



unesco

PHILIPPINES

Artificial Intelligence Readiness Assessment Report

Published in 2025 by the United Nations Educational, Scientific and Cultural Organization,

7, place de Fontenoy, 75352 Paris 07 SP, France

© UNESCO

SHS/REI/EAI/2025/AI-RAM/PH

This report is available in Open Access under the Attribution-ShareAlike 3.0 IGO (CC-BY-SA 3.0 IGO) license (<http://creativecommons.org/licenses/by-sa/3.0/igo/>). By using the content of this report, the users accept to be bound by the terms of use of the UNESCO Open Access Repository (<http://www.unesco.org/open-access/terms-useccbysa-en>).

The designations employed and the presentation of material throughout this report do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The ideas and opinions expressed in this report are those of the authors; they are not necessarily those of UNESCO and do not commit the Organization.

Cover photo: [shutterstock.com/RedKoala](https://www.shutterstock.com/RedKoala)

Cover photo design: Jzan Tamielle Villanos / UNESCO

Designed and printed by UNESCO

Printed in France



PHILIPPINES

Artificial Intelligence Readiness Assessment Report

Acknowledgments

This report is the result of close collaboration between the UNESCO Secretariat, particularly the UNESCO Jakarta Office and its Social and Human Sciences Unit, led by Undral Ganbaatar, along with experts in artificial intelligence (AI) and AI ethics, as well as various stakeholders in the Philippines ecosystem.

Our sincere appreciation goes to the Philippines National RAM Expert, Mr. Mark Bryan Manantan for his expert contributions in developing this AI Readiness Assessment report.

The dynamic collaboration of the teams from the Department of Science and Technology and the Department of Trade and Industry as well as all government stakeholders was indispensable for coordinating the policy consultative workshops in different regions of the country and gathering data during the readiness assessment process. In particular, we thank Dr Erika T. Legara (CAIR) and Mr Elmer Peramo (DOST-ASTI). We acknowledge the leadership of Secretary Renato Solidum Jr and Secretary Maria Cristina Aldeguer-Roque. The support from the National Commission for UNESCO in the Philippines has also been an integral part of the successful completion of the report.

Our appreciation also extends to the Philippine's Resident Coordinator office and UN Country Team members for their support and contributions in enriching the report, from the early stages through the implementation period. We are also thankful to the members of the National Steering Committee for their active participation and insightful perspectives during the consultations, focus group interviews, and validation workshop which were pivotal in envisioning the Philippines' future priorities in the field of artificial intelligence and assessing the country's readiness in this domain.

We also warmly thank all individuals whose valuable contributions enriched this publication. Their participation and insights through five policy consultation workshops and three field visits in 3 regions of the Philippines, namely Luzon (Manila city), the Visayas (Cebu city) and Mindanao (Davao city) bringing together professionals from multiple sectors, including the public sector, academia, private sector, and civil society, were fundamental.

We acknowledge the efforts of the UNESCO Secretariat, Maki Katsuno-Hayashiwa (UNESCO Director and Representative for the Philippines), Irakli Khodeli, Dr. James Wright and Dr. Shyam Krishna (Ethics of AI Unit, UNESCO HQ), Meyda Nento and Nikka Mae Loreto (UNESCO Jakarta).

We sincerely thank the International Telecommunications Union for its support via the "Enhancing the Development of Standards and Frameworks for Critical Technologies in Southeast Asia" project.

Finally, we gratefully acknowledge the European Union for the generous financial support provided through the Directorate-General for International Partnership on the "Supporting Member States in Implementing UNESCO's Recommendation on the Ethics of AI through Innovative Tools" project.

Table of Contents

Acknowledgements	ii
Table of Contents	iii
Foreword	v
Abbreviations and Acronyms	vi
Executive Summary	vii
PHASE 1: DIAGNOSIS OF THE NATIONAL AI LANDSCAPE	2
Legal and Regulatory	2
Social-cultural	2
Scientific and Educational	2
Economic	3
Technical and Infrastructure	3
PHASE 2: DEVELOPING THE NATIONAL AI MULTISTAKEHOLDER ROADMAP	4
Achieving a Whole of Nation Approach to AI Policy	4
Ethical Considerations	4
Lagging Education and Capacity-building	4
Low Research and Development Investments and Outputs	5
Prevailing Internet and Energy Infrastructure Gaps	5
Enhancing Data protection and Cross-border Data Flow	5
Cybersecurity – AI Nexus	6
PHASE 3: ADVANCING ACTIONABLE POLICY RECOMMENDATIONS	7
Explore a dual-track approach to improve and enhance AI policy coordination and regulation	7
Embed Ethics in AI policy	7
Increase funding for capacity building, research and development	8
Launch a comprehensive policy reform in the Philippines' ICT sector	8
Develop industry responsive educational curricula	8
Clarify and establish a shared terminology on the design, deployment, and evaluation of AI systems, models, and capabilities	8
LEGAL DIMENSION	10
AI policy and regulation	10
Department of Trade and Industry	10
Department of Science and Technology (DOST)	11
Department of Information and Communications Technology (DICT)	11
Data protection and privacy laws	14
Data Privacy Act (DPA) of 2012	14
Cybercrime Prevent Act of 2012	15
Data sharing and accessibility	16
Procurement laws and policies	18
Freedom of information acts/access to knowledge acts	19
Due Process and Accountability	19
Online safety and integrity of speech	20
Public Sector Capacity	21

SOCIAL AND CULTURAL DIMENSION	22
Diversity, inclusion, and equality	22
Public engagement and trust	26
Environmental and sustainability policies	26
Health and social well-being	26
Culture	27
SCIENTIFIC AND EDUCATIONAL DIMENSION	28
Research and Innovation	28
Research Output and Ethical AI research	28
AI Talent and Innovation Output	29
Education	29
Education Strategy	29
Education infrastructure	30
Curriculum Content	31
Educational Attainment	31
Public Access to Education	32
ECONOMIC DIMENSION	33
Labor Markets	33
Investments and Output	33
TECHNICAL AND INFRASTRUCTURE DIMENSION	35
Infrastructure and connectivity	35
Applied standards	37
Computing capabilities	37
Statistical Performance	38
DEVELOPING THE NATIONAL AI MULTISTAKEHOLDER ROADMAP	39
Achieving a Whole of Nation Approach to AI policy	39
Overcoming siloed policy making	39
Thriving industry, academia, and civil society collaboration	40
Light touch approach on regulations	41
Ethical Considerations	41
Digital Inequity	42
Public (dis)trust	43
Automation and Displacement	43
Language, culture and the arts	45
Hyper Economic and Technological determinism	45
Lagging Education and Capacity-building	46
Low Research and Development Investments and Outputs	47
Prevailing Internet and Energy Infrastructure Gaps	48
Enhancing Data Protection and Cross-border Data Flows	49
Cybersecurity – AI Nexus	50
ADVANCING ACTIONABLE POLICY RECOMMENDATIONS	51

Foreword

We have officially entered the Age of Artificial Intelligence. The world is now set to change at a pace not seen in decades, even centuries. AI-based tools and applications make our lives easier, smoother, and richer. They help us move efficiently, get informed, get credit, get a job, and get our taxes done.

But in its current form, AI reproduces and amplifies many of the social challenges we face. It is not acceptable that around a third of the world's population still lacks adequate internet access. Upstream, the AI industry is highly concentrated, with just two countries – the United States and China – and a dozen companies accounting for a major share of the sector. This can lead only to greater inequality of outcomes – including gender disparities – downstream. Non-diverse AI teams, unrepresentative datasets, and opaque and biased algorithms can cause harm, particularly to those who are already vulnerable, whether companies or individuals, children and young people, women, or entire democracies.



That is why UNESCO drafted the Recommendation on the Ethics of Artificial Intelligence, which was adopted in 2021 by 193 countries to make sure AI delivers fair, sustainable, and inclusive outcomes. The Recommendation is based on the protection and promotion of human rights, human dignity, and environmental sustainability, and these values are then translated into principles such as accountability, transparency, and privacy. The Recommendation also sets out concrete policy actions that governments can draw on to steer technological developments in a responsible direction, premised on the belief that light-touch regulation, which has until now remained the norm, is insufficient. We need capable governments that are well equipped, in terms of competencies, institutions and laws, to frame responsible AI development and protect the rule of law online, and public and private developers who are accountable for putting human rights and fundamental freedoms – not profits or geopolitical considerations – first.

The Readiness Assessment Methodology (RAM) is a diagnostic tool intended to assist Member States in upholding their commitment to the Recommendation by helping them understand how prepared they are to implement AI ethically and responsibly for all their citizens. By highlighting any institutional, regulatory, or data gaps and obstacles, it enables UNESCO to tailor support for governments to fill those gaps to ensure an ethical AI ecosystem aligned with the Recommendation.

Overall, this report presents a fundamentally optimistic vision that we at UNESCO share: that ethical governance and responsible regulation of AI is entirely consistent with innovation and economic growth and is essential for ensuring a technological ecosystem that benefits the public good. With the RAM data and this report, the Philippines has a clear roadmap for how to get there.

It was a pleasure working with the Government of the Philippines to conduct this exercise. We are grateful for their engagement with the RAM and I am sure that by following the path laid out in this report, the Philippines will be able to reap the benefits of AI while making sure that AI technologies deliver fair, sustainable, and inclusive outcomes.

Lidia Brito

Assistant Director-General ad interim for Social and Human Sciences, UNESCO

Abbreviations and Acronyms

Abbreviation	Title
AAP	Analytics Association of the Philippines
AI	Artificial Intelligence
ALS	Alternative Learning System
ASEAN	Association of Southeast Asian Nations
BPO	Business Process Outsourcing
CPA	Cybercrime Prevention Act
CSAEM	Anti-Child Sexual Abuse or Exploitation Materials Act
CSC	Philippine Civil Service Commission
CSOs	Civil Society Organizations
CHED	Commission on Higher Education
DepEd	Department of Education
DICT	Department of Information and Communications Technology
DOST	Department of Science and Technology
DOST-GIA	Department of Science and Technology Grants-In-Aid
DOST- SEI	Department of Science and Technology Science Education Institute
DTI	Department of Trade and Industry
DTI-BPS	Department of Trade and Industry- Bureau of Philippine Standards
DigiED	Digital Education
DIWA	Digital Innovation for Women Advancement
DPA	Data Privacy Act
DSA	Data Sharing Agreement
GAA	General Appropriations Act
GBARD	Government Budget Allocations for Research and Development
GDP	Gross Domestic Product
Gen AI	Generative AI
GPPB	Government Procurement Policy Board
FOI	Freedom of Information
HB	House Bill
HEIs	Higher Education Institutions
IBPAP	Information Technology and Business Process Association of the Philippine
ISO	International Organization for Standardization
NEDA	National Economic Development Authority
NPC	National Privacy Commission
NGPA	New Government Procurement Act
OSAEC	Anti-Online Sexual or Exploitation of Children
PIC	Personal Information Controller
PIDS	Philippine Institute of Development Studies

PhilGEPS	Philippine Government Electronic Procurement System
PIP	Personal Information Processor
PSA	Philippine Statistics Authority
PWDs	Persons with Disabilities
RA	Republic Act
TESDA	Technical Education and Skills Development Authority
TWC	TESDA Women's Center

EXECUTIVE SUMMARY

With its aspiration to join the ranks of upper middle-income economies, the Philippines is banking on the transformative benefits of Artificial Intelligence (AI). Rightfully so, several experts suggest that AI adoption can boost the country's Gross Domestic Product by up to PhP2.8 trillion (USD50.7 billion) by 2030. The country's key economic growth drivers—Information Technology, Business Process Management, retail, manufacturing, and financial services—are well-positioned to harness AI in driving innovation to further develop the country's digital economy.¹

But in leaping into the AI revolution, the Philippines has yet to fully get its “house in order” to maximize its true potential in AI adoption. Prevailing structural issues like poor digital infrastructure, siloed policymaking, bureaucratic inertia, lagging investments in national research and development, outdated legal and regulatory frameworks and guidelines, and fluctuating mobilization of public and private partnerships continue to undermine the Philippines' velocity in the current scope and pace of digital transformation. While AI promises tremendous opportunities, it also brings uncertainties that could exacerbate digital inequities, posing risks to critical industries from agriculture, manufacturing, and mining, to creatives, Information Technology, and Business Process Outsourcing, including Micro, Small and Medium Enterprises (MSMEs). Many are bracing for the likelihood of job displacements and supply-chain disruptions. Others fear that AI may further inflame the increasing political polarization due to AI-generated content like deep fakes and bots.

Fortunately, positive signs are on the horizon. The country's lead AI policymaking bodies, namely, the Department of Trade and Industry (DTI), Department of Science and Technology (DOST), and the Department of Information and Communications Technology (DICT), vowed to accelerate the Philippines' digital ambitions with the release of various AI national strategies and roadmaps. Conversely, a vibrant and entrepreneurial trifecta of industry-academia-civil society has emerged, advocating for structural and bureaucratic reforms, supporting and facilitating multisectoral and cross-sectoral discussions on AI policymaking, and even augmenting technical, legal, and policy capacity across the public and private sectors.

But given the gargantuan challenges the Philippines confronts, it needs more willing and trusted partners to truly realize its AI policy into practice. Unlocking the Philippines' full potential and allaying anxiety and skepticism surrounding AI-enabled tools therefore necessitates a seismic shift towards its approach to proactive and ethical AI policymaking.

Insert UNESCO's Recommendation on the Ethics of AI, a globally agreed framework adopted by 194 UNESCO Member States. Realizing the current dearth in ethical AI policy-making that ensures all member states align their national strategies with the framework's recommendations, UNESCO produced the Readiness Assessment Methodology (RAM)—a comprehensive diagnostic policy tool that indicates where a country currently stands in terms of its AI readiness journey across multiple dimensions—legal, socio-cultural, scientific and educational, economic, technical and infrastructural. Ultimately, RAM's fundamental goal is to guarantee that ethics is the defining hallmark in the AI development and deployment among member states.

The UNESCO RAM implementation in the Philippines comes at a critical juncture as the country elevates its AI ambition. Leveraging its distinct neutral role, UNESCO, through its National AI Steering Committee, convened the Philippines' leading AI decisionmakers and influencers in three roundtable discussions throughout 2024 to undertake collective problem solving and analytical exercises. True to UNESCO's mandate, the consultations were wide-ranging and facilitated active participation of diverse stakeholders across the country, including underrepresented communities like minority groups, and Persons with Disabilities.

¹ Economic Impact Report: Growing the Philippines AI opportunity (<https://cdn.accesspartnership.com/wp-content/uploads/2024/05/Economic-Impact-Report-Growing-the-Philippines-AI-opportunity-with-Google-May-30.pdf?hsCtaTracking=24ced45b-4895-4200-a4c6-114908511628%7C353f23af-093f-47c0-a42c-db840e6b42a8>)

The RAM implementation is divided into three phases:

PHASE 1: DIAGNOSIS OF THE NATIONAL AI LANDSCAPE

As a baselining exercise, this entails the deployment of RAM's five dimensions— Legal and Regulatory, Social and Cultural, Scientific and Educational, Economic, Technical and Infrastructural.

PHASE 2: DEVELOPING THE NATIONAL AI MULTISTAKEHOLDER ROADMAP

The development of a National AI Multistakeholder Roadmap encompasses three national consultations in Manila, Cebu and Davao, involving leading experts and practitioners from government, industry, academia and civil society. The cross-sectoral conversations contextualize the findings and data gathered from the diagnosis phase. To ensure comprehensive data-gathering, the roundtable discussions were also supplemented with one-on-one interviews with select experts.

PHASE 3: ADVANCING ACTIONABLE POLICY RECOMMENDATIONS

Combining insights and findings obtained from the diagnosis and consultation, the final phase entails the advancement of actionable, pragmatic, and fit-for-context policy recommendations to address the gaps identified in the context of the Philippines AI policymaking.

PHASE 1: DIAGNOSIS OF THE NATIONAL AI LANDSCAPE

The diagnostic element sets the stage for the overall AI assessment, highlighting the country's opportunities and challenges based on the five dimensions identified.

Key findings from the consultation include:

Legal and Regulatory

A patchwork of AI strategies and roadmaps exists, led by the Department of Trade and Industry (DTI), and Department of Science and Technology (DOST), and the Department of Information and Communications Technology (DICT), that demonstrate the country's upbeat trajectory on AI policy. However, there remains a huge gap on the lack of a dedicated lead agency tasked to consolidate the country's approach towards AI policy implementation.

Currently, several legislations concerning AI regulations are tabled in the Philippine congress to comprehensively regulate the dual-use technology, especially its inherent risks and harms, and maximize its prospects for economic growth. In the interim, a mix of regulations, guidelines and legal frameworks—such as the Data Privacy Act of 2020 and the Cybercrime Prevention Act of 2012—aid in bridging the regulatory gaps in data protection, cybersecurity, and cross-border data flow.

Social-cultural

The prevailing structural issues continue to exacerbate digital inequities. In response, the government has launched various initiatives to boost digital connectivity, especially in remote areas, as well as empower local innovators and entrepreneurs. The root cause lies in the lack of affordable, reliable, and accessible broadband internet, which hinders efforts to effectively raise digital competency through education, training and capacity-building.

Despite such challenges, the Philippines has shown progress in narrowing gender disparity. There is also a growing awareness on the importance of AI ethics in government, industry, academia, and civil society. But trust surrounding AI technologies is mixed. Major concerns include job displacement, explainability, transparency, regulatory compliance, and data misuse.

The overall picture of AI applications in arts and culture is pixelated. On one hand, cases of AI use to promote local languages abound, on the other, the lack of capacity stifles the preservation of cultural artifacts. Conversely, AI's environmental, health and well-being implications demand further analysis.

Scientific and Educational

Recognizing the urgency of providing students with adequate skills and competencies fit for the demands of the emerging data driven economy, several government bodies have launched initiatives to retrofit current educational curriculum at the primary, secondary, and tertiary levels. In the short-to-medium term, upskilling and reskilling opportunities on data science are also available to obtain certifications.

Due to insufficient funding support, the Philippines is underperforming in research and development, which consequently impacts its AI research competitiveness and yields low levels of ethical AI research outputs.

Economic

In 2023, the Philippines' digital economy contributed 8.4 percent or PHP 2.05 trillion to the country's total GDP. Key drivers of the digital economic growth include telecommunications services (32.9 percent) professional and business services (30.1 percent), and computer, electronic, and optical products (17.1 percent).

The country's AI market size is projected to reach US\$3,4877 million by 2030. AI adoption is higher than the global average of 75 percent, driven in large part by private companies' positive outlook on the technology's contribution to overall productivity. To sustain growth and become globally competitive, the Philippines needs to improve its domestic innovation capacity. As it stands, the private sector continues to outspend the government in research and development with 61 percent and 39 percent respectively.

Technical and Infrastructure

The Philippines is an active participant to various committees and working groups involved in international technical standard setting, including the ISO/IEC/JTC 1/SC 42: Artificial intelligence. There is growing number of data centers due to the influx of foreign investments. Internet penetration is on an upward trajectory; however, more investment is required to upgrade upload and download speeds.

PHASE 2: DEVELOPING THE NATIONAL AI MULTISTAKEHOLDER ROADMAP

Building on the RAM's diagnostic results, UNESCO implemented three roundtable discussions in Manila, Cebu, and Davao from September to November 2024 to undertake a deeper contextual analysis on the Philippines' AI landscape. After the series of consultations, a validation workshop was held. The deliberations and consultations highlighted the following gaps in the current realization of ethical AI:

Achieving a Whole of Nation Approach to AI Policy

The consultations revealed a siloed approach underpinning the government's current AI policy and strategy implementation. To a large degree, this circumstance has debilitated the practical implementation of the Philippines' AI strategy. Several participants have noted their knowledge and awareness of the existing roadmaps, strategies and initiatives, but that the lack of a dedicated lead agency makes it difficult to ensure consistency and coordination in policy implementation.

In the absence of an intragovernmental coordinating mechanism, the trifecta of industry, academia, and civil society has stepped up to the plate. Stakeholders from such sectors act as the connective tissue, moving the policy discussions and implementations through informal channels, to hopefully shape high-level government decisions.

Ethical Considerations

The drive for national economic development often overshadows equally crucial topics such as diversity, inclusion, equity, environmental footprint, health, and social well-being. Several organizations, start-ups and businesses admitted that the current pace of scaling, product development, sustainable growth, and market expansion, ultimately top the list of strategic priorities, so that ethical considerations are avertedly or invertedly sidelined.

Although enthusiasm on AI is palpable, there remains skepticism surrounding its negative implications such as the spread disinformation to undermine democratic and political institutions and processes, job displacements, increased carbon footprint, human-labor exploitation, and intellectual property rights issues.

Clearly, the lack of access to reliable and affordable broadband internet services further widens the gap between the rich and the poor, the urban and the rural areas. With limited internet connectivity, Filipino youth and professionals cannot seize learning opportunities to acquire fundamental digital skills and competencies.

Similarly, while the Philippines improve in gender parity, it has a long way to go in ensuring its technology policies are inclusive. Persons with Disabilities, and Indigenous communities are often left out of policy consultations. The exclusion of minority and other disadvantage groups in tech policymaking further exacerbate ongoing challenges of digital surveillance, algorithmic bias and discrimination.

Lagging Education and Capacity-building

While upskilling and reskilling offer short-to-medium term gains, preparing the next generation of Filipino professionals is the more critical long game. Findings suggest that an estimated 91 percent of Filipino children at late primary age cannot comprehend age-appropriate text. Weak teaching capacity due to low salary, poor working conditions, and lack of professional development also undercuts student learning experience. Filipino youth and adults continue to underperform in basic ICT skills compared to its regional peers, which, consequently, exacerbates exclusion and the digital skills gap.

In response, different government agencies have launched various initiatives to update educational curriculums that support fundamental competencies required in the fields of Science, Technology, Engineering, and Mathematics. Tech entrepreneurship is also being included and promoted in the curriculums. Interestingly, debates on the importance of non-STEM courses like Arts and Humanities and Social Sciences have also begun to flourish to address the adverse and unintended effects of AI systems.

Low Research and Development Investments and Outputs

The Philippines continues to prioritize strategic programs and initiatives to enhance its AI research competitiveness. However, funding remains a huge challenge to promoting domestic innovation. Leading government agencies like DOST continue to rely on external funding partners. Without strong political and financial support from the government, the Philippines' overall R&D will continue to underperform, consequently undercutting its capabilities toward local and homegrown innovation.

Another issue is the weak collaboration between industry and academia. Often universities lack the desire to align priorities and collaborate with industry to produce applied and market-oriented research which addresses real-world economic and societal issues. The business environment also suffers from low levels of market and technology readiness and low enforcement of intellectual property rights.

Prevailing Internet and Energy Infrastructure Gaps

The lack of accessible, reliable, and affordable internet and electricity continue to impact the Philippines' AI competitiveness regionally and globally. The lagging internet connectivity can be linked to the country's outdated legislations in the ICT sector. The Philippines remains the only country in the world that requires a legislative franchise, which discourages new investors to raise competition in the domestic telco market. The unreliable and expensive internet connection also prevents productive and meaningful participation among many Filipinos in rural areas to enroll in online courses and training.

In addition to major internet connectivity issues, experts also noted that the high electricity costs are another source of digital underdevelopment, as reflected in the country's lukewarm performance in attracting foreign direct investments in data centers as well as increasing manufacturing productivity.

Enhancing Data protection and Cross-border Data Flow

Some participants observed that the existing Data Privacy Act of 2012 remains insufficient in addressing cross-border data processing that may hinder AI readiness and interoperability. Although the DPA mandates robust security measures for personal data processing, and its extraterritorial provisions cover data-related aspects of AI, experts emphasized emerging issues concerning data-sharing.

There is a rising tension between data localization and data sovereignty with cross-border data flow in the Philippines due to competing interests between the emerging local data centers and the BPO industry. If left unmanaged, such tension will have implications for data usage, as well as the development and deployment of AI systems in both the public and private sectors.

Secondly, there is a lack of a broader data governance policy sharing framework to encourage and enhance data sharing among the public and the private sector. Developing and implementing a robust data governance framework will help facilitate sharing of usable data between both sectors and adopting a risk-based approach to data classification, with respect to other existing laws such as the Revised First Cloud policy, will also be difficult.

Cybersecurity – AI Nexus

Many public and private organizations are recognizing the benefits of AI to fortify their cyber defenses. Unfortunately, nefarious threat actors are moving more quickly. They are deploying AI to launch more sophisticated cyber campaigns. To remedy such concerns, the National Privacy Commission (NPC) provides guidance on implementing other security requirements like embedding privacy-by-design and privacy-by-default in data processing systems without requiring any action from data subjects.

Allocation of government spending to improve the country's cybersecurity infrastructure will also impact the Philippines' competitiveness in becoming an AI hub. Without robust cybersecurity in both policy and practice, achieving an ethical, safe, and reliable AI ecosystem that champions the transparent processing and training of data will remain wishful thinking.

PHASE 3: ADVANCING ACTIONABLE POLICY RECOMMENDATIONS

Building on the findings, the diagnostic analysis, and the cross-sectoral insights — as well as collective deliberations from roundtable discussions with key stakeholders in the Philippines' AI community—the following recommendations are suggested:

Explore a dual-track approach to improve and enhance AI policy coordination and regulation

Priority: **High**

- First, establishing a dedicated inter agency mechanism to synchronize AI policy implementation in the Philippines comprising DTI, DICT, DOST and NEDA. Once established, the proposed interagency mechanism can rapidly ease the current siloed approach to AI policymaking and implementation. This can be accomplished through the provision of an Executive Order from the Office of the Philippine President.
- The Philippine Digital Workforce Competitiveness Act or RAA 11927, and its IRR can also serve as a useful template in establishing the proposed interagency mechanism to clarify the overall vision and implementation of the Philippines' national AI policy, facilitate effective coordination and communication among other relevant government bodies, and raise consistent public advocacy on AI.
- Another pathway is adopting a soft-touch or normative regulatory approach that is flexible enough to anticipate rapid AI innovation while remaining robust in ensuring cybersecurity and data protection standards.

Embed Ethics in AI policy

Priority: **High**

- Encourage more academic and policy research to investigate 'ethics' in the context of the Filipino society. More than just subscribing to the mainstream and prevailing western definition and abstraction of ethics, contextualizing ethics from the lens of the Filipino through historical, sociological, and anthropological research would ensure fit-for-purpose regulatory standards, principles and compliance.
- Setting up AI research funding schemes led by DOST, DoE and CHED centered on sociotechnical approach on Filipino AI ethics can encourage greater collaboration among legal scholars, historians, artists and consumer protection advocates. In recentring the prevailing economic, technical, policy, and legal debates on AI ethics, the Philippines can reduce the technologically deterministic approach that is often espoused by bureaucrats and technocrats, and undermines the importance of ethics in the early stages of AI development and policymaking.
- The DICT and the Presidential Communications Office can also foster public knowledge and awareness on AI's potential applications and limitations from an ethical viewpoint. To clarify any misplaced and often unwarranted expectations of AI systems and models, the government, academia, and the industry should make a concerted effort to build public knowledge campaigns on AI capabilities through roadshows and/or multimedia information and educational awareness.

Increase funding for capacity building, research and development

Priority: **High**

- Scrutinize the line items found in the funding allocation of Government agencies in the General Appropriations Act and the National Expenditure Program that can be aligned to support broader research and development activities. This can be conducted by the Department of Budget and Management and DOST.
- Proposing a National AI Research Fund under the purview of the DOST-PCIEERD can be a starting point to further support local AI research and innovation. Industry associations and academia can conduct a cost-benefit analysis on the possible gains from increased R&D funding of specific AI use cases in critical sectors like IT-BPO, agriculture, manufacturing, and logistics.

Launch a comprehensive policy reform in the Philippines' ICT sector

Priority: **High**

- Improve the Philippine internet infrastructure gap by removing the legislative franchise requirement to reinvigorate market competition, improve the flow of foreign direct investments, and initiate licensing and spectrum restacking processes. Empowering the National Telecommunications Commission as an independent regulator to help oversee an Open Access in Data Transmission bill that will initiate spectrum assignment to narrow the digital connectivity gaps in the medium- and long-term.

Develop industry responsive educational curricula

Priority: **Medium**

- State- and privately-owned universities and colleges must forge closer collaboration with the industry to cultivate an applied and market-oriented approach in doing research and/or enhancing educational curriculum. HEIs and industry associations must enhance consultative mechanisms to anticipate employment trends and maximize job opportunities amid rapid technological changes.

Clarify and establish a shared terminology on the design, deployment, and evaluation of AI systems, models, and capabilities

Priority: **Medium**

- Establishing a shared definition and taxonomies on AI and its related applications will improve communication and coordination across all concerned stakeholders. This will help establish and streamline the conception and consistent implementation of standards, frameworks, and guidelines throughout the Philippines AI community.
- The DICT, DOST, Department of Education (DoE) and the Commission on Higher Education (CHED) can convene consultations and publish the official AI lexicon that is consistent to best global AI best practices but tailored to the local context.
- Incentivize Public-Private partnerships to spur domestic innovation.

Priority: **Medium**

- The Philippine Government, through DTI and DOST, must create incentives for private companies on data-sharing, research outputs, and joint IP protection to strengthen open domestic innovation, especially among local start-ups. An enhanced IP regime can support research institutions, universities and industries to efficiently commercialize valuable IP assets. Relatedly, the DOST and the Intellectual Property Office of the Philippines should support AI venture capital funds and co-funding models for AI R&D. This will involve fast-tracking AI-related patent applications under IPO Philippines.
- Proposing tax incentives or grants for private companies will encourage the development of AI-driven start-ups and broader industry-academia collaborations. Such closer academia-industry dynamic will facilitate the cross-pollination of ideas among students and industry professionals.
- Establish data sharing and cybersecurity through policy frameworks and practical drills

Priority: **Medium**

- NPC and DICT should establish a broader data governance policy framework to drive public and private sector collaboration on data exchanges. This framework should facilitate the sharing of usable data between the public and private sectors and adopt a risk-based approach to data classification with respect to other existing laws.
- DICT, DTI, DOST and NPC must convene regular red-teaming activities to identify the cybersecurity risks, weaknesses, and vulnerabilities of AI systems prior to application and release. Routinely conducting red-teaming events will help raise awareness and formulate remediation strategies to address the cybersecurity aspects of AI systems, thus increasing the stakes for cooperation as well as the responsibility and liability of AI developers.

LEGAL DIMENSION

AI policy and regulation

The Philippines leading government bodies tasked to oversee various aspects of AI policy and strategy, namely, the Department of Trade and Industry (DTI), the Department of Science and Technology (DOST), Department of Information and Communications Technology (DICT), and the National Economic Development Authority (NEDA), have released several roadmaps, blueprints, and policy notes.

Department of Trade and Industry

Building on the previous NAISR 2021, the Department of Trade and Industry (DTI) did a soft launch of the National AI Strategy Roadmap (NAISR) 2.0 in July 2024.² NAISR 2.0 reflects the recent advancements in AI systems like generative AI (Gen AI), including the emerging debates and implications of ethics and governance. NAISR 2.0 outlines seven strategic imperatives focused on improving internet connectivity, data access, workforce development and research and development. While NAISR 2.0 stresses the value-creation in harnessing AI as a transformative tool to boost the Philippines' economy, DTI has also acknowledged that the roadmap recognizes the arduous task of balancing innovation with the responsible AI regulation. The notion of ethics, and other related terms such as fairness, inclusivity, sustainability, responsibility, accountability, and ethics are found in the NAISR 2.0 document. To implement NAISR 2.0, DTI has emphasized a whole-of-nation approach to break down silos that may hinder effective collaboration especially among key stakeholders in the government, academia, industry, and civil society. DTI is cognizant of the long road ahead to make the NAISR 2.0 a success.

However, structural challenges continue to beset the Philippines that can hamstring its AI ambitions: (1) lack of digital infrastructure that impacts internet connectivity, thus exacerbating the digital divide between rural and urban areas. While large companies have the resources to integrate AI systems in their processes, and organizations, Micro, Small and Medium-sized Enterprises (MSMEs) are facing tremendous challenges in adopting AI technologies. (2) Shortage of AI professionals such as data science and machine learning engineers. In addition to upskilling or reskilling, the existing educational curriculum needs a reboot to produce an AI-ready talent pool. (3) The Philippine government continues to underspend on R&D only at 0.3 of the total GDP—a figure lower than UNESCO's benchmark of one percent share in the country's total GDP. Lastly, (4) alignment of regulatory frameworks on data privacy and ethical development remains at the very nascent stage.³

Under NAISR's implementing rules and regulations, the National Innovation Council serves as the policy advisory body for the formulation, implementation and evaluation of the country's innovation goals and priorities. NEDA is the NIC's designated secretariat. DTI is also strengthening partnerships with national government agencies to boost R&D efforts to drive AI-driven entrepreneurship. To fast-track the Philippines conceptualization and implementation of NAISR 2.0, DTI has established the Center for AI Research in July 2024 to operationalize the strategic priority areas enshrined under the NAISR 2.0. CAIR has begun to explore international collaboration with regional partners like AI Singapore as well as leading tech companies in Southeast Asia and beyond to further explore R&D opportunities. With the rapid adoption of Gen AI and the increasing emphasis on local context, CAIR has initiated discussions with other partners like AI Verify to understand the emerging complexities and challenges of incorporating multi-lingual and multi-modals in the AI innovation ecosystem in the Philippines.

Against the backdrop of the NAISR 2.0, it should be noted that the NAISR launched in 2024 elicited mixed reactions from the public. Through a case-study approach in the municipality of Carmona in the province of Cavite, Distor et. al, has noted moderate to high levels of positive attitude and behavioral intention toward the use of AI in government operations. There is slight anxiety on AI

2 Department of Trade and Industry. (2024, July 5). DTI drives AI innovation: National roadmap 2.0 and CAIR launch [Press release].

Retrieved from <https://www.dti.gov.ph/archives/news-archives/dti-drives-ai-innovation-national-roadmap-2-0-cair-launch/>

3 Asec Baluyut, DTI consultation last September 11, 2024.

which elicited negative impressions at a scale of moderate to very weak.⁴ Because NAISR 2.0. has yet to come online, it remains to be seen whether it can realize its stated strategic priorities and ultimately deliver its promise.

Department of Science and Technology (DOST)

In June 2021, the Department of Science and Technology (DOST) rolled out its AI National Roadmap, noting its view on AI is deeply rooted from research and development mandate.⁵ In the updated version released in September 2023, DOST's AI roadmap emphasized various strategies that tackles (1) Facilities and services (AI data centers and cloud platforms), (2) Human resources (conferences, workshops, online courses, upskilling and public-private partnerships, and international partnerships); (3) R&D technologies (use case AI application for industries, health and education, mobility, environment, and disaster risk reduction, autonomous applications, quantum and generative AI) and; Science and Technology Policies (in collaboration with DICT and DTI). The roadmap seeks to position the Philippines as an AI innovation hub by 2040.

After the AI roadmap was launched in 2023, DOST has embarked on various projects which are progressing at various stages.⁶ DOST's Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD) has identified 9 R&D projects in collaboration with the country's leading universities, namely, the University of the Philippines (Los Banos, and Mindanao), De La Salle University, and Caraga State University. The AI R&D initiatives will focus on autonomous vehicles, big data, health monitoring systems, natural language processing focused on the Filipino and Bisaya, marine sensors, and coastal surveys, machine learning algorithms, and traffic control and management.⁷

Department of Information and Communications Technology (DICT)

As the primary policymaking, implementing and administrative body of the Philippine government dedicated to shaping the Information and Communications Technology (ICT) agenda, the DICT is also heavily involved in AI policymaking. It has launched various efforts like the (1) Ethical development and development of AI through the drafting of the Joint Memorandum Circular on the "Principles for the Ethical and Responsible Use and Development of AI in the Government;" based on the ASEAN AI Guidelines, and the Organization for Economic Co-operation and Development (OECD), and participation in standards-setting bodies like ISO/IEC JTC 1/SC 42 on AI; (2) Capacity-building activities through the development of the Philippines Skills Framework for Analytics and AI in collaboration with the Analytics Association of the Philippines. It also launched the e-GOVPH, one-stop online system, as well as various self-development programs and webinars via Tech Trends. DICT has also represented the Philippines in key international fora tackling AI governance such as the AI Seoul Summit and AI Safety Summit, and supports the adoption of the ASEAN AI Guidelines, and the OECD AI Principles.⁸

Due to the Philippine government's actions in advancing AI governance and innovation, the country continues to improve its prospects. For instance, the Government AI Readiness Index in 2024 showed that the Philippines ranked 56th out of 188 countries. It garnered 58.51 out of 100 which is higher than the global average of 47.59 measured across three categories: Government, Technology, Data and Infrastructure.

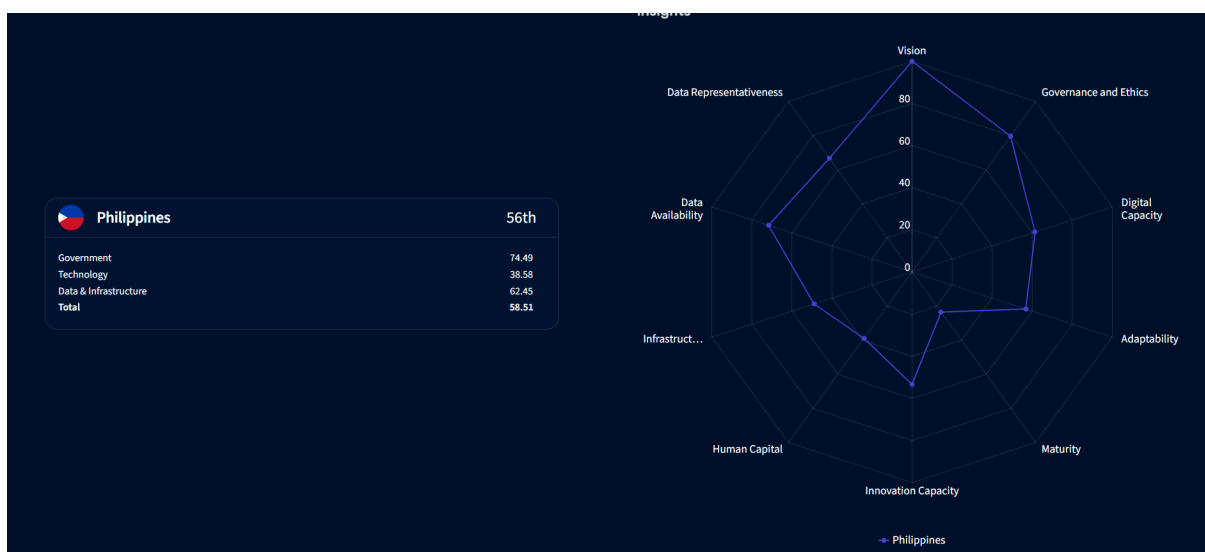
4 Adoption of Artificial Intelligence (AI) in Local Governments: An Exploratory Study on the Attitudes and Perceptions of Officials in a Municipal Government in the Philippines

5 DOST rolls out technologies for AI National Roadmap. Retrieved from DOST rolls out technologies for AI National Roadmap

6 AI Roadmap 2023. Retrieved from https://pcieerd.dost.gov.ph/images/2024/roadmap/ETDD/Artificial_Intelligence_Roadmap_v3.pdf

7 DOST-PCIEERD launch 9 new AI R&D projects. Retrieved from <https://pcieerd.dost.gov.ph/news/latest-news/422-dost-pcieerd-launch-9-new-ai-r-d-projects>

8 DICT presentation during consultations



Source: Oxford Insights AI Readiness Index, <https://oxfordinsights.com/ai-readiness/ai-readiness-index/>

The Philippines has yet to enact legally binding rules and frameworks to regulate AI. Several discussions with public and private sector experts and representatives reveal a “light touch” approach presents the most feasible pathway for the country in managing the balance innovation-regulation to AI.

Currently, various bills are currently pending in the Philippine Congress. A cursory view of the pending bills shows that key priority areas include, ensuring the ethical and responsible adoption of AI through the establishment of Philippine Council on AI; and addressing AI’s impact to the manufacturing sector and the labor industry.

Topic	Bills	Status
Regulation of AI	House Bill (HB) Nos. 7396, 10385 - provides a comprehensive framework for the deployment and regulation of AI in the Philippines HB 10751 – mandates various agencies to develop regulations on generative A HB 10751 – mandates various agencies to develop regulations on generative AI HB 1177 – provide regulations on ethical and responsible use of AI	Pending in the House Committee on Information and Communications Technology (ICT)
Regulation of AI in labor industry and welfare	HB 9448,- aims to regulate AI use and automation systems in the labor industry; HB 10460 – seeks to protect employees from termination or layoff due to automation by AI	Pending in the House Committee on ICT. Pending with the Committee on Labor and Employment
Framework on AI in Government Transactions	HB 10845 – provides for the integration of AI in government transaction	Pending in the House Committee on ICT

Creation of a Philippine Council on AI	HB 7913 – aims to establish a human-centered AI regulatory framework and a Philippine Council on AI under the Department of Science and Technology (DOST) HB 10944 - seeks to establish regulatory framework and a Philippine AI Boar	Pending in the House Committee on IC
Penalizing Deepfake Act	HB 9425 – seeks to establish clearer parameters to determine appropriate legal consequences against deep-fake related actions and crimes.	Pending
Deepfake Accountability and Transparency Act	HB 10567 aims to regulate AI amid the proliferation of deepfakes and digitally altered images and audio or video recordings that can mispresent victims.	Pending

Source: Author's data compilation

In amending the Republic Act (RA) 11313 or Safe Spaces act, the Philippine senate reformed the law to impose harsher penalties against gender-based sexual harassment, specifically in the workplace, that uses AI applications like deepfakes, and other emerging technologies.

A patchwork of existing laws, regulatory frameworks, and guidelines below which span data privacy and security, innovation, freedom of information, and cybersecurity also exist to address the prevailing regulatory gaps in AI policy and strategy:

- a. Republic Act (RA) No. 10173 or the Data Privacy Act of 2012 – regulates the identification and processing of personal and sensitive data.
- b. RA 11293 or the Philippine Innovation Act – fosters innovation as a vital component of the national development and fosters a culture of strategic planning and innovation to provide a conducive environment for research and development (R&D).
- c. RA 11337 or the Innovative Startup Act – creates the Philippine Startup Development Program, which provides benefits and incentives for startups, including the AI sector.
- d. RA 11927 or the Philippine Digital Workforce Competitiveness Act – prioritizes digital transformation in education and seeks to institutionalize reforms in line with the Fourth Industrial Revolution (FIR or 4IR).
- e. RA 11659 or the Amendment to the Public Service Act – liberalizes key public services by allowing businesses to have full ownership in select industries including telecommunications.
- f. RA 11981 or the Tatak Pinoy Act – established the Center for Artificial Intelligence Research (CAIR) and advances the country's digital and technological developments.
- g. RA 8293 or the Intellectual Property Code of the Philippines – protects intellectual property rights (i.e., patents, trademarks, and copyrights).
- h. RA 10175 or the Cybercrime Prevention Act – protects the computer and computer systems and other online-related interactions and defines and addresses cybercrime offenses.

- i. RA 11930 or the Anti-Online Sexual Abuse or Exploitation of Children (OSAEC) and Anti-Child Sexual Abuse or Exploitation Materials (CSAEM) Act – protects children from OSAEC and CSAEM.
- j. Executive Order (EO) No. 2, series of 2016 or the Freedom of Information (FOI) – adopts a full public disclosure of government records involving public interest.
- k. National Innovation Agenda and Strategy Document (NIASD) 2023-2024 - specifies the country's vision and long-term goals for innovation and identifies a road map and the strategies for improving innovation governance; deepening and accelerating innovation efforts; and integrating and fostering public-private partnerships.⁹
- l. National Cybersecurity Plan 2023-2028 provides a roadmap for integrated development and strategic direction of the Philippines' cybersecurity.
- m. Digital Government Masterplan 2023-2028 harmonizes all ICT initiatives to maximize available ICT resources in government, and protect the integrated government ICT infrastructure.
- n. ASEAN Guide to AI Governance and Ethics – serves as a guide in the responsible design, development, and deployment of AI technologies in the region.

Data protection and privacy laws

Despite its many challenges mainly from financial and talent resource limitations, the Philippines continue to demonstrate gradual progress in cybersecurity.¹⁰ In the 2024 Global Cybersecurity Index (GCI), the Philippines climbed to 53rd place—a positive outlook from its 61st spot in 2020. This means that the country's cybersecurity score has improved from 77 points (2020) to 93.49 points (2024), moving from the Tier 3 (evolving) to Tier 2 (Advancing) status. Key drivers of the Philippines improved ranking include efforts to enhance local technical skills, international collaboration, and capacity-building.

Data Privacy Act (DPA) of 2012

Related to cybersecurity, the Philippines enacted the Data Privacy Act (DPA) of 2012 (RA 10173) to establish the National Privacy Commission (NPC) to oversee and regulate the collection, processing, and storage of personal data within the Philippines. As the appointed implementing body of DPA, the NPC is tasked to promote, protect, and enforce the fundamental rights of individuals to privacy; ensure the secure and responsible use of data and serve as an advisory board on all matters related to the protection of personal data. Given the evolving nature of the digital landscape, the NPC is mandated by the DPA under Section 7 to regularly publish guidance to support the implementation of laws on data protection. It is also expected to aid on data privacy and protection, as well as to propose amendments or legislations to Philippine laws concerning data privacy and protection.

Under the General Data Privacy Principles (Section 11), the DPA adheres to the principle of transparency. It has key sections that tackle the rights of data subjects to control their personal information under Section 16, the criteria for the lawful processing of personal information under Section 12, and the lawful processing of sensitive personal information and privileged information under section 13, including sensitive personal information pertaining to the protection of life and health.

Furthermore, under Section 20, the DPA requires several security-related provisions that outlines the responsibilities of Personal Information Controller (PIC), and Personal Information Processor (PIP) to implement security measures to protect personal information including the remediation processes in case of personal data breach.

⁹ National Economic and Development Authority. (2023). National Innovation Agenda and Strategy Document (NIASD) 2023-2032. Retrieved from <https://neda.gov.ph/niasd-2023-2032/>

¹⁰ Ronda. Philippines Star. (2024). DICT: Philippines cybersecurity rating improves. Retrieved from: DICT: Philippines cybersecurity rating improves | Philstar.com

Additionally, the DPA also emphasizes the protection of personal, family, and household affairs. Other laws relevant to DPA's enforcement include Electronic Commerce Act of 2000 that regulates electronic commerce activities and transactions and the Cybercrime Protection Act of 2012 that penalizes cyber-enabled crimes and prohibits online activities such as identity theft and cyberbullying.

The DPA emphasizes stricter requirements for government agencies processing sensitive information. Under Chapter 7, Section 22 specifies the responsibilities of the heads of government agencies as well as the requirements in accessing sensitive personal information. Furthermore, under Chapter 8, Sections 25 to 32, the DPA identifies the penalties for unauthorized processing, authorized access due to negligence, improper disposal, unauthorized processing, unauthorized access or intentional breach, and concealment of security breaches, malicious and authorized disclosure.

According to circular no. 2022-01, the NPC can impose administrative fines that shall not exceed PHP 5 million or USD 100,000 depending on whether grave infraction or major infraction is committed. Criminal penalties on the unauthorized processing of personal information and sensitive personal information can be penalized by imprisonment of one to three years, and a fine of PHP 500,000 to PHP 200,000. The criminal penalties shall be imposed against individuals who processed such personal and sensitive information without the consent of the data subject or deemed unauthorized by the DPA or other existing laws.¹¹ The NPC Advisory 2022-01 upholds specific guidelines on requests for personal data for public officers, and Circular 2022-01 for administrative fines.

Of great importance to RAM is that the NPC claims that the DPA applies to AI systems so there is no need to issue specific guidelines anytime soon.¹²

In 2022, the NPC commissioned a survey to evaluate public awareness, practices and perception of data protection and privacy issues. The results revealed that data privacy awareness and knowledge on the DPA grew from 13 percent in 2017 to 25 percent in 2021 with 41 percent satisfaction and 36 percent trust rating.¹³ The use of television and social media (Facebook, Twitter, and YouTube) were instrumental in the rise of public awareness and knowledge of the DPA. Unsurprisingly, respondents based in the National Capital Region, Luzon, Mindanao and other urban areas had the highest awareness level due to their access to the internet. NPC launched the Kabataang Digital advocacy campaign to further raise awareness on data privacy principles to promote online safety among children, as well as young adults ages 18 to 29.¹⁴

To assess the impact of DPA, qualitative research by Ching, Fabito and Celis in 2018 examined the motivations of government agencies to achieve compliance. Using the Commission on Higher Education and Commission on Elections as case studies, the study revealed four major factors that influence various government agencies capacity to successfully comply with the DPA: lack of awareness, budget, and time constraints. Deterrence and legitimacy were also identified as key causal determinants of compliance.

Cybercrime Prevent Act of 2012

Relatedly, the RA 10175 or the Cybercrime Prevention Act (CPA) of 2012 also applies to issues concerning data protection and privacy laws. In assessing CPA, the Center for Law and Democracy found various loopholes in the Cybercrime law from the perspective of international guarantees of freedom of expression. First, the restrictions in the Cybercrime Prevention Act lacks consistency with the International Covenant on Civil and Political Rights (ICCPR), and should be justifiable under the

11 National Privacy Commission. (2022). Guidelines on Administrative Fines. Retrieved from: Microsoft Word - Guidelines on Administrative Fines_FINAL VERSION.docx

12 Philippines data-privacy law applies to AI, explains regulator, but no specific guidance expected soon. Retrieved from <https://mlex-marketinsight.com/news/insight/philippine-data-privacy-law-applies-to-ai-explains-regulator-but-no-specific-guidance-expected-soon>

13 (NPC survey: PH now with heightened data privacy awareness & knowledge, driven by social media and TV - National Privacy Commission)

14 Ibid.

three-part test: (i) the law must meet certain metrics or standards of clarity and accessibility (ii) the restriction must be connected to the objective it seeks to promote and should not be arbitrary or unfair; (ii) the restrictions effect or impact must be as little as possible and; (iii) restrictions must be proportionate to its legitimate aim.¹⁵

The research concludes that the Philippine government must review the CPA to ensure that its provisions do not contravene its international human rights obligations. Instead of asserting broad jurisdictions, the CPA should only be limited to cases where the offending conduct or the substantial harm is committed in the Philippines.¹⁶ Another major contention with the law is the extensive surveillance measures that may impact privacy and freedom of expression under Section 13. Experts noted the mandatory, generalized data retention rules that can impinge on the anonymity of online users can have a chilling effect on the freedom of speech.

Similarly, according to the Foundation of Media Alternatives and Privacy International, the Supreme Court has recognized the 15 consolidated petitions seeking to declare several provisions of the CPA as null and unconstitutional because it provides law enforcement agencies too much sweeping power and lacks restraints. Despite its nullification, the law still allows interception of communications and disclosure of computer data. There is also no provision for the requirements for the issuance of a court warrant by law enforcement authorities.¹⁷

Data sharing and accessibility

With an overall score of 69, the Philippines ranks 36th out of 195 countries in the Open Data Inventory in 2020. The overall score is based on the combination of data coverage sub score 58 and data openness sub score 78. Data coverage is based on the availability of national and subnational data while data openness refers to the format and licensing of datasets, comprehensiveness of metadata and available download options.

The Philippines is a signatory to the international Open Data Charter. Frameworks governing the conditions of data sharing in the country are stipulated in the NPC Circular No. 2020-03. The circular classifies personal data under the control of the PIC who shares, discloses or transfers to another PIC, and excludes arrangements between a PIC and PIP. NPC Circular 16-02 is only limited to data sharing among government agencies, while NPC Circular 2022-01 upholds specific guidelines on requests for personal data of public officers.

Section 8 and 9 of NPC Circular 2020-03 contain terms and conditions of data sharing agreement (DSA), including purpose parties, terms and operational details, and obligations to protect personal data. DSA involving public and private sectors shall be considered under FOI guidelines as stipulated in EO No. 2, series of 2016 and the DPA 2012. If deemed detrimental to national security, public interest or public policy, the DSA can be terminated under Section 16.

Examining the scope and limitations of cross-border data protection policies in the Philippines, Serzo asserts that under the DPA, data can be processed and transferred if there are lawful criteria like consent.¹⁸ DPA also has extraterritorial applications in cases where the processing of personal information involves a Filipino citizen or resident and/or the processing entity has links to the Philippines in the form of branch, agency, office or subsidiary. The Implementing Rules and Regulations permit data sharing in the private sector if the subject gives his or her consent to data sharing. The DPA does not have specific rules on data localization and does not prohibit the transfer of personal information to foreign jurisdictions.¹⁹ In addition to DPA, there are sector-specific regulations for personal data such as government and the financial sector.

15 Philippines : Analysis of the Cybercrime Prevention Act of 2012. Retrieved from (<https://cyrilla.org/entity/dtqnw8ojzk?-file=15688959233145x5b2ko0g7e.pdf&page=5>), p.5

16 Philippines : Analysis of the Cybercrime Prevention Act of 2012. Retrieved from <https://cyrilla.org/entity/dtqnw8ojzk?-file=15688959233145x5b2ko0g7e.pdf&page=13>, p.12

17 State of Privacy Philippines. Retrieved from <https://www.privacyinternational.org/state-privacy/1009/state-privacy-philippines#com-mssurveillance>

18 Serzo, A. L. O. (2020). Cross-border data regulation for digital platforms: Data privacy and security (Discussion Paper Series No. 2020-47). Philippine Institute for Development Studies. <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps2047.pdf>

19 Serzo, A. L. O. (2020). Cross-border data regulation for digital platforms: Data privacy and security (Discussion Paper Series No. 2020-47). Philippine Institute for Development Studies. <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps2047.pdf>

Serzo also claims that the DPA provides greater privacy protection because it does not provide exemptions based on organizational structure, size or income. This will prevent entities to circumvent the law to escape coverage and accountability. However, compliance with the DPA can lead to digital platform publishing privacy policies and consent forms that are lengthy and legalese. This can lead to surveillance policies masquerading in the form of privacy regimes. Serzo cautioned regulators to ensure that the legislation and regulation do not have a chilling effect on innovation and has suggested “light touch” regulatory approaches on specific types of technology that process data in addition to the existing general data protection legislation. Another recommendation is leveraging regulatory sandboxes to support AI use-cases to avoid preempting their progress and developments.

The Revised Cloud first Policy of the Philippines under DICT Department Circular No. 010, 2020 clarifies the notion of sovereignty where Philippines laws have primacy over foreign laws when it comes to data managed by entities connected to the Philippines. The said policy introduces a framework for data classification that ensures that data is handled safely, when it is accessed, stored, processed, or moved around in cloud services. Additionally, the Revised Cloud-First Policy does not impose residency restrictions on government data, provided that appropriate controls and security are enforced.

While there is no single law that specifically caters to government data or open data, parallel policies and initiatives exist. The EO No. 2, series of 2016 or the Freedom of Information (FOI) Bill promotes transparency in the Philippine government’s executive branch, state universities, and government-controlled corporations. It allows Filipinos gain access to information, official records, public records, government research data as basis for public development. The Presidential Communications Operation Office supervises the implementation and operationalization of the FOI in the country. Conversely, as mentioned the DPA provides protection of personal data, while ensuring mitigation measures towards data breach or misuse.

The Open Data Philippines is an online repository of “open” datasets from various Philippine government agencies that seeks to improve accessibility, searchability and comprehension of government data that the public can freely use, reuse, and redistribute subject to proper attribution and sharing.

As of October 2024, the online portal has 2,586 resources, and 175 datasets from 17 organizations that are in machine-readable format. Other open data portals include the (1) the Banko Sentral ng Pilipinas Online Statistical Database that provides data series on key economic and financial indicators; (2) Philippine Government Electronic Procurement System (PhilGEPS), a centralized online procurement system and serves a platform to conduct public bidding and procurement processes and; (3) Philippine Statistics Authority (PSA) OpenSTAT website that shares the PSA’s datasets on various statistics like demographic, social, environment, and multi-domain. The OpenSTAT website can be utilized under open data license without any restrictions other than source attribution. The Philippines Extractive Industries Transparency Initiative (PH EITI) publishes data regarding the production, contribution to the economy, job allocation, and among others related to the extractive sector.

With the proliferation of such initiatives, several scholars have analyzed the current state of open government data in the Philippines. Alampay assessed the accessibility and usage of health information during the COVID-19 pandemic, and found that the government has fragmented information systems that delays collation of health and other related data.²⁰ While Pacis emphasized the lack of digital literacy leading to citizens inability to access data and comprehend its importance and application.²¹ Relatedly, Cruz and Lee highlighted the diverging interpretations among Philippine government bodies and the public in using open access data and proposed a two-way open governance model that reinforces the active role of user-stakeholders to effectively share and maximize the utilization of open data.²²

20 Alampay, E.A., Zules, D., & Asuncion, X. (2020). Open Government Data Governance in the Time of the Pandemic. Retrieved from <https://ncpag.upd.edu.ph/wp-content/uploads/open-data-policy-paper-13May-2020.pdf>

21 Pacis, J. (2017). Open Data in the Philippines: An Issue of Access and Awareness. Retrieved from <https://projects.itforchange.net/mavc/wp-content/uploads/2017/06/Research-Brief-Philippines.pdf>

22 Cruz, R. A. B., & Lee, H. J. (2019). Open governance and duality of technology: The open data designer-user disconnect in the Philippines. *eJournal of eDemocracy and Open Government*, 11(2), 94-118. <https://doi.org/10.29379/jedem.v11i2.545>

Procurement laws and policies

Recognizing the need to modernize its procurement process, the Philippines enacted the Republic Act. No. 12009 known as the New Government Procurement Act (NGPA) on July 20, 2024.²³ Overall, NGPA aims to address current government procurement loopholes, expedited the bidding process, improve service delivery, and remedy opportunities for corruption.²⁴

For the longest time, the Philippines RA 9184 or the Government Procurement Reform act and its amendments cover the procurement of goods and services of the Philippine government. The law requires the conduct of competitive bidding and upholding the principles of transparency and accountability in procurement. The RA 12009 or The Government Procurement Act supports the RA 9184, emphasizing the need to (1) achieving value for money, (2) strengthening procurement planning of procuring entities with mandatory market scoping, (3) modernizing procurement processes using emerging technologies, and (4) institutionalizing sustainable public procurement principles with environmental, social, and economic considerations and (5) enhancing transparency and greater accountability with open government. In the same vein, the Medium-Term Information and Communications Technology Harmonization Initiative (MITHI) aims to ensure systematic process for government wide ICT projects convened by the Department of Budget and Management, NEDA, and the DICT.

Existing procurement policies have yielded mixed results. Major concerns include cost-efficiency and transparency, low quality products, and services turnover and the alarming bid failure rate that impacts the country's R&D.²⁵ There is an underutilization of RA 9184, particularly, Section 53.6 or the "Scientific, Scholarly or Artistic Work, Exclusive Technology, and Media Services," under the alternative methods of procurement²⁶. Some noted that the language of the policy was unclear, lacking specifications on R&D activities, while others pointed out the lack of procurement capacity among project staff to facilitate procurement activities.²⁷ In addition, institutional procurement policies are also lengthy characterized by tedious paper works, and thus hinder effective and efficient conduct of R&D. Some state universities and colleges are faced with the difficulty of limited number of qualified or eligible local suppliers.

Echoing similar concerns, DOST has contended with the issue of very few bidders due to the highly technical and specialized bidding and science-related procurement process. Equally concerning is that the procurement process has contributed to the underspending and delay of implementing projects.²⁸ To address such challenges, key recommendations include the allocation of political and financial resources to change the organizational culture, greater planning and preparatory activities prior to the actual procurement, and embracing an innovation and value-for-money procurement mindset.

Under the NGPA, government agencies will no longer just seek lowest bidders as the major determinant in awarding contracts due to subpar performance of selected suppliers.²⁹ Furthermore, the NGPA also emphasizes direct procurement for science, technology, and innovation which will aims to address the above discussion that derails R&D performance of DOST, research institutions, and other related public sector entities.³⁰

23 New Government Procurement Act or Republic Act No. 12009. Retrieved from <https://www.gppb.gov.ph/new-government-procurement-act-or-republic-act-no-12009/>

24 Ibid

25 Querijero, et al. (2024). Procurement practices in the Philippines and the implications to public research and development. United Nations. https://sdgs.un.org/sites/default/files/2024-05/Querijero%2C%20et%20al._Procurement%20Practices%20and%20Policies%20in%20the%20Philippines%20and%20the%20Implications%20to%20Public%20Research%20and%20Development.pdf

26 Ibid.

27 Ibid.

28 Adoracon M. Navarro and Juan Alfonso O. Tanghal, (2017). The Promises and Pains in Procurement Reforms in the Philippines, Philippine Institute of Development Studies, Discussion paper series No. 2017-16, <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pids-dps1716.pdf>.

29 New Government Procurement Act or Republic Act No. 12009. Retrieved from <https://www.gppb.gov.ph/new-government-procurement-act-or-republic-act-no-12009/>

30 Ibid.

Freedom of information acts/access to knowledge acts

To increase government transparency, the Philippines passed EO No. 2, series of 2016 or the Freedom of Information (FOI) to govern the disclosure of public records, contracts, transactions, and other information that are held by government offices in the Executive branch. To file a request for information, the public can use the e-FOI portal however restrictions apply for matters that may have national security implications as well as other information that are classified. Consent under the FOI is governed by the DPA of 2012, especially when requesting for sensitive personal information. Depending on the information available, the public may inquire about the procurement, development, and utilization of AI systems.

Building on the previous analyses, several reports show that the FOI face serious implementation challenges like the high rejection rates of FOI requests,³¹ overdue responses from government agencies, and unsatisfactory results for the said requests. However, it was also found that the denial of requests from government agencies boil down simply to the lack or absence of the information inquired and at times, government agencies consider some requests as invalid under FOI. There are also gaps in the differing approaches of government agencies in processing requests. Overcoming such hurdles would require the Philippine government to consider the unique practices of various government agencies, redesign the existing portal to include additional categories for search and appeals, and include a feedback system to improve user satisfaction.³²

Due Process and Accountability

The 1987 Philippine Constitution Article III (Bill of Rights) Section 1 stipulates that “No person shall be deprived of life, liberty, and property without due process of law, nor shall any person be denied the equal protection of the laws.” While the Bill of Rights acknowledges due process, there remains no legal definition for extrajudicial killings.³³ The Philippines is also committed to the Convention on the Rights of the Child, International Covenant on Economic, Social, and Cultural Rights. The Philippines membership to such covenants mandates the submission of reports on the implementation of the initiatives included in the covenants.

The Philippines continue to contend with serious human rights issues. Notable human rights violations include extrajudicial killings, enforced disappearance, torture, degrading treatment, punishment of and on behalf of the government, and physical abuses linked to non-state actors, life threatening prison conditions, arbitrary detention, kidnapping as well as reports on insurgencies and terrorism.³⁴ The resumption of the International Criminal Court’s investigations on unlawful killings connected to the Duterte administration’s “War on Drugs” did offer some hope to the families of the victims. However, achieving accountability for the serious human rights violations committed remained highly elusive.³⁵ Similarly, government critics also faced intimidation through spurious charges, while human rights and humanitarian organizations continue to be the targets of malicious and life-threatening red tagging.³⁶

The grave concerns of human rights violations in the Philippines extend from the offline to the online space. The 2023 Freedom of the Net report found that the Duterte and Marcos administrations have imposed control mechanisms that continue to limit online spaces. The report showed that the Philippines garnered a score index of 61 out of 100, putting it in the category of “partly free” as far as internet freedom is concerned. Key contributing factors to the Philippines declining internet freedom include the Duterte administration’s decision to block 27 websites, including news sites. Another factor was the explosion of disinformation during the election. An emerging concern is the impending sim card registration law enacted by President Marcos Jr. that some civil society consider a major risk to people’s privacy.

31 Perez, P. J. (2020). Why are Freedom of Information Requests in the Philippines Being Denied? An Analysis using a Practice-based Approach. *Philippine Journal of Librarianship and Information Studies*, 40(2), 3–36. Retrieved from <https://phjlis.org/index.php/phjlis/article/view/41>

32 Ibid.

33 Atienza, M.L. et. al. (2020). Constitutional Performance Assessment of the 1987 Philippine Constitution: Summary of Findings. Idea International and University of the Philippines – Center for Integrative and Development Studies. Retrieved from <https://doi.org/10.31752/idea.2020.2>

34 Philippines 2023 Human Rights Report. Retrieved from https://www.state.gov/wp-content/uploads/2024/02/528267_PHILIP-PINES-2023-HUMAN-RIGHTS-REPORT.pdf

35 Asia and the Pacific Regional Overview. Retrieved from <https://www.amnesty.org/en/location/asia-and-the-pacific/report-asia-and-the-pacific>

36 Ibid.

The procurement of AI-enabled facial recognition systems and technologies³⁷ poses serious questions regarding mass surveillance and its possible impingement on human rights. Conversely, the explosion of frontier models like ChatGPT that can generate malicious content such as deepfakes can further exacerbate the reach and impact of disinformation and misinformation campaigns. This may further erode the Philippines' internet freedom and consequently harm Filipino citizen's data privacy and security.

While there remains no specific law or framework that specifically addresses or remedies the potential harms and risks of AI, the Philippines rely on the following instruments to tackle nefarious AI use case applications like disinformation, misinformation, cybersecurity attacks caused by adversarial AI:

- RA 10175 or the Cybercrime Prevention Act protects the computer and computer systems and other online-related interactions and defines and addresses cybercrime offenses.
- RA 10173 or the DPA of 2012 protects sensitive and personal data from unauthorized access, use, disclosure, alteration, destruction or damage, data breaches, among others.
- RA 8792 or the Electronic Commerce Act of 2000 regulates electronic commerce activities which has implications on data privacy and security, and may be applied on cases of online fraud, scams, and other harmful activities.
- The draft Joint Memorandum between DICT-Civil Service Commission (CSC) provides principles and guidelines for an ethical and responsible use of AI in the government.

Also, as discussed above, there are impending laws in the Philippine congress to address the risks and harms of AI like House Bill (HB) Nos. 7396, 10385, HB 10751, HB 1177, HB 9448, HB 10460, HB 10845, HB 7913, and HB 10944.

Online safety and integrity of speech

Addressing the mounting challenges of dis/misinformation, the Commission on Elections introduced rules governing the use of social media, AI, and other internet technologies last September 26, 2024. The said regulations will impact political candidates, parties, and third-party entities such as internet technology platforms especially social media companies that host political content. Digital campaigns that use AI technology must include disclosures or disclaimers to ensure authenticity of content and/or avoid misuse of AI-manipulated election related content.³⁸ Noncompliance will result to fines, takedown requests, and criminal charges.³⁹ The introduction of the regulations comes ahead of the 2025 national and local elections and the upcoming Bangsamoro of Muslim Mindanao parliamentary elections.

Similarly, RA 10175 or the Cybercrime Prevention Act of 2012 also provides guidelines on (a) computer-related offenses such as, computer-related forgery, fraud, identity theft. It also outlines the responsibilities of service providers: Section 12 deals with the real-time collection of traffic data where third party service providers assist law enforcement authorities in the collection or recording of the stated information; Section 13 on the preservation of computer data ensures the integrity of traffic data that mandates the service provider to preserve the data for a minimum period of six months from the data of transaction. Content data shall be preserved for six months upon the request of the law enforcement authorities. Lastly, Section 14 permits the disclosure of computer data, subject to court warrant, where the service provider can disclose or submit subscriber's information, traffic or relevant data in its possession or control within 72 hours for the purpose of investigation.

Other related laws that govern online content concerning children include the RA 11930 or the Anti-Online Sexual Abuse or Exploitation of Children (OSAEC) and Anti-Child Sexual Abuse or Exploitation Materials (CSAEM) Act.

37 Philippines unveils new CCTV system command center, plans facial recognition procurement. Retrieved from <https://www.biometricupdate.com/202307/philippines-unveils-new-cctv-system-command-center-plans-facial-recognition-procurement>

38 Baker McKenzie. (2024, October 22). Philippines: AI and social media guidelines for the 2025 elections issued by the COMELEC. Insight-Plus. Retrieved from <https://insightplus.bakermckenzie.com/bm/data-technology/philippines-ai-and-social-media-guidelines-for-the-2025-elections-issued-by-the-comelec>

39 Ibid.

Public Sector Capacity

Given the rapid diffusion of AI systems, capacity-building has become an urgent priority for the Philippine government. The Philippine Civil Service Commission (CSC) has been conducting training programs on digital technologies for civil servants. Upskilling and reskilling are integral to Human Resource Development plans of each agency. In April 2024, DICT partnered with the CSC to draft a Joint Memorandum Circular on the Principles and Guidelines for an Ethical and Trustworthy AI in the Government. During the consultation, DICT discussed the rollout of the Philippine e-Gov Super App, and the National Fiber Backbone Phase 1. Meanwhile, CSC emphasized the importance of ethical standards for AI implementation. Together, DICT and CSC agreed that ethical and trustworthy AI guidelines must be adopted for AI policy development in the public sector.

To foster digital inclusion, the DICT launched the Universal Internet Subscription for Geographically Isolated and Disadvantaged Areas (UISGIDA) to provide technological infrastructure in Eastern Visayas.⁴⁰ Through the establishment of 183 free Wi-Fi sites, the project aims to provide students and teachers with online educational resources and research materials. Likewise, the DICT has also launched 129 Technology for Education, Employment, Entrepreneurs and Economic Development (Tech4ED) centers that will serve as digital hubs for literacy and skills development.⁴¹

Given the seismic challenge of digital reskilling, several public-private partnership initiatives have begun to address the widening skill's gap. In 2023, the Technical Education and Skills Development Authority (TESDA) had launched a partnership with Microsoft Philippines to provide access and resources among technical and vocational educational learners to gain technical certifications in cybersecurity, AI, data, and digital literacy.⁴²

40 DICT Initiatives Bridging the Digital Gap in the Philippines. Retrieved from <https://opengovasia.com/2024/04/20/dict-initiatives-bridging-the-digital-gap-in-the-philippines/>

41 Ibid.

42 TESDA launches digital skilling program for over 1.2 million tech-voc learners in partnership with Microsoft. Retrieved from <https://news.microsoft.com/en-ph/2023/09/07/tesda-launches-digital-skilling-program-for-over-1-2-million-tech-voc-learners-in-partnership-with-microsoft/> <https://news.microsoft.com/en-ph/2023/09/07/tesda-launches-digital-skilling-program-for-over-1-2-million-tech-voc-learners-in-partnership-with-microsoft/>

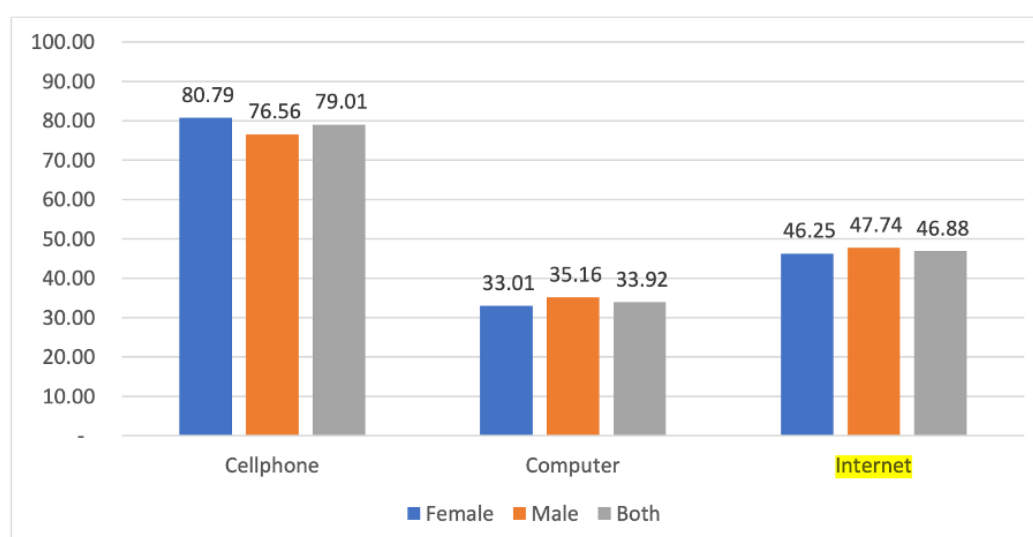
SOCIAL AND CULTURAL DIMENSION

Diversity, inclusion, and equality

According to University of Oxford's Digital Gender Gaps, the Philippines' ratio of female-to-male internet use (Internet GG-Combined) is 1. The estimated figure is based on the Facebook Gender Gap Index (GGI) and offline indicators (e.g., Human Development Index or HDI).⁴³ The study claims that there is equal internet use among females and males. Furthermore, the ratio of female-to-male mobile phone use using the Facebook GGI and offline indicators is at 0.974⁴⁴ where 9 of 10 people who use their mobile phones are female.

The Philippines conducted its National ICT Household Survey (NICTHS) in 2019, which is the first nationwide baseline survey in the country. Results of the 2019 NICTHS showed that among the population aged 10 and above, internet usage is at 47 percent. By a slight margin, there are more males (48 percent) who use the internet than females (46 percent).⁴⁵ In the same survey, it was found that females and males mainly use the internet for communication/social activities, information access, leisure/lifestyle, learning, and access to government website/services.⁴⁶ The Phase 2 of the NICTHS is currently ongoing.

Figure 1 ICT usage rate, by sex (%)



Source: NICTHS

According to ITU World Telecommunications Indicator database, 43 percent of all individuals use the internet, regardless of sex and urbanity (urban/rural)⁴⁷. In the Philippines, approximately, 41 percent of STEM graduates are women.⁴⁸ A LinkedIn Report found that 36.3 percent of STEM workers in the Philippines are women.⁴⁹ Around 36.6 percent of women in STEM in the 2017 cohort remained in STEM between their graduation and a year after that.⁵⁰ For the 2021 graduation cohort, has a drop-off of 5.6 percentage points.⁵¹

43 University of Oxford. (n.d.) Digital Gender Gaps. Retrieved from <https://www.digitalgendergaps.org/>

44 Ibid.

45 Tabuga, A.D. & Cabaero, C.C. (2021). Filipinos' Access and Exposure to ICT: A General Overview based on the National ICT Household Survey. PIDS Discussion Paper Series No. 2021-13. <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps2113.pdf>

46 Ibid..

47 Gender ICT Statistic. Retrieved from <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>

48 Fung, I. (2024, February 16). Navigating the Gender Wage Gap in Today's Modern World. Asian Development Bank Southeast Asia Development Solutions. Retrieved from <https://seads.adb.org/solutions/navigating-gender-wage-gap-todays-modern-world#:~:text=Significant%20disparities&text=dominated%20by%20men.,In%20the%20Philippines%2C%20just%2041%25%20of%20STEM%20graduates%20are%20women,compared%20to%2035%25%20of%20boys.>

49 Baird, M., et al. (2023). International gender representation in STEM employment and skills. Retrieved from <https://economicgraph.linkedin.com/content/dam/me/economicgraph/en-us/PDF/international-gender-representation-in-stem.pdf>

50 Ibid.

51 Ibid.

A study by UNILAB Foundation (2021) found that males are more likely to study STEM in the university than females.⁵² Male students tend to take courses in the engineering, IT, and computer science.

Based on the results of Programme for International Student Assessment (PISA)⁵³ 2022, the Filipino learners' mean score in science performance is the one of the lowest (ranks 78 out of 80 PISA-participating countries) with a 356 PISA Score.⁵⁴ The Filipino boys' performance in science (rank 79/80, 349 PISA score) is lower than that of Filipino girls' (rank 77/80, 363 PISA score).⁵⁵

The Philippines ranked 53rd globally (54th in 2021) and 14th among the 22 countries in Asia in the Inclusive Internet Index⁵⁶ 2022.⁵⁷ Although, the country improved in the Relevance⁵⁸ category from ranking 54th in 2021 to 32nd in 2022, affordability of internet worsened (ranked 54th in 2021 and 58th in 2022) due to increasing postpaid tariffs and fixed-line broadband cost. The Index also noted that gender gap in internet and mobile phone accessed widened.

Inclusive Internet Index: Philippines, 2021 and 2022

Category	Rank in 2021	Rank in 2022
Availability	48th	49th
Affordability	54th	58th
Relevance	54th	32nd
Readiness	67th	70th

Source: Economic Impact

The Philippine Development Plan (PDP) 2023-2028 has identified key strategies to mitigate digital divide, namely:

- improve competencies of teachers (Chapter 2.1: Improve education and lifelong learning).
- effectively implement online and blended learning modalities (Chapter 2.1).
- increase investments in TVET, human resources, higher education, digitalization initiatives, and innovation facilities (Chapter 4: Increase Income-earning Ability).
- pursue entrepreneurship leveraging technology-based models (Chapter 6: Revitalize Industry).
- increase access of MSME management to training that enhance their digital and entrepreneurship competencies (Chapter 7 Reinvent Services).

The PDP 2023-2028 also includes digitalization, enhanced connectivity, and partnership with the private sector as three of its transformation agenda. It also seeks to improve data systems for the government and better linkage to employment opportunities, among others. The government will further explore partnership with other stakeholders to address cross-cutting issues such as the digital divide.

52 UNILAB Foundation, et al. (2021). Perceptions of Filipino Youth Around STEM and the Need to Understand It. Retrieved from <https://pbcwe.com.ph/wp-content/uploads/2021/06/12022020-Youth-in-STEM.pdf>

53 Programme for International Student Assessment (PISA)

54 OECD. (n.d.). Philippines: Student Performance (PISA 2022). Retrieved from <https://gpseducation.oecd.org/CountryProfile?primary-Country=PHL&treshold=5&topic=PI>

55 Ibid.

56 Inclusive Internet Index is commissioned by Meta and conducted by Economist Impact. It looks into national-level internet inclusion across four categories, namely: Availability, Affordability, Relevance and Readiness.

57 Economist Impact. (2022 & 2021). Inclusive Internet Index. Retrieved from <https://impact.economist.com/projects/inclusive-internet-index/2022>

58 The Relevance category explores the existence and extent of local language content and relevant content.

In January 2024, the Department of Education (DepEd) also launched the Digital Education (DigiED) to facilitate access to digital infrastructure and equipment for teaching and learning.⁵⁹ A subject on media and information literacy is taught in senior high school, as well as its counterpart namely, the specialized learning strand on digital literacy in the Alternative Learning System (ALS) K to 12. Lessons on digital citizenship is also included in 2019 in the K to 12 curriculums.⁶⁰ The Commission on Higher Education (CHED) also has the Higher Education Digital Integration. To push digitalization in higher education, CHED and DICT signed a memorandum of understanding to integrate technological solutions in higher education institutions (HEIs) through the e-governance system.

TESDA also offers online and offline programs in its TESDA Women's Center (TWC), which trains women on ICT literacy and entrepreneurship. Since 2012, it has been providing technical education through eTESDA or the TESDA Online Program. Its massive open online courses or MOOCs are offered free to the public and may be accessed through its website and mobile application.⁶¹

DICT also implements the Rural Impact Sourcing Technical Training that "promotes ICT-enabled jobs in the countryside as well as develops the online freelancing industry and home-based outsourcing."⁶² Additionally, the Digital Innovation for Women Advancement (DIWA) was implemented in 2022 to increase the involvement of Filipino women in ICT through scholarships and mentorship, skills training in basic computer, programming, cybersecurity and digital communications.⁶³

Connected Women provide job matching platform, and Women Who Code also supports women who aim to excel in technology. While the United States Agency for International Development (USAID) implements the Better Access and Connectivity (BEACON) project that seeks to improve Philippines' ICT and logistics infrastructure and help close the digital divide.⁶⁴

The following laws has been enacted to facilitate the growth of STEM in the Philippines: (a) RA 2067 or the Science Act of 1958; (b) RA 7687 or the Science and Technology (S&T) Scholarship Act of 1994; (c) RA 10612 or the Fast-Track S&T Scholarship Act of 2013; and (d) RA 8439 or the Magna Carta for Scientists, Engineers, Researchers, and other S&T Personnel in the Government of 1997.

Of particular importance are the RA 7687 and RA 10612 which are implemented through DOST-Science Education Institute (DOST-SEI) that provides scholarships for high-performing students to undertake AI-related courses in data science, engineering, and computer science. DOST is also promoting STEM in secondary education through the Philippine Science High School System.

In addressing the digital socio-economic gap, including the rural-urban gap, the DICT implements the following programs to address the digital divide:

- **Technology for Education – Digital Transformation Centers (Tech4Ed-DTC)** program provides access for communities and individuals to bridge the digital and education divide. This program establishes community e-centers in areas with minimal to no access to information and government services.

59 Philippine Commission on Women (PCW). (2024). Progress Report on the Philippines' Implementation of the Beijing Declaration and Platform for Action (BPfA) from 2019 to 2024. Retrieved from https://www.unwomen.org/sites/default/files/2024-09/b30_report_philippines_en.pdf

60 Foundation for Media Alternatives (FMA). (2022). Filipino Women's Digital Agenda. Retrieved from <https://fma.ph/wp-content/uploads/2022/01/A5-Filipino-Womens-Digital-Rights-A-Policy-Overview-FINAL-Copypdf-1.pdf>

61 Ibid.

62 UN ESCAP (2019). Women ICT Frontier Initiative (WIFI) in the Philippines. Retrieved from: <https://hdl.handle.net/20.500.12870/5331> .

63 PCW (2024) op cit.

64 USAID. (2022, July 19). USAID Leads Dialogue on Improving Women's Digital Inclusion in the Philippines [Press release]. <https://www.usaid.gov/philippines/press-releases/jul-19-2022-usaid-leads-dialogue-improving-womens-digital-inclusion-philippines>

- **National Broadband Plan (NBP)** stipulates the necessary policy, regulatory, and infrastructure interventions to deliver universal, fast, reliable, affordable broadband internet services to the country. The NBP lays the foundation for the National Governmental Portal (NGP) and the Free Wifi in Public Places, among others.⁶⁵
- **National Competency Standard for e-Center Knowledge Workers (NCS-KW)** guides in the development of training activities that seeks to strengthen and improve the capacity of e-Center knowledge workers. The NCS-KW is also mapped with the ASEAN ICT Skills Standards format and definition.
- **Free Internet Wifi connectivity** covers the subscription of broadband connectivity for public use in selected public spaces.

DTI has partnered with Converge ICT Solutions and Amazon Web Services to boost digital connectivity to remote Filipino enterprises and upskill and reskill Filipino innovators and entrepreneurs in adopting digital technologies. The E-commerce Philippines 2024-2028 Roadmap is currently underway and will introduce inclusiveness and innovation.

The private sector and several civil society organizations (CSOs) provide programs that enhance diversity in STEM (i.e., inclusion of girls and women in STEM): UNILAB Foundation through STEM+PH, its flagship program has launched the *Pinays can STEM* to support young girls and women with opportunities to inspire other women choose an education and career path in STEM. For The Women Foundation has been providing scholarships to women in STEM since 2018. Annually, they provide two batches of 30 scholarships for underprivileged women and girls to be trained under their 14week training on data visualization and modeling.

The Government Procurement Policy Board (GPPB) Resolution No. 01-2023 “adopts strategies to promote gender-responsive procurement policies in the Philippines.” The document supports women-owned and women-led businesses to enhance competition and inclusivity in the public procurement process. Furthermore, RA 12009 or the New Government Procurement Act (RA 12009) mandates the procuring entities to prioritize inclusivity across all procurement activities, focusing on gender equity, ethnic diversity, poverty alleviation, and adherence to labor standards.⁶⁶

The Philippines has a score of 0 in the language and data governance under the Global Data Barometer.⁶⁷ Most of the AI applications in the country use English and foreign language. CAIR has emphasized that the Philippines still has more opportunities to be more data-driven, particularly on AI and culture. CAIR reiterated that AI language models are usually trained using English and Western data, and ASEAN is underrepresented in such endeavor. In response, CAIR has established partnership with AI Singapore to develop language models that reflects the diverse languages and cultures in Southeast Asia.

There is no data available regarding the use of indigenous languages to train AI systems. CAIR notes that more concerted efforts are required to collect more high-quality source on Filipino languages. Aside from this, there is also a need to gather more data on languages and arts, e.g., dances. CAIR also raised the need to look beyond the implementation of AI not only in Luzon, but also in Visayas and Mindanao.

65 DICT. (2017). National Broadband Plan. <https://dict.gov.ph/wp-content/uploads/2017/09/2017.08.09-National-Broadband-Plan.pdf>

66 GPPB. (n.d.). Empowering Inclusive Growth through Gender-Responsive Procurement under RA 12009. <https://www.gppb.gov.ph/empowering-inclusive-growth-through-gender-responsive-procurement-under-ra-12009/>

67 Global Data Barometer. <https://globaldatabarometer.org/country/philippines/>

Public engagement and trust

Trust on AI use applications and technical in general in the Philippines is quite mixed. It was found that only 25 percent of industry leaders are confident that they can address the risks associated with AI tool adoption, while only 47 percent of organizations are actively engaged in ensuring their employees are AI ready.⁶⁸ The most significant concerns stem from the lack of confidence in the outcomes of AI tool usage (36 percent), intellectual property concerns (35 percent), misuse of client or customer data (34 percent), regulatory compliance (33 percent), and the lack of AI's explainability and transparency (31 percent).⁶⁹ There is also a major issue that AI tools could increase economic inequality (51 percent).⁷⁰ Deloitte Philippines found that two-thirds or 62 percent of the business and tech leaders are excited about Generative AI while 30 percent has expressed uncertainty.⁷¹

The Philippines' Online Service Index is at 0.8054 in 2024, which is an improvement from its 0.6303 in 2022.⁷² In the 2024 E-Government Development Index, the Philippines ranks 73rd globally and has a score of 0.7621— a figure lower than leading countries like Denmark (0.9847) and Singapore (0.9691). Despite this, the Philippines latest ranking is a positive improvement to the country's standing in 2022 at 89, with an index/value of 0.65230. Meanwhile, the Philippines has improved its E-participation index from 0.4886 in 2022 to 0.7260 in 2024. The country moved from rank 80th globally in 2022 to 49th in 2024. The sub-region leader is Singapore at 0.9589.⁷³

Under the Readiness category of the Inclusive Internet Index 2022, the Philippines ranked 67th. Such category "examines the capacity to access the Internet, including skills, cultural acceptance, and supporting policy." Under the sub-category Trust & Safety, the country was at 27th in 2022—a meager improvement from its previous rank of 55th in 2021. Trust in Government websites and apps jumped from 66th (2021) to 12th (2022).⁷⁴⁷⁵

Environmental and sustainability policies

While the Philippines uses AI in dealing with natural hazards and disasters, the country has yet to draft a specific policy on addressing the impact on AI on the environment and sustainability.

Health and social well-being

The Department of Health is implementing the Philippines' eHealth or the National eHealth Program (NeHP), in line with the country's mandate to support the Universal Health Care Act that builds on the early achievements and lessons learned from the Philippine eHealth Strategic Framework and Plan (PEHSFP) 2013-2017. The Philippine eHealth Strategic Plan (PeHSP) 2014-2020 specifies "the key policies and strategies to harmonize, align, interoperate and implement the various eHealth initiatives, programs and projects for the NeHP to ensure proper and efficient use of information and communications technologies to support and facilitate the achievement of Universal Health Care."⁷⁶

While RA 11223 or the Universal Health Care Act, mandates the institutionalization of health technology assessment (HTA) as a fair and transparent priority setting mechanism for the development of policies and programs, regulation, and the determination of a range of entitlements such as drugs, medicines, pharmaceutical products, other devices, procedures and services. Among the existing digital health policies and frameworks, there is no mention of AI technologies.

68 The State of Artificial Intelligence in the Philippines. Retrieved from <https://www.yondu.com/articles/the-state-of-artificial-intelligence-in-the-philippines>

69 Ibid.

70 Ibid.

71 <https://www2.deloitte.com/ph/en/pages/technology-media-and-telecommunications/articles/now-decides-next.html>

72 E Government Development Index. Philippines. Retrieved from <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/134-Philippines>

73 Ibid.

74 Economist Impact. Inclusive Internet Index 2022. Retrieved from <https://impact.economist.com/projects/inclusive-internet-index/2022/country/Philippines>

75 Economist Impact. Inclusive Internet Index 2021. Retrieved from <https://impact.economist.com/projects/inclusive-internet-index/2021/country/Philippines>

76 DOH. PEHSP Overview. Retrieved from <https://ehealth.doh.gov.ph/index.php/pehsp/overview>

Culture

RA 10066 or the National Cultural Heritage Act of 2009 provides a comprehensive framework on the protection, conservation, and promotion of the Philippines' cultural heritage. However, there is no mention on the use of AI on the preservation of cultural heritage.

To date, there is no official study that examines Filipino's general attitudes toward AI. The National Commission for Culture and the Arts (NCCA) raised that digitalization is recognized within the organization, but there is no specialized unit to address AI concerns. Although there are initial interests on AI's possible use for culture and the arts, no efforts and initiatives are actively undertaken in relation to its application to preserve Filipino cultural artifacts, thus, raising the urgency for NCCA to build capacity.

Key initiatives regarding the use of AI to promote and preserve minority languages include:

- ISIP Project 6 that seeks to collect data for the Philippine Languages Database.
- Marayum.ph is aims to collect data by making a dictionary to help preserve minority/community languages.
- DOST's iTanong project provides an interface that enables interaction with relational databases through Filipino words, including Taglish terminologies.⁷⁷

⁷⁷ Bonifacio, J. (2024, September 1). These efforts seek to preserve PH languages in the age of AI. Retrieved from <https://www.rappler.com/technology/features/ph-efforts-filipino-language-preservation-artificial-intelligence/>

SCIENTIFIC AND EDUCATIONAL DIMENSION

Research and Innovation

To boost its R&D capacity, the Philippines has outlined key areas under Chapter 8: Advance Research and Development Technology and Innovation of the Philippine Development Plan (2023 – 2028): increase of national expenditure, undertake mutually beneficial private-public collaborations in technology and innovation; increase number of partnerships; attract global corporate investors, intensify tech transfer and rapid commercialization of publicly-funded technologies.

For its part, the DOST Grants-In-Aid (GIA) Program was launched to harness the country's scientific and technological capabilities to spur sustainable economic growth and development. The GIA provides grants for the implementation of projects and initiatives identified in the current DOST priorities and supports its activities under the General Appropriations Act (GAA). The GIA aims to improve productivity and strengthen various Science and Technology sectors in research and development, promotion, technology transfers, and utilization, human resources development, information dissemination, and linkages.

Despite such progress, the Philippines must strive to further improve its R&D funding allocation. According to UNESCO Institute for Statistics (UIS Stat Bulk Data Download Service, the Philippines' Gross Expenditure on Research and Development (GERD) as a share of its gross domestic product is 0.32 as of 2018. Zooming in at the GERD on natural sciences and engineering expenditure, the country has allocated the following:

INSTITUTION	AMOUNT
Department of Agriculture	PHP 2.3 billion
PCAARD	PHP 1.6 billion
PhilMech	PHP 342 million
Agricultural Competitiveness Enhancement Fund (ACEF)	PHP388 million
Department of Health	PHP1.6 billion
DOST R&D initiatives	PHP870 million

The Government Budget Allocations for R&D or GBARD is PHP4.029 billion in 2024—a dramatic drop compared to PHP57.6 billion in 2018. On AI, the Philippine government has allocated PHP350.5 million to support the operationalization of CAIR. Focusing on the country's R&D priorities on AI, DOST has crafted an AI R&D Program framework for 2019-2029 to increase the Philippines Global Innovation Index that will effectively translate innovation investments into outputs.

Research Output and Ethical AI research

Based on the Country Activity Tracker (CAT) on Artificial Intelligence, the Philippines has published a total of 4,359 articles, 1,037 articles with international collaborations, and 29,644 citations.⁷⁸ In the same tracker, the Philippines ranked sixth in ASEAN, trailing behind Indonesia, Singapore, Malaysia, and Vietnam, Thailand respectively.

However, according to FAcT publications per capita, there are no accepted papers from the Philippines from 2021 onwards. Likewise, there is no existing data available on ethical AI research.

⁷⁸ Emerging Technology Observatory Country Activity Tracker: Artificial Intelligence. Retrieved from <https://cat.eto.tech/?countries=Philippines&countryGroups=&expanded=Summary-metrics%2CCountry-co-authorship%2CTop-ten-cited-articles%2CChanges-over-time%2CTop-ten-organizations>

AI Talent and Innovation Output

The Global Innovation Index shows that there are 172 researchers with a full time equivalent per million population as of 2018. In 2022, the Philippines had 84 researchers. In 2018, the DOST Compendium of Science and Technology (S&T) statistics found that there are 708 R&D personnel per million in the Philippines. The survey covered 75,037 R&D personnel in 2018 from HEIs. In 2018, the number of researchers is at 37,701.

Currently there are 674 patent applications (resident and abroad) in 2022, but no disaggregated data is available, especially, whether they are AI patents. Patents by origin is at 0.49 thousand or 490 on 2021.

Education

Education Strategy

Legal and policy frameworks have emphasized the importance of integrating digital technologies in the Philippines to equip students, and graduates with adequate competencies in the emerging digital economy:

- NAISR 2.0 has emphasized the importance of transforming education, and nurturing AI talent, and upskilling and reskilling workforce.
- RA 11927 or the Philippine **Digital Workforce Competitiveness Act** seeks to develop the future workforce of the Philippines. The Inter-Agency Council for Development and Competitiveness of the Philippine Digital Workforce is tasked to establish public-private-partnerships with experts, private corporations, industry associations like the information technology, business process outsourcing and other key stakeholders to formulate and implement skills training and development, and certification programs.
- The IRR of RA 11927 designates the DICT and DOST as lead agencies to collaborate with the Department of Labor and Employment, TESDA, DTI, and CHED to implement the skilling and certification programs based on the digital technology and digital skills mapping. The DICT through its ICT Literacy and Competency Bureau is collaborating with DOLE, TESDA DTI, and CHED to develop the Digital Skills Framework.
- RA 11337 or the **Innovation Startup Act's IIR** also requests the DepEd, CHED, and TESDA in collaboration with DTI, DOST and DICT to develop curriculum that integrates entrepreneurship to foster a culture of innovation.
- The National Technical Education and Skills Development Plan (NTESDP) 2023 – 2028 identifies AI as an emerging sector that necessitates the development of adequate skills, and the need for the TVET sector to prioritize digital transformation.
- Relatedly, TESDA has also crafted the TVET in the Philippines in the Age of Industry 4.0. or TVETPH 4.0. to equip its enrollees on the necessary skills for the Fourth Industrial Revolution. TESDA has the Artificial Intelligence Data Annotation (AIDA) Training Program that seeks to train women for employment. Pending House Bill No. 10751 has tasked DepEd, CHED, DOST, DICT to develop generative AI maximize its positive impact on Philippine Education system.

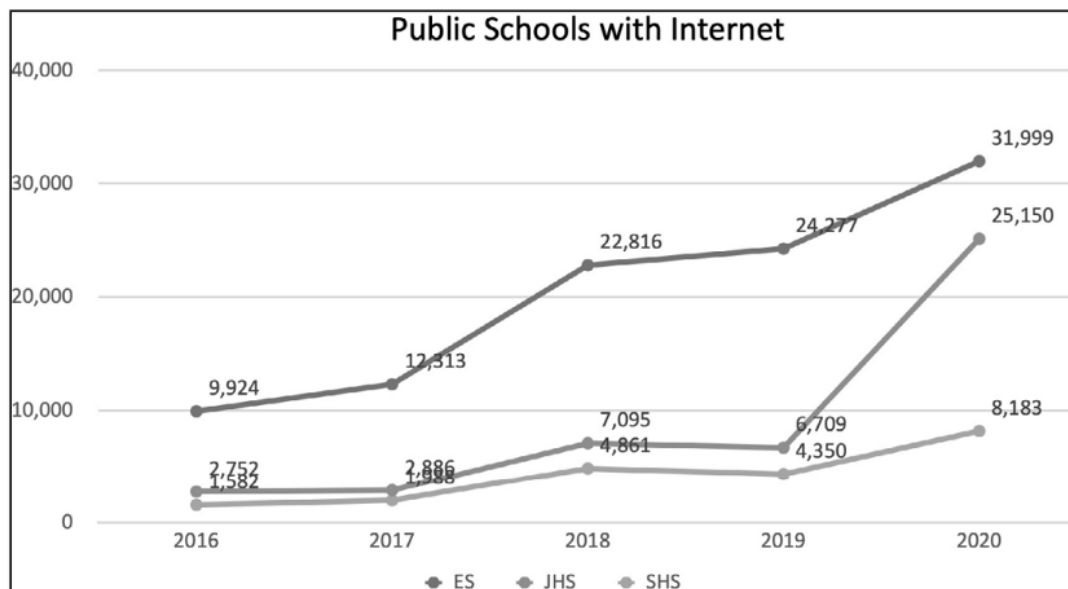
As far as educational institutions are concerned, laws or policies on AI is developing at varying stages and pace. DepEd is in the initial stages of developing a policy standard, guidelines or frameworks on the responsible use of AI in schools. Last August to September 2024, DepEd conducted activities to examine AI utilization for teaching and learning. Through a circular released last July 8, 2024, TESDA has begun to implement competency standards for Gen AI to inform and guide training providers and individuals on the required skills and knowledge to effectively use AI.

At that time of this research, CHED has not yet released its official guidelines; however, other universities have begun to tackle the ethical use of AI. For instance, the University of the Philippines released the Principles for Responsible and Trustworthy AI. It has established a multidisciplinary UP AI Advancement Committee (AIAC) to convene the UP community to discuss the benefits and perils of using AI and formulate better policies and guidelines. The UP AI Advisory Board was also created to ensure UP leadership across AI teaching research and development. Siliman University has also approved the Policies and Implementing Guidelines for the Integration of Artificial Intelligence in Siliman Education based on the university's overarching AI integration framework.

Education infrastructure

As shown in the graph below, the rapid shift to online learning during the COVID19 pandemic facilitated the growth of internet access in public schools marked by a threefold increase from 2016 to 2020. But despite the sharp uptick, the Philippines has a long way to go in realizing universal internet access.

Figure 2. Public schools with Internet from 2016 to 2020



Source: DepEd (2020)

The research suggests that access to electricity and the internet go hand in hand in conducting remote distant learning. Findings revealed that the notion of digital divide is not only the provision of access, but it also tackles the deeper issue of digital inclusivity that the demands upgrading digital literacy.⁷⁹

A similar study of the Philippine Institute for Development Studies in 2022 has found that the country is still behind among its Asian peers on ICT infrastructures due to low internet and computer access.⁸⁰ Evaluating the **Philippine Development Plan 2017 to 2022**, the Philippines was unable to meet its targets for primary and junior high school levels on the proportion of public schools with compute packages as shown below. There was no report available on the senior high school level.

79 Provision of Electricity and Internet Access in DepEd Schools: Implications on School Performance and Digital Inclusivity in the New Normal. Retrieved from https://cids.up.edu.ph/wp-content/uploads/2023/12/02_Provision_Electricity_Internet_Access_DepEd_Schools_School_Performance_Digital_Inclusivity_Alampay_Navarro.pdf

80 School Infrastructure in the Philippines: Where are we now and where should we be heading? Retrieved from <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps2210.pdf>

Primary schools

Year	Target	Accomplishment
2017	95	78
2018	99	78
2019	100	79

Junior high schools

Year	Target	Accomplishment
2017	95	82
2018	99	81
2019	100	80

Experts suggest that the Philippines inability to achieve its computer package delivery specifically contracts for activating Wi-Fi hotspots can be linked to insufficient public investments as well as delays in the DepEd's computerization program due to procurement and bidding failures.

According to the latest data available in the SDG Index dashboard specifically on the subcategory of SDG 4 Quality Education in 2022, participation rate in pre-primary organized learning in the Philippines has dropped to 71.3. The net primary enrollment rate remains low at 90.3. while lower secondary completion rate increased by 97.2 and literacy rate (aged 15-24) jumped to 99.2.⁸¹

Curriculum Content

While CHED has information of universities offering programs in the broader STEM field, there is still no specific data dedicated to AI. In November 2023, CHED noted the urgency to integrate AI across the learning process even beyond technology-related programs. This means that even teachers and students in the humanities and social science courses must understand the impact of AI.⁸² There is also a call among academics to embrace the rising demand for AI-ready graduates across relevant industries like marketing, health, and architecture.

Similarly, DepED is also exploring a policy standard on the responsible use of AI for teachers and students. The Teacher Education Council has launched nationwide survey to review and redesign preservice education for teachers. The goal is to gather input for the ongoing curriculum review efforts.⁸³

Educational Attainment

As of 2023, the Philippines percentage of STEM graduates is 22.56, while the percentage of ICT graduates in tertiary education is 7.58. In 2019-2020, there were 47,327 Information Technology graduates. The country has 2.4 million Coursera learners where 51 percent of the learners are women, and 36 percent of women learners are enrolled in STEM. There is a marked increase to 79 percent in Professional Certificate enrollments that illustrate digital upskilling, and a 642 percent enrolment in Gen AI. Despite such increase, Coursera's Global Skills Report in 2023 ranked the Philippines 99 out of 100 countries. Compared to its East and Southeast Asian peers, the Philippines registered very low performance in business, technological and data science skills.⁸⁴

81 Philippines SDG Index. Retrieved from: <https://dashboards.sdgindex.org/static/profiles/pdfs/SDR-2024-philippines.pdf>

82 CHED urges firms to prepare workers for AI. Retrieved from <https://www.bworldonline.com/labor-and-manage-ment/2023/11/24/559432/ched-urges-firms-to-prepare-workers-for-ai/>

83 DepEd studying policy on use of AI in schools. Retrieved from <https://www.philstar.com/headlines/2024/10/26/2395424/dep-ed-studying-policy-use-ai-schools>

84 Philippines still lags in Coursera's 2023 global skills ranking. Retrieved from <https://www.bworldonline.com/infographics/2023/06/16/529017/philippines-still-lags-in-courseras-2023-global-skills-ranking/#:~:text=The%20Philippines%20placed%20last%20among,2>

By 2028, the tech industry in the Philippines is expected to generate 1.1 million new jobs.⁸⁵ However, the lack of essential skills can hamstring the country's prospects. According to a UNESCAP study, almost 90 percent of the Filipino population lacks basic ICT skills such as word-processing, internet and email skills.⁸⁶ Although upskilling and reskilling opportunities abound, many obstacles remain pervasive such as poor internet access, lack of time, and the high cost of courses.

Public Access to Education

The Asian Institute of Management (AIM) is offering an Introduction to Data Science and Ethical AI in its Master of Science in Data Science program. At AIM, AI ethics is also covered even in non-data science programs like Master of Business Administration, and the Masters in Innovation and Business. Similarly, the Ateneo De Manila University is also offering Master of Science in Data Science with an ethics component. Currently, the University of the Philippines offers a Ph.D. in Data Science while its Philosophy department has AI ethics as a course unit. The Polytechnical University of the Philippines has launched its own research program focusing on AI ethics and governance.

Through its Project Smarter Philippines through Data Analytics, Research and Development, Training and Adoption (SPARTA), the Development Academy of the Philippines is offering data science courses, while TESDA through its online program provides massive open online courses on data science courses as upskilling and reskilling opportunities. The Union Bank of the Philippines is also offering XCELLERATOR, a free six-week program that teaches data science principles with hands on and remote learning and capstone project.⁸⁷

Giray et. al (2024) found that Filipino educators and administrators positively acknowledge AI's transformative impacts to enhance teaching, streamline administrative tasks, and boost research productivity. However, the research pointed out the limitations of AI in contextualizing experiences. In the age of ChatGPT, students become prone to "cheating, data fabrication, and the potential decline in creativity and critical thinking." The authors recommend that urgency for regulatory policies and ethical guidelines to govern the use of AI in higher education learning.⁸⁸

85 IT-BPM sector targets 1.1M new jobs in 6 years. Retrieved from <https://www.bworldonline.com/top-stories/2022/09/01/471885/it-bpm-sector-targets-1-1m-new-jobs-in-6-years/>

86 Bridging the skills gap: Fuelling careers and the economy in the Philippines. Retrieved from https://impact.economist.com/perspectives/talent-education/bridging-skills-gap-fuelling-careers-and-economy-philippines#_ftn6

87 UnionBank starts third batch of free data science program. Retrieved from UnionBank starts third batch of free data science program - BusinessWorld Online

88 Use and Impact of Artificial Intelligence in Philippine Higher Education: Reflections from Instructors and Administrators. Retrieved from <https://www.tandfonline.com/doi/full/10.1080/10875301.2024.2352746>

ECONOMIC DIMENSION

Labor Markets

The Philippines' AI market size is projected to reach US\$772.10M in 2024. It is expected to grow in the coming years at the rate of 28.57 percent, possibly reaching a market volume of US\$3,487.00M by 2030.⁸⁹ Currently, the Philippine Statistics Office estimates that there are 394,000 employed in the professional, scientific, and technical sector, while 431,000 in the information and communication last August 2024. To date, there is no clear-cut metric in measuring the employment and participation of AI-related professionals in the Philippines' labor market.

The 2024 World Trend Index Annual Report of Microsoft and LinkedIn showed that 86 percent of employees surveyed from the Philippines used AI which is higher than the global average of 75 percent and regional average of 73 percent; 89 percent of the leaders who were surveyed revealed that their company needs to adopt AI to stay competitive, and; 55 percent shared that they worry that they lack a vision on AI implementation. On employment, 70 percent said that they will not hire someone without AI skills and 68 percent said they would rather hire a candidate with less AI skills compared to someone without it. According to the study, 83 percent of Filipinos bring their own AI to work which is cause of concern in relation to privacy, and legal risks for companies.⁹⁰

In 2023, 9.68 million persons were employed in the digital economy, where 87.3 are in e-commerce, 11.5 percent in digital enabling infrastructure, among others. The ICT industry has a vacancy of 43.8 percent. While the professional, scientific, and technical activities have job vacancies of 37.0 percent. According to the 2019/2020 Integrated Survey on Labor and Employment, the number of vacancies from July 2019 to June 2020 in ICT is 9,130 while for professional, scientific, and technical is 13,090.

NAISR 2.0. has emphasized the need for rapid transformation of educational and training programs to nurture talents that can participate in AI productivity. Other legislative provisions include RA 11927, or the Philippine Digital Workforce Act calls for digital skills mapping, formulation of digital skills roadmap, and the development upskilling and reskilling programs. RA 119621 or the *Trabaho Para sa Bayan* (TBP) mandates the formulation of the TPB plan to boost employability, improve conditions for quality of employment and productivity, and establishment of labor market governance. NEDA is expected to draft the TBP by the end of 2025.

RA 11981 or the *Tatak Pinoy Act* seeks to improve the country's education and training system, and facilitate the transfer of technology among government bodies, industry, enterprises, and academia. The E-Commerce Roadmap mentioned aims to further boost the contribution of e-commerce in the country's digital economy. As the policy frameworks, and legislations are still in the early stages of implementations, evaluations are yet to be properly conducted to evaluate their impact.

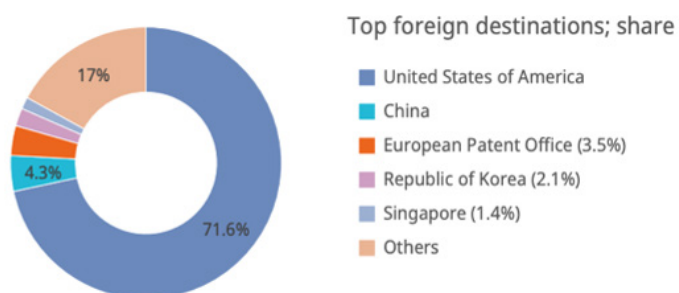
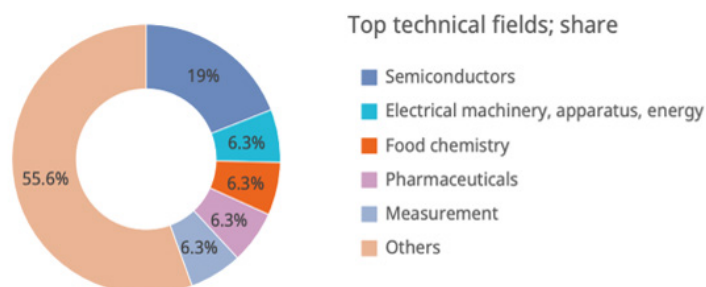
Investments and Output

In the Philippines, the total government R&D expenditure is 39 percent versus the private sector at 61 percent. In 2023, the country's digital economy contributed 8.4 percent or PHP 2.05 trillion to the country's GDP, and digital enabling infrastructure amounted to PHP1.7 trillion. Majority of the digital economy's contribution to the GDP comes from: telecommunications services (32.9 percent) professional and business services (30.1 percent), and computer, electronic, and optical products (17.1 percent).

89 Statista Artificial Intelligence – Philippines. Retrieved from <https://www.statista.com/outlook/tmo/artificial-intelligence/philippines>

90 Microsoft and LinkedIn Release 2024 Work Trend Index on AI Use at Work in the Philippines. Retrieved from <https://news.microsoft.com/en-ph/2024/05/23/microsoft-and-linkedin-release-2024-work-trend-index-on-ai-use-at-work-in-the-philippines/>

The Philippines ranked 53 out of 133 economies in the 2024 Global Innovation Index. It is a key exporter of computers, scientific instruments, and electrical machinery.



Science and innovation investment

Scientific publications ^①	R&D investments ^①	Venture capital ^①		International patent filings ^①
		Deal numbers	Deal values	
▼ -7.7% 2022 - 2023	n/a	▼ -39.1% 2022 - 2023	▼ -78.3% 2022 - 2023	▼ -72.4% 2022 - 2023
▲ 9.1% 2013 - 2023	▲ 17.1% 2007 - 2018	▲ 14.9% 2013 - 2023	▲ 5.9% 2013 - 2023	▼ -12.9% 2013 - 2023

Technology adoption

Safe sanitation ^①	Connectivity ^①		Robots ^①	Electric vehicles ^①
	Fixed broadband	5G		
▲ 1.6% 2021 - 2022	▼ -10.5% 2021 - 2022	n/a	▲ 3.3% 2021 - 2022	n/a
▲ 1.7% 2012 - 2022	▲ 13.2% 2012 - 2022		▲ 12.4% 2012 - 2022	n/a
62.7 per 100 inhabitants in 2022	7.6 per 100 inhabitants in 2022	60.6 per 100 inhabitants in 2021		n/a

Source: <https://www.wipo.int/edocs/statistics-country-profile/en/ph.pdf>

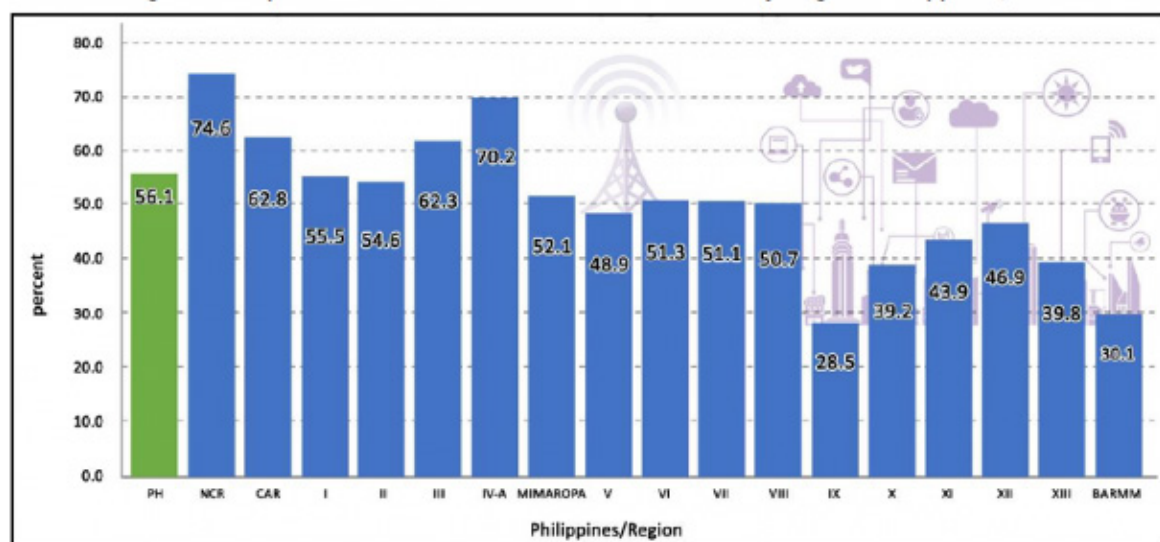
TECHNICAL AND INFRASTRUCTURE DIMENSION

Infrastructure and connectivity

In the Philippines, more than eight in every ten households (81.7 percent) have a mobile phone.⁹¹ As of 2022, there are 144 mobile cellular subscriptions per 100 people.^{92,93} In 2023, there are 135 million mobile cellular subscriptions in the country and approximately 15.0 percent of the households have internet connection through fixed (wired) narrow/broadband network. While around 4.0 percent of the households have fixed (wireless) broadband network,⁹⁴ and 2.4 percent have satellite broadband network.⁹⁵

More than 4 in 10 households (or 42.1 percent) have active mobile broadband network.⁹⁶ Of the 11.1 million households with mobile broadband network, CALABARZON has the highest share of households with internet access at 17.9 percent and Region IX has the lowest with 1.8 percent.⁹⁷ Luzon has the top five fastest fixed broadband network with faster than 90 Mbps. CALABARZON has the fastest median download speed of 99.55 Mbps, and Eastern Visayas (Region VIII) has the lowest median download speed of 38.43 Mbps.⁹⁸

Figure 1. Proportion of Households with Internet Access by Region: Philippines, 2020



Source: Philippine Statistics Authority, 2020 Census of Population and Housing

91 Philippine Statistics Authority (PSA). (2023, July 4). More than 50 million Have Access to the Internet (2020 Census of Population and Housing) {Press release}. <https://www.psa.gov.ph/statistics/population-and-housing/node/1684059979>

92 The indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services. (Source: International Telecommunication Union (ITU) World Telecommunication/ICT Indicators Database)

93 World Bank. Mobile cellular subscriptions (per 100 people) – Philippines <https://data.worldbank.org/indicator/IT.CEL.SETS.P2?locations=PH>

94 World Bank. Mobile cellular subscriptions – Philippines. <https://data.worldbank.org/indicator/IT.CEL.SETS?locations=PH>

95 PSA op cit.

96 PSA op cit.

97 PSA op cit

98 Ibid.

The Philippines' fixed broadband speed of 94.42 Mbps in Q2 2024 is still slower compared to its ASEAN peers, namely Singapore (284.93Mbps), Thailand (231.01 Mbps), Vietnam (135.00 Mbps), and Malaysia (132.72 Mbps).⁹⁹ In 2024, the mobile upload and download speeds in the country are at 40.0 and 36.0 Mbps.¹⁰⁰ Fixed broadband speed of 93.05 megabits per second (Mbps) and a download speed of 93.31 Mbps in January 2024.¹⁰¹

The Philippines ranked 86th of the 220 countries in the 2023 Worldwide Broadband Speed League, with an average download speed of 43.36 Mbps.¹⁰² However, the Philippines also has poor mobile broadband speed at 6.21 Mbps upload speed and 25.47 Mbps download speed (based on August 2023 data from Ookla).¹⁰³ (See Table 6 below. Source: Serafica, et al.).

Despite being the first country in Southeast Asia to experience 5G connectivity, the Philippines has 99 percent 3G and 4G population coverage and only 70 percent 5G population coverage,¹⁰⁴¹⁰⁵ As of 2022, around 96.2 percent of the population has access to electricity.¹⁰⁶¹⁰⁷

Table 6. ASEAN countries' key characteristics, 2022*

Country	Income group	Urban population	4G coverage	5G coverage	Mobile download*	Fixed download*
Singapore	H	100	100	76.56	81.41	254.65
Brunei Darussalam	H	78.854	85	0	100.63	49.52
Malaysia	UM	78.214	96.35	20.67	62.92	98.48
Thailand	UM	52.889	98	86.14	40.06	212.68
Indonesia	UM	57.934	99	70	24.22	28.28

⁹ Telco Capex Spending Expenditures

Vietnam	LM	38.766	98	0	47.08	93.11
Philippines	LM	47.977	99	70	25.47	88.81
Lao PDR	LM	37.592	98	11.79	27.44	31.83
Cambodia	LM	25.114	98	0	24.1	23.81
Myanmar	LM	31.771	94	0	22.68	19.56

Note: Per column, Red to Green filled cells represent low to high values; Urban population = % of total population; Note: H = High income; UM = Upper-middle income; LM = Lower-middle income; *Mobile and fixed broadband download speeds as of August 2023

Sources: GSMA (2023); Ookla (2023a); World Bank (n.d.; 2022)

- 99 Johan, A. (2024, July 22). Fiber in the Philippines is Improving and catching up with its Regional Peers. <https://www.ookla.com/articles/philippines-fixed-q2-2024>
- 100 GSMA. (2024). GSMA Mobile Connectivity Index. <https://www.mobileconnectivityindex.com/index.html#year=2023&zonelocode=PHL&analysisView=PHL>
- 101 Manila Standard. (2023). Think tank says PH connectivity lags behind in Asia. <https://www.pids.gov.ph/details/news/in-the-news/think-tank-says-ph-connectivity-still-lags-behind-in-asia>
- 102 Ibid.
- 103 Serafica, R.B., Francisco, K.A., & Oren, Q.A. (2023). Making Broadband Universal: A Review of Philippine Policies and Strategies. PIDS Discussion paper Series No. 2023-31. <https://pidswebs.pids.gov.ph/CDN/document/pidsdps2331.pdf>
- 104 Serafica, Francisco, & Oren op cit.
- 105 GSMA op cit. (2024)
- 106 PSA. (2023). 2023 SDG Watch as of November 8, 2023. https://psa.gov.ph/sdg/Philippines/baselinedata/no_poverty
- 107 This refers to the proportion of households with access to electricity. From 2017 to present, the TFEM of DOE used the number of total potential households from the 2015 Census of Population, while for the previous years, these are based on the 2010 Census of Population and Housing.

According to the 2024 GSMA Mobile Connectivity Index, the Philippines got an index score of 67.2 based on a combined average of key criteria like infrastructure, affordability, consumer readiness, and content services.

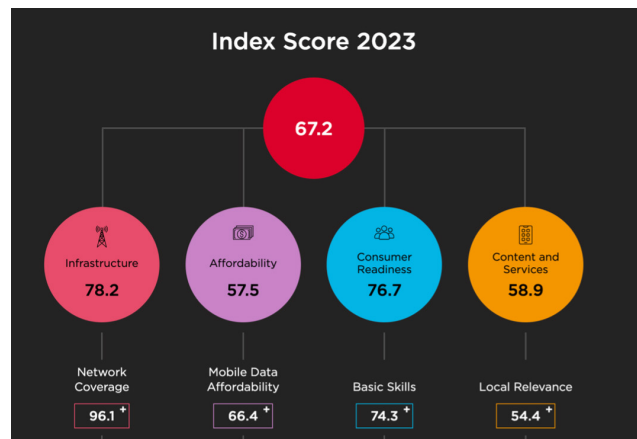


Image Source: Mobileconnectivityindex.com¹⁰⁸

Applied standards

Through the Department of Trade and Industry- Bureau of Philippine Standards (DTI-BPS), the Philippines is a member to the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), and its technical committees, subcommittees, and working groups. Its membership to these organizations is aligned with the country's commitment to the World Trade Organization - Technical Barriers to Trade Agreement (WTO-TBT). Currently, the DTI-BPS is involved in the following committees¹⁰⁹ :

- ISO/IEC JTC 1/SC27: Information security, cybersecurity and privacy protection
- ISO/IEC JTC 1/SC36: Information technology for learning, education and training
- ISO/IEC JTC 1/SC40: IT service management and IT governance
- ISO/IEC JTC 1/SC 42: Artificial Intelligence

Computing capabilities

According to Data Center Map, there are currently 23 data centers in the Philippines.¹¹⁰ The country is bullish in capitalizing on the increasing demand from hyperscalers. ePLDT, DITO Telecommunity, and Converge ICT Solutions are the homegrown providers currently investing in infrastructure development. ePLDT has also announced its plans to increase its capacity in Makati City by 12 MW plus an expansion to build its 11th data center called VITRO with an initial capacity of 14 MW in its 5-hectare lot in Sta. Rosa, Laguna.¹¹¹ In May 2023, Singapore-based ST Telemedia Global Data Centres have signed a joint venture with Globe Telecom Inc., and Ayala Corporation to build a 124-MW data center which is expected to go online by early 2025.

The Philippines implements its Cloud First Policy¹¹² which amends the DICT DC No. 2017-002] that "promotes cloud computing as the preferred technology for government administration and delivery

¹⁰⁸ GSMA Mobile Connectivity Index. Retrieved from <https://www.mobileconnectivityindex.com/index.html#year=2023&zonesocode=-PHL&analysisView=PHL&comparison=1&geographys=PHL&metricsIndex=overall>

¹⁰⁹ ISO – Philippines. Retrieved from <https://www.iso.org/member/2041.html?view=participation&t=PT>

¹¹⁰ Data Center Map – Philippines Data Centre. Retrieved from <https://www.datacentermap.com/philippines/>

¹¹¹ PHL data center capacity set to soar five times by 2025 — DICT. Retrieved from <https://www.bworldonline.com/corporate/2023/07/27/536218/phl-data-center-capacity-set-to-soar-five-times-by-2025-dict/>

¹¹² DICT. (2020). Amendments to department circular No. 2017 – Prescribing the Philippines Government's Cloud First Policy. Retrieved from Department_Circular_No_10_Amendments_to_DC_No_2017_002_re_Prescribing.pdf

of government services.” The latest amendment also seeks to cover all executive departments and instrumentalities of the national government, SUCs, and LGUs. The Congress, Judiciary, constitutional commissions, and Office of the Ombudsman are encouraged to adopt this policy. The amendment provides: (a) the government’s general adoption of cloud computing for the storage, use, and processing of data; (b) changes in data classification (i.e., highly sensitive, above-sensitive, sensitive, and non-sensitive government data); (c) overall data security; (d) data sovereignty and residency; and (e) data ownership.¹¹³

Statistical performance

According to the World Bank’s Statistical Performance Indicators that evaluates a country’s national statistical system to ensure quality and trustworthy data for policy-decision-making, the Philippines got a score of 83 both for data products and data sources and 65 for data infrastructure.



Based on the Global Data Barometer that measures a country’s strengths, and weaknesses on data capabilities, governance, availability and impact, the Philippines got high score of 45 in the governance pillar due to its DPA alongside its Implementing Rules and Regulations and the Advisor Opinions that provide a detailed framework for personal data protection.

However, the country’s lack of formal frameworks on open data and data sharing do not guarantee full compliance.¹¹⁴ On availability, the Philippines obtained 28 which is a higher score than the global average. It has data available for beneficial ownership, land use, public consultation data, data budget, spend data, biodiversity, climate vulnerability, vital statistics, and COVID-19 vaccination. There is low data availability on company register, political finance data, asset declarations, lobby data, and real-time health care capacity.¹¹⁵ Finally, on use and impact, the Philippines obtained a score of 18. Media and civil society organizations maximized available data on public officials to ensure accountability. No open data for companies are available.¹¹⁶

¹¹³ Ibid.

¹¹⁴ Global Data Barometer Country Report – Philippines. Retrieved from https://data.opendevdevelopmentcambodia.net/library_record/global-data-barometer-country-report-phillipines

¹¹⁵ Ibid.

¹¹⁶ Ibid

DEVELOPING THE NATIONAL AI MULTISTAKEHOLDER ROADMAP

Taking stock of its current AI policy trajectory, the diagnostic analysis in the preceding section thus showed that overall, the Philippines is on a positive trajectory on human and ethical approach to AI policymaking. However, to fully realizing its AI policy implementation, the country must narrow the gap between conception and practice. On **paper**, there are policy standards to advancing ethical, secure, reliable and transparent development and deployment of AI systems, but the opportunities and challenges to realizing them in **practice** have not been adequately addressed. The application of UNESCO's RAM sought to fill such gaps.

As an international policy tool, RAM goes beyond the generic evaluation of AI readiness. Challenging the conventional tiering or ranking approach, RAM embarks on a deeper analysis of understanding the local context of the target partner country—the nucleus that makes or breaks sustained and coherent AI policy implementation. RAM is not merely a superficial checklist exercise or a yardstick that fixates on the possible economic gains of AI adoption. Its various dimensions decrypt the deeply seated structural root causes that prevent countries like the Philippines undertake a comprehensive AI leap to unlock its growth potentials where no one is truly left behind. RAM shifts the focus towards a more persuasive rather than just a prescriptive policy diagnosis grounded on a comprehensive and holistic analysis of what constitutes an ethical AI policy.

To do so, UNESCO Philippines RAM Team has connected with leading experts, practitioners, and enthusiasts in government, industry, academia, and civil society to evaluate the Philippines AI journey. Capitalizing on the country's multistakeholder community, RAM reframes the highly pervasive digital economic mindset that has predominantly been shaping policy deliberations in the Philippines, to center the deliberations toward AI ethics. Over a series of multistakeholder consultations across Manila, Cebu, and Davao, the UNESCO Philippines RAM Team examined the myriads of factors behind the country's AI journey to decode where it is headed and what gaps are worth plugging in amid the technology's disruptive nature and the ever-changing domestic political priorities.

The proceeding section tackles the five major issues that key stakeholders has identified in the series of closed-door consultations and informant interviews.

- (1) Achieving a Whole of Nation approach to AI policy
- (2) Ethical considerations
- (3) Lagging education and capacity-building
- (4) Low Research and Development Investment and Outputs
- (5) Internet and Energy Infrastructure Gaps
- (6) Enhancing Data Protection and Cross-border data flows
- (7) Cybersecurity-AI Nexus

Achieving a Whole of Nation Approach to AI policy

Overcoming siloed policy making

At the very onset, an overwhelming number of the consulted stakeholders in government, industry, academia and civil society subscribed to and advocate for a whole of a nation approach, but several barriers inhibit the realization of such a framework or principle. The most salient factor identified is the lack or absence of a dedicated intragovernmental agency or a coordinating mechanism that will synchronize and optimize the implementation of the country's AI policy and strategy. Without an interagency mechanism, the Philippine government's leading government agencies in AI policy and strategy, namely, DTI, DOST, DICT, and NEDA will continue to operate in silos, and can slow down the country's momentum to realizing its AI aspirations.

In the short to medium-term, the current stalemate in the government bureaucracy will have serious repercussions at the economic and ethical levels. Economically, the Philippines will be perceived less favorably compared to its ASEAN peers like Indonesia, Malaysia, and Vietnam who have outlined a clearer and more coherent vision supported by government interventions to court potential investors. Crucially, the development and deployment of ethical AI systems will remain fragmented due to the lack of a government oversight to ensure compliance. Without a dedicated agency, promoting consistent and coherent messaging on AI-enabled technologies will be difficult among the public which may undermine trust towards AI adoption.

The lack of coordinated approach at the national level has impacted the implementation of AI policies among local constituents. During the Cebu and Davao consultations, several participants had noted that there is awareness of the existing roadmaps, strategies and initiatives which are developed and implemented by DTI, DOST, and DICT but the lack of a dedicated agency makes it difficult to ensure consistency in policy implementation. For instance, some observed that central government agencies in Manila would conduct roadshows and roundtables to promote policy roadmaps and blueprints, yet there is a lack of follow through to sustain momentum among the target stakeholders in the provinces. These engagements which are often on an ad-hoc basis has led to confusion. It further underscores the lack of coordination between the national, provincial, and local communities. Because local government units lack of specific guidelines from a central intragovernmental agency or body they are lack the directives and capacity to aligning their digitization efforts and initiatives with the national government.

Thriving industry, academia, and civil society collaboration

Throughout the UNESCO RAM PH consultations, the industry, academia, and civil society are well-aware of the current siloed policymaking and stove piping. In the absence of an intragovernmental coordinating mechanism, the trifecta of industry, academia, and civil society has stepped into the plate. Stakeholders from such sectors act as the connective tissue, moving the policy discussions, and implementations through informal channels, with the intention of shaping high-level government decisions.

For instance, as noted in the diagnostic report, the AAP has collaborated with DTI and DICT on various initiatives to move the needle on AI policy consultations, as well as digital skills mapping such as the Philippine Skills Framework. Under its BEACON project, USAID is currently collaborating with NEDA to realize the role of AI in digital transformation in line with the Philippine Development Plan 2023-2028. Over the past few years, USAID has also engaged with DICT to improve support ICT infrastructure policy. The Philippine Business for Social Progress has been actively cultivating AI champions in the Philippine Congress to improve electrification of critical infrastructure that supports AI systems development and deployment. Augmenting the national-regional divide, the Information Technology and Business Process Association of the Philippines (IB-PAP) sector has been actively mounting industry forums among various universities in Visayas and Mindanao to prepare job-ready graduates as far as qualifications, and trainings are concerned.

PIDS has also initiated an AI scoping study to examine the trends underpinning the country's digital landscape, particularly on the implications of AI's transformative impact in the country's vital industries like business process outsourcing, and manufacturing. Recognizing the importance of promoting positive and responsible use of AI and the need to address its negative consequences, the University of the Philippines put forward the *Principles for Responsible and Trustworthy AI*. Divided into a general provision, research and development, education, the 15 principles serve as guardrails to the university's pursuit of AI innovation in the university, and hopefully, as an inspiration for the country.¹¹⁷

117 University of the Philippines Principles for Responsible and Trustworthy Artificial Intelligence. Retrieved from <https://up.edu.ph/up-principles-for-responsible-artificial-intelligence/>

But despite their proactive efforts, stakeholders from industry, academia, and civil society are well-aware regarding the sustainability of their efforts due to the availability of talent and funding resources. But perhaps more worrying is the pervasive lack of tech awareness and appetite within the government to embrace AI tools despite efforts among the public and the private sectors. The lack of knowledge or interest on technology in general in the current organizational culture in Philippine bureaucracy continue to undermine the progress of digitization efforts.

During the consultations, many stakeholders have emphasized the overwhelming number of government initiatives that aims to address the prevailing challenges and obstacles of the Philippines' digitalization but noted the need for more studies to measure or evaluate impact of such interventions. Overwhelmingly, funding is a major issue. To be effective, and impactful, the respective AI strategy and roadmaps of DTI, DOST, and to some extent DICT will require adequate budgetary support. Doubts surely abound whether the current stream of funding will be adequate to realize all the strategic directions and imperatives they outlined.

Light touch approach on regulations

Given the importance of digital technologies to their operations and prospects for growth, private companies continue to deploy AI systems in close compliance with existing and relevant government regulations and frameworks. However, the continuing delays on the lack of a clear-cut policy or legal framework on AI may impact business continuity and profitability in the medium to long term. Based on the learnings from the rollout of ICT related legislations like the DPA, several industry representatives are exercising deep caution in procuring AI hardware and software to avoid unnecessary costs.

As policies and regulations on data privacy, cybersecurity and ethics continue to develop given the rapidly changing nature of AI technology itself, many private companies are taking a cautious approach in adopting AI systems which may soon be considered non-compliant or prohibited. A huge challenge is identifying liability in relation to existing DPA concerning the harms and risks of AI-enabled technologies. While DICT and CSC are currently finalizing a joint memorandum on adopting principles for ethical and responsible use and development of AI in the government, most private companies has adopted their own risk management guidelines in the interim.

As mentioned, the Philippine government has enacted the NGPA in 2024 to elevate the country's procurement practices to international standards. To improve overall transparency, and efficiency, the law advocates from the use of emerging technologies and innovative solutions. Crucially, the NGPA recognizes the urgency to fast-track procurement of goods and services in the science, technology, and innovation fields which will ease procurement of AI systems, and other digital solutions like cloud.

Ethical Considerations

Because RAM considers social and cultural aspects as fundamental building blocks toward achieving an ethical AI policy, the stakeholder consultations attempted to highlight them front and center. This avoids the pitfalls of conventional AI assessments that consider social, cultural, and human aspects merely as additions or nice to have. Like other countries, there are still no clear-cut metrics to measure the socio-cultural impact of AI in the Philippines. The drive for national economic development largely overshadows equally crucial topics such as diversity, inclusion, equity, environmental footprint, health, and social well-being. Several organizations, start-ups and businesses admitted that the current pace of being able to scale, develop products, and sustain growth and expand are the top priorities, which advertently or inadvertently sidelining ethics in the back burner.

Optimism lies in the ongoing discussions initiated mostly by industry groups, and civil society, including the UNESCO's National AI Steering Committee in tandem with governmental bodies to shift the agenda towards a more comprehensive and holistic view and analysis of AI policy and innovation.

Digital Inequity

In 2024, the World Bank estimates that over 58 million Filipinos are considered internet poor. Majority are struggling to afford basic mobile internet package. The price of fixed broadband utilized mostly by MSMEs in the Philippines is four times higher compared to Malaysia and Vietnam, and two times higher than the ASEAN average. The fixed broadband internet penetration in the Philippines in 2022 is 33 percent, a figure lower compared to the Malaysia (50 percent), Thailand (58 percent), and Vietnam (76 percent). Among ASEAN countries, the Philippines holds approximately 50 percent of the region's population which do not have access to mobile broadband. This means that the country only has 70 per 100 inhabitants of active subscribers—the lowest figure among major ASEAN economies.¹¹⁸

World Bank claims that the root cause of the Philippines lagging internet connectivity lies on its market and regulatory failures characterized mainly by the (1) duopoly of two large telcos, (2) pervasive disparity in fixed broadband access across urban and rural markets, and the (3) underinvestment in broadband infrastructures. Overall, the Philippines suffers from the lack of a sound policy environment that promotes competition and investment in broadband infrastructure.¹¹⁹ Its market environment discourages broad private sector participation which can impact the successful implementation of its national broadband policy to genuinely achieve universal internet access and narrow the urban-rural divide.¹²⁰

While other studies conducted by the GSMA Mobile Connectivity Index in 2024 showed that the Philippines has shown improvements in its mobile connectivity as far as affordability, infrastructure, and mobile internet usage, there remains fundamental structural and systemic challenges in the country's internet ecosystem that needs to be addressed.

Clearly, the lack of access to reliable and affordable broadband internet services will further widen the gap between the rich and the poor, especially in the rural areas. From 2019 to 2022, poor income and lower-middle households only obtained three and six percentage increase in fixed broadband respectively, compared to the 20-percentage jump for the richest and upper middle-income groups.¹²¹

Moving into gender inequities, although women have better internet access to men due to social media platforms, they are more susceptible to financial exclusion and opportunities for economic participation. As one expert noted, women are likely to be more disadvantaged than men due to inadequate economic opportunities, societal norms, and lack of skills.

Other experts highlighted the disproportionate harms and risks associated with the use of ICTs. Even with the CPA, women and young girls in the Philippines are disproportionately exposed to technology facilitated gender-based violence or TFGBV especially with the advent of more advanced AI systems.¹²² As one expert noted, the growing sextortion phenomenon in Southeast Asia further puts women and young girls at a greater risk, thus, exacerbating the digital gender divide.

Addressing the gap among women's equitable access to digital opportunities, a few non-profit organizations are undertaking several initiatives. Connected Women, a women empowerment community has been helping female professionals through AI-enabled solutions to find employment. The Women Foundation in the Philippines have been providing STEM scholarships since 2018. So far, the program has produced 30 scholars to participate in a 14-week training on data visualization and modelling. While the organization has received an uptake of 5000 applications, the challenge lies in having very few teachers or trainers and the limited scholarships available.

118 BETTER INTERNET FOR ALL FILIPINOS: Reforms Promoting Competition and Increasing Investment for Broadband Infrastructure. Retrieved from <https://documents1.worldbank.org/curated/en/099011824231036851/pdf/P502027179f71d08418678193f2fabcdbec.pdf>

119 BETTER INTERNET FOR ALL FILIPINOS: Reforms Promoting Competition and Increasing Investment for Broadband Infrastructure. Retrieved from <https://documents1.worldbank.org/curated/en/099011824231036851/pdf/P502027179f71d08418678193f2fabcdbec.pdf>

120 Ibid

121 Ibid.

122 7 in 10 girls and young women in PH experience online harassment – Plan International study. Retrieved from <https://plan-international.org/philippines/news/2020/10/16/7-in-10-girls-and-young-women-in-ph-experience-online-harassment-plan-international-study/>

The University of the Philippines and De La Salle Universities have also begun to explore and implement solutions to ensure that women are involved in curriculum development. Experts emphasized that to make concepts like ‘security by design’ or ‘ethics by design’ feasible, women must be directly involved in training AI models rather than employed for auditing or quality assurance.

When making inclusive digital policies, minority groups like Persons with Disabilities (PWDs) are often left out of consultations. A PWD expert noted that the Philippine government’s neglect of their sector has led to the country’s lagging performance on digital accessibility. For instance, PWDs were not thoroughly consulted during the conception and development of the Philippines National ID system resulting into inaccessible platforms and processes on biometrics collections like fingerprint identification especially, given the circumstances among the blind and those who are physically incapacitated.

Also, the lack of digital accessibility concerning tech policies has implications to PWD’s are excluded from existing data protection regimes and thus threatens their data subject rights for autonomy, consent, and privacy. And with the advent of AI surveillance, and algorithmic bias, PWDs are further subjected to discrimination and exploitation.

Public (dis)trust

Case studies of AI adoption among local entrepreneurs in the Philippines show a growing enthusiasm. With government support, especially from DOST, many SMEs are integrating AI to support and increase productivity. For instance, Davao-based Agri-entrepreneurs are using AI-based grading system to grow and harvest Durian. In Cebu, MSMEs are using GenAI for marketing and promotional campaigns, while others rely on conventional AI software for supply-chain management. Although AI is seen positively, many of the entrepreneurs confirmed that there is no substitute to human-to-human interaction. Chatbots are seen only as complimentary to existing customer services and operations but not the end-all solutions in ensuring business continuity and fostering trust.

While enthusiasm on AI is palpable, there remains skepticism surrounding its various use case applications in the Philippines. The increasing deployment of AI systems to undermine democratic and political institutions and processes as observed during the previous elections is a major source of worry especially among academic and civil society representatives. The explosion of misinformation/disinformation, deep fakes, and troll farms have created deep and lasting divisions in the Filipino society. The pervasive occurrence of cybersecurity breaches that jeopardizes data security and privacy has also undermined trust on digital platforms and government institutions.

In response to the growing threats of AI-powered tools to civil liberties, several journalists and civil society groups have bonded together to leverage AI to counter the growing disinformation. The University of the Philippines joint recommendation on the principles of AI serves as a useful reminder on the importance of education on awareness raising and public education.

Automation and Displacement

Key sectors in the Philippine economy recognize the looming challenge of job automation and job displacements due to AI. Some private sector representatives are fearful about the growing impact of AI to the Philippine Business Process Outsourcing (BPO), a major economic growth driver which contributed 8.12 percent to the country’s overall Gross Domestic Production in 2023.

Experts noted that AI’s impact to the Philippine BPO’s competitive edge will depend on the overall readiness of companies, employees, and government policies. According to the 2023 International Monetary Fund’s AI preparedness index, the Philippines was ranked 65 out of 174 countries—a standing below its ASEAN peers like Indonesia, Malaysia, Singapore, Vietnam and Thailand. The country’s workforce was also considered high exposure, with low complementarity.

Conversely, a recent study of the International Monetary Fund claims that one third of occupations in the Philippines are highly exposed to AI. Zooming in, 61 percent of the highly exposed jobs were found to be highly complementary to AI, resulting to increase productivity.¹²³ The research found that only three percent of the BPO industry's the total workforce is highly exposed but with low complementarity. Although the anticipated impacts of AI in the BPO workforce sector is marginal, it may still have spillover effects to the broader economy.¹²⁴

As a vital engine to the country's economic growth in terms of jobs and investments, the Information Technology and BPO industry is proactively embracing the opportunities and challenges of AI technologies. Although there is a consensus among experts that AI will not replace humans, there is pressure across industries to reskill and upskill employees through acquisition of micro-credentials. While routine and repeated tasks are expected to be automated, there is also a growing niche for more specialized skills.

As noted in the diagnostic analysis, there is no shortage of government initiatives and frameworks to addressing the gaps in digital technology and skills primarily on workforce development. In response to the potential disruptions of AI, the Philippines BPO industry has updated its industry roadmap. During the consultations, representatives from the IB-PAP have been leveraging AI systems especially in the healthcare, gaming and animation sector to enhance productivity. IB-PAP has been encouraging its members to acquire certifications to make them even more competitive, productive and adaptive to the rapid integration of AI tools. As of January 2025, 67 percent of organizations in the Philippines BPO industry has been piloting and implementing AI solutions. Although 8 percent have reported job losses, some reported 13 percent in new employment opportunities.

With the prevailing fearful sentiment on job displacements, NEDA has launched a digital skills mapping study in collaboration with the United Nations Development Programme (UNDP). Key findings and outcomes of the study are expected to contribute to the successful implementation of the *Trabaho Para sa Bayan* (Work for the Country) program. Industry associations have also developed the Philippine Skills Framework and continue to encourage industry-academia collaboration.

Environmental Sustainability and well-being

AI's environmental footprint is becoming a pressing concern in Southeast Asia. While there is initial hype on the investments that comes with data centers, the Philippines is struggling to make a competitive bid due to the high electricity prices in the country. Operationalizing data centers that require massive amounts of electricity will further add to the looming climate-induced challenges of the Philippines. Although the Department of Energy has begun examining what are the requisite energy requirements to run and support data centers, one expert has noted that the government must balance the socioeconomic and environmental ramifications of AI and data centers.

But more than just electricity or land use, ultimately, the country's unreliable and expensive internet also makes it least attractive given the vertical integration inherent in the ecosystem of hyperscalers that are spread across geographic footprint. An expert noted the Philippines was the least favored investment site in Southeast Asia for multinational companies compared to Indonesia, Malaysia, Thailand, and Viet Nam.

Some experts have noted that the Philippines is home to approximately two million gig workers involved in labor intensive outsourced digital work of data collection and annotation. Ironically, under very harsh labor conditions, marked by unfair contract and payment terms, Filipino engages in crowd work or digital sweatshops to support American AI companies. Despite such sobering reality, freelance online work is highly lucrative in the Philippines due to its perceived short-term economic benefits amid the staggering figures of unemployment and underemployment.

123 Artificial Intelligence and the Philippine Labor Market: Mapping Occupational Exposure and Complementarity. Retrieved from <https://www.imf.org/en/Publications/WP/Issues/2025/02/21/Artificial-Intelligence-and-the-Philippine-Labor-Market-Mapping-Occupational-Exposure-and-562171>

124 Ibid.

Language, culture and the arts

During the RAM consultations, it was revealed that there is no direct regulatory policy that addresses AI and culture. With ongoing digitization projects, NCCA has recognized the implications of AI on the country's cultural artifacts and practices. However, the lack of capacity makes it difficult to evaluate the extent of such impact. There are very limited personnel dedicated to examining the use of digital technologies in relation to the conservation of cultural heritage.

Furthermore, the rate of application of US and Chinese-based Large Language Models in the Philippines may also sideline minority languages mostly from underrepresented and indigenous groups. While DTI and DOST are making strides to develop multimodal and multilanguage frontier models, some local companies and start-up communities shared that it remains to be seen whether domestic companies and organizations can integrate and adopt such advanced AI systems due to costs and economies of scale.

The Philippines' creative industry has also sounded the alarm regarding the ethical implications of AI. Artists pointed out the rise of AI-generated art that relies on datasets comprising images, sound and compositions from existing artworks, and thus, raise legal questions concerning intellectual property (IP) and fair competition. The simmering skepticism from the creatives industry should not come as a surprise especially the lack of robust mechanisms to enforce IP protection in the Philippines. In the longer-term, some participants view such a trend of AI-generated art contributing to the devaluation of human creativity, and the reduction of employment and livelihood opportunities for artists.

Hyper Economic and Technological determinism

Several members of the civil society have voiced out their concerns regarding the loose application of AI as a terminology. Some participants noted that a simple automation should not mistakenly associated with AI. Such observation points to the realization that many key stakeholders in the Philippines view AI as silver bullet to the country's socio-economic problems. In this regard, some have raised the importance of formulating a lexicon of AI related definition and benchmarks.

On local innovation, the prevailing attitude of first mover-advantage may compromise ethics at the expense of profit. Some entrepreneurs, educators and innovators shared that ethics is often considered at the final stages of development and in some worst-case scenarios completely neglected. These sentiments thus reflect the need to step back, and recenter the discussions on critical technologies from an ethical standpoint that has been hijacked by a hyper economic and technologically deterministic agenda.

There is no denying that AI and data-driven technologies offer solutions to deliver better public goods and services, but some experts ask, "to what end?" Technology should be for the greater and common good not at the expense of reducing human agency and dignity. Such lack of reflection on the implications of advancing AI innovation is reflected by the current malaise, whether through the exploitation of the environment to power data centers, extraction of personal data or simply the exclusion of minority groups on tech policies.

The Philippine government is well-aware of the social and ethical implications of AI technologies. Experts noted that policy deliberations have noted the rise of AI technologies to exacerbate existing socio-cultural, and ethical concerns beyond the digital domain. The challenge lies in consistently advocating and mainstreaming a socio-technical approach either through public awareness campaigns or establishing networks for knowledge-sharing given the limited bandwidth in human resources, and policy attention.

Overall, these reflections that were prompted throughout the consultations has resulted from some members of government, academia, industry and start-up seeking UNESCO's intervention and advice in formulating their institutional frameworks and guidelines on ethical AI in the lack or absence of a clear and coherent national guidelines for AI development in the Philippines.

Lagging Education and Capacity-building

Fostering a strong skills ecosystem remains a vital issue for the Philippines to support its vision to becoming a technologically advanced and inclusive economy and society. During the consultations, many stakeholders noted the urgency of revisiting educational curriculums to address prevailing gaps starting from basic to tertiary education. While upskilling and reskilling can offer short-to-medium term gains, preparing the next generation of Filipino professionals is the more critical long game. To accomplish such a goal, the Philippine government should address the declining quality of education particularly on fundamental skills like reading proficiency and numeracy skills.

An estimated 91 percent of children in the Philippines at late primary age cannot comprehend age-appropriate text. Weak teaching capacity marked by low salary, poor working conditions, and lack of professional development also undercuts student learning experience.¹²⁵ Relatedly, the UN data on SDG 4.4.1 showed that Filipino youth and adults continue to underperform in basic ICT skills compared to its regional peers, which, consequently, exacerbate exclusion and digital skills gap in the utilization of AI tools.

Internally, the Philippine government must also upgrade the skills and know-how of its employees. Compared to its neighboring states in Southeast Asia like Singapore, Malaysia, and Indonesia, several stakeholders emphasized the lack of skills and low awareness and adoption of AI's systems and applications within the Philippine government. Such reality influences the organizational culture of various departments and agencies, and thus shape the level of engagement, and dynamism that politicians, and bureaucrats invest to support and promote an enabling policy environment and the allocation of adequate funding to fast-track digital transformation.

The above assessments paint a sobering reality which can undermine the long-term prospects of Filipinos to utilize AI and gainfully participate in the data-driven economy. In response, different government agencies are leading initiatives to plug in the increasing demand for curriculum development, and capacity-building.

On primary and secondary education, DepEd's Bureau of Learning and Delivery has begun to include AI-related lessons in the K to 12 curriculums. Such efforts include the revision of the *Pangkabuhayan* technology from Grade 4 that includes coding lessons. A STEM strand has also been included for Senior High School (SHS). AI is poised to be included in the revised SHS curriculum which is currently undergoing validation process. The National Educators Academy of the Philippines, DepEd's training arm, is drafting a policy standard on AI utilization. Simultaneously, DepEd is training of trainers on the use of AI.

Experts suggested that primary and secondary educational institutions must assess if their existing curriculum can produce graduates who possess the fundamental digital skills and competencies that serve as the pre-requisites for STEM courses at the tertiary level. Currently, DepEd has only one subject dedicated to STEM and only 60 percent of schools have access to the internet. These realities impact Filipino students' performance in the PISA.

The Commission on Higher Education is providing capacity-building among faculties and university officials belonging to HEIs. Through its Center of Excellence, CHED is sharing technical expertise to integrate AI concepts in the curriculum development of state universities and colleagues (SUCs) With AI's integration in the curriculum, CHED contends that SUCs will soon demand more investments on equipment and training. But the most urgent challenge for CHED is promoting intellectual rigor and integrity with the rapid use of Gen AI among students.

TESDA has also recently released competency standards on Gen AI: data annotation, engineering, machine learning model validation, and model testing. There is an ongoing public-private partnership with StarTek, a leading BPO company, and the AAP. StarTek will develop the competencies while APP will serve as validators.

125 Jobs and Technology – World Bank East Asia and the Pacific Economic Update October 2024. Retrieved from <https://openknowledge.worldbank.org/server/api/core/bitstreams/b881d2ff-9912-4eb6-9698-8f151975abb6/content>

Many participants have noted that budgetary limitations remain an obstacle to ensuring that TESDA and CHED's capacity-building and competency-building activities remain operational in the longer-term. To ensure that students acquire and develop strong digital skills, many participants have suggested the concept of government-industry-academia (GIA) partnership to augment the current budgetary deficit. GIA can also cultivate at the very early stages an entrepreneurial mindset among students. Whether through setting up incubation hubs, supporting hackathons, or simply providing internship opportunities, the Philippines educational ecosystem can achieve AI innovation into practice rather than just being an abstract concept.

In 2022, the Inter-Agency Council for Development and Competitiveness of the Philippine Digital Workforce was launched to conduct skills mapping to identify skills gap in ICT infrastructure, platforms, and skills under the Philippine Digital Workforce Competitiveness Act or RA No. 11927. Experts noted that while the inter-agency will provide greater government coordination to identify gaps in digital and ICT capacity, including AI, web development, cloud computing, e-commerce marketing, the role of public-private partnership remains crucial to streamlining curriculum and career development of ICT graduates.

Increasingly, debates on the importance of non-STEM courses like Arts and Humanities and Social Sciences have also begun to flourish in the Philippines due to the socio-economic implications of AI. In regional areas like Cebu, participants echoed the lack of strong recognition of such fields that may amplify the adverse and unintended effects of AI systems.

Low Research and Development Investments and Outputs

R&D remain an Achilles' heel in the Philippines AI journey. The country's current allocation to its R&D fall significantly short compared to its ASEAN neighbors. Despite budget deficits, DOST has prioritized strategic programs and initiatives such as DOST-PCIEERD's AI R&D projects to enhance the Philippines AI research competitiveness.

During the consultations, representatives from state colleges and universities, even start-ups expressed enthusiasm to participate in DOST's grant and funding opportunities. However, funding sustainability is a constant challenge. It was observed that a major culprit is weak industry-academia collaboration. Some participants suggest that Philippine universities often do not consider industry partnerships as part of their official mandate. Often, universities lack the desire to align priorities and collaborate with industry to produce applied and market-oriented research to address real-world economic and societal issues.

But overall, stakeholders overwhelmingly echo that the Philippine government, especially legislators lack a deep internalization on the inherent value and contribution of R&D to nation-building. Based on the current figures, the Philippine government is not allocating adequate spending on human capital investments particularly on research and trainings on technology and innovation. It was noted that instead of the DOST and DTI leaning into external funding partners, they should receive sufficient resources mainly from the General Appropriations Act. Without strong political and financial support from the government, the Philippines' R&D will continue to underperform, consequently, undercutting its capabilities towards local and homegrown innovation.

The inherent lack of entrepreneurial spirit among Filipino students and educators was also identified as the main culprit of the country's lagging performance in research and development in the fields of STEM. Majority of Filipinos view themselves more as a technology consumer and not as innovators. Business environment itself is largely not very encouraging with low levels of market and technology readiness. Another concern is the less conducive IP culture in the Philippines marked by low IP registration and weak enforcement of laws. Collaborative research and outputs between universities and industries also do not transform valuable IP assets into commercialized entities. Ultimately, the confluence of these factors slows down the performance of the country's startup ecosystem where most homegrown innovations fail to reach commercial deployment.

Brain drain is another huge challenge in the Philippines. Most of the capable professions are poached or decides to move to Singapore, United Arab Emirates, and the United States due to improved career prospects. To address such a phenomenon, DOST has launched the Balik Scientist program to lure successful and educated Filipino inventors, S&T professionals, researchers, and engineers to bolster the country's research pool. The program provides financial incentives and major benefits like tax exemptions. It also promotes international collaboration among Filipino scientists working in other countries.

Prevailing Internet and Energy Infrastructure Gaps

The lack of accessible, reliable, and affordable internet and electricity continue to impact the Philippines AI competitiveness regionally and globally. Current weak infrastructure undermines any technology and innovation programs and digitization roadmaps the government aims to pursue and implement. Essential internet connection is required to adopt and integrate AI systems to government transactions and industry operations located outside Luzon. Without it, data scientists and professionals will have limited access to process data which are the primary ingredients to train machine learning models and algorithms.

The Philippines' fixed and mobile internet lags among its regional income peers in terms of access and costs. Fixed broadband costs more than 11 percent of GNI per capita which is four times higher than Malaysia, and Vietnam, double than the ASEAN average, and considered highest in ASEAN in absolute USD price.¹²⁶ During the COVID-19 pandemic, the access gap to digital infrastructure between the lower income and lower-middle group and the upper middle groups and richest widened from 26 percentage points to 42 percentage points. If left unaddressed, digitalization will further exacerbate poverty and unequal access to opportunities.¹²⁷

The Philippines lagging internet connectivity can be linked to the country's outdated legislations in the ICT sector, namely the 1995 Public Telecommunications Policy Act or RA 7925, and the 1931 Radio Control Law or RA 3846. Such antiquated legislations impact ICT competitiveness in the country because they limit the number of telco players and internet service providers. To date, the Philippines still requires a legislative franchise to roll out a network, and access radio spectrum which are critical to wireless telecommunications like 5G. The outdated legislations discourage new entrants or players from investing in the Philippines, and thus, broadband connection has remained expensive and unevenly distributed in the country. Some experts even shared that the Philippines 5G connection do not satisfy the actual broadband speed required because of the fragmented spectrum holdings among the current ICT players. Consequently, the outdated legislations are expected to impact the performance of the country's data centers and cloud service providers.

The Philippines lagging infrastructure has profound implications to its educational and capacity-building opportunities. Unreliable and expensive internet connection are major barriers to inclusive participation among many and highly motivated Filipinos to join reskilling and upskilling opportunities. Many in the urban and rural areas still cannot afford the high internet fees and therefore also excludes them in joining and enrolling online courses and training. For instance, Filipino youth and professionals cannot seize learning opportunities to acquire fundamental digital skills and competencies. MSMEs are unable to digitize processes for increased productivity. If left unaddressed, overall equitable participation is jeopardized, and worst, further contributing to the prevailing socioeconomic challenges. Instead of AI being a tool for potential growth, it becomes an impediment that may result to job displacement and social exclusion.

Relatedly, experts noted that the high electricity cost is another source of digital underdevelopment as reflected in the country's lukewarm performance in attracting foreign direct investments and increasing manufacturing productivity. Unlike its neighbors in Southeast Asia, the Philippines competitiveness as an attractive data center hub is diminished due to the high electricity price, quality, and reliability. With more companies adopting AI solutions, electricity powering up data centers will also experience demand.

126 BETTER INTERNET FOR ALL FILIPINOS: Reforms Promoting Competition and Increasing Investment for Broadband Infrastructure. Retrieved from <https://documents1.worldbank.org/curated/en/099011824231036851/pdf/P502027179f71d08418678193f2fabcdbec.pdf>

127 Ibid.

Several participants noted that the Philippines is currently reviewing the Electric Power Industry Reform Act 2021 or EPIRA to lower electricity cost. The suggested amendments aim to restructure the electric power industry by privatizing power generation, transmission, and distribution and prohibiting cross-ownership to improve competition. Although President Ferdinand Marcos Jr. has personally endorsed EPIRA's review as urgent, many are still doubtful whether the intended amendments based on privatization of electricity resources is the most viable strategy to address the Philippines' high electricity costs challenges.

The Philippine government is also exploring the use of small nuclear modular reactors to further increase the energy mix to support the growing electricity demand in the country. It remains to be seen if such effort will materialize given Philippines' heavy reliance on coal and fossil fuels.

Enhancing Data Protection and Cross-border Data Flows

With the rapidly evolving AI landscape, especially with the rise of Gen AI, several questions were raised regarding the scope and extent of the existing data protection regimes in the Philippines that touches on user consent, data processing, extra territoriality of data flows and the need for impact assessments. As it stands, the NPC states that the DPA does not distinguish what type of technology is used to process personal information if the PICs enforce the general principles of privacy, and transparency to ensure that data subjects' rights to be informed and rectify are observed and upheld.

Moreover, under its NPC advisory No 2017-03, AI technologies' fairness and proportionality with respect to the purpose of processing can be evaluated using privacy impact assessments.¹²⁸ PICs are responsible to ensuring that adequate safeguards are in place to protect and promote the rights and freedoms of data subjects. Under the NPC advisory no. 2024 – 04, the DPA and its IRR are principles-based and technology-neutral and thus apply to all forms of processing personal information and sensitive personal information.¹²⁹

Despite this, some participants observed that the existing DPA remains insufficient in addressing cross-border data processing that may hinder AI readiness and interoperability. Although the DPA mandates robust security measures for personal data processing, and its extraterritorial provisions cover data-related aspects of AI, experts emphasized emerging issues concerning data-sharing.

First, the rising tension between data localization or data sovereignty and cross-border data flow in the Philippines due to competing interests between the emerging local data center industries and the BPO industry. If left unmanaged, such tensions will have implications to the usage of data, as well as the development and deployment of AI systems in public and private sector.

Secondly, the absence of a broader data governance policy sharing framework to encourage and enhance data sharing among the public and the private sector. While the NPC Circular 2020-03 on Data Sharing Agreements outlines steps to facilitate potential public and private sector collaboration on data exchanges, more needs to be done to create an enabling environment to foster data collaboration. As one informant shared, developing and implementing a robust data governance framework will help facilitate sharing of usable data between public and private sector, and adopting a risk-based approach to data classification with respect to other existing laws. Several experts noted that without a robust data governance framework, operationalizing data classification under the Revised First Cloud policy will be difficult.

Relatedly, leveraging AI-enabled technologies as well as fostering a viable research and development environment will require a robust data governance framework for seamless data exchanges. Absent of such mechanism, secure and effective data sharing between government agencies, and the private sector becomes ineffective.

128 National Privacy Commission – Advisory Opinions Regarding the Use of AI. Retrieved from <https://privacy.gov.ph/wp-content/uploads/2024/01/Advisory-Opinion-No.-2024-002.pdf>

129 Guidelines on the application of republic act No.10173 or the Data Privacy Act 2012. Retrieved from [Advisory-2024.12.19-Guidelines-on-Artificial-Intelligence-w-SGD.pdf](#)

Others also strongly advocate for the NPC to draft clearer guidelines specifically on AI given its rapid integration as a general-purpose technology which cuts across all sectors vital to the country's economy from e-commerce banking and finance, energy, manufacturing, ICT, to cybersecurity. Most have adopted a cautious approach to avoid committing possible unintended harms and risks that are not currently addressed or clarified within the existing law and regulations—a painful and costly lesson when the DPA was enforced in 2017. On the brighter side, this reality has motivated major companies to become more proactive and agile. Some organizations have started to adopt their own core values and principles on AI, as well as approaches to data processing, and certification to demonstrate transparency and responsibility to regulators and customers which still aligns to the DPA.

So far, the NPC has ramped up its participation in key initiatives to promote cross-border data flow at the national and regional levels. Recently, the NPC inked a Memorandum of Agreement with Aboitiz Data Innovation to establish a regulatory sandbox to test the development and adoption of Privacy Enhancing Technologies (PETs) in the Philippines. Through the regulatory sandbox, PETs can be used to enforce robust data protection to facilitate data flows and exchanges among organizations. The goal is to collect insights, feedback, and best practices on PETs in the context of the Philippines to develop adaptive regulatory regimes and safeguards.¹³⁰ Internationally, the NPC is actively participating in the Global Cross-Border Privacy Rules (CBPR) Forum and Global Cooperation Arrangement for Privacy Enforcement (Global CAPE) to foster international cooperation on data privacy and security.

Cybersecurity – AI Nexus

Of course, data privacy and security and cybersecurity go hand in hand. With more users and devices tethered to the internet, malicious actors are exploiting vulnerabilities to conduct cyber-enabled crimes like spear-phishing emails, scams, and steal private information. During the consultations, many public and private organizations are recognizing the benefits of AI to fortify their cyber defenses. Unfortunately, nefarious threat actors are moving more quickly. They are deploying AI to launch more sophisticated cyber campaigns. To remedy such concerns, NPC's Circular 2023-06 provides guidance on implementing other security requirements like embedding privacy-by-design and privacy-by-default in data processing systems without requiring any action from data subjects. Some participants admit that the Philippines still needs to improve the adoption of AI as an integral component of cybersecurity strategies and solutions both in the public and the private sector. Both the NPC and DICT are facing extreme challenges in monitoring compliance checks and conducting audit due to the limited familiarity on AI as a fast-changing technology, and has recognized that they too need technical, policy, and legal skills upgrade to ensure the proper enforcement of cybersecurity and data privacy, and protection audits.

Many have pointed out that the government spending to improve the country's cybersecurity infrastructure will also impact the Philippines' competitiveness in becoming an AI hub. While some have recognized that without robust cybersecurity, achieving an ethical, safe, and reliable AI ecosystem that champions the transparent processing and training of data will remain wishful thinking.

130 NPC and Aboitiz Data Innovation Partner to Propel Privacy Enhancing Technologies in the Philippines through Regulatory Sandbox. Retrieved from <https://insights adi.tech/npc-and-aboitiz-data-innovation-partner-to-propel-privacy-enhancing-technologies-in-the-philippines-through-regulatory-sandbox/>

ADVANCING ACTIONABLE POLICY RECOMMENDATIONS

Building on the findings the diagnostic analysis and the cross-sectoral insights and collective deliberations gleaned from the roundtable discussions involving key stakeholders from the Philippines AI community across the country, the following recommendations are suggested:

Explore a dual-track approach to improve and enhance AI policy coordination and regulation

Priority: **High**

- First, establishing a dedicated inter agency mechanism to synchronize AI policy implementation in the Philippines comprising DTI, DICT, DOST and NEDA. Once established, the proposed interagency mechanism can rapidly ease the current siloed approach to AI policymaking and implementation. This can be accomplished through the provision of an Executive Order from the Office of the Philippine President.
- The Philippine Digital Workforce Competitiveness Act or RAA 11927, and its IRR can also serve as a useful template in establishing the proposed interagency mechanism to clarify the overall vision and implementation of the Philippines national AI policy, facilitate effective coordination and communication among other relevant government bodies and raise consistent public advocacy on AI.
- Another pathway is adopting a soft touch or normative approach to regulation that is flexible to anticipate the rapid AI innovation but still consistently robust to ensuring cybersecurity and data protection standards.

Embedding Ethics in AI policy

Priority: **High**

- Encourage more academic and policy research to investigate ‘ethics’ in the context of the Filipino society. More than just subscribing to the mainstream and prevailing western definition and abstraction of ethics, contextualizing ethics from the lens of the Filipino through historical, sociological, and anthropological research would ensure fit-for-purpose regulatory standards, principles and compliance.
- Setting up AI research funding schemes led by DOST, DoE and CHED centered on sociotechnical approach on Filipino AI ethics can encourage greater collaboration among legal scholars, historians, artists and consumer protection advocates. In recentring the prevailing economic, technical, policy, and legal debates on AI ethics, the Philippines can reduce the technological deterministic approach often espoused by bureaucrats and technocrats that undermine the importance of ethics in the early stages of AI development and policymaking.
- The DICT and the Presidential Communications Office can also foster public knowledge and awareness on AI’s potential applications and limitations from an ethical viewpoint. To clarify any misplaced and often unwarranted expectations of AI systems, and models, the government, academia, and the industry should make a concerted effort to build public knowledge campaigns on AI capabilities through roadshows and/or multimedia information and educational awareness.

Increase funding for capacity building, research and development

Priority: **High**

- Scrutinize the line items found in the funding allocation of Government agencies in the General Appropriations Act and the National Expenditure Program that can be aligned to support broader research and development activities. This can be conducted by the Department of Budget and Management, and DOST.
- Proposing a National AI Research Fund under the purview of the DOST-PCIEERD can be starting point to further support local AI research and innovation. Industry associations and academia can conduct a cost-benefit analysis on the possible gains from increased R&D funding of specific AI use cases in critical sectors like IT-BPO, agriculture, manufacturing, and logistics.

Launch a comprehensive policy reform in the Philippines' ICT sector

Priority: **High**

- Improve the Philippine internet infrastructure gap by removing the legislative franchise requirement to reinvigorate market competition, improve the flow of foreign direct investments, and initiate licensing, and spectrum restacking process. Empowering the National Telecommunications Commission as an independent regulator can help oversee the Open Access in Data Transmission bill that will initiate spectrum assignment to narrow the digital connectivity gaps in the medium and long-term horizon.

Develop industry responsive educational curricula

Priority: **Medium**

- State- and privately-owned universities and colleges must forge closer collaboration with the industry to cultivate an applied and market-oriented approach in doing research and/or enhancing educational curriculum. HEIs and industry associations must enhance consultative mechanisms to anticipate employment trends to maximize job opportunities amid rapid technological changes.

Clarify and establish a shared terminology on the design, deployment, and evaluation of AI systems, models, and capabilities

Priority: **Medium**

- Establishing a shared definition and taxonomies on AI and its related applications will improve communication and coordination across all concerned stakeholders. This will help establish and streamline the conception and consistent implementation of standards, frameworks, and guidelines throughout the Philippines AI community.
- The DICT, DOST, Department of Education (DoE) and the Commission on Higher Education (CHED) can convene consultations and publish the official AI lexicon that is consistent to best global AI best practices but tailored to the local context.

Incentivize Public-Private partnerships to spur domestic innovation

Priority: **Medium**

- The Philippine Government through DTI and DOST must create incentives for private companies on data-sharing, research outputs, and joint IP protection especially among local start-ups to strengthen open domestic innovation. An enhanced IP regime can support research institutions, universities and industries to efficiently commercialize valuable IP assets. Relatedly, the DOST and the Intellectual Property Office of the Philippines should support AI venture capital funds and co-funding models for AI R&D. This will involve fast-tracking AI-related patent applications under IPO Philippines.
- Proposing tax incentives or grants for private companies will encourage the development of AI-driven start-ups and broader industry-academia collaborations. Such closer academia-industry dynamic will facilitate cross-pollination of ideas among students and industry professionals.

Establish a data sharing, and cybersecurity through policy frameworks and practical drills

Priority: **Medium**

- NPC and DICT should establish a broader data governance policy framework to drive public and private sector collaboration on data exchanges. help facilitate sharing of usable data between public and private sector and adopting a risk-based approach to data classification with respect to other existing laws.
- DICT, DTI, DOST and NPC must convene regular red-teaming activities to identify the cybersecurity risks, weaknesses, and vulnerabilities of AI systems prior to application and release. Routinely conducting red-teaming events will help raise awareness and formulate remediation strategies to address the cybersecurity aspects of AI systems, and thus, increases the stake for cooperation as well as the responsibility and liability on the part of AI developers.



unesco

United Nations
Educational, Scientific
and Cultural Organization

Social and Human Sciences Sector

7, place de Fontenoy
75352 Paris 07 SP France



ai-ethics@unesco.org



on.unesco.org/Ethics-of-AI

Follow us

@UNESCO #AI #HumanAI



**Funded by
The European Union**