sg/why-Smart-Nation/sndgg

31 Government Technology Agency (GovTech) Singapore, National Digital Identity, https://www.tech.gov.sg/files/media/media-releases/Media%20Factsheet%20on%20Singpass%20(National%20Digital%20Identity)_28%20October%202021.pdf

32 Ministry of Communications and Information (MCI) Singapore (2019), Digital Readiness Blueprint, https://www.mci.gov.sg/-/media/mcicorp/doc/mci_blueprint-report_final.ashx

33 International Business Machines (IBM) Newsroom (2021), Global Data from IBM Points to AI Growth as Businesses Strive for Resilience, https://newsroom.ibm.com/IBMs-Global-AI-Adoption-Index-2021

34 Research@SMU (2019), SMU AI Lead joins Salesforce Research Asia, https://research.smu.edu.sg/news/2019/may/14/smu-artificial-intelligence-expert-lead-salesforce-research-asia

35 Open Data Portal, https://data.gov.sg/

36 Smart Nation Singapore Data Innovation Programme Office (DIPO), https://www.smartnation.gov.sg/initiatives/business/dipo

37 Ministry of Communications and Information (MCI) Singapore Roles of Data Innovation Programme Office (DIPO), https://www.mci.gov.sg/cos2017/modules/articles/leveraging-data-for-the-digital-economy/data-innovation-programme-office/roles-of-the-data-innovation-programme-office

38 Oxford Insights (2020) Government AI Readiness Index 2020, https://www.oxfordinsights.com/government-ai-readiness-index-2020

39 Government Technology Agency (GovTech) Singapore (2020), Digital Government Blueprint, https://www.tech.gov.sg/digital-government-blueprint/

40 Personal Data Protection Commission (PDPC) Singapore (2020), Model AI Governance Framework, https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/SGModelAIGovFramework2.pdf

41 Personal Data Protection Commission (PDPC) Singapore (2020) Compendium of Use Cases: Practical Illustrations of the Model AI Governance Framework, https://www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/SGAIGovUseCases.pdf

42 Computer Weekly (2021), Google Cloud ties up with AI Singapore on skills training, https://www.computerweekly.com/news/252503590/Google-Cloud-ties-up-with-AI-Singapore-on-skills-training

43 GovInsider (2019), Inside Huawei's new 5G AI lab, https://govinsider.asia/connected-gov/huawei-ai-lab-nicolas-ma-5g-singapore-china/

44 International Organisation for Standardization, ISO/IEC JTC1/SC 42 Artificial Intelligence, https://www.iso.org/committee/6794475.html

45 Organisation for Economic Co-operation and Development (OECD) AI Policy Observatory, AI Singapore, https://www.oecd.ai/dashboards/countries/Singapore

46 The Business Times (2020), Changing the business landscape with AI, https://www.businesstimes.com.sg/garage/changing-the-business-landscape-with-ai; MEITI (2021) https://www.meti.go.jp/press/2020/01/20210115003/20210115003.html

47 Organisation for Economic Co-operation and Development (OECD) (2019) Principles on Artificial Intelligence, https://www.oecd.ai/ai-principles

48 Kearney (2020) Racing towards the future: artificial intelligence in Southeast Asia, https://www.kearney.com/documents/20152/50272176/Racing+toward+the+future_artificial+intelligence+in+Southeast+Updated.pdf/679e501c-aae8-0483-e016-d6b780071540?t=1602067482000

49 Salesforce (2021) Driving Digital Skills in Australia, https://www.salesforce.com/au/resources/research-reports/digital-skills-australia-2021/; Driving Digital Skills in Singapore, https://www.salesforce.com/ap/resources/research-reports/digital-skills-singapore-2021/; Driving Digital Skills in India, https://www.salesforce.com/in/resources/research-reports/digital-skills-india-2021/;

50 Boston Consulting Group (BCG) and Salesforce (2021), Trust Imperative 2.0 https://www.bcg.com/en-au/industries/public-sector/the-trust-imperative

51 Salesforce (2020) Infusing Ethics into AI (Australia), https://www.salesforce.com/ap/blog/2020/12/infusing-ethics-into-ai.html

52 Salesforce (2021) Ethical and Human Use, https://www.salesforce.com/company/ethical-and-humane-use/

53 Australian Human Rights Commission (2021) Human Rights and Technology Final Report 2021, https://humanrights.gov.au/our-work/rights-and-freedoms/publications/human-rights-and-technology-final-report-2021


salesforce