Artificial Intelligence (AI) in the Global South: Status and Prospects

Tibebe B. Tesema (PhD)

tibebe.beshah@aau.edu.et

Associate Professor of Information Systems
School of Information Sciences
Addis Ababa University
Addis Ababa, Ethiopia

Abstract

Artificial Intelligence (AI) is a set of technologies that enable machines to perceive their environment and use learning and intelligence to achieve specific goals or perform tasks as required. As AI technologies advance globally, their impact on socio-economic development becomes increasingly critical, particularly in regions with diverse challenges and opportunities. The term "Global South" was a reference to countries sharing post-colonial history and development goals. However, it has evolved to include various marginalized populations, resulting in multiple "souths." These populations face risks related to AI, including discrimination, bias, exclusion, and poor design. Citizens in the Global South, lacking access to proper education, internet access, health services, etc. are particularly at risk. On the other hand, the Global South is eagerly embracing AI's potential, aiming for inclusive growth and positive impact. This perspective article outlines the current landscape of AI in the region and highlights its prospects.

Introduction

Building on the foundation of the third Industrial Revolution, the fourth Industrial Revolution is defined by the convergence of technologies that are blur the lines between the physical, digital, and biological spheres[1]. At the heart of this revolution is artificial intelligence (AI), which plays a central role in driving these transformative changes.

AI refers to the ability of computers and machines to perform tasks that typically require human intelligence. These tasks include reasoning, learning, problem-solving, and understanding natural language[2]. AI systems use complex algorithms to perceive their environment and make decisions that maximize their chances of achieving specific goals. In practical terms, AI powers applications like advanced web search engines, recommendation systems (YouTube or Netflix), voice assistants (such as Google Assistant and Siri, and Amazons Alexa), autonomous self-driving vehicles, creative tools (like ChatGPT, Microsoft's Copilot, X's Grok, Googles Gimini, AI-generated multimedia (art, images, video, sound), Healthcare, and even superhuman gameplay in strategy games like chess

[1] https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/
[2] https://cloud.google.com/learn/what-is-artificial-intelligence

and Go. The field of AI has evolved significantly since its inception in the 1950s, and it continues to impact various aspects of our lives, from healthcare to industry and beyond[3].

The term "Global south" is used to refer to countries located in the Southern Hemisphere, particularly in Africa, Latin America, the Arab World and Asia. While the term is often used to refer to “developing countries,” it is a more nuanced concept that combines various dimensions, including geographical, geopolitical, historical, and developmental factors. Countries in the Global South are often characterized by lower income levels, higher rates of poverty, and less development compared to countries in the Northern Hemisphere. They face various challenges such as limited access to healthcare, education, and infrastructure, as well as the impacts of climate change and political instability. Hence, the term encapsulates a complex set of shared experiences and challenges across diverse regions.

Early AI development has been primarily concentrated in the Global North, but the technology presents unique opportunities for countries in the Global South. The development and adoption of AI also poses unique challenges for these countries, especially regarding internet penetration, infrastructure development, electricity connection, and concerns about the negative impacts of Artificial Intelligence.

The purpose of this perspective article is to shade light on the state of AI use in the Global South and challenges as well as opportunities that these technologies pose. Efforts are also made to outline a path forward for the ethical and responsible application of AI, aimed at improving human well-being and fostering economic development in the target region.

AI in the Global Context

As mentioned before, AI refers to computer systems that can perceive their environment, think, learn, and act based on their observations and goals. AI can be categorized into two types: intelligence with human involvement and intelligence without human involvement. When a human is involved, it can be classified as either assisted or augmented intelligence. When there is no human involvement, it can be classified as either automated or autonomous intelligence. Consequently, AI agents and models can fit into one of these categories, with the most advanced solutions being those that exhibit autonomous intelligence. Progress in this field can be understood through the application of advanced intelligence and the development of significant AI models.

According to AI index report by Stanford[4] the United States leads in AI development, with 61 notable models, followed by the European Union (21) and China (15). Notability is measured by considering number of citations (>1000), number of use (over one million monthly active users), the state-of-the-art performance and indisputable historical significance. As can be seen from the

[3] https://www.coursera.org/articles/what-is-artificial-intelligence
[4] https://www.weforum.org/agenda/2024/04/stanford-university-ai-index-report/

report, countries from the Arab world like UAE and Egypt are contributing to the notable models worldwide.

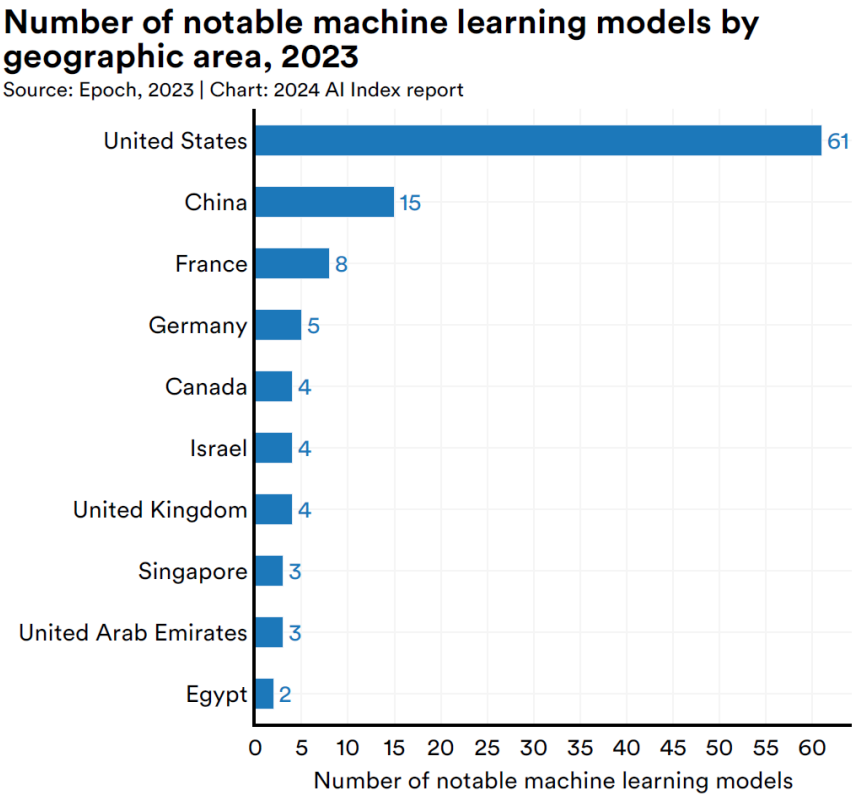

Figure 1 : Number of notable ML models (source : ***Annual AI Index report by Stanford University, 2024)***

When it comes to the role of AI in the global economy, PwC[5] research shows global GDP could be up to 14% higher in 2030 as a result of AI which is the equivalent of an additional $15.7 trillion making it the biggest commercial opportunity in today's fast changing economy. It is also noted that the greatest gains from AI are likely to be in China (boost of up to 26% GDP in 2030) and North America (potential 14% boost). In terms of specific economic sector, the biggest sector gains will be in retail, financial services and healthcare as AI increases productivity, product quality and consumption.

A similar perspective from McKinsey Global Institute[6] also indicates that AI has the potential to deliver additional global economic activity of around $13 trillion by 2030, or about 16 percent higher cumulative GDP compared with today. This amounts to 1.2 percent additional GDP growth

[5] https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study/research-and-methodology.html
[6] Modeling the global economic impact of AI | McKinsey

per year. Goldman Sachs[7], also indicated that AI could increase global GDP by 7% over a ten-year period. Therefore, these facts indicate that AI is set to have a major impact on the global economy.

State of AI in the Global South

The current state of AI in the Global South is presented in terms of promising advancements and showcases, existing challenges, and the region's limited visibility in the context of global AI governance.

Promising Advancements

While the development and adoption of AI vary across developing countries, there are ongoing efforts to bridge the gap and ensure equitable access to the benefits of AI. Some of the promising initiatives include both creating supportive environments and engaging in practical development efforts, such as:

- Saudi Arabia's Vision 2030 which includes AI as a strategic component
- The plan of UAE to position itself as a digital innovation hub for public services
- The African Union's Artificial Intelligence Continental Strategy for Africa
- The contributions by Egypt and UAE to the notable AI models globally
- Initiatives like Deep Learning Indaba, Khipu, AI Saturdays Lagos, and Data Science Africa[8].
- Attempts to improve connectivity in the Global South like *2Africa*, the longest subsea internet cable ever designed with 46 connections to land-based networks around 33 countries within Africa, Asia, and Europe.
- Nigeria's partnership with Microsoft to help equip citizens with digital skills with the aim of harnessing the potential of AI
- Kenya's Digital Economy Blueprint[9] and Ethiopia's AI institute and National AI policy
- Plans to implement digital transformation initiatives in Brazil, Costa Rica, India, Jamaica, Malaysia, Panama, Rwanda, and South Africa[10]

In terms of specific examples, there is a wide range of AI use cases among countries in the Global South, especially in the fields of agriculture, healthcare, and education. AI projects focused on identifying fruits and vegetable diseases to support farmers, building a deep learning-based object detection model to aid in-field diagnosis of cassava disease in East Africa, *Farmer's*

[7] https://www.gspublishing.com/content/research/en/reports/2023/03/27/d64e052b-0f6e-45d7-967b-d7be35fabd16.html
[8] https://www.brookings.edu/articles/ai-in-the-global-south-opportunities-and-challenges-towards-more-inclusive-governance/
[9] https://www.ict.go.ke/wp-content/uploads/2019/05/Kenya-Digital-Economy-2019.pdf
[10] https://www.brookings.edu/articles/ai-in-the-global-south-opportunities-and-challenges-towards-more-inclusive-governance/

Companion which is a solution using AI to mitigate crop damage from pests in Uganda[11] and developing imagery observing systems to support precision agriculture and forest monitoring in Brazil are good examples in the agriculture sector. Nigeria's *RxAll* used to assess drug's compound[12], AI models to interpret fetal ultrasounds in Zambia, a clinical decision support to combat antimicrobial resistance in Ghana and predictive models to keep expecting mothers in rural India engaged in telehealth outreach programs are instances in the healthcare. There are also AI powered solutions in education like the teaching assistants to aid science education in West Africa and models enhancing English learning for Thai students.

Dataprophet which is an AI based solution to optimize manufacturing processes in south Africa, an AI tool called *Slang* to scale content generation in Latin America for language teaching, AI based customer management to improve engagement by *M-KOPA* in Kanya, and *Solai* which is an AI based solution in Kazakhstan to help in optimizing transportation and logistics for distributors[13] are also noticeable showcases in the use of AI in the Global South.

There is much anticipation for an increase in AI innovation and its economic impact over the next decade as companies, governments, and various organizations actively work to expand their development despite the challenges from lack of budget, infrastructure, and political instability.

Research on Artificial intelligence in developing countries by Nir Kshetri (2020)[14] cited Accenture's case studies on Latin American countries to illustrate AI as a new factor of production. According to the report the company forecasts that Brazil's gross value added (GVA) in 2035 will be US$3452 billion without AI while AI is taken as a factor of production, the value will increase to US$3884 billion. A briefing to European parliament citing PwC report presents expected gains from AI in the different regions of the world by 2030. According to the prediction, Africa, Oceania and other Global South countries could expect gains of 5.6% of their GDP from AI while Latin America could achieve 5.4% of their GDP by 2030. In relation to supply chain management the use of AI is estimated to reduce logistics costs by 15% and improve inventory levels by 35%[15].

Finally, a Digital Sprinters by Google (April 2024) demonstrates AI's transformative potential within emerging markets. As indicated in the report, 71% of those surveyed in emerging markets said that AI already has a positive impact on access to information, health, education and work.

[11] AI Sprinters: Capturing the economic opportunity of AI in emerging markets
[12] https://doi.org/10.1109/MITP.2019.2951851
[13] AI Sprinters: Capturing the economic opportunity of AI in emerging markets
[14] Kshetri, Nir (2020)."Artificial intelligence in developing countries" IEEE IT Professional*, 22(4)* 63 - 68. https://doi.org/10.1109/MITP.2019.2951851
[15] AI Sprinters: Capturing the economic opportunity of AI in emerging markets

Operating in Constraints

Many countries in the Global South face challenges in fully utilizing AI technologies due to a lack of essential digital infrastructure, such as reliable internet access and adequate computational power[16]. These nations struggle with limited access to data, computing resources, and financial support for advanced AI models. Additionally, there is a notable shortage of skilled professionals needed to develop and sustain competitive AI systems.

Another significant constraint is the absence of a comprehensive regulatory framework to address ethical and regulatory issues associated with AI. Policymakers often lack a clear understanding of AI's implications, resulting in limited policy coverage compared to other areas. According to a study by Demaidi (2023), as of 2023, sixty countries worldwide have published their national AI strategies. Over 70% of these countries are developed nations. A commentary by Chinasa T. Okolo, published by the Brookings Institution on July 24, 2024, emphasized that insufficient adoption and integration of AI in Africa could worsen existing inequalities. On the other hand, national governments in the Global South, along with regional organizations such as the African Union (AU) and the League of Arab States (LAS), have the capacity to establish regulatory frameworks to ensure the proper development and sufficient adoption of AI technologies. This includes addressing issues related to connectivity, data protection and privacy within the regions.

Limited visibility on AI governance

The United States and the European Union (EU) have led discussions on regulating, overseeing, and guiding development and implementation of responsible AI. Yet, voices from the Global South such as the Africans, Latin American countries, Arab states, the Caribbean, and India are notably missing from these debates. These regions are developing their own perspectives on responsible AI governance, which could contribute valuable insights to the already available initiatives worldwide[17].

Prospects and Challenges of AI in the Global South Context

Given the historical development challenges faced by countries in the Global South, AI holds significant potential to drive substantial progress in critical areas such as agriculture, healthcare, and education. Although AI has been predominantly concentrated in the Global North, its

[16] Okolo, C. T. (2023). AI in the Global South: Opportunities and challenges towards more inclusive governance. *Brookings Institution Press. https://www. brookings. edu/articles/ai-in-the-global-south-opportunities-and-challengestowards-more-inclusive-governance*.

[17] https://www.brookings.edu/events/why-the-global-south-has-a-stake-in-dialogues-on-ai-governance/

application in the Global South can address various challenges and foster advancement in these key sectors. AI presents transformative solutions that can enable developing nations to leapfrog traditional development stages, enhance citizens' lives, and stimulate economic growth in these regions. Here are some examples from the World Bank's[18] article "Tipping the Scales: AI's Dual Impact on Developing Nations" and Aderibigbe et al. (2023)[19], corroborated by various other references:

- **Education**: AI-powered tools can bridge critical gaps caused by teacher shortages. For instance, intelligent tutoring systems and personalized learning can enhance educational equity. In Uganda, AI provides pro-bono legal education to rural communities, while in India, students using personalized AI tools scored higher in Hindi and math.
- **Healthcare**: Many low-income countries face a shortage of medical professionals. AI tools can support diagnosis and treatment recommendations, freeing up doctors' time and improving patient care. In South Africa, AI aids in healthcare diagnostics, making it a lifesaver where medical professionals are scarce.
- **Public Services and Financial Inclusion**: AI can streamline tax collections, enhance social transfers, and extend banking services to remote areas. It can be the backbone of efficient governance and financial empowerment, especially in developing countries like in Africa and the Arab World.
- **Transformation in Agriculture:** Agriculture, a cornerstone of many developing economies, stands to benefit significantly from AI technologies. Precision agriculture, enabled by AI, optimizes resource use, enhances crop yields, and mitigates environmental impact. A report by FAO, (2020)[20] indicates that AI applications in crop monitoring, pest control, and predictive analytics contribute to sustainable agricultural practices, ensuring food security and bolstering the livelihoods of farmers.
- **Boosting economic growth and productivity**: AI can boost productivity growth by automating tasks, optimizing processes, and helping with decision-making[21]. A recent study[22] reports that consultants using generative AI completed 12% more tasks on

[18] https://blogs.worldbank.org/en/digital-development/tipping-the-scales--ai-s-dual-impact-on-developing-nations

[19] Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: bridging the gap between potential and implementation. Computer Science & IT Research Journal, 4(3), 185-199.

[20] FAO. (2020). Innovation in family farming: A global perspective. FAO Publications

[21] Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: bridging the gap between potential and implementation. Computer Science & IT Research Journal, 4(3), 185-199.

[22] Dell'Acqua, Fabrizio et al. Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality (September 15, 2023). Harvard Business School Technology & Operations Mgt. Unit Working Paper No. 24-013, The Wharton School Research Paper, Available at SSRN: https://ssrn.com/abstract=4573321 or http://dx.doi.org/10.2139/ssrn.4573321

average and completed tasks 25% more quickly. In 2023, Erik Brynjolfsson[23] and his team found that generative AI has increased call center agent productivity by 14%, especially benefiting entry-level, lower-skilled workers. As discussed in literatures cited by Brokensha et al (2023)[24] over the last five centuries, technological progress has frequently sparked concerns about rising unemployment, but in reality, the opposite effect has occurred. But AI's promise will not automatically translate into economic growth and opportunity rather it will take concerted action by governments, the private sector and civil society.

AI's potential is vast, and it continues to evolve. Whether it's improving human capabilities or autonomous AI, the future looks promising. But it is also important to note that from the estimated $15.7 trillion contribution of AI to the global economy by 2030 mentioned above, excluding China, only $1.7 trillion of this economic impact is expected to impact the Global South[25].

Thus, by leveraging AI tools, countries in the Global South can improve healthcare outcomes through telemedicine, optimize agricultural practices through precision farming techniques, enhance educational access and quality through personalized learning platforms, and streamline infrastructure development and management.

However, the development and deployment of AI face numerous challenges. Additionally, growing concerns about the ethical implications of AI introduce new issues for countries in this region to tackle, alongside managing existing development priorities. Many of the most frequently mentioned challenges are associated with one or more of the following factors[26];

- **Data Quality and Availability**: AI systems heavily rely on data. Ensuring high-quality, relevant data is crucial. Challenges include collecting, cleaning, and maintaining diverse datasets. Most datasets found in these regions are poorly collected, not cleaned, and inaccessible.
- **Limited Infrastructure and Computation facilities**: AI models demand significant computational resources. In relation to this inefficient computing facility and cloud services are observed facts in the regions. Limitation in electricity and internet connectivity should also be taken in to consideration.

[23] Brynjolfsson, E., Li, D., & Raymond, L. R. (2023). *Generative AI at work* (No. w31161). National Bureau of Economic Research.

[24] Susan Brokensha, Eduan Kotzé, Burgert A. Senekal (2023). AI in and for Africa: A Humanistic Perspective. Chapman & Hall.

[25] https://www.brookings.edu/articles/ai-in-the-global-south-opportunities-and-challenges-towards-more-inclusive-governance/

[26] https://www.mckinsey.com/industries/public-sector/our-insights/using-ai-in-economic-development-challenges-and-opportunities#/

- **Bias and Fairness**: AI models can inherit biases from training data, leading to unfair outcomes. Addressing bias requires careful data curation and model evaluation which is not well researched in these regions.
- **Inadequate Data Security and Storage**: Safeguarding sensitive data used for training and inference, balancing data accessibility with privacy concerns and data warehousing are key issues in the development of AI. A comprehensive guiding framework is not well established in most countries of the Global South.
- **Insufficient skilled manpower and Skillset**: AI development requires specialized skills (e.g., machine learning, natural language processing). Limited human capacity in relation to AI design and development is being reported in various platforms.
- **Cost and Resource Constraints**: AI development can be expensive due to infrastructure, talent, and data costs. Balancing investment with expected benefits is another challenge presented to the policy makers in the regions.
- **Ethical Considerations**: AI decisions impact people's lives. Ensuring fairness, transparency, and accountability. Ethical guidelines and responsible AI practices are not well established.

Thus, it is easy to see that while AI presents immense opportunities, addressing these challenges is vital for successful AI adoption within these regions.

Conclusion and way forward

While AI adoption varies across developing countries, efforts are being made to close the gap and ensure fair access to AI benefits. There are numerous attempts and success stories related to AI applications in different sectors. However, much work remains to fully leverage AI's potential. In this context, I encourage countries in the Global South to collaborate and invest in baseline studies or research to identify available opportunities and areas needing urgent attention. The focus should be on developing AI solutions tailored to the needs of the Global South, as many prominent large language models, such as those from ChatGPT, Google, Anthropic, or OpenAI, do not adequately represent the languages and needs of under-resourced regions.

Another critical aspect of ensuring the proper and effective development and implementation of AI is establishing appropriate policy and standard frameworks. AI and data privacy regulations should not be developed in isolation, as they impact various facets of society. Therefore, it is crucial for policymakers to engage with a diverse range of stakeholders—including the private sector, educational institutions, think tanks, NGOs, and civil society organizations—to inform their policy-making processes and to help create robust governance mechanisms.

Therefore, governments in the Global South should invest in AI excellence centers and support local researchers to advance AI development within their countries. They also need to incorporate digital skills into educational curricula to ensure that citizens are well-informed as either

developers or users of AI. Additionally, countries leading the AI dialogue should include Global South nations in discussions and advisory bodies. Attention must also be given to improving infrastructure related to internet access and electricity. Stakeholders should advocate for an AI design and deployment approach that emphasizes sustainability, inclusivity, and contextual relevance for the Global South.

In summary, stakeholders in the Global South must work together with various partners, invest in capacity building, and emphasize ethical considerations to ensure that AI technology adoption is inclusive, sustainable, and advantageous for all societal segments. By engaging in strategic planning, investing wisely, and fostering collaboration, the Global South can leverage AI's transformative potential to drive innovation, economic growth, and social progress, leading to a more equitable and prosperous future for everyone.

Recommendations

Finally, drawing on existing literature and the April 2024 AI Sprinters Report[27] by Google, the Association of Senates, Shoora Councils, and similar bodies in Africa and the Arab World could consider the following recommendations to advance AI in the Global South:

- **Supporting innovation, research and development:** Supporting research and innovation in AI technologies and responsible practices is crucial for promoting AI for economic development in African and Arab states. Such support can be provided through a range of measures, including funding for research and development and partnerships between academia and industry.
- **Collaboration with in the Global South and with international organizations, development partners, and civil society to support AI initiatives and projects**: While there are hurdles to overcome, the potential benefits of AI in the Global South are substantial, offering opportunities for significant socio-economic improvements. However, it is important to bear in mind that south - south collaborations in terms of capacity building and visibility on AI Governance has paramount importance. Appearing and playing pivotal role in world wide AI governance platforms like “AI Governance Alliance” has to get due attention by the global south countries.
- **Encouraging open data initiatives and efficient data management System:** High-quality datasets that represent diverse perspectives, languages and cultures are essential for training AI models effectively for local markets. Governments should commit to better utilizing and sharing data to improve public services like health care, education, transportation and disaster response, and invest in the infrastructure needed to promote responsible use of data. Similarly, governments should enable

[27] AI Sprinters Capturing the economic opportunity of AI in emerging markets. April, 2024

trusted cross-border data flows to ensure models and systems are trained on rich, geographically diverse data.

- **Strengthening capacity building and Mentoring programs for the development of AI skills and implementation:** People especially the youth should get special attention in building technology oriented and digitally enabled society. More collaboration between the public and private sectors is needed to build AI fluency, strengthen STEM education and increase online learning opportunities. Tech based Startups working on AI based solutions should be mentored and supported through collaborative funding. Encouraging private sector involvement in AI initiatives through incentives and regulatory frameworks should also get due attention.
- **Regulatory framework (Support AI-enabling regulation):** Governments must focus on robust AI regulation, sustainable ecosystems, and equitable inclusion in global AI discussions. Countries should adopt risk-based and proportionate regulatory approaches, uphold privacy and copyright frameworks that allow the use of publicly available information while respecting legitimate rights, support and contribute to the creation of international technical standards for AI, and implement national AI strategies.
- **Invest and promote Infrastructure development:** IT infrastructure including computing resources and connectivity are at the center of technology advancement. Policymakers should advance cloud-first initiatives that prioritize cloud solutions over traditional IT systems.
- **Establishing Regional Partnerships:** Regional partnerships can involve a variety of stakeholders, including governments, NGO's, the private sector, academia, civil society, in a form of regional networks, alliances, and initiatives. Establishing such regional partnerships to share knowledge, expertise, and resources in the design and implementation of AI solutions is an important aspect of promoting sustainable AI in African and Arab states. Regional partnerships are found more practical and manageable in facilitating the exchange of best practices and lessons learned, enhance collaboration among countries, and promote regional integration.

Thus, the Association of Senates, Shoora Councils, and similar bodies in Africa and the Arab World, as a collective of parliamentarians, can significantly contribute to promoting the adoption and implementation of the recommendations outlined in the paper. They can offer legislative support by drafting, sponsoring, and endorsing laws that align with these recommendations. Additionally, association members can use their public platforms to highlight AI's potential for economic growth and sustainable development.

Parliamentarians could also influence the allocation of government funds to support AI initiatives and facilitate policy dialogues by engaging with stakeholders to create a unified vision for AI's role

and capabilities. Additionally, members of the association can play a crucial role in fostering regional and international cooperation by participating in inter-parliamentary discussions, collaborating with international organizations, and partnering with development agencies to exchange knowledge, resources, and best practices in AI initiatives.

References

1. Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: bridging the gap between potential and implementation. *Computer Science & IT Research Journal*, *4*(3), 185-199.
2. AI Sprinters Capturing the economic opportunity of AI in emerging markets. April, 2024
3. Brynjolfsson, E., Li, D., & Raymond, L. R. (2023). *Generative AI at work* (No. w31161). National Bureau of Economic Research.
4. Demaidi, M.N. Artificial intelligence national strategy in a developing country. *AI & Soc* (2023). https://doi.org/10.1007/s00146-023-01779-x
5. FAO. (2020). Innovation in family farming: A global perspective. FAO Publications
6. Google. AI Sprinters Capturing the economic opportunity of AI in emerging markets. April, 2024
7. Jake Okechukwu Effoduh. A Global South Perspective on Explainable AI. https://carnegieendowment.org/2024/04/30/global-south-perspective-on-explainable-ai-pub-92333
8. Kshetri, Nir (2020)."Artificial intelligence in developing countries" IEEE IT Professional*, 22(4)* 63 - 68*.* https://doi.org/10.1109/MITP.2019.2951851
9. Okolo, C. T. (2023). AI in the Global South: Opportunities and challenges towards more inclusive governance. Brookings Institution Press. https://www. brookings. edu/articles/ai-in-the-global-south-opportunities-and-challengestowards-more-inclusive-governance.
10. Sengupta, N., Subramanian, V., Mukhopadhyay, A., & Scaria, A. G. (2023). A Global South perspective for ethical algorithms and the State. Nature Machine Intelligence, 5(3), 184-186.
11. Srivastava, K. (2023). Artificial Intelligence and National Security: Perspective of the Global South. International Journal of Law in Changing World, 2 (2), 77-87. DOI: https://doi.org/10.54934/ijlcw.v2i2.63
12. Wall, P. J., Saxena, D., & Brown, S. (2021). Artificial intelligence in the Global South (AI4D): Potential and risks. arXiv preprint arXiv:2108.10093.
13. Susan Brokensha, Eduan Kotzé, Burgert A. Senekal (2023). AI in and for Africa: A Humanistic Perspective. Chapman & Hall.