

ASIA PACIFIC

AI Readiness Index

ASSESSING THE AI PREPAREDNESS OF CONSUMERS,
BUSINESSES, AND GOVERNMENTS IN ASIA PACIFIC



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The next tech divide could be between those who have access to artificial intelligence (AI) and those who do not. AI is becoming a new human right, and everybody will need access to it.

In the words of Marc Benioff, Co-CEO of Salesforce – “Today, only a few countries and only a few companies have the very best artificial intelligence in the world... Those who have the artificial intelligence will be smarter, will be healthier, will be richer.” By contrast, those who do not have access to AI will be “weaker and poorer, less educated, and sicker.”¹

The benefits of AI are significant. Among others, it improves efficiency and productivity, solves complex problems, and allows specialists to focus on higher level tasks. But there are global ethical concerns that AI could replace jobs and other functions that humans currently perform, or could be used in ways that reinforce bias or discrimination.

Einstein, Salesforce’s AI technology, now delivers 6.5 billion AI-driven predictions to its customers every day.

This report, commissioned by Salesforce and prepared by TRPC, sets out the potential benefits and challenges of AI. It evaluates how Australia, Hong Kong, India, Indonesia, Malaysia, the Philippines, Singapore, and Thailand fare relative to each other in AI readiness, and provides practical recommendations for people, businesses, and governments to improve AI adoption.

Singapore leads the region in overall AI readiness followed by Hong Kong and India. Thailand takes the lead in terms of consumer readiness.

Salesforce’s Asia Pacific AI Readiness Index shows that AI adoption is fragmented and uneven across the region. In some cases, governments’ efforts and commitment have yet to be reflected in businesses’ or consumers’ adoption and usage of AI. In others, business and consumers are taking the lead, showing governments the way forward in terms of change and innovation.

This paper provides recommendations on how to further adopt AI in three broad categories:

- Preparing AI talent
- Building trust
- Shaping ecosystems

It also provides in-depth analysis and recommendations for Australia, India, and Singapore.

Working in close partnership, business, government, and the technology industry can help APAC countries become world leaders in AI readiness and adoption.

Eric Loeb
EVP, Global Government Affairs, Salesforce



Artificial intelligence (AI) is being deployed rapidly around the world and its impact is being felt in all sectors. From finance and healthcare to transport and manufacturing, AI helps organisations automate processes, boost productivity, and optimise the use of resources.

This is especially true in the Asia Pacific (APAC) region, where AI leaders are fast emerging. But for APAC economies to truly benefit from AI, they must be able to embrace and embed AI technologies into their workflows.

This ability constitutes the essence of “AI readiness”, which can take many forms. For consumers, it means understanding and trusting AI technologies; for businesses, it means being equipped with the skills and processes to leverage AI systems; and for governments, it means being the catalyst of AI adoption, ensuring AI is developed in a safe, ethical, and sustainable manner.

Commissioned by Salesforce and prepared by TRPC, the Asia Pacific AI Readiness Index (the Index) is a composite measure of the quality and the strength of AI frameworks and ecosystems in Australia, Hong Kong, India, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. It combines qualitative research and quantitative modelling to assess the ability of consumers, businesses, and governments to adopt, deploy, and support AI technologies,² and leverages Salesforce research notably ‘Artificial Intelligence in Asia: Trust, Understanding and the Opportunity to Re-Skill’.

The Index reveals three key findings:

1. AI readiness is not a one-size-fits-all process;
2. Trust and accountability are key to wider AI adoption; and
3. Governments must drive AI readiness.

AI READINESS IS NOT A ONE-SIZE-FITS-ALL PROCESS

The Index shows that Australia, Hong Kong, India, and Singapore score highest in government and business readiness, a reflection of government-driven strategies that focus on steering the growth of AI through dedicated funds, programs, and policies.

Thailand, the Philippines, Malaysia, and Indonesia, meanwhile, score highest in consumer readiness, demonstrating a more market-driven approach that puts the maturation of commercial AI products and services ahead of any definitive, potentially constraining frameworks.

The Index also shows that AI readiness is not a linear process. Singapore and Hong Kong lead in overall readiness (respectively 1st and 2nd) despite being relatively small territories. At the same time, Indonesia and the Philippines are among the region’s most promising digital economies, yet they consistently rank low compared to the other economies.

These discrepancies may be explained by the fact that AI readiness is not accessible to all economies in the same manner. The Index shows that overall AI readiness is strongly correlated to GDP per capita, suggesting an advantage of mature economies over emerging ones.³ Indeed, the more mature and diversified an economy is, the likelier it is to have suitable infrastructure, institutions, regulations, and human capital.

TRUST AND ACCOUNTABILITY ARE KEY TO WIDER AI ADOPTION

Trust and accountability are defining concepts of the digital age.⁴ A growing number of digital services rely on personal data to function, making it crucial for individuals and organisations to have some visibility over who is handling their information. This is especially true for AI systems, which are increasingly used to make decisions that can have profound repercussions.⁵



AI Ready?
AUSTRALIA • HONG KONG • INDIA .

The Index shows that despite great awareness, consumers do not necessarily understand the way AI technologies work. Singapore, Hong Kong, the Philippines, and India score high in terms of consumer awareness of AI but relatively low in consumer understanding of AI.

This translates into a reluctance to trust AI technologies: all eight APAC economies score less than 7 out of 10 in consumer sentiment about AI, and they all score less than 8 in consumer willingness to use AI. This trend is more pronounced in developed economies such as Hong Kong and Singapore, possibly because their hyper-connectivity makes security lapses more consequential.

From a consumer's perspective, it is vital to have visibility into how AI systems comply with laws that frame the way personal data and information are collected, stored, used, and protected. For instance, it is not enough for an insurance customer to know that an AI application helps determine who qualifies for an insurance policy. It is just as crucial for the insuring company to be able to explain the algorithm's decision-making process, as well as to demonstrate it has oversight over the decisions made by AI.

In this sense, the future of AI hinges on it being used ethically, a mission that governments are taking very seriously. Singapore has recently launched a Proposed Model AI Governance Framework,⁶ Australia's Human Rights Commission has released a guiding paper on AI governance,⁷ India's 2019 budget includes the creation of a National Centre for Artificial Intelligence,⁸ and the G20 has added the ethical use of AI technologies to its Future of Work and Education agenda.⁹

GOVERNMENTS MUST DRIVE AI READINESS

Government readiness comprises two distinct but complementary aspects: the extent to which a government supports AI through clear, decisive, and consistent public policies, and the extent to which a government equips its own organisations with AI capabilities. In both cases, governments play a key role in making AI adoption a national priority.

Three major policy priorities can be highlighted for governments in the region: develop AI talent and encourage the ethical use of AI in schools and institutions; encourage public-private partnerships to make AI a key part of inclusive growth and positive social outcomes; and establish regional policy frameworks to support wider AI development and adoption.

The Index shows that economies that have taken concrete steps towards building coordinated national strategies specifically devoted to AI – or at least have defined foundational guiding principles pertaining to AI – rank the highest in terms of overall readiness. Indeed, fostering sophisticated business environments is strongly correlated with government readiness, suggesting that innovation begets innovation.¹⁰

In terms of public-sector adoption, the Index shows that most of the governments in the region have made great institutional strides. They have either deployed AI technologies within their own organisations, making automation a key productivity tool for the public service, or launched a number of initiatives to shape and prepare dynamic AI ecosystems.

Singapore, for instance, has made it a national priority to become "AI ready"; it has built strong ties with the technology sector to improve the performance and productivity of its public sector through AI solutions, and it is working with its public and private sectors to develop industry-focused policies that enable the ethical and inclusive development of AI.

However, it is important to note that government use of AI is still in its infancy. In APAC as elsewhere, departments and agencies are challenged by the need to implement new technologies and hire staff with the appropriate skills – all while navigating bureaucracies' natural risk aversion.

AI Ready?

INDONESIA • MALAYSIA • THE PHILIPPINES • SINGAPORE • THAILAND

OVERVIEW

Salesforce's Asia Pacific 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 20 proxy indicators clustered into three key dimensions:



Consumer readiness (5 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.



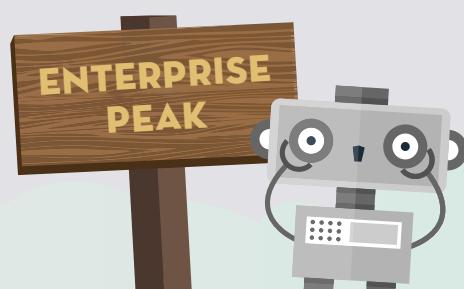
Government readiness (8 indicators)

How the public sector – regulators, policy-makers, 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 1. ASIA PACIFIC AI READINESS INDEX – BREAKDOWN OF INDICATORS

CONSUMER READINESS

1	Digital Adoption Index (People)	Measures people's adoption of digital technologies through mobile access and internet access at home.	World Bank, Digital Adoption Index, 2016	Link
2	Consumer Awareness of AI	Measures consumer familiarity with AI.	Salesforce, AI in Asia: Trust, Understanding and the Opportunity to Re-Skill, 2018	Link
3	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	Link
4	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	Link
5	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	Link



III. METHODOLOGY

BUSINESS READINESS

1	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	Link
2	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, 2018	Link
3	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, 2018	Link
4	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, 2018	Link
5	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.	Link , Link , Link , Link , Link
6	Number of AI Start-Ups	Measures the number of active companies headquartered in a country and categorised as "artificial intelligence".	Crunchbase database, consulted in December 2018.	Link
7	Venture Capital Availability	Measures the ease with which start-up entrepreneurs with innovative and risky projects can obtain equity funding.	World Economic Forum, Global Information Technology Report, 2016	Link

GOVERNMENT READINESS

1	Digital Evolution Index	Measures governments' digital readiness by assessing their competitiveness and trust in the global digital arena.	Tufts University, Digital Planet Report, 2017	Link
2	Digital Government Score	Measures national digital government readiness and development across ten indicators and 35 sub-indicators.	Waseda University, IAC Digital Government Survey, 2018	Link
3	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 Digital Government Survey, 2018	Link
4	Global Open Data Index	Measures the free and open publication of government data.	Open Knowledge Network, Global Open Data Index, 2016	Link
5	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, 2018	Link
6	H-Index for AI Publications	Measures the productivity and the citation impact of a scientific publication.	Scimago Journal & Country Rank, 2017	Link
7	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	Link
8	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	Link

CALCULATIONS

The Index covers eight APAC economies: Australia, Hong Kong, India, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. All scores for the indicators are normalised to 10, while the overall total is normalised to 100 for comparison.

Consumer readiness indicators were not available for Australia. Hence, it has been excluded from the consumer and overall readiness rankings. Australia's scores are, however, available for the business and government readiness dimensions, allowing complete comparisons for all eight economies.

Where available, 2018 data has been used throughout this report. All data is publicly available and accessible.

CORRELATIONS

A correlation analysis was conducted to understand the nature and strength of the relationship between AI readiness (overall, consumer, business, and government) and internationally comparable measures of social, economic, and technological advancement.

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	-0.089	0.900**	0.891**	0.558	0.725*	0.742*
Sig. (2-Tailed)	0.834	0.002	0.003	0.150	0.042	0.035
N	8	8	8	8	8	8
CONSUMER READINESS						
Pearson Correlation	-4.91	0.462	0.360	0.239	0.547	0.505
Sig. (2-Tailed)	0.264	0.296	0.428	0.606	0.203	0.248
N	7	7	7	7	7	7
BUSINESS READINESS						
Pearson Correlation	0.180	0.749*	0.764*	0.344	0.486	0.544
Sig. (2-Tailed)	0.669	0.033	0.027	0.404	0.222	0.164
N	8	8	8	8	8	8
GOVERNMENT READINESS						
Pearson Correlation	-0.064	0.948**	0.932**	0.648	0.755*	0.760*
Sig. (2-Tailed)	0.881	0.000	0.001	0.082	0.030	0.029
N	8	8	8	8	8	8

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

III. METHODOLOGY

Table 3 shows that Singapore leads the region in overall AI readiness with a score of 63.0, followed by Hong Kong (56.5) and India (50.2).

At 44.2 and 41.1 respectively, the Philippines and Indonesia rank 6th and 7th.

TABLE 3. ASIA PACIFIC AI READINESS INDEX – OVERALL SCORES AND RANKINGS

Country	Overall Readiness (Score, /100)	Overall Readiness (Ranking)
Singapore	63.0	1
Hong Kong	56.5	2
India	50.2	3
Malaysia	49.0	4
Thailand	46.7	5
Philippines	44.2	6
Indonesia	41.1	7

Note: Australia is excluded from overall scores and rankings because it is missing data for consumer readiness (one of the Index's three main dimensions).

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Table 4 provides a more detailed breakdown of the Index. It shows that Thailand takes the lead in terms of consumer readiness (score of 62.6), just ahead of Hong Kong (61.9) and Singapore (61.3).

Singapore ranks 1st in business readiness (score of 51.3), followed by India (45.2) and Australia (44.8). Singapore also ranks 1st in terms of government readiness (score of 76.4), followed by Australia (69.1) and Hong Kong (63.4).

Indonesia and the Philippines – and Malaysia to a lesser extent – have the furthest to go in terms of overall, consumer, business, and government readiness.

TABLE 4. ASIA PACIFIC AI READINESS INDEX – CONSUMER, BUSINESS, AND GOVERNMENT SCORES AND RANKINGS

Ranking	Consumer Readiness (Score, /100)	Business Readiness (Score, /100)	Government Readiness (Score, /100)
1	Thailand (62.6)	Singapore (51.3)	Singapore (76.4)
2	Hong Kong (61.9)	India (45.2)	Australia (69.1)
3	Singapore (61.3)	Australia (44.8)	Hong Kong (63.4)
4	Philippines (60.8)	Hong Kong (44.2)	Malaysia (52.3)
5	India (55.2)	Malaysia (40.5)	India (50.2)
6	Malaysia (54.3)	Thailand (34.6)	Thailand (42.8)
7	Indonesia (49.4)	Philippines (33.5)	Indonesia (41.4)
8		Indonesia (32.4)	Philippines (38.4)

Note: Australia only has data for business and government readiness, and as such is not included in the consumer readiness rankings.



OVERALL READINESS:

1. SINGAPORE
2. HONG KONG
3. INDIA
4. MALAYSIA
5. THAILAND
6. PHILIPPINES
7. INDONESIA

Note: Australia is excluded from overall scores and rankings because it is missing data for consumer readiness (one of the Index's three main dimensions).



#5



#6



#7

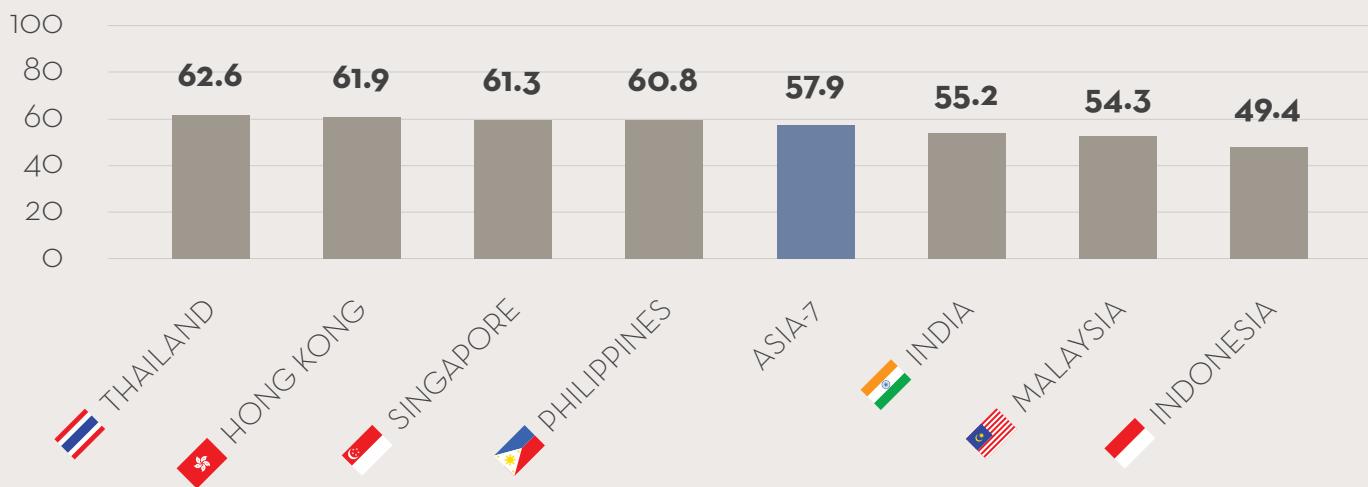


CONSUMER READINESS

Consumer readiness is measured through five key indicators that examine the general public's levels of awareness, understanding, adoption, and usage of AI products and services. Assessing the willingness to use and trust AI technologies helps organisations deploy AI technologies that truly meet users' expectations.

Figure 1 shows that Thailand ranks highest, followed by Hong Kong (2nd) and Singapore (3rd). This may be attributed to Thailand's widespread usage of automated systems in schools, hospitals, malls, and farms,¹¹ whereas Singapore and Hong Kong prioritise back-end applications of AI (banking, insurance, e-commerce, etc.).

FIGURE 1. CONSUMER READINESS – OVERALL SCORES (/100)



Note: Australia has no consumer readiness data, so it has been excluded from this figure.



Table 5 shows the scores for each of the five indicators, normalised to a maximum score of 10. It reveals that consumer awareness of AI is high across the region, due in part to technology companies making headlines with the implementation of AI-powered technologies such as autonomous vehicles.¹²

TABLE 5. CONSUMER READINESS – DETAILED SCORES (/10)

CONSUMER READINESS					
Country	Digital Adoption (People)	Consumer Awareness of AI	Consumer Understanding of AI	Consumer Sentiment about AI	Consumer Willingness to Use AI
Hong Kong	9.1	8.9	2.6	5.0	5.3
India	2.3	7.8	3.7	6.4	7.5
Indonesia	4.1	5.7	2.3	5.0	7.5
Malaysia	6.4	6.7	2.3	4.7	7.0
Philippines	4.4	8.8	4.9	5.0	7.3
Singapore	8.0	8.9	2.8	4.5	6.4
Thailand	6.8	6.8	3.1	6.9	7.8

Note: Australia has no consumer readiness data, so it has been excluded from this table.

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However, awareness does not always translate into understanding. Hong Kong and Singapore have the region's highest levels of digital adoption and AI awareness, yet both score the lowest in terms of AI understanding. The Philippines, on the other hand, scores high on both awareness and understanding, demonstrating consumers' willingness to embrace AI and the wide-ranging changes it brings about.¹³

In terms of sentiment, positive outlooks towards AI are highest in Thailand and India – two economies in which consumers interact primarily with AI technologies geared towards entertainment (home assistants, geolocation applications, etc.) – and lowest in Singapore and Malaysia – two economies that are increasingly confronted to more intrusive facets of AI, such as AI-enabled surveillance.¹⁴

BUSINESS READINESS

Business readiness examines the extent to which the private sector – start-ups, SMEs, and large enterprises – are equipped to adopt AI. Evaluating AI skills and know-how allows decision-makers to bridge the organisational gaps that hinder the implementation of AI technologies.

Figure 2 shows that Singapore leads the pack, followed by India (2nd). Driving business adoption has allowed Singaporean companies from a wide range of sectors – supply chain and logistics, customer support, research and development, among others¹⁵ – to effectively implement some form of AI. In India, business adoption is predominantly focused on the automation of industrial processes.¹⁶

FIGURE 2. BUSINESS READINESS – OVERALL SCORES (/100)

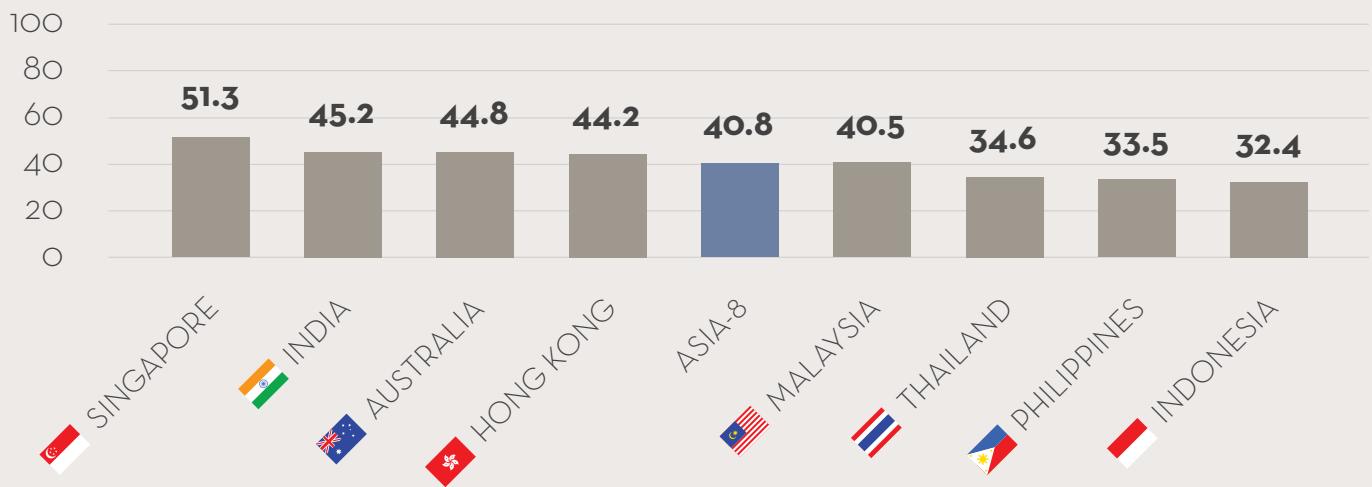


Table 6 shows the scores for each of the seven indicators, normalised to a maximum score of 10. It reveals that mature economies are far likelier than developing ones to have AI-ready businesses, highlighting the symbiotic relationship between digital capabilities and economic development.¹⁷

TABLE 6. BUSINESS READINESS – DETAILED SCORES (/10)

BUSINESS READINESS							
Country	Digital Adoption (Business)	Business Sophistication	Knowledge and Technology Outputs	Creative Outputs	Employment Susceptible to Automation	Number of AI Start-Ups	Venture Capital Availability
Australia	7.7	4.5	3.2	4.5	4.4	2.7	4.4
Hong Kong	8.5	3.7	3.7	4.8	2.8	1.3	6.1
India	5.0	3.0	3.0	2.5	4.3	8.1	5.7
Indonesia	4.2	2.6	1.8	2.7	5.6	0.4	5.4
Malaysia	5.5	3.8	3.3	3.5	4.9	0.4	6.9
Philippines	5.7	3.5	2.7	2.1	4.9	0.1	4.4
Singapore	8.5	6.5	5.1	4.0	2.6	2.6	6.6
Thailand	5.7	3.1	3.1	3.2	4.4	0.1	4.7

But the relationship is not always clear-cut. Singapore's highly digitised economy allows it to dominate in terms of digital adoption and business sophistication, but it scores relatively low in measures of innovative capabilities. India, meanwhile, leads the way in terms of number of AI start-ups despite having moderate scores for all other indicators – suggesting that much more could be accomplished if companies were to have the business environment they need for their innovative potential to flourish.

It is worth noting that Malaysia ranks highest in terms of venture capital availability and second-to-last in number of AI start-ups, indicating a clear disconnect between business potential and business capacity. The same can be said of Hong Kong, Indonesia, Thailand, and the Philippines, where there is much room for growth. This is not the case in India and Australia, where capital and investments are much more aligned with actual enterprise creation.



GOVERNMENT READINESS

Government readiness explores the different ways in which the public sector enables AI. From regulatory frameworks to institutional initiatives, the goal is to identify the best ways for policy-makers to build ecosystems in which AI is a key driver of economic growth and competitiveness.

Figure 3 shows that Singapore and Australia are fully mobilised to drive and support homegrown AI-based innovation. The Singapore government has launched government programs specifically devoted to fostering AI innovation¹⁸ and has created a body tasked with providing policy advice for the ethical usage of AI.¹⁹

FIGURE 3. GOVERNMENT READINESS – OVERALL SCORES (/100)

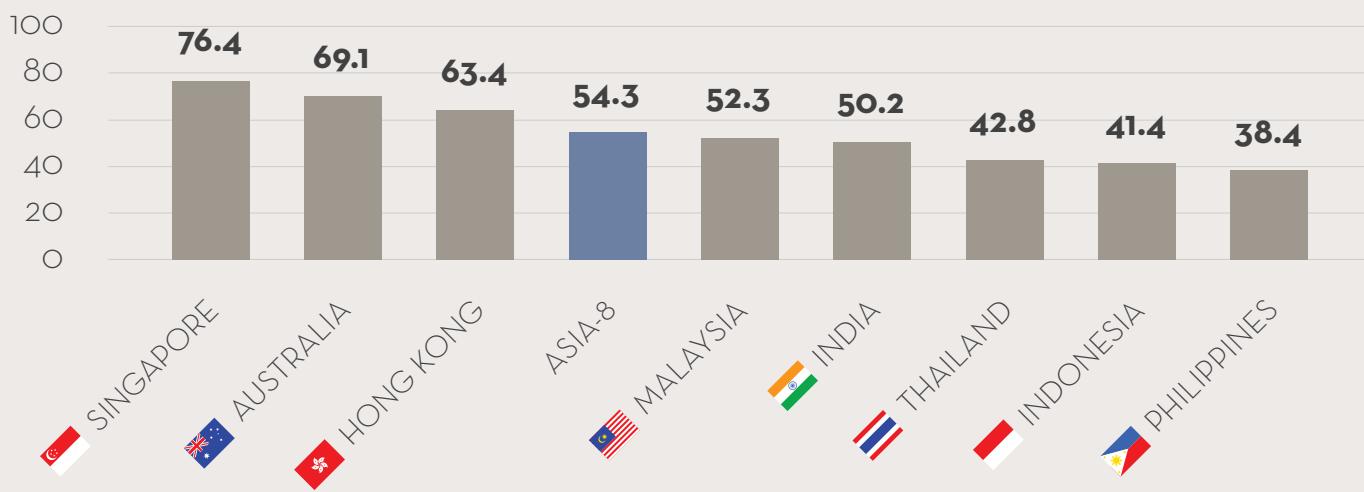


Table 7 shows the scores for each of the eight indicators, normalised to a maximum score of 10. It reveals that AI ecosystems are more likely to take shape in environments that combine strong vision, solid policy-making, dependable institutions, and reliable infrastructure.²⁰

TABLE 7. GOVERNMENT READINESS – DETAILED SCORES (/10)

GOVERNMENT READINESS									
Country	Digital Evolution	Digital Government	E-Participation/ Digital Inclusion	Open Data	Human Capital and Research	H-index for AI publications	Laws Relating to ICTs	Importance of ICTs to Government Vision of the Future	
Australia	7.1	8.0	5.8	7.9	6.5	6.9	6.9	6.1	
Hong Kong	7.3	7.0	5.4	5.1	4.7	7.1	7.3	6.7	
India	3.7	6.1	5.4	4.7	3.3	5.3	6.0	5.7	
Indonesia	4.5	6.2	5.0	2.5	2.1	0.7	5.9	6.3	
Malaysia	5.8	6.4	5.8	1.0	4.5	2.6	7.7	8.0	
Philippines	4.1	6.1	3.8	3.0	2.5	0.3	5.3	5.7	
Singapore	7.4	9.4	8.3	6.0	7.3	6.2	8.1	8.4	
Thailand	4.7	6.8	3.8	3.4	3.3	1.6	5.1	5.6	

The rapid evolution of digital technologies makes it crucial to have laws that facilitate the safe use of innovative ICTs. Singapore (8.1), Malaysia (7.7), and Hong Kong (7.3) are the three top-ranked countries in this area, indicating the existence of conducive regulatory frameworks (e-commerce, digital signatures, cybersecurity, consumer and data protection, etc.). However, there is room to improve legal systems further, especially to address the unique questions that will arise with the growth of AI.

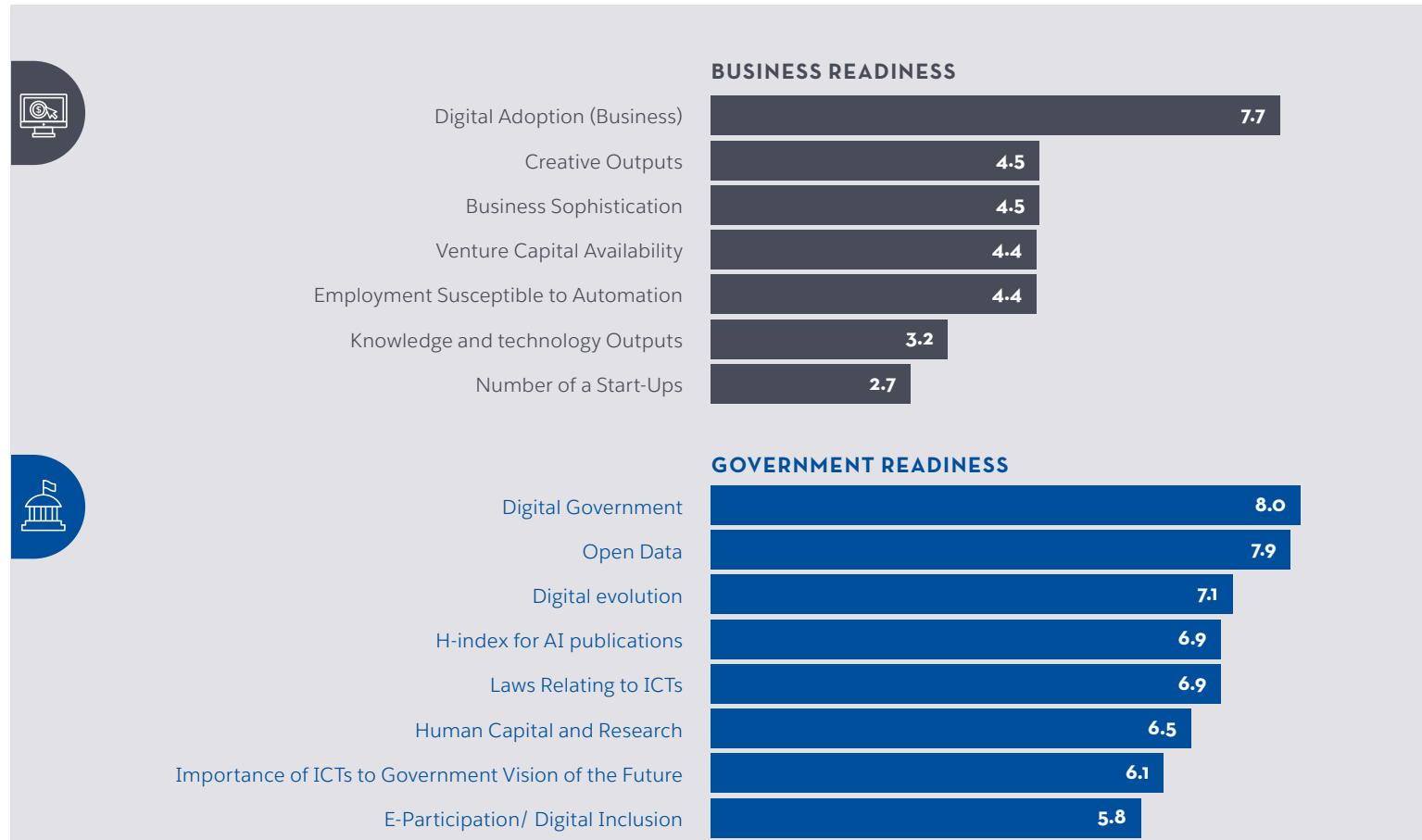
In addition to laws, open government data availability indicates a strong government commitment to the digital agenda, as well as the willingness to prioritise digital presence and inclusion. Australia is the most advanced in this regard and ranks highly in several other areas. The past decade has seen different levels of the Australian government, establishing responsive digital services and channels as well as encouraging citizens to take part in public consultations, an approach that is equipping both institutions and citizens to navigate future AI-driven disruption.²¹





AUSTRALIA

FIGURE 4. AUSTRALIA – BUSINESS AND GOVERNMENT READINESS (SCORES OUT OF 10)



Note: Australia has no data for consumer readiness.

Australia performs relatively well in most dimensions of government readiness. This is largely thanks to a strong government push to put AI at the heart of several nationwide plans and initiatives.

In 2018, the government's Digital Economy Strategy made AI a key driver of competitiveness and productivity.²² More recently, the 2018-2019 budget announced a four-year, A\$29.9-million investment to support the development of AI in Australia.²³ This includes the launch of a national AI Ethics Framework, the creation of a Technology Roadmap, the development of an AI Standards Framework, as well as support to Cooperative Research Centre projects, PhD scholarships, and other initiatives to increase the supply of AI talent in Australia.

Yet this institutional dynamism is not reflected in Australia's business readiness. Australian businesses have been slow to adopt AI even though they understand its many benefits and are willing to invest in it. According to a Daisee survey, only 14% of Australian companies reported having adopted AI, compared with the global average of 23%. Moreover, almost 70% of Australian organisations say they are yet to adopt AI solutions, compared to a global average of 54%.²⁴

The same is true for consumer readiness. According to an IPSOS survey, Australian consumers are highly aware of AI (75%), but their actual understanding remains weak: 23% say they know nothing about it and over half (57%) acknowledge they know just a little bit. The pervasiveness of virtual assistants such as Siri and Alexa, and Google's work in driverless cars have given consumers a good understanding of AI in speech recognition and autonomous vehicles, but they remain uncomfortable with AI-driven products and services in other areas; more than 66% do not like the idea of robots in customer communication and around 59% disapprove of talking to a robot while making a purchase.²⁵

This discrepancy between government effort and wider adoption risks turning Australia into what Tufts University calls a "stall out" economy: one that has attained digital maturity in key areas, but whose overall pace of innovation is slowing down.²⁶ If consumer and business readiness do not improve, Australia will be overtaken by nimbler, more dynamic economies that can keep up with a rapidly growing and evolving AI sector. And catching up will become harder the more advanced, complex, and widespread AI technologies become.

RECOMMENDATIONS

- **Strengthen AI capabilities through skills and knowledge:** Lack of AI-specific expertise is a major obstacle for Australia.²⁷ Almost two thirds of Australian organisations have trouble finding suitable staff to lead AI technology integration,²⁸ making it difficult for business leaders to find the skills they need to increase performance and competitiveness with AI. Supporting public and private initiatives that aim to close the AI skills gap will allow an increasingly specialised workforce to emerge.²⁹
- **Develop a set of ethical principles:** Driving AI adoption will require governments to work with AI experts to ensure the technology is deployed ethically and responsibly, for the good of society. AI-specific ethical principles can help industry players innovate in a responsible and ethical manner. For maximum effectiveness, they will have to be updated regularly to keep pace with AI developments.
- **Create an AI Governance framework:** The rapid rise and evolution of AI technologies will be a major source of difficulties. It will be helpful to establish a framework in which industry leaders can provide implementable guidance to organisations using AI. The framework should not be intended as a set of rules, but rather as a guide for sound approaches to data management and AI governance, and provide practical and risk-based approach to thinking about the responsible use of AI.



CASE STUDY 1. AUSTRALIA BUILDS SKILLS FOR AI

Australia currently faces a severe skills gap in the fields of business automation, big data, and AI. The economic benefits of meeting this demand make it increasingly vital and urgent for Australian workers and businesses to leverage AI's capabilities. Accenture estimates show that succeeding in this area could lead to a AUD\$400 billion GDP increase by 2035, as well as an increase of Australia's annual growth rate from 2.2% to 3.7%.

The Australian government has recognised the new priority areas for the country. The Australia 2030 report, published by Innovation and Science Australia, highlights the vital need for the government to prioritise the development of advanced capabilities in AI and machine learning (ML). Education will play a key role in responding to the changing nature of work by equipping as many Australians as possible with relevant skills by 2030. It recommends the government develop strategies to train teachers and undertake targeted interventions, as well as appropriate vocational and training programs.

Most recently, the government has earmarked AUD\$29.9 million over four years to build AI capabilities. This funding is part of the broader Australian Technology and Science Growth Plan and will be split between programs at the Department of Industry, Innovation, and Science,

the national science research agency (CSIRO), and the Department of Education and Training. The funding also provisions for AI and ML focused PhD scholarships and school-related learning to address skill gaps.

Moving forward, Australia can leverage existing platforms to develop AI skills and capabilities. For instance, Data61, the digital innovation arm of the CSIRO, is well-placed to help address the skills gap and accelerate initiatives in research and innovation. It can use its position to build collaborations between academia and industry, introduce training programs, and match employers with the right candidates using its vast network.

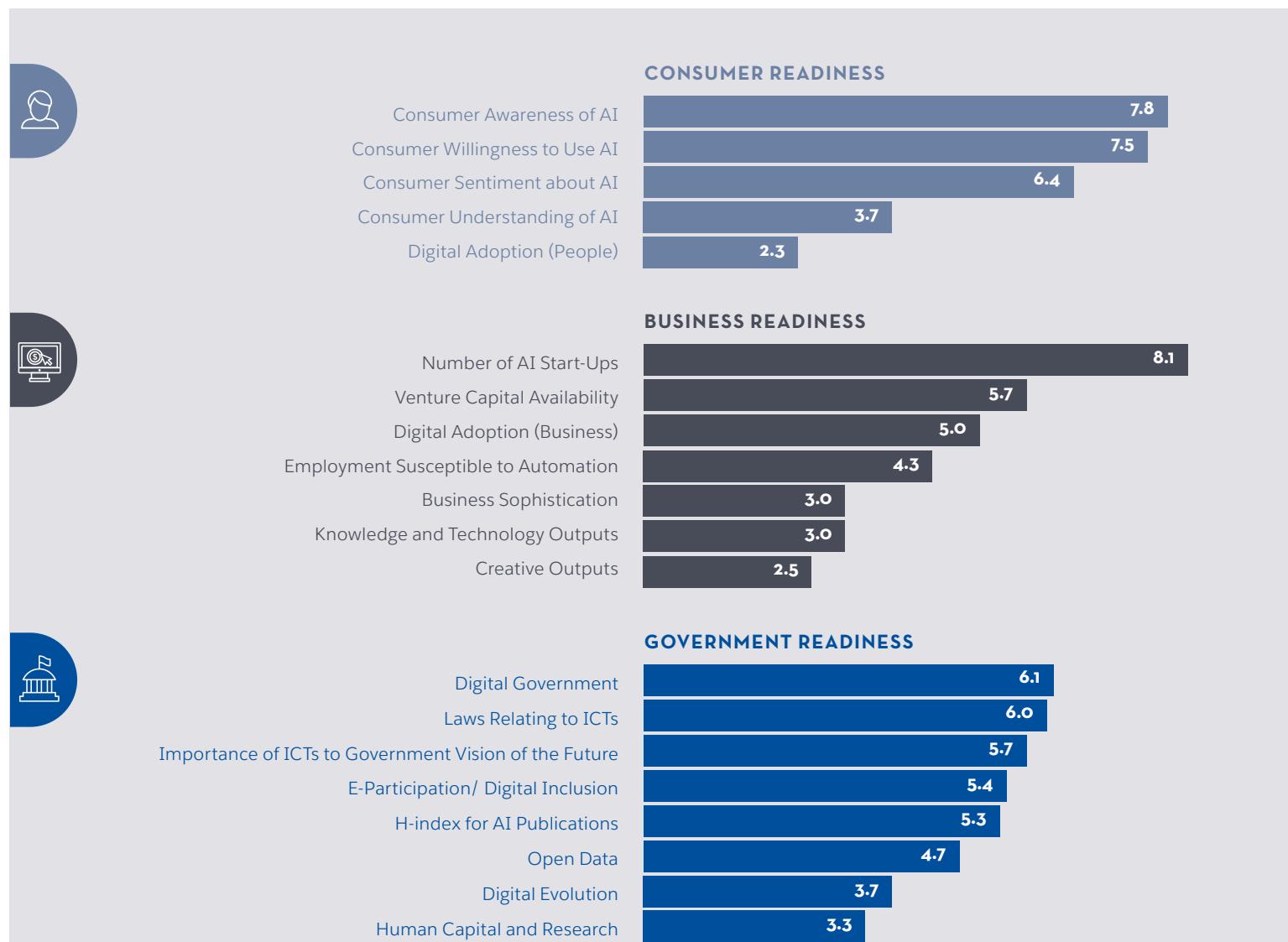
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INDIA

FIGURE 5. INDIA – CONSUMER, BUSINESS, AND GOVERNMENT READINESS (SCORES OUT OF 10)



India is one of few global economies to have implemented and perfected automated processes across many different industries³⁰ and it also boasts a high number of AI start-ups. But this is not reflected in its business readiness scores. In fact, its performance shows low levels of dynamism and innovation in the AI space.

In terms of dynamism, Indian AI start-ups are constrained by the fact that most small- and mid-sized businesses – the backbone of the country’s economy – cannot afford to adopt or implement AI systems.³¹ In terms of innovation, India’s AI ecosystem is held back by the lack of existing skilled professionals who can develop innovative AI solutions; 76% of companies in India feel the shortage of skilled professionals is slowing down AI adoption.³²

Consumer readiness paints a more complicated picture. On the one hand, Indian consumers are largely aware of AI technologies and their benefits, thanks in part to entertainment-driven products and services. India has a large, digitally savvy, and young population increasingly accustomed to using AI-powered devices and applications such as home assistants, robo-advisors, and chatbots.³³ On the other hand, poverty and infrastructure limitations keep the digital economy out of the reach of millions of people, hindering their understanding and adoption of transformative digital technologies such as AI.³⁴

In terms of government readiness, India is among the most prepared economies in the region, but much remains to be done. In recent years, the government has shown a strong commitment to the digital agenda, with AI-related efforts culminating most recently in a National Strategy for AI. The plan provides over 30 policy recommendations to accelerate the adoption of AI across the value chain, and promote ethics, privacy, and security in AI. More recently, the 2019 budget includes plans to set up a National Centre on Artificial Intelligence, as well as steps to turn 100,000 Indian villages into “digital villages”.³⁵

RECOMMENDATIONS

- Support AI innovators by strengthening policies and institutions:** The development of India's digital economy rests on its ability to provide a favourable business environment that fosters entrepreneurship and innovation. Several reforms have been introduced to streamline the process of starting a business, accessing credit, paying taxes, and trading across borders. These and other measures can have a tangible impact on AI innovators, allowing them to push the boundaries of AI by making it possible to find specialised talent or secure VC funding. For this to happen, national plans and policies must be effectively implemented, and progress must be carefully tracked.
- Encourage localised, community-driven use cases:** There remains tremendous room for Internet adoption to grow in India. While mobile connectivity is increasing rapidly, only 29.5% of the Indian population uses the Internet daily.³⁶ Such limitations in digital access and literacy remain major hurdles to India's otherwise promising digital transformation. Local governments can partner with technology companies and local communities to support the emergence of AI products and services that bridge major livability gaps. From healthcare, agriculture, and sanitation to education, transport, and urbanisation, AI has the potential to transform all areas of people's lives and India has what it takes to become a test-bed for innovative use cases that improve people's lives.³⁷
- Grow a unique and differentiating AI ecosystem by cultivating AI skills and know-how:** AI will undoubtedly reshape the workforce and employment opportunities in India. The country needs to begin upgrading the skills of its workforce and rethink education and training programs. Advanced skills must focus on abstract, problem-solving skills as well as capabilities that are most difficult to automate. The Skill India program aims to develop industrial and entrepreneurial skills among the workforce. While an ideal platform, it will need to be repositioned such that it can focus on developing advanced skills for an AI-centric future.

CASE STUDY 2. INDIA ENABLES AI IN THE FINANCIAL SECTOR

The Indian financial services sector is currently tackling persistent challenges of shrinking margins and rising non-performing assets. At the same time, non-traditional financial players have entered the sector, driven by India's dynamic entrepreneurial ecosystem. A rising number of financial services institutions (FSIs) are embracing AI to address these challenges.

FSIs are forming partnerships with AI start-ups to develop business applications. This has helped start-ups flourish as they find markets for their products, as well as necessary capital. Estimates suggest that there are over 400 AI-related start-ups in India and they have attracted over USD\$150 million in investments in the last three years. Accelerators, hackathons, and innovation labs have played a key role in this process. Notable examples include:

- ICICI Bank is leveraging AI to augment customer services and operations such as international remittance operations and document checks. In addition, chatbots have been deployed for customer queries and employee assistance in documentation. Most recently, the Bank has launched an instant digital credit facility to enable customers to make small-ticket purchases digitally.
- HDFC Bank is partnering with start-ups and using AI and machine learning to give customers personalised and intuitive experiences through chatbots, digital assistance through enterprise virtual assistants (EVAs), and physical assistance through a humanoid robot. It is also using AI to streamline hiring decisions by screening candidates and conducting psychometric tests.
- Kotak Mahindra Bank is using Keya, an AI-powered voice bot. Integrated with the phone-banking helpline, it uses automatic speech recognition, English and Hindi

language understanding, and text-to-speech technology to assist consumers. The bank also hopes to draw customer insights and identify new opportunities from this system.

With the mainstreaming of AI in the financial services sector, AI may also be used in strategic decision-making. One of its biggest possibilities is that it may serve India's unbanked and uninsured populations, who do not have access to financial services. Some of these use cases could be AI-led credit scoring, micro-insurance, and distribution models, all of which may see huge adoption in rural areas.

To strengthen the AI ecosystem, government and regulators have played a proactive role in developing comprehensive policies, regulations, and initiatives. Apart from the Digital India program, the Reserve Bank of India's "working group on FinTech and digital banking" has also recognised the importance of AI and robotics and provided recommendations for developing FinTech innovations. The Securities and Exchange Board of India (SEBI) has set up a Committee on Financial and Regulatory Technologies (CFRT) to facilitate the application of AI in securities and trading and for other regulatory functions.

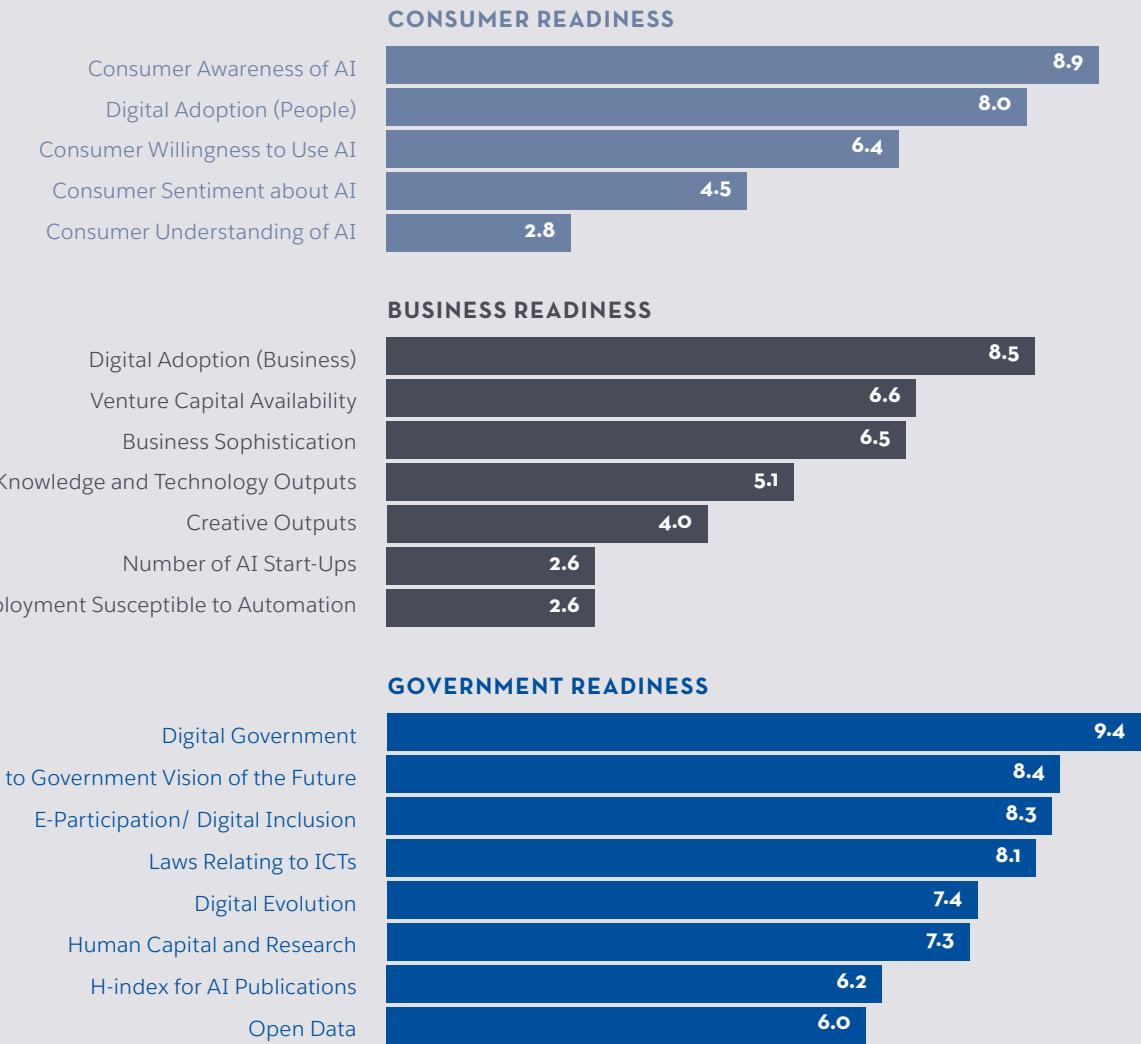
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SINGAPORE

FIGURE 6. SINGAPORE – CONSUMER, BUSINESS, AND GOVERNMENT READINESS (SCORES OUT OF 10)



Singapore ranks highest in the overall Index due to one of the region's most progressive and conducive approaches to AI.³⁸ From data protection laws³⁹ to nationwide cybersecurity strategies,⁴⁰ Singapore's institutions have built strong regulatory foundations to maximise the impact of digital technologies on the economy.⁴¹

This commitment has also been true for AI, as demonstrated by AI Singapore, a government body devoted to driving investments in AI research, design regulatory frameworks, and broaden adoption and use of AI within industries.⁴² The government has recently created the Advisory Council on the Ethical Use of AI and Data,⁴³ published several documents on the ways responsible data collection and usage can drive AI adoption,⁴⁴ and launched a Model AI Governance Framework (see Case Study 3).⁴⁵ In addition, the Monetary Authority of Singapore (MAS) has released a set of fairness, ethics, accountability, and transparency (FEAT) principles to promote the responsible use of AI and data analytics in finance.⁴⁶

But there is still room for improvement, especially when it comes to business adoption and consumer usage. According to a recent survey, at least six in 10 organisations in Singapore have already implemented AI in one form or another.⁴⁷ At the same time, more than a third of organisations say their approach to AI lacks clear strategy and direction, and that the rising lack of AI-capable talent stifles their ambitions.⁴⁸ These two factors can explain Singapore's unusually low scores for creative outputs, automated employment, and number of AI start-ups.

Meanwhile, consumers in Singapore remain suspicious of AI technologies. A hyper-connected population, Singaporeans are concerned with how their data is handled: 83% feel they are kept in the dark about how companies use their data and 80% feel they are not given control over the data that they share. Only 53% feel that companies have enough security measures in place for safe-keeping of the data that they share with them.⁴⁹

RECOMMENDATIONS

- **Strengthen AI-specific data protection policies:** The Singapore government must continue its strong position on the misuse or misappropriation of private information. Strengthening both data protection and business certainty in a fast-evolving technological environment is the road to a solid foundation for countering data breaches,⁵⁰ ensuring public trust and the continued development of AI.
- **Build a regional hub for AI research centres:** Singapore has been successful in attracting businesses to set up regional headquarters that service the region. A similar approach must be adopted to ensure AI businesses create and grow local AI research centres. This will not only give Singapore a strong foothold in the regional AI value chain, it will give it the ability to develop a local AI talent pool.
- **Strengthen skills upgrading initiatives to build a homegrown pool of versatile AI talent:** AI Singapore has launched two initiatives – AI for Industry (AI4I) and AI for Everyone (AI4E) – to equip 12,000 Singaporeans over the next three years.⁵¹ This is a great start, but more needs to be done for Singapore to become a regional AI hub.⁵² Whether it is introducing coding at an early age or encouraging computational thinking,⁵³ making AI a part of the education system can both bridge the local AI talent gap and quell future workers' concerns of the impact of AI on their jobs.
- **Incentivise creativity and innovation to foster a dynamic AI ecosystem:** Innovative capabilities are becoming core business skills. From tech start-ups to multinational corporations, businesses are looking beyond employees' technical skills to remain competitive.⁵⁴ The ability to think critically and solve problems creatively are highly sought-after competences that Singapore cannot afford to neglect. Apart from fostering such aptitudes in educational institutions,⁵⁵ Singapore can incentivise out-of-the-box thinking in the workplace by making it one of many KPIs for career progression.⁵⁶

CASE STUDY 3. SINGAPORE DEVELOPS A MODEL AI GOVERNANCE FRAMEWORK

The Personal Data Protection Commission (PDPC), Infocomm Media Development Authority (IMDA), with the advice from the Advisory Council on the Ethical Use of AI and Data recently published the Proposed Model AI Governance Framework (Model Framework).

The “living” Model Framework translates ethical principles into practical measures that can be implemented by organisations deploying AI solutions at scale. One of its aims is to promote AI adoption while building consumer confidence and trust in providing their personal data for AI-focused purposes.

The Model Framework is based on two high-level guiding principles that promote trust in AI and understanding of the use of AI technologies:

1. Decisions made by or with the assistance of AI should be explainable, transparent, and fair so that affected individuals will have trust and confidence in these decisions.
 - Explainable: Automated algorithmic decisions and the data that drives such decisions must be understandable by end-users and other stakeholders in non-technical terms.
 - Transparent: AI developers, data scientists, application builders, and companies should be accountable for the AI algorithms, systems, applications, and resultant decisions respectively in order to build trust in the entire AI ecosystem.
 - Fair: AI algorithms and models embedded in decision-making systems should incorporate fairness at their core to avoid unintentional biases or discriminatory practices.
2. AI systems, robots, and decisions made using AI should be human-centric, i.e. put users front-and-centre of all and any AI deployment.
 - Decisions should strive to help individuals and avoid causing foreseeable harm.
 - Tangible benefits to individuals should be identified and communicated to build consumer understanding and confidence.
 - AI systems and robots should be designed to avoid causing bodily harm or affecting the safety of individuals.

Source: Personal Data Protection Commission (PDPC), www.pdpc.gov.sg/-/media/Files/PDPC/PDF-Files/Resource-for-Organisation/AI/A-Proposed-Model-AI-Governance-Framework-January-2019.pdf

Salesforce's Asia Pacific AI Readiness Index shows that AI adoption is fragmented and uneven across the APAC region. In some cases, governments' efforts and commitments have yet to be reflected in businesses' or consumers' adoption and usage of AI. In others, business and consumers are taking the lead, showing governments the way forward in terms of change and innovation.

There is room to shape the way how AI impacts society. Working together, the public and private sectors can develop policies and best practices in several key areas including: equipping populations with the AI skills of the future; supporting privacy and security to make AI applications transparent and ethical, and building dynamic and innovative AI ecosystems.



PREPARE AI TALENT

A recent report suggests that there are only 300,000 AI engineers, researchers, and practitioners worldwide, when several millions of them will be needed over the next two decades.⁵⁷ Across the board, companies report that finding the right talent is the biggest hurdle they face in trying to integrate AI into their existing operations. And the shortage is even more acute in APAC.⁵⁸

How can the number of AI specialists increase? And how can they be equipped with AI skills that remain relevant no matter how the sector evolves?

Adapt educational institutions and what they teach

Curriculum reform of both compulsory and post-compulsory education is gaining traction in most of the countries covered in the Index. In Singapore, coding has been introduced to primary and secondary school curricula, and STEM coursework has been added to secondary and vocational training programs.⁵⁹ AI-specific initiatives could be developed to introduce students to the more abstract facets of AI, including the role of ethics in computer science, the influence of biases in society and in databases, and the importance of data quality when using data-driven technologies. To be usable across all increasingly complex AI applications, AI curricula will need to move away from a purely technical perspective and draw more from the humanities (history, sociology, psychology, philosophy, and ethics).

Use AI to make education better

Big data and analytics can be used to improve both learning and teaching experiences. Capturing data on student demographics, school attributes, and individual trajectories can help decision-makers optimise the way they allocate resources or adjust policies. AI-based Intelligent Tutor Systems (ITS), for example, can deliver precise support to students. Universities in Singapore and Malaysia are experimenting with predictive software that detects the likelihood of students dropping out of a class.⁶⁰ AI systems can also help teachers improve their workflows, by relieving them of some of the more routine, time-consuming tasks of teaching, including record-keeping.

Support upskilling and lifelong learning schemes

The effectiveness of AI policies hinges on populations being able to capitalise on AI-specific skills and knowledge. AI technologies will require advanced skills and workers who can develop and maintain complex systems and applications. According to some estimates, AI will push as many as 375 million workers globally – or 14% of the global workforce – to reskill or make a transition to new occupational categories.⁶¹ Lifelong learning and upskilling schemes are already helping workers upgrade and diversify their skills. Such programs could be expanded to include AI-specific skills such as applied statistics, computational thinking, graphical modelling, robotics, programming languages, and cognitive science theory.

Build a diverse and representative workforce

It is important for new and transformative technologies such as AI to effectively address the needs and expectations of diverse populations. For this to happen, the creators of the technologies – engineers, developers, programmers, designers, etc. – must themselves be diverse. Increasing diversity is a complex issue that has no one-size-fits-all solution, but there are ways to ensure people of all backgrounds produce and enjoy the technological innovations of tomorrow. Technologies are already helping governments in the APAC region increase the number of girls and women who have access to primary and tertiary education.⁶² Likewise, social networks are enabling many women-driven entrepreneurial initiatives in emerging markets, helping women lift themselves and their families out of poverty.⁶³ Such efforts must be supported by policy-makers, as increasing diversity also has the added benefit of increasing the potential pool of AI-skilled talent in the long run.



BUILD TRUST IN AI

Privacy and security are central to the development and deployment of AI technologies. As AI grows increasingly complex and widespread, it will become inescapable for AI-driven organisations to comply with laws that regulate the way individuals' and organisations' data is collected, stored, used, and protected. In this context, trust will be crucial for the rise of AI in day-to-day functions. Not only must algorithms be understandable, transparent, reliable, and trustworthy, the organisation using it must be accountable in case it leads to errors or misuses.

How can AI be kept secure and trustworthy? How can consumers and businesses be reconciled with the idea of letting machines influence important aspects of their lives?

Adhere to privacy principles and practices

"Privacy by Design" comprises a number of technical and organisational measures at each stage of the data collection and processing chain. It pushes organisations to consider the privacy and security requirements of their data-dependent products, systems, and operations every step of the way. It also includes security measures such as access controls, audit logs, encryption, and data segregation to keep personal data separate from other forms of data. Conducting regular privacy impact assessments (PIA) can also help identify and mitigate privacy risks before the actual processing of personal data. While AI systems may involve innovative, complex, and sometimes unexpected/unintended uses of personal data, the use of PIAs help organisations better assess the risks and impacts involved in the processing of personal data.

Make transparency a key feature of AI products and services

Increasingly complex digital products and services require increasingly complex uses of data. As the number of self-managing, hyper-connected devices grows across homes, offices, and even public spaces, it is crucial for AI systems to be transparent; not only how, but also why a decision or an action was reached. Making AI transparent will allow consumers to better understand how AI systems work and affect them.

Control the way data is collected and used

There are many ways to ensure personal data is used the way it is meant to be used. Data anonymisation – deleting or pseudonymising personally identifiable information to make the data irreversibly untraceable and unreplicable – allows AI systems to use data without using or divulging any personal or private information, mitigating the risks of data breaches and accidental disclosures. Data limitation policies, meanwhile, force organisations to limit the use of personal data for the purpose for which it was originally collected. Finally, data minimisation reduces the amount of data collected and processed by establishing at the onset what data is relevant and necessary for a given purpose.

Enable ethics in AI

For AI to grow and deliver on its promises, it must be designed and deployed in a manner that earns and keeps the trust of individuals, organisations, and governments alike. It is important to ensure AI (including its training data, models, and context) is developed, implemented, and monitored following the highest ethical principles. AI professionals, including policy-makers, need to be aware of existing biases and make every attempt to remove them and/or mitigate the potential harm they may cause when put in charge of recommendations and predictions. AI algorithms are only as good as the data they are fed to learn, which means it is up to humans to manually take fairness and diversity into account as datasets are built.

Use AI to strengthen cybersecurity

AI can be deployed to improve existing detection and response capabilities, as well as create new preventative defence protocols. AI allows cybersecurity specialists to see and address threats sooner, as it more effectively sifts through large amounts of data and identifies patterns that humans take much longer to evaluate. Companies from all sectors can use AI platforms to streamline complex, manual, or time-consuming inspection processes, allowing specialists to devote their attention to more immediate threats.





SHAPE AI ECOSYSTEMS

Governments have a major role to play in driving the adoption of AI. From investment and procurement schemes to education, labour and migration policies, the public sector can influence the expansion of AI technologies. To be truly effective, government-led initiatives must both support existing projects and facilitate the launch of new ones, enabling the growth of the AI value chain as it takes shape and matures.

How can governments foster dynamic, sustainable, and innovative AI ecosystems? Which areas should they prioritise, and which is the most effective way of supporting initiatives?

Make data open and available

AI technologies require a secure and steady diet of reliable data to learn and function. In many government organisations, data sits in silos with fragmented ownership. In others, vast quantities are collected but never analysed. Governments can bridge major data gaps by making non-sensitive data freely available for everyone to access and use. This approach has proven successful in helping innovative companies implement solutions that truly address society's needs and expectations.⁶⁴ It can also set the example for other organisations to institute their own data governance protocols.

Facilitate cross-border flows and regional cooperation

A recent paper found that cross-border data flows are imperative to drive AI growth.⁶⁵ In the age of hyper-connected people, devices, and platforms, data flows across multiple jurisdictions and as such does not heed geographic borders. Facilitating the movement of data in this manner requires effective and consistent cooperation between governments that share a common goal. Initiatives such as the APEC Cross-Border Privacy Rules (CBPR) system must be supported and expanded to ensure cross-border flows of data and personal information are as useful to AI technologies as they are secure for users.

Set the example by using AI in government organisations

GovTech is a sector devoted to using cutting-edge digital technologies – including AI – to modernise and improve the public sector. AI can help eliminate administrative processes, support overloaded or underfunded institutions, optimise the allocation of resources, and even help prevent crime. Despite these promises, AI adoption by government organisations is currently following the same historical arc of technology adoption: at a much slower pace and at a smaller scale than in the private sector. For governments to propel consumer and business adoption of AI, and shape the nature of AI, they must be able to keep up with the pace of change.

Create specific roles to enable ethical and humane uses of AI

From Chief Digital Officers to Chief Innovator, many economies have created new roles within specialised government agencies to design unprecedented solutions for the unprecedented challenges of the digital era. AI – more specifically the ethical and moral dilemmas brought on by AI – requires the appointment of Chief Ethical Officers tasked with creating strategic AI frameworks that ensure the ethical and humane use of AI technologies across governments, institutions, and the public service. Such a role would clearly demonstrate governments' commitment to keeping AI safe and ethical for the benefit of citizens and businesses alike.

Use AI for good and teach AI to do good

The AI for Good Global Summit recently concluded that AI can and must help solve humanity's grand challenges by capitalising on the unprecedented quantities of data generated on human health, commerce, communications, migration, and more.⁶⁶ Collaborating with private-sector organisations, governments can share AI tools and resources, datasets, and supporting knowledge and expertise to address pressing sustainability challenges and help vulnerable populations. Governments can also support efforts aimed at better understanding and addressing the legal and ethical issues that AI technologies create. Singapore's Advisory Council on the Ethical Use of AI and Data could serve as inspiration for national or regional bodies in charge of ensuring that AI and data are used in a fair and ethical manner across industries.



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