Closing the AI Capability Gap in Indonesia

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OpenAI

Southeast Asia Public Policy Institute

About this Paper

This paper has been researched and produced by the Southeast Asia Public Policy Institute with support from OpenAI. The information and analysis presented are based on interviews with a range of government and private sector stakeholders, publicly available information, and analysis by the authors. It does not represent the views of OpenAI, nor is it intended to serve as an exhaustive review of policy, legislation, or regulation. It is intended as a practical starting point for further discussion on how to expand AI adoption, unlock economic opportunities, and deliver broader societal benefits.

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- Coordinating Ministry for Human Development and Cultural Affairs
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- Ministry of Communications and Digital Affairs
- Ministry of Primary and Secondary Education
- Ministry of Administrative and Bureaucratic Reform
- Ministry of Health
- Financial Services Authority (OJK)
- Indonesian Artificial Intelligence Research & Industrial Innovation Collaboration (KORIKA)

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About OpenAI

OpenAI is an AI research and deployment company. Its mission is to ensure that artificial general intelligence (AGI) benefits all of humanity. OpenAI develops AI models and products while advancing research on AI safety, alignment, and responsible deployment.

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Executive Summary

Indonesia's most advanced AI users are operating at the global frontier. The country ranks in the global top five for ChatGPT use in Codex and data analytics, with a cohort of advanced users applying AI to exactly the kinds of complex, high-value tasks where productivity gains are greatest. That frontier capability is rare among emerging economies and indicates the possibility of significant productivity gains across the wider workforce and economy.

But the distance between that frontier cohort and the typical Indonesian user is among the widest measured anywhere. This is Indonesia's 'capability gap' — the difference between what AI tools can do and how typical users are using them, measured in the depth of reasoning users draw on, the mix of tasks they apply AI to, and the advanced tools they adopt. OpenAI's platform analysis quantifies this directly: the 95th-percentile user in Indonesia draws on over eleven times more thinking tokens than the median user.

Closing the capability gap requires two main components. Broadening access is the first; without access to capable AI tools, workers and institutions cannot participate in the productivity gains AI makes possible. The second is enabling advanced use; giving users the skills and capacity to deploy AI for complex, high-value tasks where the returns are greatest.

Accessibility distinguishes AI from earlier general-purpose technologies. Where previous waves of innovation required large, up-front capital investment and formal training, AI's natural-language interface and free or low-cost access puts productivity gains driven by frontier AI within reach of any worker with a phone — from a Jakarta SME owner drafting contracts to a Sulawesi farmer mapping market price.

The opportunity is substantial. AI could contribute up to US$366 billion to Indonesia's GDP by 2030 according to Kearney — more than a third of Southeast Asia's projected total. Capturing opportunities of this scale will depend on the adoption and implementation of advanced AI tools across the economy beyond basic use.

The urgency for closing Indonesia's capability gap is increasing. According to leading AI researchers METR, the complexity of tasks that frontier AI systems can complete autonomously has doubled every seven months for the past six years. As AI capabilities improve, the economic value of advanced use rises with them. This means that the cost of remaining at basic levels of adoption is likely to grow over time, while the returns to advanced deployment become greater.

Indonesia has strong foundations in place to maximize the opportunity. Around half of Indonesian workers use AI on a weekly basis and a fifth use AI every day. Eighty percent of Indonesians view AI as more beneficial than harmful, one of the highest rates globally. The policy architecture has also been established: the National AI Strategy 2020-2045 (Stranas KA) and the National AI Roadmap set the long-term vision, which will be operationalized across ministries and through sectoral guidance so firms can adopt with confidence.

This paper identifies four sectors where proven use cases exist and the opportunity for further productivity gains is greatest — three where the priority is extending advanced use, and one, the public sector, where the priority is broadening access:

Education: Indonesia already ranks in the global top ten for educational AI use, but engagement is largely informal and student-led, according to OpenAI data.[1] There is an opportunity to adopt AI at the institutional level and use it within an age-appropriate pedagogical framework.

Healthcare: The near-term opportunity is to extend AI beyond single-purpose diagnostics toward tools that support frontline caregivers and strengthen primary-care delivery, particularly in areas with a shortage of doctors.

Financial services: Under OJK's framework, the opportunity is to move from experimentation to institution-wide deployment, consolidating financial services as Indonesia's first sector operating near the global frontier of enterprise AI use.

Public Sector: Proven use cases exist, but deployment remains in pockets rather than institutional. The binding constraints are reach and scope — expanding officially-mandated access to AI tools across ministries and agencies, alongside building awareness among civil servants of what these tools can do in day-to-day government work.

Summary of recommendations

Topic	Details
Closing the Gap in the Private Sector	
Objective 1: Enable advanced AI use through support for digital transformation	
Support the digital transformation of MSMEs	Support MSME/UMKM digital transformation by strengthening UMKM Go Digital as a channel for practical capacity-building, basic digital systems, and AI-ready business processes.
Support the adoption of AI tools across the private sector	Expand AI adoption by developing financial support, tax incentives, or vouchers within existing BKPM and Ministry of Finance frameworks that can cover enterprise AI subscriptions, API-based use-case development, cloud services, secure data management, and training or enablement costs.

[1] ChatGPT usage, source: OpenAI platform data

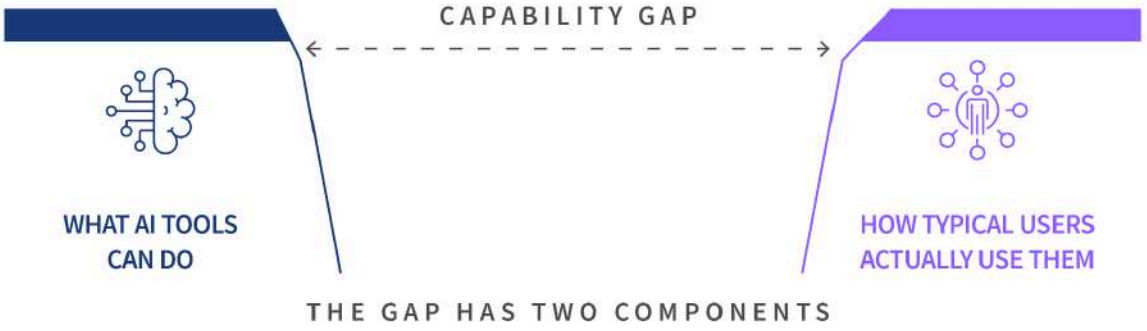
Topic	Details
Objective 2: Develop an AI-ready workforce through upskilling, reskilling, specialist development and certifications	
Upskill on-the-job and reskill out-of-work workers	Upskill and reskill workers through co-developed training programs delivered through the Ministry of Manpower's Job Training Centre network, building on programs such as *Microsoft Elevate*, *Google's Bangkit*, and *Prakerja* where quality assurance and employment outcomes are clear.
Develop a new cohort of AI specialists and developers	Develop certified AI specialists and applied AI practitioners by creating a dedicated workstream under Komdigi's Digital Talent Scholarship, co-designed with National Professional Certification Authority (BNSP), industry associations, universities, and leading technology partners.
Incentivize companies to hire certified AI talent	Incentivize AI talent hiring by offering incentives (potentially tax credits or deductions) to companies investing in certified AI training or credentials.
Objective 3: Build Indonesia's innovation capacity to enable AI development and deployment	
Apply frontier technologies to Indonesian business needs	Encourage Indonesian applications of frontier AI by offering targeted tax credits, deductions, and grants for developers and firms building AI tools for local sectors and languages within the existing BKPM and Ministry of Finance incentive framework. Mobilize additional capital through public-private partnerships and investment from international and domestic entities.
Build research communities to develop and deploy AI in underserved sectors	Establish centers of excellence and institutional platforms collaborating with research institutions and universities to co-develop AI prototypes and run structured pilots in underserved sectors.
Objective 4: Provide regulatory clarity while maintaining flexibility	
Clarify AI governance and institutional leadership	Strengthen AI governance by designating clear lead and supporting agencies, with cross-agency coordination mechanisms that reduce duplication and give firms a clearer point of contact. Align governance principles with international best practices
Adopt a sector-specific regulatory approach	Adopt a risk-based national framework alongside sector-specific AI guidelines for high-impact sectors.

Topic	Details
Establish flexible but clear guidelines for AI innovation	Enable faster AI deployment through circular letters, ministerial regulations, regulatory sandboxes, and joint decrees as flexible instruments. Build on existing frameworks and forthcoming guidance to avoid overlapping or inconsistent requirements.
Closing the Gap in the Public Sector	
Drive public sector AI adoption with clear mandates, guidelines and top-down leadership	Build a public sector AI ecosystem through senior-led directives, government-wide usage guidelines, procurement mechanisms, and awareness workshops .
Launch high-impact public sector AI pilots	Launch high-impact AI pilots in selected agencies through a joint government and AI company initiative, using streamlined procurement processes, sandbox environments, approved tools, usage guidelines, and practical training. Priority should be given to sectors such as healthcare, disaster relief, agriculture, rural education, and public service delivery.
Enable public sector data interoperability and risk-management standards	Create common data, interoperability, and AI risk-management standards across public agencies to enable trusted data sharing, consistent safeguards, and scalable cross-agency adoption.
Closing the Gap in the Strategic Sectors	
Education Sector	
Develop and pilot age-appropriate AI use models	Encourage students and educators to use AI tools in schools by developing age-appropriate AI literacy-framework, adopting responsible use guidelines, and rolling out teacher training and national curriculum integration programs.
Extend inclusive AI education to remote and rural communities	Expand age-appropriate AI education to remote and rural communities through existing frameworks such as unplugged computational thinking initiative and promote classroom digitalization
Healthcare Sector	
Pilot AI support for frontline caregivers	Run structured pilots in selected facilities using approved AI tools, usage guidelines, and frontline training.

Topic	Details
Develop healthcare-specific AI guidelines	Establish healthcare AI guidelines through ministerial regulations aligned with the national SATUSEHAT system.
Financial Sector	
Extend advanced AI adoption to mid-Sized, smaller and non-urban financial institutions	Scale AI in smaller financial institutions through voucher programs, financial incentives, and government-invested centralized resource hubs providing shared access to enterprise-grade tools.

The Capability Gap

The capability gap is the distance between what AI tools can do and how typical users actually use them, measured across the depth of reasoning users draw on, the mix of tasks they apply AI to, and the advanced tools they adopt.



1. ACCESS

Whether people and institutions can use AI tools at all. Without access, workers and institutions cannot participate in the productivity gains AI makes possible.

2. ADVANCED USE

Whether users deploy AI for the complex, high-value tasks where productivity gains are greatest.

This paper uses the capability gap as its **central analytical lens** for examining where AI access, adoption and use in Indonesia sits today and what policy support can do to close it.

SECTION 1

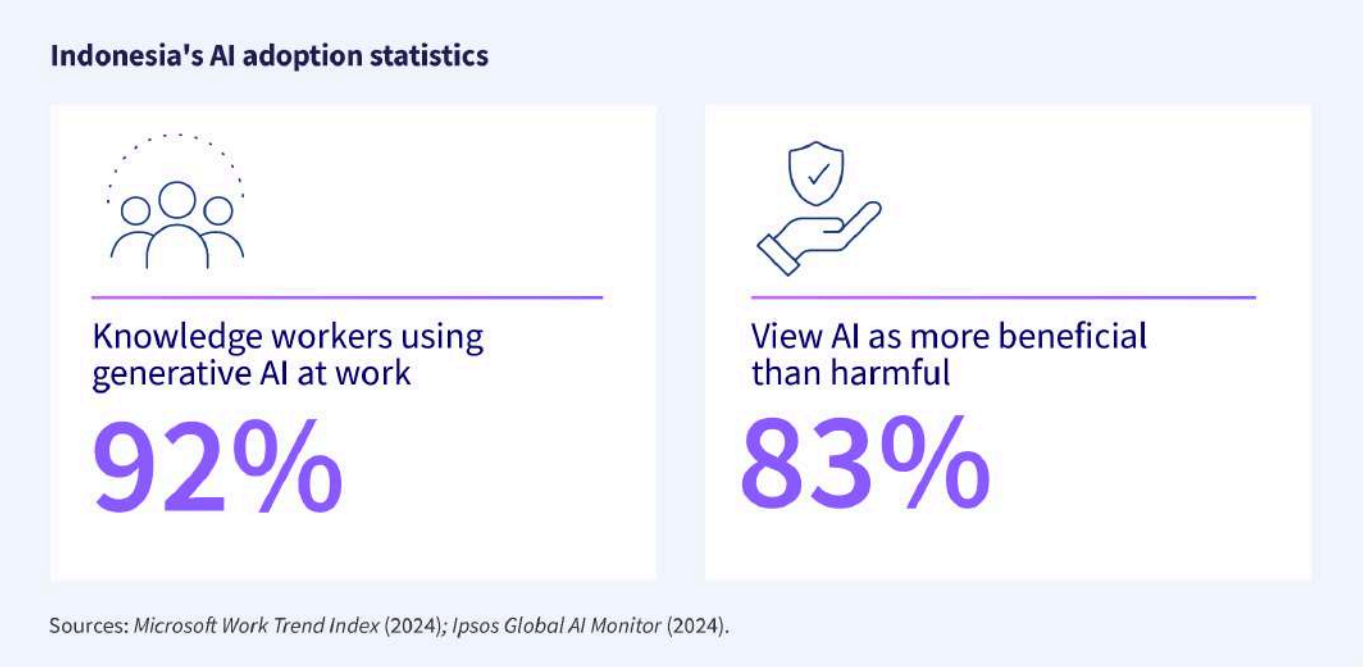
The State of AI Adoption in Indonesia

Key Takeaways

1. AI use is already widespread in Indonesia. Around half of Indonesian workers use AI on a weekly basis and public attitudes toward AI are among the most positive globally.
2. Indonesia's frontier users are operating at global standards in activities such as education, coding, and data analysis, even though overall adoption levels remain moderate.
3. The main challenge is converting broad individual use into organizational productivity.
4. Indonesia's strategic architecture increasingly recognizes that the next phase of AI development depends on using advanced capabilities rather than access alone.
5. Indonesia's regulatory framework has been effective for encouraging experimentation, but the next stage of AI adoption will require greater clarity and predictability for advanced deployment.

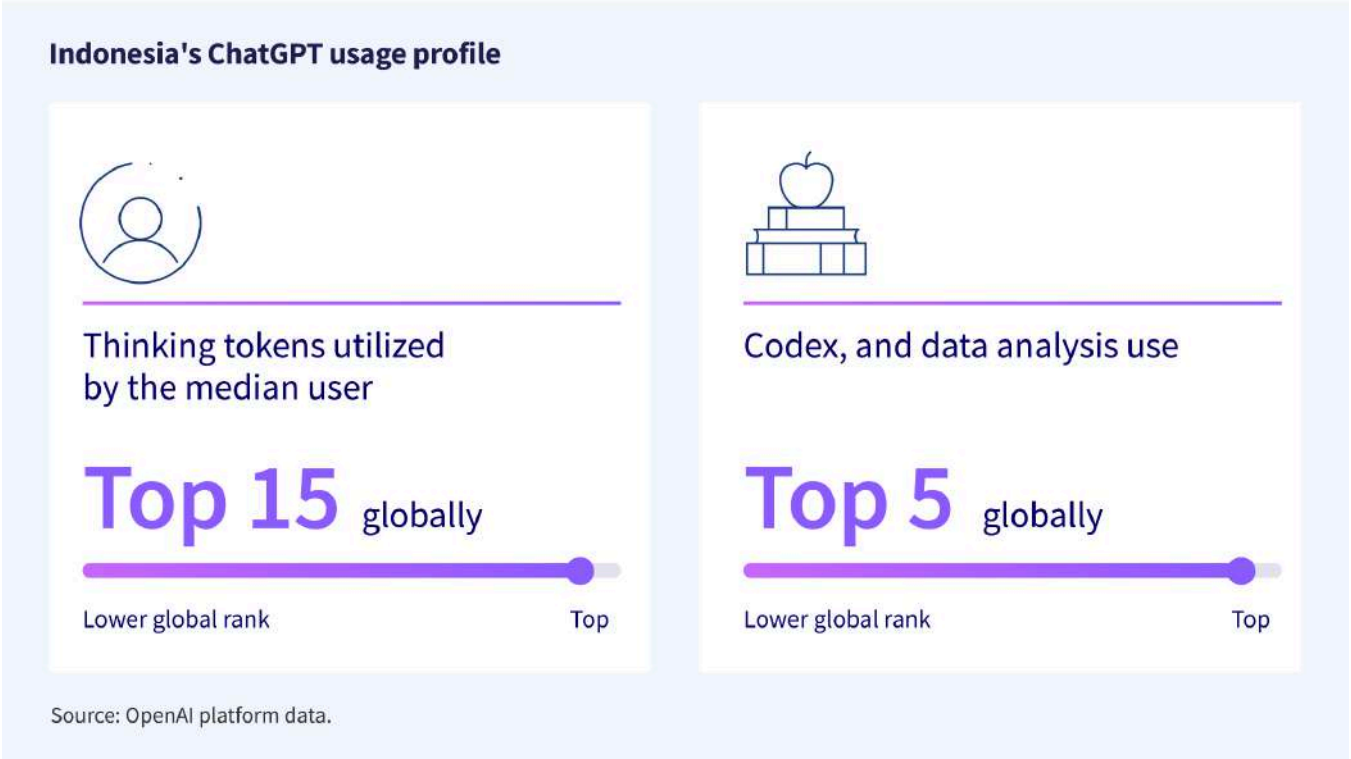
How Indonesians Are Using AI

Individual engagement with AI is already widespread in Indonesia, and public attitudes toward the technology are among the most positive globally.[2, 3]

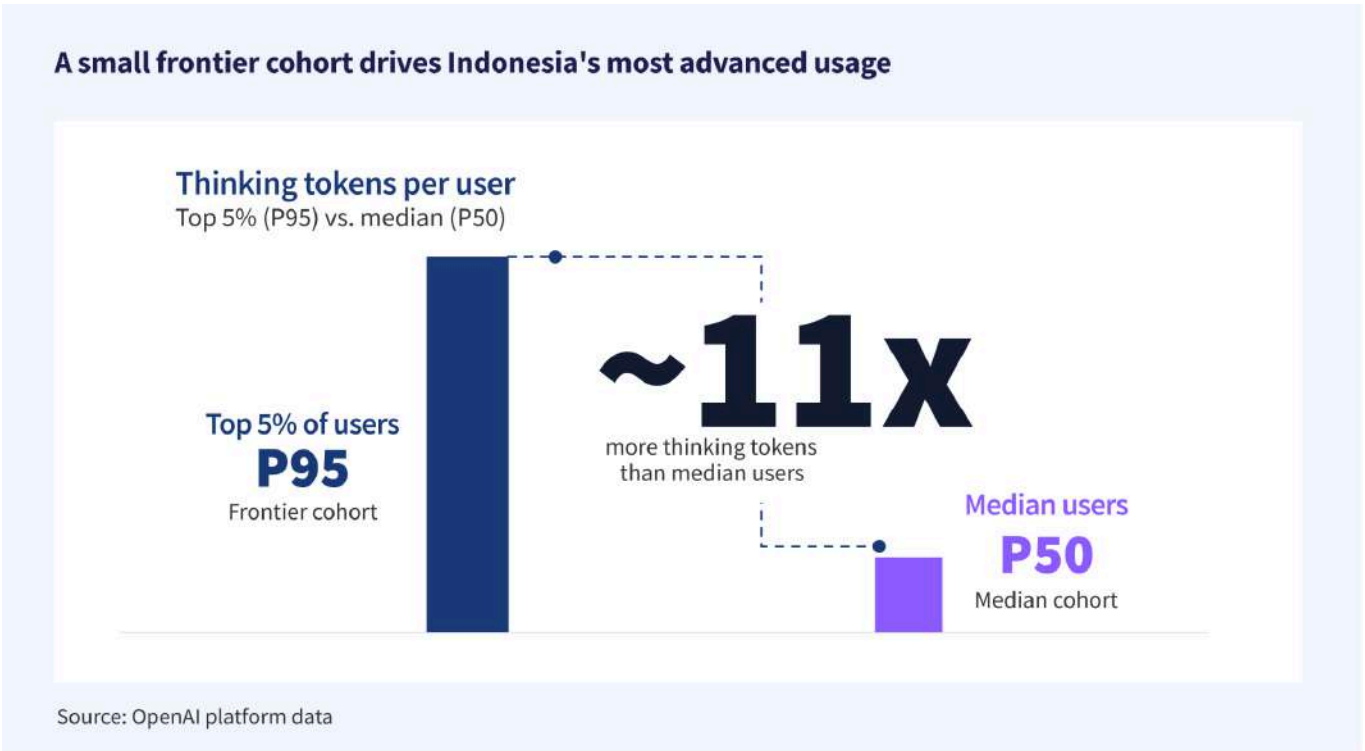


OpenAI platform data indicates that this broad engagement extends beyond casual experimentation. Indonesia ranks among the top 15 countries globally in median user utilization of reasoning tokens, suggesting relatively intensive use by the average user. It also ranks among the world's leading users of ChatGPT for Codex use and data analysis.

[2] Microsoft and LinkedIn, AI at Work Is Here. Now Comes the Hard Part, 2024 Work Trend Index Annual Report, May 8, 2024.
[3] Stanford University, AI Index Report 2025



Beneath these strong aggregate indicators lies a substantial capability gap. OpenAI's platform analysis shows that the top five percent of users in Indonesia consume more than eleven times as many thinking tokens as the median user.



This suggests that advanced AI capabilities are concentrated within a relatively small group of highly intensive users. A growing frontier cohort is already employing AI for more demanding tasks, while the median user engages with these capabilities much less extensively. The challenge for Indonesia is therefore less about encouraging initial adoption and more about diffusing advanced usage across a broader share of individuals and organizations.

This distinction matters because the largest economic benefits emerge when organizations redesign workflows, integrate AI into business processes, and build organizational capability around it. Indonesia has already achieved widespread individual adoption. The harder task is converting it into organizational productivity.

Creating the conditions for closing the capability gap

The national environment can help convert adoption to productivity growth. There are two core conditions: a strategy that targets the right constraints on advanced AI adoption, and a regulatory regime that gives organizations in key sectors the certainty to deploy advanced AI tools at scale.

The Strategic Framework

Indonesia's AI strategy is anchored in the National Strategy for Artificial Intelligence 2020–2045 (Stranas KA), launched in August 2020 as part of the broader "Golden Indonesia 2045" vision. The strategy identifies five priority sectors for AI application, three of which — healthcare, bureaucratic reform, and education and research — correspond to the sectors examined in this paper.[4, 5]

In 2025, the Ministry of Communication and Digital Affairs updated this foundation with the publication of the National AI Roadmap White Paper, which is expected to be formalized through a Presidential Regulation.[6] The Roadmap names concrete capability targets, such as the goal to train 100,000 professionals in AI skills annually, and explicitly acknowledges that the 2020 strategy has become outdated with the rapid emergence of generative AI since 2022.

The National Regulatory Environment

Indonesia's regulatory approach to AI has generally prioritized flexibility over prescription. This has supported experimentation and early adoption but has provided less certainty for organizations seeking to deploy AI at scale. While no single AI law exists, a growing set of regulations, guidelines, and policy instruments shape how AI can be developed and used across the economy.

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[4] Agency for the Assessment and Application of Technology (BPPT), *Strategi Nasional Kecerdasan Artifisial 2020–2045*, August 2020.

[5] SAFEnet, "Priorities and Challenges of Indonesia's Artificial Intelligence National Strategy (Stranas KA)," May 2022; AI Social Contract Index 2020 — Indonesia.

[6] GovInsider, "Indonesia Unveils National AI Roadmap," 2025.

Foundations for experimentation

Indonesia's legal framework for AI rests on two general-purpose digital laws.

The first is the Electronic Information and Transactions Law (EIT Law), which applies to AI systems through its definition of "electronic agents" — technologies that automatically perform actions on electronic information. [7] While the law was not designed with modern AI systems in mind, it provides a legal basis for the use of automated digital systems.

The second is the Personal Data Protection Law (PDP Law), enacted in 2022 and fully effective from October 2024. Modelled closely on the EU's GDPR, the PDP Law governs how personal data can be collected, processed, and transferred. As AI systems increasingly rely on large volumes of personal and organizational data, the PDP Law has become one of the most important legal frameworks governing AI deployment in Indonesia.

Circular Letter 9/2023 has added non-binding ethical principles for AI deployment, including inclusivity, transparency, accountability, data protection, but with no enforcement mechanism.

These instruments have enabled experimentation but have not kept pace with modern AI systems. Questions surrounding automated decision-making, generative AI outputs, model accountability, and AI-specific risk management remain largely unresolved. For organizations considering advanced deployment, there is greater uncertainty in the absence of regulation than in how existing rules apply in practice.

Sector-specific leadership

Financial services currently represents the most developed example of sector-specific AI governance in Indonesia. The Financial Services Authority (OJK) has issued AI guidelines for both the fintech and banking sectors, distinguishing between predictive, generative, and agentic AI, and benchmarked on international frameworks. [8, 9] Although non-binding, these guidelines provide financial institutions with considerably greater clarity than firms in other sectors, demonstrating what operational forms of AI governance could look like elsewhere.

Emerging national AI regulation

Indonesia is now moving toward a more comprehensive AI governance framework to be implemented through two draft Presidential Regulations.

The first establishes national AI ethics principles, including transparency, accountability, fairness, and human oversight. It also introduces a tiered risk classification system covering intolerable-risk, high-risk, and low-risk applications.

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7 Budidjaja Law, "Legal Alert — Revision of the ITE Law: No Regulations on AI?", 2024.

8 OJK, AI Guideline for the Financial Technology Sector; OJK, AI Guideline for the Banking Sector.

9 OJK, *AI Guideline for the Banking Sector*.

The second formalizes the National AI Roadmap as a non-binding policy framework, providing a longer-term structure for AI development and deployment.[10]

Together, these initiatives represent Indonesia's first attempt to establish governance specifically for AI rather than relying on broader digital regulations. Their significance lies less in imposing stricter controls than in providing the certainty organizations increasingly need as AI moves from experimentation to large-scale deployment.

Taken together, Indonesia's framework reflects a deliberate preference for flexibility. That approach has been well suited to the first phase of AI adoption, where encouraging experimentation mattered. The challenge for the next phase is different. As AI becomes embedded in core organizational processes, the central question is whether Indonesia can preserve flexibility while providing the clarity and predictability needed for advanced use to scale across the economy.

[10] Ministry of Communication and Digital Affairs, Draft Presidential Regulation on AI Ethics; Draft Presidential Regulation on AI Roadmap, circulated February 2025

SECTION 2

Closing the Capability Gap in the Private Sector

Key Takeaways

1. Private-sector AI adoption is widespread and growing fast, but most firms remain at basic operational use — only one in ten have undertaken transformational adoption.
2. For Indonesia's MSMEs, which drive the domestic economy, the binding constraint is the absence of the digital foundations that advanced AI use depends on.
3. Moving firms from basic to advanced use depends on four conditions: digital foundations, skills and talent, innovation capacity, and regulatory clarity.
4. Indonesian firms lack the conditions needed for advanced AI use to scale, making government action central to turning today's broad experimentation into sustained, economy-wide productivity gains.

The capability gap in the private sector

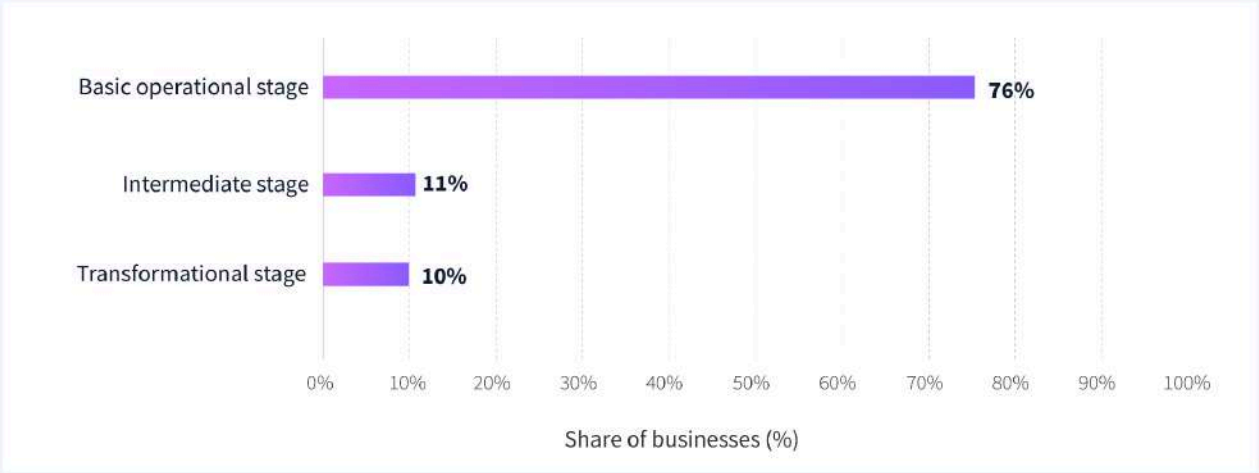
The capability gap in individual use described in the previous section is also present at the organizational level. An AWS/Strand Partners study published in August 2025 found that AI adoption among Indonesian businesses is expanding rapidly, particularly in sectors such as technology, professional services, and financial services. However, most organizations remain at the early stages of AI maturity, using AI primarily for operational efficiency rather than product innovation or strategic transformation.[11]

[11] AWS / Strand Partners, Unlocking Indonesia's AI Potential, August 2025.

Indonesia's Enterprise AI adoption profile

Source: AWS and Strand Partners, *Unlocking Indonesia's AI Potential* (2025).

Distribution of AI Adoption Maturity Among Indonesian Businesses

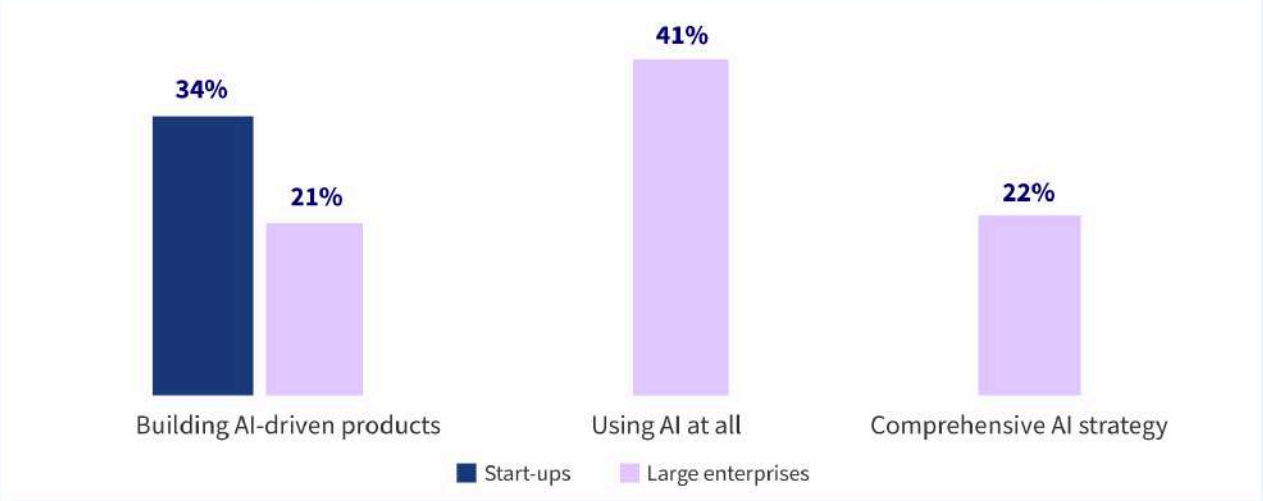


Source: AWS and Strand Partners, *Unlocking Indonesia's AI Potential* (2025).

Rapid AI adoption has not yet translated into advanced use and integration, which remains concentrated among a relatively small frontier of firms.

Start-ups show somewhat deeper integration than large enterprises, but genuinely AI-native products and organization-wide strategies remain the exception rather than the norm.

Level of AI integration among Indonesian firms



Source: AWS and Strand Partners, *Unlocking Indonesia's AI Potential* (2025). No start-up figure reported for the latter two indicators.

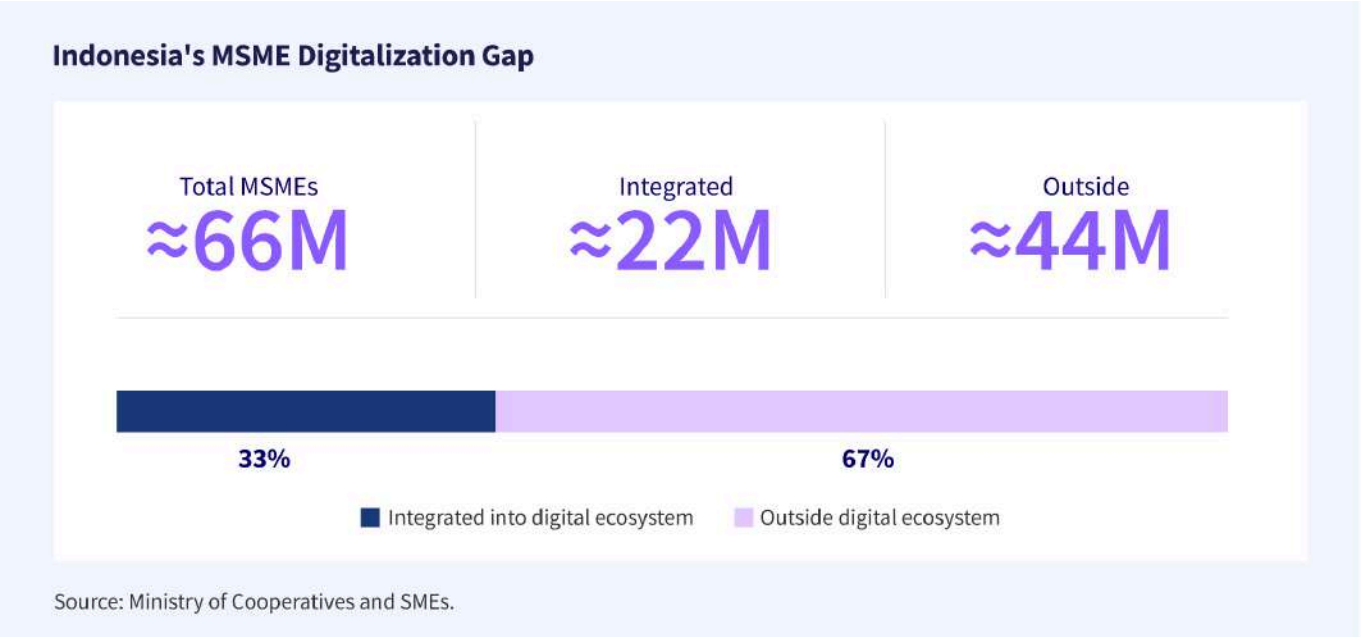
The organizational capabilities and supporting ecosystems that enable advanced AI deployment remain unevenly distributed across the business landscape. Where these conditions are in place, the returns are meaningful.

Reported Benefits from AI Adoption for Indonesian businesses

Source: AWS and Strand Partners, *Unlocking Indonesia's AI Potential* (2025).

The importance of closing the capability gap becomes clearer when looking at Indonesia's MSMEs, which account for around 61 percent of Indonesian economic activity.[12] Stakeholder interviews for this report suggested that the adoption of basic AI tools by MSMEs is already significant, but the conditions required for advanced deployment are often absent.

[12] Coordinating Ministry for Economic Affairs, Republic of Indonesia, 2023



The structured digital systems that AI tools depend on — for data, workflows, and customer records — remain absent from many MSMEs. As a result, the challenge facing most firms is not access to AI tools but the absence of the underlying digitization that makes advanced use possible.

By contrast, sectors such as financial services, which have undergone more extensive digital transformation and benefit from standardized data, stronger organizational capabilities, and clearer regulatory expectations, have created more favorable conditions for advanced AI deployment.

Why closing the gap matters

The opportunity extends well beyond the performance of individual firms. AI could add up to US$366 billion added to Indonesia's GDP by 2030, more than a third of Southeast Asia's projected total.[13] Realizing that opportunity depends less on increasing access to AI tools than on helping firms move beyond basic operational use toward advanced, productivity-enhancing deployment.

Closing that gap depends less on the technology itself than on the environment surrounding it. Advanced use does not emerge automatically once firms gain access to AI tools. It depends on a set of complementary conditions that allow organizations to integrate AI into workflows, develop locally relevant applications, and deploy them with confidence.

[13] Kearney and EDBI, The Future of Southeast Asia's Digital Economy: AI and Productivity Growth Outlook, 2020. Accessed at: www.kearney.com

Conditions for advanced use

Indonesia has created an environment for widespread AI access and adoption but lacks the conditions for advanced use to spread through the economy. Through the research and stakeholder interviews for this report, four conditions were highlighted for enabling advanced use; most private sector organizations lack all four to varying degrees.

There is a role for government to play in developing each of the four conditions described below:

1. **Digital foundations:** Many firms, MSMEs especially, lack the digital foundations that enable AI to enhance productivity. Without digital records, cloud infrastructure, and standardized workflows, firms can adopt basic tools but struggle to integrate AI into core operations.
2. **Skills and talent:** Businesses consistently identify shortages of digital and AI capabilities as one of the main barriers to advanced adoption, and relatively few believe their workforce is prepared for advanced use.
3. **Innovation capacity:** Domestic pilots and prototypes rarely scale into widely deployed solutions, and many available tools are not adapted to Indonesian contexts.
4. **Regulatory clarity and coordination:** Unsettled rules and overlapping mandates increase uncertainty and discourage firms from moving beyond experimentation.

Each of these conditions corresponds to an objective in the following section, under which there are actionable recommendations for the government to close the capability gap and support the adoption of advanced AI tools by the private sector in Indonesia.

Table 7: Conditions for Advanced Use

Condition	Why It Matters	Related Objective
Digital foundations and access	Without digital records, cloud infrastructure, and standardized workflows, firms can adopt basic tools but struggle to integrate AI into core operations.	Enable advanced AI use through support for digital transformation
Skills and talent	Shortages of digital and AI capabilities constrain deeper adoption and limit firms' ability to deploy advanced systems.	Develop an AI-ready workforce through upskilling, reskilling, specialist development and certifications
Innovation capacity	Domestic pilots rarely scale into widely deployed solutions, and many tools are not adapted to Indonesian contexts.	Build Indonesia’s innovation capacity to enable AI development and deployment

Regulatory clarity and coordination	Uncertainty and fragmented governance discourage firms from moving beyond experimentation.	Provide regulatory clarity while maintaining flexibility

Closing the capability gap in the private sector: policy recommendations

Objective 1: Enable advanced AI use through support for digital transformation

Digitization and digital transformation are the binding constraints for a large share of firms. MSMEs lack the digital systems AI runs on, and even firms that have digitized face financial and technical limits on the infrastructure advanced use requires such as cloud computing and secure data storage and management. Without these foundations, a firm can use AI for simple tasks but cannot apply it to the complex functions that will generate real productivity gains.

ACTIONS FOR GOVERNMENT

Support the digital transformation of MSMEs

Priority	Target	Implementor
Short-term	Businesses, especially MSMEs	Ministry of Communication and Digital Affairs; Ministry of MSME; Ministry of Trade

Overview

Support the digital transformation of MSMEs, many of whom continue to rely on analogue processes, moving them into the digital space and creating the foundation for the adoption of productivity-enhancing AI tools to drive growth.

Tools and Mechanism

Komdigi and the Ministry of MSME can review and align the objectives and work of the *UMKM Go Digital* program to the objectives of the AI Roadmap. The *UMKM Go Digital platform* exists to support the digitalization of Indonesia's 60+ million SMEs through capacity-building and access initiatives, helping businesses access and adopt digital tools and operations management software. The platform should be optimized for digital transformation that supports productivity-enhancing AI tools and innovative business models built on AI tools, in line with Indonesia's national AI objectives.

Expected Outcomes

MSMEs shift core operations (such as book-keeping) onto digital platforms, making them ready to integrate with and benefit from productivity-enhancing AI tools. MSMEs can then adopt AI tools and improve productivity.

Support the adoption of AI tools across the private sector		
Priority	**Target**	**Implementor**
Short-term	Businesses: MSMEs and large enterprises	Ministry of Communication and Digital Affairs; Ministry of Finance; Ministry of Investment and Downstreaming; Relevant sectoral ministries and regulators

Overview

Improve access and adoption of AI tools at the organizational level so businesses can begin using productivity-enhancing AI tools and build a foundation for advanced AI tools.

Tools and Mechanism

Develop a financial support program to help businesses adopt AI tools and build AI-ready foundations, including enterprise AI subscriptions, API-based use-case development, cloud services, secure data storage, workflow integration, and training or enablement costs.

With a view to targeting larger, established organizations, the procurement of AI tools can be supported through tax incentives, based on existing Ministry of Finance and Ministry of Investment and Downstreaming tax incentive frameworks.

Expected Outcomes

Businesses across sectors adopt AI tools across the organization.

Objective 2: Develop an AI-ready workforce through upskilling, reskilling, specialist development and certifications

Access to skills and talent to drive the adoption and integration of advanced AI tools is a significant obstacle; 57 percent of Indonesian businesses cite a shortage of digital skills as their primary barrier to deeper AI use, and only 21 percent believe their workforce is adequately prepared.[14] Closing the gap needs both broad upskilling of the existing workforce and a pipeline of specialists with the depth to develop and deploy advanced systems.

[14] AWS and Strand Partners, Unlocking Indonesia's AI Potential (2025).

ACTIONS FOR GOVERNMENT

Upskill on-the-job and reskill transitioning workers

Priority	Target	Implementor
Short-term	Existing workforce at operational level and mid-career workers	Ministry of Manpower; Ministry of Communication and Digital Affairs

Overview

Expanding AI capability across the workforce requires two parallel tracks:

1. Upskilling equips those in work to develop AI skills and support existing AI users with the skills to move beyond basic use, integrating advanced AI tools into their workflows.
2. Reskilling creates a pathway for mid-career and/or out-of-work workers to develop new skills and strengthen their competitiveness in the job market.

Tools and Mechanism

Komdigi and the Ministry of Manpower can co-develop structured training programs with AI developers covering both tracks: applied AI integration programs for general workers and technical reskilling programs for workers transitioning mid-career. The Ministry of Manpower's existing network of Manpower's Job Training Centers (UPLP) across the country provides a ready infrastructure to deliver these programs at scale.

These programs should align with the National AI Roadmap and build on existing large-scale training initiatives that have been implemented in Indonesia, such as *Microsoft Elevate* and *Google's Bangkit* and *Prakerja*, while adapting the content to the needs of workers at different levels of responsibility.

Expected Outcomes

General workers can use AI as a fully integrated part of how they work, while mid-career professionals gain the technical skills needed to transition into and fill roles across sectors.

Develop a new cohort of AI specialists and developers

Priority	Target	Implementor
Medium-term	AI specialists and developers who can deploy and localize frontier AI tools	Ministry of Manpower; Ministry of Higher Education, Science and Technology; Ministry of Communication and Digital Affairs; National Professional Certification Authority

Overview

Expand the pool of certified AI specialists, engineers and developers creating a supply of talent that can help companies implement AI across their organizations and implement advanced AI tools.

Tools and Mechanism

Relevant ministries can develop an AI specialist workstream under Komdigi's *Digital Talent Scholarship* program, with a stronger focus on skills needed for deploying advanced AI. Komdigi should work with the National Professional Certification Authority (BNSP) to develop competency standards and collaborate with industry associations to identify specific needs and industry-recognized qualifications.

Expected Outcomes

Certified specialists can support more advanced AI deployment across priority sectors

Incentivize companies to hire certified AI talent

Priority	Target	Implementor
Medium-term	Companies considering hiring AI talent, starting with high-impact sectors such as financial and healthcare	Ministry of Finance; Ministry of Investment and Downstreaming

Overview

Introduce targeted incentives to encourage companies to hire workers with recognized AI-related credentials.

Tools and Mechanism

Komdigi and the Ministry of Finance can develop tax incentives and enhanced deductions granted for companies that invest in certified AI training or hire workers with recognized AI-related credentials. This program could draw lessons from Thailand's approach under the *Thailand Plus Package*, where the government provides significant tax deductions for companies hiring highly skilled STEM professionals.

Expected Outcomes

The scheme will create stronger labor-market demand for newly trained AI professionals.

Companies will hire the talent required to close the capability gap and implement advanced AI tools.

Objective 3: Build Indonesia's innovation capacity to enable AI development and deployment

Closing the capability gap will mean moving from experimentation with advanced AI tools to deployment at scale. Indonesian organizations have produced domestic AI pilots and prototypes, but few have been scaled or commercialized. Meanwhile many available solutions are not adapted to Indonesian contexts, limiting their value and firms' incentive to adopt them. Stronger collaboration between industry, research institutions, and government is needed to turn prototypes into deployable, locally relevant tools.

ACTIONS FOR GOVERNMENT

Apply frontier technologies to Indonesian business needs

Priority	Target	Implementor
Medium-term	Companies developing AI tools and solutions	Ministry of Investment and Downstreaming; Ministry of Finance

Overview

Support companies that develop AI tools and solutions focused on the needs of Indonesian businesses.

Tools and Mechanism

Targeted incentives, including a combination of tax measures and direct grants, should be provided to companies developing AI tools and solutions that meet the specific needs of Indonesian businesses. These incentives should be built on the existing Ministry of Finance and Ministry of Investment and Downstreaming framework, where eligibility criteria are already defined, while prioritizing AI-related businesses as the top tier of priority business activities.

The government should also mobilize funding through public-private partnerships and investment from domestic and international partners to help promising AI solutions progress from initial development to sustained deployment at scale.

Expected Outcomes

A stronger base of AI solution providers is established, giving Indonesian businesses access to AI tools that are built for their context and supporting broader adoption.

Build research communities to develop and deploy AI in underserved sectors		
Priority	**Target**	**Implementor**
Medium-term	Research institutions, universities, and academics	Ministry of Communication and Digital Affairs; National Research and Innovation Agency (BRIN); cross-agency

Overview

Establish platforms that bring together research institutions, academics, and universities to develop AI prototypes and run pilot projects in sectors where AI deployment remains limited or untested.

Tools and Mechanism

Establish centers of excellence or dedicated institutional platforms that collaborate with research institutions, universities, and academics to co-develop AI prototypes and support pilot deployment.

This model could draw on AI Singapore, a national program under the National Research Foundation that funds, co-develops, and deploys scalable AI projects domestically

Expected Outcomes

AI prototypes developed through research collaboration are tested and refined through structured pilots, creating a stronger foundation for practical deployment in targeted sectors across the country

Objective 4: Provide regulatory clarity while maintaining flexibility

Firms with capacity to adopt advanced tools are moving cautiously because of a lack of regulatory certainty. Few industries have specific sectoral guidance and institutional mandates overlap across ministries and agencies. The private sector will benefit from government guidance and legal certainty, enabling them to deploy at scale.

ACTIONS FOR GOVERNMENT

Clarify AI governance and institutional leadership		
Priority	**Target**	**Implementor**
Short-term	Public agencies involved in AI policy and regulation	Ministry of Communication and Digital Affairs; cross-agency

Overview

Improve coordination across existing AI-related regulations and guidelines by clearly identifying lead institutions.

Tools and Mechanism

Clear designation of lead and supporting agencies, with coordination mechanisms for cross-agency mandates. This model could draw lessons from leading examples in other countries, such as the EU AI Office, Japan's AI Strategy Council under the Cabinet Office, the UK AI Security Institute, and Malaysia's National AI Office.

The country should also align its governance principles with international best practices, including the OECD AI Principles and the Hiroshima AI Process, to strengthen policy credibility and create a more conducive environment for investment.

Expected Outcomes

The government has clearer roles in implementing AI policy, reducing overlaps among government bodies and establishing a more coherent governance structure to drive AI adoption in a strategic and coordinated manner.

Adopt a sector-specific regulatory approach

Priority	Target	Implementor
Short- term	High-impact sectors such as finance, healthcare, and education	Coordinating Ministry for Economic Affairs; OJK; Ministry of Health Sector regulators

Overview

Maintain a principles-based and light-touch national framework for AI, while developing sector-specific guidelines for high-impact areas high-impact areas where clearer guardrails are needed.

Tools and Mechanism

Risk-based regulatory framework and sector-specific AI guidelines which governments can draw lessons from international approaches such as the UK's sector-specific regulatory model. This approach can translate national principles into practical, sector-relevant guardrails while avoiding one-size-fits-all requirements and preserving space for innovation.

Expected Outcomes

Businesses receive clearer guidance for adopting AI, supporting broader AI innovation while ensuring responsible deployment.

Establish flexible but clear guidelines for AI innovation		
Priority	**Target**	**Implementor**
Short-and Medium- term	AI developers and sectoral regulators	Cross-agency

Overview

Develop flexible, innovation-led regulations or guidelines underpinned by ethical principles and aligned with existing legal framework to help agencies and firms deploy AI without waiting for a single comprehensive AI law

Tools and Mechanism

Circular letters, ministerial regulations, regulatory sandboxes, and joint decrees can be used as regulatory instruments to provide flexibility and enable quick adaptation to the changing AI landscape, especially for sector-specific mandates.

In areas already covered by existing legislation, such as data protection and ethics, build on frameworks such as the Personal Data Protection Law or pending guidance such as the Presidential Regulation to avoid regulatory uncertainty, duplication, and overlapping obligations.

Expected Outcomes

AI developers and businesses can deploy AI with greater regulatory clarity, supporting experimentation and enabling faster adaptation to technological change.

SECTION 3

Closing the capability gap in the public sector

Key Takeaways

1. Expanding access across civil service could raise government productivity while accelerating AI adoption across the wider economy.
2. The primary constraint on public-sector AI adoption in Indonesia is access: advanced deployments exist in selected agencies, but most civil servants still lack institutional access to general-purpose AI tools.
3. Uncertainty over data governance, procurement, and acceptable use continues to limit deployment of AI tools across ministries and agencies.
4. International experience shows governments can expand adoption through structured pilots, broad civil-servant access, and clear governance frameworks.

The capability gap in the public sector

In government, the most immediate challenge is access to AI tools. Frontier deployments exist and should continue to be supported but driving early productivity gains will ultimately depend on whether civil servants across ministries and agencies can reach capable AI tools for everyday work. This is a precursor to developing advanced use across the civil service over the coming years.

Current adoption: pockets of advanced use

Public-sector adoption differs from adoption by individuals and businesses because deployment typically requires institution-wide decisions rather than individual initiative. Government AI adoption remains limited at the organizational scale. Individual officials use AI tools for personal productivity enhancements, but institution-wide deployment is limited by unanswered questions around procurement, data governance, security, and accountability. Where advanced deployments exist, they are frontier islands, though they point towards the benefits of broader AI adoption.

Statistics Indonesia (BPS) offers the clearest example of advanced AI deployment within government. Its paddy rice production system combines satellite-based area sampling, deep learning classification of Sentinel imagery, machine-learning techniques, and extensive field surveys to improve the timeliness and granularity of agricultural statistics in a country where rice production is economically central.[15] BPS now hosts the UN Regional Hub on Big Data and Data Science for Asia and the Pacific, signaling that the methodology is being adapted across the region's statistical offices.[16]

Another notable initiative is Sahabat-AI, an Indonesian-language large language model, was launched in November 2024 by Indosat Ooredoo Hutchison and GoTo, and upgraded to 70 billion parameters in mid-2025.[17] The model supports Bahasa Indonesia and several regional languages, including Javanese, Sundanese, Balinese, and Bataknese, and is intended for public sector and commercial AI applications.[18]

Notably, both use cases are individual targeted projects or services, developed with third party partners, rather than the result of organic growth from widespread organizational adoption.

[15] Thorp, K.R. and Drajat, D., "Deep machine learning with Sentinel satellite data to map paddy rice production stages across West Java, Indonesia," Remote Sensing of Environment, Vol. 265, 2021

[16] BPS-Statistics Indonesia, Regional Hub on Big Data and Data Science for Asia and the Pacific.

[17] Indosat Ooredoo Hutchison and GoTo Group, "Sahabat-AI Gets Smarter: Indosat and GoTo Launch New 70 Billion Parameter Model with Multilingual Chat Service," 2 June 2025

[18] NVIDIA, "Indonesia on Track to Achieve Sovereign AI Goals With NVIDIA, Cisco and IOH," March 2026.

Why closing the gap matters in the public sector

The value of public-sector AI extends past productivity within government. 65 percent of Indonesian businesses are more likely to adopt AI if the government leads by example.[19] Broad civil-servant access therefore works as a market-making lever: when agencies use AI visibly and capably, they signal that AI use is institutionally legitimate and lower the perceived risk of adoption across the wider economy. The reverse holds too — if the government is cautious in its own operations, that caution propagates through the business environment.

Conditions for broad adoption

Indonesia has demonstrated that AI deployment in government is possible, but broad institutional adoption across the civil service remains limited. Through the research and stakeholder interviews for this report, four conditions emerged as particularly important for enabling AI adoption at scale across ministries and agencies. Most public-sector organizations lack all four to varying degrees.

There is a role for government to play in developing each of the conditions described below:

- **Governance clarity:** Ministries and agencies continue to face uncertainty over procurement requirements, the treatment of government data under the PDP Law, and which categories of information can be processed by external AI services. In the absence of common guidance, agencies often conduct their own risk assessments and default to cautious, limited deployment.
- **Operational frameworks:** Indonesia's AI policy architecture is beginning to take shape through the National AI Roadmap, the AI Ethics Guidelines, and the PDP Law. However, ministries and agencies still lack practical guidance on deploying AI comparable to the sector-specific frameworks available to financial institutions under OJK.
- **Institutional coordination:** Responsibilities remain fragmented across government. Although AI policy largely falls under the Ministry of Communications and Digital Affairs, implementation responsibilities are dispersed, and agencies performing similar functions frequently procure separately and develop solutions in parallel.
- **Integrated data foundations:** Government data remains fragmented across disconnected systems, while questions surrounding interoperability, data sovereignty, and localization continue to create uncertainty. Without stronger data foundations, AI systems will struggle to scale across ministries and agencies.

Each of these conditions underpins the international experiences examined below. Governments that have successfully expanded AI adoption have generally done so either through structured pilots that build confidence

[19] AWS and Strand Partners, Unlocking Indonesia's AI Potential (2025).

before scaling, or through whole-of-government platforms that combine access, governance, and capability-building from the outset.

International case studies: broad access on a civil-service scale

Two models show what broad public-sector access looks like once those institutional conditions are resolved: structured pilots that prove value and then scale, and purpose-built platforms deployed across the civil service.

Pilot-to-scale: Pennsylvania

In January 2024, Pennsylvania became the first US state to launch a generative AI pilot for state government employees, partnering with OpenAI to give 175 employees across 14 agencies access to ChatGPT Enterprise.[20]

Results released in March 2025 showed employees saving an average of 95 minutes per day on administrative tasks such as writing, research, summarization, and IT support. Over 85 percent reported a positive experience despite nearly half having never used the tool before the pilot.[21] Following the pilot's success, the Shapiro Administration has since expanded access to more than 3,000 state employees across 35 agencies.[22]

The pilot's significance lies less in the productivity number than in what the deployment model achieved. It generated employee-validated evidence for general-purpose AI use within the civil service, identified where AI added the most value, and created the analytical basis for broader deployment while governance structures were developed in parallel.

The model is particularly relevant for governments that need to demonstrate value to civil service stakeholders before authorizing wider adoption.

Whole-of-government platforms: Singapore

Singapore offers the clearest example of broad civil-servant access deployed at scale. GovTech Singapore's Pair suite — large language model-powered assistants designed for public officers — has reached over 150,000 registered users, saving officers an estimated 46 percent of time spent on administrative tasks.[23] The suite includes Pair Chat for general-purpose use, Pair Noms for meeting minute generation, and Pair Search for querying government records.[24] Singapore civil servants have also created over 20,000 custom AI assistants ("AIBots") for specific tasks such as answering HR queries and providing guidance on budget and procurement processes.

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[20] Commonwealth of Pennsylvania, Office of Administration, "Lessons from Pennsylvania's Generative AI Pilot with ChatGPT," March 2025.

[21] StateScoop, "ChatGPT saving staff 8 hours per week, Pennsylvania governor says," March 2025.

[22] Commonwealth of Pennsylvania, Office of Administration, "Shapiro Administration Expands Safe and Responsible AI Across State Government," 15 April 2026.

[23] Ministry of Digital Development and Information, Republic of Singapore, "MDDI's response to PQ on Progress of Adopting AI Tools within Public Service," 6 November 2025

[24] Open Government Products, Government of Singapore, Pair product documentation.

The deployment model is purpose-built. Tools are tailored to public-sector use cases, hosted within a government cloud environment that addresses data residency and security concerns, and accompanied by whole-of-government skilling programs reaching civil servants across ministries and statutory boards.

Singapore's experience demonstrates that broad civil-servant access does not require a trade-off between productivity and confidentiality. Governance, security, and capability-building can be integrated into the deployment model from the outset.

Closing the capability gap in the public sector: policy recommendations

The international cases point to a common lesson. Broad public-sector AI adoption begins with institutional confidence: clear political direction, approved tools, practical guidance, and early pilots that demonstrate value while governance frameworks mature. The Pennsylvania case illustrates how structured pilots can build evidence and support for wider deployment, while Singapore shows how those foundations can evolve into broad civil-service access at scale.

For Indonesia, where uncertainty around governance and procurement remains a greater constraint than technological capability, the immediate priority is to create the conditions that allow ministries and agencies to adopt AI across organizations with confidence. In addition, nascent advanced AI deployments must also be supported.

The recommendations below focus first on expanding access and institutional support, and then on demonstrating value through targeted high-impact pilots.

ACTIONS FOR GOVERNMENT

Drive public sector AI adoption with clear mandates, guidelines and top-down leadership		
Priority	**Target**	**Implementor**
Short- and Medium-term	Civil servants, especially in government agencies where AI has not yet been adopted or encouraged	Ministry of Administrative and Bureaucratic Reform; Ministry of Communication and Digital Affairs

Overview

Build a public-sector AI adoption ecosystem through senior-led direction, approved tools, practical guidance, procurement support, and training for civil servants.

Tools and Mechanism

Introduce a coordinated set of initiatives that enables the public sector to move from uneven individual use toward supported, responsible AI adoption:

1. Directives from senior officials that set a clear institutional mandate for AI adoption across public agencies.
2. Government-wide AI usage guidelines and practical use cases that provide a common framework for all agencies to follow.
3. Procurement mechanisms that make it easier for agencies to access and purchase approved AI tools.
4. Awareness workshops and training programs that build civil servants' confidence to apply AI safely and effectively in daily administrative and service-delivery work.

Expected Outcomes

Public agencies receive clear direction and institutional support to adopt AI, backed by the tools and guidelines needed to prepare civil servants for more advanced AI use in the future.

Launch high-impact public sector AI pilots

Priority	Target	Implementor
Short-term	Selected government agencies where AI can significantly improve public-service delivery. Priority sectors include healthcare, disaster relief, agriculture, rural education, and public service delivery.	Ministry of Administrative and Bureaucratic Reform; Ministry of Communication and Digital Affairs

Overview

Launch pilot programs that support selected government agencies in applying AI to high-impact public administration and service delivery functions.

Tools and Mechanism

A joint initiative between the Indonesian government and AI companies could draw on *Singapore's AI Trailblazers model*, helping agencies identify generative AI use cases, prototype them in a sandbox environment, and evaluate productivity and risk before broader rollout.

The initiative could begin with agencies that have already adopted AI for specific purposes, such as the Ministry of Finance, Statistics Indonesia, and the Indonesian National Police. It should focus on improving existing use cases

through streamlined procurement processes, approved tools, clear usage guidelines, practical training, and measurable productivity or service-delivery outcomes.

Expected Outcomes

Civil servants have the tools, guidance, and practical experience to apply AI beyond basic administrative tasks, resulting in more scalable adoption across government.

Enable public sector data interoperability and risk-management standards

Priority	Target	Implementor
Short-term	Government ministries and agencies adopting or sharing data for AI use	Ministry of Communication and Digital Affairs; Ministry of Administrative and Bureaucratic Reform; cross-agency

Overview

Establish common data, interoperability, and AI risk-management standards so public agencies can share data responsibly and adopt AI with consistent safeguards.

Tools and Mechanism

Develop a government-wide framework covering:

1. Common data formats, metadata, and secure data-sharing protocols that support interoperability across agencies.
2. Shared requirements for privacy, cybersecurity, and access controls.
3. Consistent AI risk assessments, risk monitoring, incident reporting, and escalation procedures.
4. Cross-agency guidelines that give agencies clear direction on how to align their data practices with these standards

Expected Outcomes

Public agencies can share data and scale AI use across government with greater trust, interoperability, and consistent risk mitigation.

SECTION 4

Closing the capability gap in strategic sectors

Indonesia's challenge for closing the capability gap is not primarily whether users can access AI tools, but whether widespread access translates into productive capability. Productivity is not a matter of how many Indonesians use AI, but how effectively workers, firms, and institutions apply more advanced AI tools to complex, high-value tasks.

Based on research and stakeholder interviews, three sectors stand out as priority strategic opportunities for advanced AI use. Each is economically or socially important, has clear operational challenges that AI can help address, and offers room to expand from narrow use cases to broader deployment. In all three sectors, AI is already being used, but adoption remains concentrated rather than embedded across systems and workflows.

Based on the current landscape, Indonesia's key opportunities lie in the following sectors.

- **Education Sector:** The opportunity in education is to move beyond individual experimentation with AI and toward institutional adoption across schools and universities. While Indonesia is now in the 'understanding and learning' phase, there is an opportunity for AI to strengthen the education system and build a future-ready workforce.
- **Healthcare Sector:** Indonesia faces numerous healthcare challenges, ranging from shortages of healthcare personnel to geographic disparities in access to care. Recent implementation has started with AI-assisted diagnostic support in the healthcare sector, but its potential to strengthen the health system goes far beyond that.
- **Financial Services:** The use of AI across the financial services sector has been remarkable in Indonesia, positioning AI as a key driver of transformation. Looking ahead, further AI deployment could help Indonesia's financial sector deliver more customer-centered, efficient, and resilient financial services.

Opportunities for advanced use in the education sector

Key Takeaways

1. Indonesia is already among the world's most active users of AI for education and learning, but usage remains predominantly informal and student-led.
2. Universitas Terbuka demonstrates that advanced institutional AI deployment is possible when digital infrastructure, leadership, and teaching resources are aligned.
3. International experience suggests that successful AI adoption in education requires not only access to tools, but also teacher training, AI literacy, and institutional support.
4. Indonesia's next challenge is extending AI adoption beyond leading institutions and embedding it across the wider education system.
5. Education is where Indonesia's AI ambition and its child-protection safeguards meet most directly. Reconciling productive AI literacy with the protective framework of the Joint Ministerial Decree is a design problem, not a trade-off.

Indonesia ranks in the global top ten for education and learning use on ChatGPT.[25] This strong level of engagement suggests widespread familiarity with AI tools, but most use remains informal and student-led rather than institutionally organized.

As a result, opportunities for more advanced deployment exist in two distinct settings. In higher education, well-resourced institutions can build their own AI deployments at scale. Across the primary and secondary school system, by contrast, where structured introduction has barely begun.

Among the three strategic sectors examined in this paper, education also has the most developed regulatory framework. The March 2026 Joint Ministerial Decree on the Use of AI in Education sets age-appropriate guidance on permitted uses and duration across education levels, complementing the broader cross-sector framework being developed through the Komdigi-led National AI Roadmap and AI Ethics Guidelines.

[25] OpenAI internal platform data, March 2026.

A proven deployment in Indonesia's largest public university: Universitas Terbuka

Universitas Terbuka illustrates what institutional deployment looks like when the right conditions come together. UT is Indonesia's largest public university, serving more than 525,000 distance-learning students through its nationwide distance-learning system. The university operates one of the world's largest online higher-education platforms, delivering learning through extensive virtual tutorials, digital course materials, and online student support services.[26, 27]

UT built an AI tutor on Microsoft's Azure OpenAI Service and integrated it into its Moodle learning management system (LMS).[28] The tutor uses retrieval-augmented generation, drawing on lecturer-curated teaching materials and grading rubrics to ensure that responses stay aligned with course content and academic standards.

The system currently supports 500 classes and around 100,000 students, with the system developed to scale toward UT's projected total of 1 million active students before 2027.[29]

UT's experience highlights the institutional dimension of the capability gap. Access to AI models is becoming increasingly common, but the ability to integrate those models into teaching systems remains concentrated in a relatively small number of institutions. UT is primed for AI adoption given its distance-learning focus and on-going digital transformation including a unified LMS, lecturer capacity to curate materials, technical leadership with cross-institutional authority, and cloud infrastructure capable of handling 60,000 concurrent users.[30]

The central question for Indonesia is how similar productivity gains can be extended to institutions that lack these foundations.

The central challenge: reconciling protection and AI literacy

Institutional capacity and digital transformation are key challenges for AI adoption in the university sector. There is a broader debate about AI integration in Indonesia's school system where Indonesia's largest AI use case and the need for strong safeguards meet head-on.

The cohort using AI most heavily — school- and university-age students — is the same cohort whose future productivity and competitiveness will depend most on AI literacy. Yet it is also important to recognize the importance of guardrails for the use of internet technologies by children and young adults.

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[26] Microsoft Customer Stories, "Universitas Terbuka enhances distance learning for 100,000 students with Azure AI," 13 December 2024.

[27] Open Praxis (International Council for Open and Distance Education), "Generative AI-Based Tutoring for Enhancing Learning Engagement and Achievement," 2025.

[28] Microsoft Source Asia, "Universitas Terbuka Builds a Secure and Scalable Digital Learning Foundation with Microsoft Azure," May 2026.

[29] Microsoft Customer Stories, "Universitas Terbuka enhances distance learning for 100,000 students with Azure AI," 13 December 2024.

[30] Ibid.

This makes the government's March 2026 Joint Decree on AI use in schools an important policy moment. Issued by seven ministers, it implements the spirit of Government Regulation No. 17 of 2025 (GR 17), a binding child protection framework that covers all digital platforms accessible to under-16s.[25]

The Decree places limits on the use of "instant AI tools" for tasks such as answering questions at the elementary to senior high school level. It also establishes areas where AI use is considered appropriate, including "green zones" such as information retrieval and comparative analysis, as well as more limited use in "yellow zones" such as brainstorming. Early childhood use is capped at sixty minutes per day.

The underlying goals are widely shared across education systems globally: safeguarding cognitive development, preserving academic integrity, and ensuring AI complements rather than substitutes for foundational learning.

Indonesia's AI Roadmap explicitly targets the production of 100,000 AI-trained professionals annually and the designation of adaptive learning and AI-enhanced education as national priorities.[31] [32] The AI-trained professionals entering the workforce over the coming years are in school now; preparing them for the future world of work will make these goals more achievable.

Reconciling protection with productive literacy is therefore a design problem rather than a trade-off. The objective is not to choose between safeguarding students and developing AI capabilities, but to ensure that both goals advance together.

Doing so requires clear progression in what AI use looks like at different stages of education. It also requires teacher training that supports both protective and pedagogical objectives, alongside curriculum models that treat AI literacy as a core competency rather than an optional digital skill.

International case study: extending advanced use across education systems

International cases suggest that successful AI deployment in education requires more than student access to AI tools. Two approaches are particularly relevant to Indonesia: nationwide deployment models that combine access with teacher support, and accelerator programs that focus on AI literacy and institutional capability.

Nationwide deployment combined with teacher support: Estonia and Malaysia

In September 2025, the Estonian government, working with OpenAI, began providing all 10th and 11th graders and their teachers in the secondary school system with access to ChatGPT Edu — around 20,000 students and 3,000 teachers in the initial cohort.[33] The program extended beyond access, incorporating API services, technical support, knowledge-sharing, and structured teacher training to help schools develop practical educational use cases.. The

[31] Ministry of Communication and Digital Affairs, Republic of Indonesia, White Paper on the National Artificial Intelligence Roadmap, 2025

[32] GovInsider, Indonesia Unveils National AI Roadmap, September 2025. Accessed at: www.govinsider.asia

[33] OpenAI, "Estonia and OpenAI to bring ChatGPT to schools nationwide," 25 February 2025; Republic of Estonia Ministry of Education and Research, AI Leap 2025 initiative announcement.

lesson is that educational AI deployment works best when student access is paired with support for educators and institutions.

A similar pattern is emerging in Malaysia. Gemini for Education is being integrated across the public university system, extending AI access to nearly 600,000 students and 75,000 faculty members.[34] This initiative is supported by broader AI-skilling programs, including Gemilang, free Google AI courses, and Google Career Launchpad.[35] Together, these efforts illustrate how access can be combined with broader capability-building across the education sector.

Accelerator programs focused around AI literacy: India

India illustrates a complementary model centered on AI literacy and institutional readiness. In August 2025, OpenAI launched the OpenAI Learning Accelerator in India, working with IIT Madras and the All India Council for Technical Education (AICTE) to distribute ChatGPT licenses and training across government schools, technical institutes, and K-12 educators.[36] The program focuses on teacher onboarding, responsible use, learning design, and AI literacy. Its central premise is that educational outcomes depend not only on access to AI tools but also on the capacity of educators and institutions to use them effectively.

Closing the capability gap in the education sector: policy recommendations

Taken together, these experiences suggest that successful educational AI deployment depends on progression rather than unrestricted access. Students need age-appropriate exposure, educators need training and support, and institutions need clear guidance on responsible use. Indonesia's existing Joint Ministerial Decree provides the protective framework; the next challenge is translating that framework into practical models that schools can implement.

ACTIONS FOR GOVERNMENT

Develop and pilot age-appropriate use guidelines		
Priority	**Target**	**Implementor**
Medium-term and long-term	Public schools and education institutions	Ministry of Primary and Secondary Education; Ministry of Communication and Digital Affairs

Overview

Develop and pilot age-appropriate guidelines across schools, aligned with the Joint Ministerial Decree on the Use of AI in Education while promoting responsible AI use and strengthening the critical thinking and essential skills students need to use AI effectively.

[34] Google, "Enabling Gemini for Education across all Malaysian public universities," 9 March 2026.
[35] Ibid.
[36] OpenAI, "Introducing the OpenAI Learning Accelerator in India," 25 August 2025.

Tools and Mechanism

Conduct research on the impact of AI use in education as a first step, ensuring that subsequent age-appropriate AI literacy framework, responsible AI use guidelines for schools, teacher training programs, and integration of AI literacy into the national curriculum are grounded in evidence and proven outcomes.

The framework should strengthen analytical reasoning, critical thinking, and students' ability to evaluate AI-generated outputs, while promoting healthy digital habits and ensuring that AI use is appropriate to students' readiness and maturity.

Indonesia can draw lessons from countries such as Estonia and India to develop its own country-specific framework, adoption model, and guidance.

Expected Outcomes

Schools can adopt AI in ways that strengthen teaching quality, foundational learning, critical thinking, responsible AI literacy, and students' digital well-being.

Extend inclusive AI education to remote and rural communities

Priority	Target	Implementor
Medium-term and long-term	Students and educators in remote, rural, and underserved communities	Ministry of Primary and Secondary Education; Ministry of Communication and Digital Affairs; regional-level agencies

Overview

Ensure that students and educators in remote and rural communities can participate in age-appropriate AI learning through inclusive digital infrastructure, access to AI tools, training, and locally appropriate support.

Tools and Mechanism

Use existing government mechanisms, such as unplugged computational thinking, to teach AI skills without internet access. Building on pilot programs in Eastern Indonesia, these initiatives should be expanded to remote areas where digital infrastructure remains limited.

In the longer term, the government should promote classroom digitalization nationwide by expanding internet connectivity and digital learning infrastructure.

Expected Outcomes

Students and educators in remote and rural communities gain equitable access to responsible AI education and the support needed to use it effectively.

Opportunities for advanced use in the healthcare sector

Key Takeaways

1. Indonesia has successfully deployed AI in targeted healthcare applications, most notably tuberculosis screening, demonstrating that AI can operate at a national scale within healthcare workflows.
2. The next opportunity is to move beyond disease-specific tools toward AI systems that support frontline caregivers, reduce administrative burdens, and strengthen primary care delivery.
3. International experience suggests that the greatest impact comes from using AI to extend healthcare-system capacity, particularly in settings facing workforce and specialist shortages.
4. Scaling healthcare AI will require interoperable systems, accessible deployment models, and stronger institutional capability across the health sector.

Indonesia's healthcare sector has adopted AI in specific diagnostic applications, most visibly in tuberculosis screening, with early adoption extending to radiology, pathology, and clinical decision support in larger urban hospitals. The opportunity is to move beyond single-purpose diagnostic tools toward broader system-level support: helping frontline health workers navigate complex guidelines, reducing administrative burdens, and strengthening primary-care delivery in areas with limited doctor and specialist coverage.

Proven deployment in Indonesia: AI-assisted TB screening

Indonesia's healthcare system carries one of the world's heaviest tuberculosis burdens, accounting for more than 9 percent of global cases, with roughly one in four people with TB unreported or undiagnosed.[37]

To address this, the Ministry of Health has worked with Qure.ai, supported by the Global Fund and Siemens Healthineers, to embed AI-powered chest X-ray analysis into TB screening workflows.[38] The qXR software,

[37] World Health Organization, "Strengthening TB surveillance to accelerate Indonesia's path to elimination," 1 July 2025

[38] The Global Fund, "Global Fund and Siemens Healthineers to Accelerate Adoption of Artificial Intelligence for Tuberculosis Diagnosis," 16 October 2023

recommended by the WHO as a computer-aided detection tool that can replace human readers for TB screening in adults, generates reports within seconds and allows off-site radiologists to read scans remotely.[39]

This extends screening into areas previously uncovered, addressing a specific pressure point in a health system where speed of diagnosis and the availability of trained radiologists vary sharply outside major urban centers.

The deployment is deliberately narrow: one disease, one imaging modality, one point in the workflow, with free software licenses and health worker training built-in.[40] This approach has been critical to its success — the operational constraints are concrete, the clinical guardrails are clear, and the return on capacity extension is high.

The project has significance beyond better TB screening, showing how AI can be deployed within healthcare workflows on a national scale. The next step is determining how this model can be developed from a disease-specific application, to apply to other disease areas, and subsequently into broader support for national healthcare delivery.

International case study: From single-purpose tools to workforce support

International experience suggests that the next phase of healthcare AI goes beyond diagnostic tools, to extending healthcare-system capacity: supporting frontline caregivers, reducing administrative burdens, and embedding decision support directly into clinical workflows.

The most relevant examples for Indonesia come from health systems facing workforce constraints and uneven specialist coverage. Horizon 1000, an initiative launched by OpenAI and the Gates Foundation, will support the operation of 1,000 primary healthcare clinics across Africa by 2028, starting in Rwanda.[41]

The initiative is designed to help frontline caregivers navigate complex clinical guidelines, reduce administrative burden, and improve care delivery in settings where specialist availability is uneven — addressing Sub-Saharan Africa's estimated health workforce shortfall of approximately 5.6 million workers.[42]

The significance of the model lies in its deployment approach. Rather than introducing AI as a standalone tool within individual hospitals, Horizon 1000 deploys AI across primary-care networks where capacity constraints are greatest. The objective is not to replace clinicians but to help existing health workers serve more patients, make better-informed decisions, and spend less time on administrative tasks.

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[39] World Health Organization, WHO Consolidated Guidelines on Tuberculosis: Module 2 – Screening: Systematic Screening for Tuberculosis Disease, 2021.

[40] Qure.ai, "A Case Study on Global Deployment of qXR for TB"; FierceBiotech, "Siemens Healthineers, Qure.ai partner on chest X-ray AI rollout for TB screening," 16 October 2023.

[41] OpenAI, "Horizon 1000: Advancing AI for primary healthcare," 21 January 2026; Gates Foundation, joint announcement with OpenAI, January 2026.

[42] Ibid.

For Indonesia, where healthcare access and specialist coverage vary significantly across regions, this workforce-extension model may be more relevant than deployments designed for highly resourced hospital systems. These experiences suggest that Indonesia's immediate opportunity lies in applying AI to relieve pressure on frontline care. The tuberculosis screening program has already demonstrated that AI can operate within healthcare workflows at national scale. The next step is to extend that logic beyond disease-specific applications and test how AI can support clinicians and health workers more broadly. The following recommendation seeks to accelerate this transition through targeted pilots focused on workforce support and primary-care delivery.

ACTIONS FOR GOVERNMENT

Pilot AI support for frontline caregivers		
Priority	**Target**	**Implementor**
Short-term	Frontline caregivers	Ministry of Health; Ministry of Communication and Digital Affairs

Overview

Launch pilots that move healthcare AI beyond specific diagnostic tools toward organizational use cases that support frontline workers, reduce administrative burdens, and extend primary-care reach in underserved areas.

Tools and Mechanism

Structured pilots in selected healthcare facilities, with approved AI tools, usage guidelines, and practical training for frontline caregivers. Initiatives such as *Horizon 1000*, developed by the Gates Foundation, can provide a useful framework for how Indonesia could adopt AI to support frontline service delivery.

Expected Outcomes

Healthcare workers gain hands-on experience applying AI as an assistant to manage complex clinical decisions, administrative workloads, and service delivery.

International case study: Building the foundation to scale

In the most advanced systems, AI is becoming part of the infrastructure through which care is delivered.

The Mayo Clinic and Google Cloud, for example, have built an AI-enabled platform that integrates patient data across imaging, electronic health records, and genomic data to support diagnostic decision-making and clinical research.[43]

[43] Google Cloud, "Mayo Clinic and Google Cloud" customer case study.

Enterprise-grade AI models from OpenAI, Google, and Microsoft are being rolled out at major academic medical centers in the United States for clinical reasoning support, administrative burden reduction, and integration with institutional systems under enterprise controls.

While these deployments operate in health systems that differ substantially from Indonesia's, they illustrate the longer-term trajectory of healthcare AI: the evolution from isolated applications toward institution-wide capability embedded across clinical operations.

Reaching that trajectory depends on a regulatory and institutional foundation that Indonesia has only partly built. The Ministry of Health's Digital Health Transformation Strategy 2024–2034 establishes the policy direction for AI integration, with SATUSEHAT as the interoperability platform connecting facility-level records to national registries.[44] The planned Presidential Regulation on the National AI Roadmap identifies health services as a priority sector for AI deployment between 2025 and 2027, and the regulation on AI Ethics Guidelines is expected to set the cross-sectoral baseline.[45] However, sectoral guidance is less developed than in financial services, where OJK's 2025 framework provides firms with clear operational rules. Healthcare equivalents — on clinical AI validation, post-market surveillance, and liability — remain in earlier stages. This regulatory gap will shape the pace at which institutional deployments can scale from pilot projects.

Closing the capability gap in the healthcare sector: policy recommendation

International experience shows that advanced health systems rely not only on capable models, but also on clear standards governing validation, monitoring, interoperability, and accountability. As AI applications expand beyond narrow use cases, establishing comparable sector-specific guidance will become increasingly important. The following recommendation focuses on creating those foundations for broader adoption.

ACTIONS FOR GOVERNMENT

Develop healthcare-specific AI guidelines		
Priority	**Target**	**Implementor**
Short- and Medium-term	Healthcare providers	Ministry of Health; Ministry of Communication and Digital Affairs
Overview		

[44] Ministry of Health, Republic of Indonesia, Digital Health Transformation Strategy 2024–2034.
[45] Ministry of Communication and Digital Affairs (Komdigi), National AI Roadmap White Paper, 2025.

Establish healthcare-specific AI guidelines that set clear conditions for clinical validation, monitoring, privacy, liability, human oversight, and interoperability with SATUSEHAT.
Tools and Mechanism Ministerial regulations or guidelines should be developed in alignment with Indonesia's current landscape. Successful case studies, such as *South Korea's healthcare AI governance*, can be used as lessons for the government to develop its own approach.
Expected Outcomes Healthcare providers have clear guidelines to deploy AI tools responsibly in ways that align with Indonesia's health-system context.

Opportunities for advanced use in financial services

Key Takeaways

1. Financial services offers one of Indonesia's clearest opportunities to use AI for public benefit, particularly in strengthening fraud prevention, improving customer service, and supporting broader financial inclusion efforts.
2. OJK has established one of the region's clearest sector-specific AI governance frameworks, providing a strong foundation for responsible AI adoption across the financial sector.
3. Leading banks have demonstrated how AI can improve customer service, fraud detection, compliance, and operational efficiency, but a significant capability gap remains across smaller institutions.
4. The next phase of adoption is scaling AI and governance capabilities beyond a small number of market leaders so that these benefits can be delivered more broadly across Indonesia's financial system.

Financial services presents one of Indonesia's clearest opportunities to use AI for public benefit. Two priorities stand out: strengthening protection against fraud and scams and expanding access to financial services beyond major

urban centers. Indonesia's largest banks have already demonstrated what advanced AI deployment can achieve. The opportunity now is to extend those capabilities across the wider financial system, under the governance framework OJK has built.

The foundation is already in place

The Indonesian Financial Services Authority (OJK) has moved further than most Indonesian regulators in setting the conditions for AI use.

- In late 2023, OJK launched its AI ethics code for the fintech sector to address automated decision-making, algorithmic bias, and data misuse.[46]
- Then in July 2024, OJK Regulation Number 12 came into effect, requiring all financial services institutions to implement a comprehensive anti-fraud strategy built on prevention, detection, investigation, and monitoring.[47]
- In April 2025, it launched the Artificial Intelligence Governance for Indonesian Banks — a sector-specific framework built around three principles: reliability, accountability, and human oversight.[48] The framework is explicitly benchmarked against international standards including the EU AI Act and Basel Committee on Banking Supervision guidance.[49]

The combined effect is that financial institutions in Indonesia now operate under one of the clearest sectoral AI governance frameworks in Southeast Asia. This provides a foundation for scaling AI applications that improve consumer protection, expand financial access, and increase operational efficiency, while maintaining supervisory oversight and public trust. Cross-sectoral guidance from the forthcoming Presidential Regulations are expected to reinforce this framework. Indonesia's largest banks have already begun deploying AI within these emerging governance arrangements.

Advanced AI deployment in Indonesia’s financial services sector

Among the most advanced institutions, AI is increasingly being applied to functions with direct public value, particularly customer service, fraud prevention, and financial crime monitoring.

A handful of larger financial institutions have moved furthest. BRI's Sabrina virtual assistant illustrates what advanced deployment looks like. Developed in-house and capable of operating in local languages, Sabrina now handles roughly 40 percent of incoming call center traffic, equivalent to the work of approximately 509 human

[46] Otoritas Jasa Keuangan, "Code of Ethics on Responsible and Trustworthy AI in the Financial Technology Industry," launched at the Fifth Indonesia Fintech Summit & Expo, 24 November 2023

[47] OJK Regulation No. 12 of 2024 on the Implementation of Anti-Fraud Strategies by Financial Services Institutions, issued 23 July 2024, effective 31 October 2024.

[48] Otoritas Jasa Keuangan, Artificial Intelligence Governance for Indonesian Banking, launched 29 April 2025.

[49] Ibid.

agents.[50] This allows the bank to serve large customer volumes more efficiently while improving access to customer support.

Other leading banks have pursued similar deployments. Bank Mandiri has deployed AI across customer authentication and fraud detection.[51] BCA uses AI for transaction monitoring and anti-money-laundering surveillance, with model outputs reviewed under the bank's broader risk governance framework.[52] These examples demonstrate how AI is being used not only to improve operational efficiency, but also to strengthen consumer protection and financial system integrity.

These deployments share a pattern: they are institution-specific, built or heavily customized in-house, and depend on the technical and regulatory capacity that only the largest banks have accumulated.

Most smaller banks are not yet at that level. Tier-2 and tier-3 institutions face the same operational pressures — fraud, customer service load, credit assessment in a thin-file market — but lack engineering capacity, data infrastructure, and capital resources that allowed BRI to develop proprietary systems.

This matters not only for operational efficiency but also for financial inclusion. Smaller institutions often play an important role in serving customers and businesses outside major metropolitan markets, meaning that gaps in AI capability may also limit the broader diffusion of AI-enabled financial services.

The utility of AI tools in the finance sector is increasingly proven. The challenge is no longer demonstrating their usefulness, but ensuring that advanced tools can be deployed by institutions with very different levels of technical capability and resources. For many smaller banks, constraints in engineering capacity, data infrastructure, and investment budgets make it difficult to implement the same AI-enabled customer service, fraud detection, and operational tools available to larger institutions. The next phase of adoption is therefore not simply about increasing AI use, but about ensuring that the benefits of AI diffuse more broadly across Indonesia's financial sector.

International case studies: scaling across institutions

International experience shows the next phase is not defined by isolated use cases. As institutions strengthen customer service, fraud prevention, and efficiency, AI is increasingly deployed across the whole organization rather than within single functions — along two dimensions especially relevant to Indonesia.

Institution-Wide AI Deployment

BBVA, a global bank serving more than 89 million customers, has worked with OpenAI to deploy AI across both employee and customer functions. Internally, it expanded its rollout to 120,000 employees globally, created

[50] CNBC Indonesia, "Bank Berubah Total, BRI Ungkap 1 Robot Setara 509 Orang," 25 September 2024.
[51] FICO, "FICO Solutions Help Bank Mandiri Slash Fraud by 80% on Cards and 85% on Digital App as Digital Channels Boom," 16 September 2024
[52] NICE Actimize, "NICE Actimize Transforms Indonesia's Bank Central Asia Anti-Money Laundering Compliance Operations," 24 September 2018.

thousands of custom GPTs used to manage its routine tasks.[53] Externally, BBVA has introduced Blue, a virtual assistant that helps customers manage cards, accounts, and everyday questions through natural-language interaction.[54]

Comparable enterprise deployments are underway at Morgan Stanley, whose GPT-4-based adviser assistant is used by 98 percent of adviser teams, and at Commerzbank, which uses generative AI for client-facing summarization and internal documentation.[5556]

The common feature is that AI is no longer confined to individual departments or pilot projects. Instead, it is being deployed across a broad surface of bank operations—including customer service, risk management, compliance, and employee support—under enterprise controls that regulators can audit and supervise.

Institution-Wide Governance

BNY demonstrates how large-scale AI deployment can be paired with centralized governance. The bank created a dedicated AI Hub and an internal deployment and education platform called Eliza, which now supports more than 125 live use cases with 20,000 employees actively building agents.[57]

Cross-disciplinary teams meet regularly to review new use cases, ensuring that innovation, risk management, and organizational oversight develop together rather than separately.

The significance of this model for Indonesia is that it allows AI adoption to scale without dispersing accountability, helping institutions expand AI use while maintaining effective risk management and regulatory oversight. Every deployment operates within the same governance structure, making internal control, consumer protection safeguards, and external supervision more manageable.

This is ultimately the model anticipated by OJK's framework: not a list of approved AI applications, but an institutional capacity to govern AI use as it evolves. As AI becomes increasingly important for functions such as fraud detection, customer service, and compliance, the ability to scale innovation while maintaining accountability may become as important as the underlying technology itself.

Closing the capability gap in financial services: policy recommendation

Experience in Indonesia and internationally prove the utility of AI tools across financial services, from customer service to compliance. The challenge for Indonesia is ensuring that those advanced capabilities can be adopted beyond a small group of leading institutions. Widespread adoption will contribute to overall financial stability as well as public goods such as combating fraud and scams.

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53 OpenAI, "BBVA and OpenAI collaborate to transform global banking," December 2025

54 Ibid.

55 OpenAI, "Morgan Stanley uses AI evals to shape the future of financial services," 2024.

56 Commerzbank Group, "Strategic partnerships for digital transformation," 2025.

57 OpenAI, "BNY builds 'AI for everyone, everywhere' with OpenAI," 2025.

As Indonesia's largest banks begin to develop institution-wide AI capabilities under OJK's framework, the next priority is to enable mid-sized, smaller, and non-urban institutions to adopt similar approaches. The following recommendation focuses on broadening access to governed AI deployment across the financial system.

ACTIONS FOR GOVERNMENT

Extend advanced AI adoption to mid-sized, smaller and non-urban financial institutions

Priority	Target	Implementor
Short-term	Mid-sized and smaller banks and financial institutions, including those operating outside urban centers	OJK; financial institutions

Overview

Scale advanced AI use toward mid-sized and smaller financial institutions by helping them identify high-ROI use cases and deploy governed AI tools across priority workflows.

Tools and Mechanism

Shared access and financial support should focus on practical adoption, not direct GPU ownership for every institution.

- Voucher programs and financial incentives: support procurement of enterprise AI software, API-based services, implementation support, and staff enablement.
- Shared resource hubs: provide guidance, reference architectures, model evaluation support, procurement templates, and access to approved tools where smaller institutions lack internal capacity.

Successful enterprise-level adoption cases, from Indonesia’s large financial institutions, or international examples such as *BBVA* and *BNY*, can serve as reference points for how financial institutions can integrate AI into their operations.

Expected Outcomes

Mid-sized and smaller financial institutions can deploy AI in priority workflows such as fraud prevention, scam response, financial inclusion, customer service, compliance, and internal knowledge management under OJK-aligned governance.