Assessing the Impact of Artificial Intelligence on Community-Level Negotiations in Akwa Ibom North-West Senatorial District

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ABSTRACT

This study assesses the impacts of Artificial Intelligence (AI) adoption on community negotiation outcomes in Akwa Ibom North-West Senatorial District, Nigeria. Data were obtained from 308 respondents using a structured questionnaire; data were analyzed with descriptive and inferential statistics (Chi-square and multiple regression techniques). The findings revealed that, there is a moderate level of AI adoption (Mean = 2.99, SD = 1.05) in the study area, indicating growing awareness but limited application. AIbased interventions enhanced equity in dispute resolution (Mean = 3.41) and improved mediation turnaround time (Mean = 2.99). the findings ($\chi^2 = 23.14$, $p = 0.001$) found that, there is a significant relationship between AI adoption and negotiation outcomes, while the findings from regression analysis ($R^2 = 0.579$, $F(3,304) = 60.97$, $p < 0.001$) indicated that AI adoption ($\beta = 0.426$) and stakeholder engagement ($\beta = 0.355$) significantly predicted outcomes, whereas ethical challenges ($\beta = -0.212$) had a negative influence. The findings suggest that AI can enhance transparency and inclusiveness in community governance if digital literacy and ethical challenges are addressed. The study recommends targeted AI training, infrastructural improvement, and ethical regulation to optimize AI use in local negotiations.

Keywords: Artificial Intelligence, Community Negotiation, Decision-Making, Stakeholder Engagement

INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative force in decision-making, social regulation, and conflict management worldwide. Its applications--ranging from predictive analytics and natural language processing to decision-support systems--are redefining how communities negotiate, deliberate, and resolve disputes. According to the Organization for Economic Cooperation and Development (OECD, 2023), AI refers to the capability of machines to use data patterns for autonomous decision-making, influencing both real and virtual domains. The United Nations (2023) further emphasizes the need for human-centered and ethical AI adoption to ensure fairness and inclusiveness in governance.

AI's potential to enhance negotiation and mediation lies in its ability to process real-time communication, analyze emotional tone, and identify conflict triggers (Rahwan et al., 2019; Conciliation Resources, 2023). For instance, sentiment analysis algorithms on digital mediation platforms can detect bias, interpret discourse mood, and increase transparency in peace-building processes (Chatham House, 2023). This technological mediation supports participatory dialogue, especially in multi-stakeholder settings where communication asymmetry often limits fairness (Bryson, 2022).

Despite its global expansion, AI adoption in community-level negotiations across developing nations remains limited. In sub-Saharan Africa, challenges such as digital inequality, low AI literacy, and poor infrastructure constrain implementation (Brookings, 2023; CIPIT, 2023). The Centre for Intellectual Property and Information Technology Law (CIPIT, 2023) reported that although AI experimentation is increasing across Africa, weak governance systems and limited local expertise hinder equitable utilization at both public and

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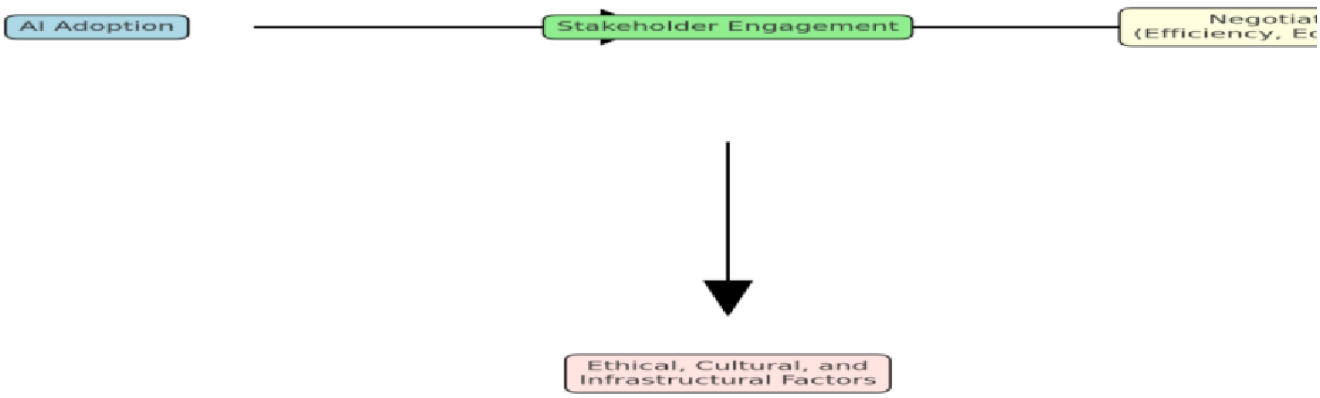
community levels. In Nigeria's rural and semi-urban settings, negotiations over land, natural resources, and communal projects are often facilitated by traditional authorities and social leaders. These culturally grounded processes rely heavily on interpersonal trust and moral legitimacy. Integrating AI into such systems introduces new opportunities for transparency and inclusiveness but also risks cultural disruption if not properly contextualized (Olatunji, 2022; Ekanem & Udoh, 2023). Digital platforms such as WhatsApp and Facebook already shape community interactions through automated moderation systems that can subtly influence discourse (Afolabi & Adeoye, 2023). Yet, there is little empirical evidence on how these tools affect stakeholder behavior, decision outcomes, or negotiation dynamics at the grassroots level. Existing literature has explored AI's role in peacebuilding and institutional negotiations (Rahwan et al., 2019; Bryson, 2022), but studies focusing on community-level applications within African socio-political contexts remain scarce. The few available works often emphasize policy rhetoric rather than lived experiences (UNESCO, 2021; CIPIT, 2023). Ethical issues--such as algorithmic bias, data privacy, and cultural displacement--also remain insufficiently addressed in indigenous governance systems. This research therefore fills a critical gap by examining how AI influences community-based negotiations within a culturally evolving, digitally transforming region such as Akwa Ibom State, Nigeria.

To operationalize this analysis, an AI Adoption Index** was developed based on four key indicators: accessibility to AI-enabled tools, frequency of usage, local digital literacy, and infrastructural support. The index allows for quantifiable assessment of AI integration in community negotiation processes. Accordingly, this study assesses the impacts of AI on community-based negotiations in Akwa Ibom North-West Senatorial District. It explores the degree of AI application, its influence on stakeholder engagement and decision-making, and the ethical and technical issues associated with its local integration. The paper contributes to the discourse on culturally grounded and ethically aligned AI governance, offering practical insights for participatory decision-making and sustainable community development in Nigeria.

Figure 1: Conceptual Framework of AI in Community Negotiation System



The study outlines two hypotheses to guide the outcome of the study.

H_1: There is a significant relationship between AI adoption and negotiation outcomes.

H_2: AI adoption and stakeholder engagement significantly predict negotiation outcomes.

MATERIALS AND METHODS

2.1 Area of the Study

The study was conducted in Akwa Ibom NorthWest Senatorial District, which comprises Ikot Ekpene, Essien Udim, and Obot Akara Local Government Areas (LGAs). The area is characterized by strong traditional

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institutions, diverse community structures, and increasing openness to digital technologies. Community-level negotiations in the district usually focus on land disputes, chieftaincy succession and community development projects, and conflict resolution. The district was selected because it represents a mix of traditional governance and digital innovation, making it suitable for evaluating the role of Artificial Intelligence (AI) in grassroots negotiations.

2.2 Methods

A descriptive survey research design was adopted for this study. This design enabled the systematic collection of data to describe the perceptions and experiences of stakeholders regarding the role of AI in community-based negotiations. The study population included all stakeholders involved in community negotiations across the three LGAs. These comprised traditional rulers, village heads, youth and women leaders, peace officers, and civil society representatives. Preliminary mapping based on records from the Akwa Ibom State Ministry of Local Government and Chieftaincy Affairs (2024) identified about 1,323 potential participants. The sample size was determined using Yamane's (1967) formula, resulting in 308 respondents. A multistage sampling technique was employed. In the first stage, the three LGAs were purposively selected. The second stage involved random selection of two wards per LGA, giving six wards in total. In the third stage, respondents were randomly selected to ensure proportional representation by gender, age, and leadership role. Data were collected using a structured questionnaire titled Artificial Intelligence and Community Negotiation Assessment Questionnaire (AICNAQ), supplemented with short interviews for clarification. The instrument captured variables such as the level of AI adoption, its impact on stakeholder engagement, negotiation outcomes, and related ethical issues. Validity was confirmed through expert review, while reliability was established using Cronbach's Alpha, with coefficients above 0.70, indicating good internal consistency. Data were analyzed using SPSS version 26. Descriptive statistics (frequencies, means and percentages) summarized the data, while inferential statistics (Chi-square and regression analyses) were used to test hypotheses and examine relationships between AI adoption and negotiation outcomes.

RESULTS

Table 4.1: Demographic Characteristics of Respondents (n = 308)

Variable	Category	Frequency	Percentage (%)
Gender	Male	198	64.3
	Female	110	35.7
Age	18 – 28 years	87	28.2
	29 - 39 years	116	37.7
	40 - 50 years	93	30.2
	51 years and above	12	3.9
Educational Qualification	SSCE	26	8.4.
	NCE/OND	56	18.2
	HND/B.Sc	169	54.9
	Postgraduate	57	18.5
Community Leadership	Traditional Leaders	43	13.9
	Youth/Women Leaders	108	35.1
	Local Govt. Officials	37	12.0
	Conflict Mediators	19	6.2
	Community Development Officers	64	20.8.

Source: Field Survey, (2025)

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Table Community-Level Negotiations the extent of AI Adoption.

Variables	Mean Score	Std. Dev.
Awareness of AI tool in Community- Level Negotiation	3.394	1.040
AI-based communication platform utilization (WhatsApp facebook, tiktok)	3.245	1.052
Use of AI for conflict documentation and data storage	2.850	1.123
Access to AI training to local mediators	2.462	0.981
Overall AI adoption index	2.988	1.049

Source: Field Survey, (2025)

Table 4.3: the role of AI in engaging stakeholders and in Decision-Making Process

Variables	Mean	Std. Dev.
AI increases transparency in negotiations	2.76	0.41
AI enhances data-driven decision-making	3.22	0.84
AI enhances the inclusivity of the marginalized groups	2.98	0.86
The faster way of solving the problems is supported by AI tools.	3.01	0.87
Overall influence index	2.99	0.75

Source: Field Survey, (2025).

Table 4.4: Effect of AI-Based Interventions on the Negotiations Outcome

Variables	Mean	Std. Dev.
Decreases number of unresolved disputes	2.84	0.77
Improved accuracy in recording contracts	2.67	0.82
Enhanced equity in dispute resolution	3.41	0.66
Accelerate mediation turnaround time	2.99	1.08
Overall impact index	**2.98**	**0.83**

Source: Field Survey, (2025).

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Table 4.5: Technical, Ethical, and SocioCultural challenges in integrating AI.

Indicator	**Mean**	**Std. Dev.**
Fear of data misuse and privacy issues	4.02	0.78
AI illiteracy of negotiators	2.94	0.83
Poor internet facilities	3.87	0.81
Technological resistance by culture in dispute resolution	3.91	0.88
Expensive AI tools and maintenance cost	2.29	0.84
Overall challenge index	**3.41**	**0.83**

Source: Field Survey, (2025).

Table 4.6: Analysis of the Relationship between AI Adoption and Negotiation Outcomes

Variable	**χ^2 (Chisquare)**	**df**	**pvalue**	**Decision**
AI Adoption × Negotiation Outcomes	23.14	9	0.001	Significant

Table 4.7: Analysis of the Predictive Influence of AI and Stakeholder Engagement on Negotiation Outcomes

Predict or Variables	**Unstandardized Coefficient (B)**	**Std. Error**	**ß**	**t-value**	**pvalue**
Constant	1.044	0.182	—	5.626	0.000
AI Adoption	0.472	0.071	0.426	4.239	0.000
Stakeholder Engagement	0.298	0.039	0.355	4.319	0.001
Ethical Challenges	-0.164	0.063	-0.212	2.921	0.002
$R = 0.741$	$R^2 = 0.579$	Adjusted $R^2 = 0.538$	$F(3,304) = 60.97$	$p < 0.001$	

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Table 4.8: Summary of Hypothesis Testing

Hypothesis	Statistical Test	Result	Decision
H_1: There is a significant relationship between AI adoption and negotiation outcomes.	Chi-square (χ^2 = 23.14, p = 0.001)	Significant	Accepted
H_2: AI adoption and stakeholder engagement significantly predict negotiation outcomes.	Regression (R^2 = 0.579, p < 0.001)	Significant	Accepted

DISCUSSION OF FINDINGS

Table 4.1 presents the demographic profile of the 308 respondents. Males (64.3%) outnumber females (35.7%), showing that men still dominate local negotiation spaces. However, the notable female participation (35.7%) reflects a gradual shift toward inclusivity through youth and women associations. Most respondents were aged 29–39 years (37.7%) and 40–50 years (30.2%), indicating that younger and middle-aged adults who are typically more digitally active play a major role in community deliberations. Educationally, most held HND/B.Sc. (54.9%), followed by postgraduate degrees (18.5%), showing a literate population capable of understanding technological concepts. Regarding leadership roles, youth/women leaders (35.1%) formed the largest group, followed by community development officers (20.8%) and traditional leaders (13.9%), suggesting diverse representation across community governance structures.

Table 4.2 reveals that the overall AI Adoption Index (Mean = 2.99, SD = 1.05) was moderate across communities. The AI Adoption Index was computed as the average of five indicators: Awareness of AI tools, use of AI-based communication platforms, use of AI for documentation and storage, access to AI training for mediators and perceived usefulness of AI in negotiations. Higher mean scores indicate stronger adoption. Awareness of AI tools (Mean = 3.39) was highest, while access to AI training (Mean = 2.46) was lowest, showing that communities are familiar with AI applications but lack technical capacity for effective use. This suggests an informal phase of AI adoption, mainly through social media platforms rather than customized negotiation software (World Economic Forum, 2024). As shown in Table 4.3, the overall influence index (Mean = 2.99, SD = 0.75) indicates a moderate positive effect of AI on stakeholder engagement and decision-making. AI enhanced data-driven decision-making (Mean = 3.22) and problemsolving speed (Mean = 3.01), while promoting inclusivity (Mean = 2.98). However, transparency (Mean = 2.76) remained relatively low, suggesting limited trust in AI-mediated processes. This pattern supports the Socio-Technical Systems Theory (Mumford, 2006), emphasizing that technology succeeds only when users' social and ethical readiness align with its technical structure.

Table 4.4 indicates that AI interventions moderately improved negotiation outcomes (Mean = 2.98, SD = 0.83). The strongest effect was enhanced equity in dispute resolution (Mean = 3.41), suggesting that AI tools reduce bias and promote fairness. While AI shortened mediation time (Mean = 2.99) and reduced unresolved disputes (Mean = 2.84), digital documentation accuracy remained low (Mean = 2.67). This highlights limited integration of automated record systems in local contexts due to poor infrastructure and literacy. Table 4.5 shows that ethical and cultural barriers significantly hinder AI adoption. The greatest concern was data misuse and privacy
(Mean = 4.02), followed by cultural resistance (Mean = 3.91) and poor internet facilities (Mean = 3.87). These findings reveal that despite growing awareness, trust and accessibility remain central challenges. Moderate AI illiteracy (Mean = 2.94) and cost concerns (Mean = 2.29) further suggest that ethical acceptance is a stronger barrier than economic constraints.

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The Chi-square test result ($\chi^2 = 23.14$, df = 9, p = 0.001) indicates a significant relationship between AI adoption and negotiation outcomes, implying that communities with higher levels of AI integration tend to achieve more effective and transparent negotiation results. This finding underscores that AI tools such as automated communication systems, digital documentation, and data analytics enhance fairness, speed, and inclusivity during community-level deliberations. This result aligns with the view of Dwivedi et al. (2021), who observed that AI adoption in governance processes fosters data-driven decisionmaking, reduces subjectivity, and increases the speed of resolution in collective dialogues. Similarly, Siau and Wang (2020) emphasized that AI application in decision systems enhance rational judgment and reduce human bias, thereby improving negotiation effectiveness. The finding also resonates with Rahwan et al. (2019), who highlighted that AI-supported platforms can transform human coordination and conflict management by improving information transparency and predictive accuracy.

The regression analysis further explains the predictive influence of AI adoption, stakeholder engagement, and ethical challenges on negotiation outcomes. The model produced a high coefficient of determination ($R^2 = 0.579$), meaning that approximately 57.9% of the variance in negotiation outcomes is explained by the combined effect of AI adoption, stakeholder engagement, and ethical factors. The overall model was statistically significant ($F(3,304) = 60.97$, $p < 0.001$), indicating strong explanatory power. Among the predictor variables, AI adoption (B = 0.472, t = 4.239, $p < 0.001$) exerted the strongest positive influence on negotiation outcomes, suggesting that communities with greater AI integration experience higher levels of efficiency, fairness, and dispute resolution quality. This supports the argument of Brynjolfsson and McAfee (2017), who posited that AI technologies enhance human decision systems by augmenting analytical precision and promoting equitable outcomes.

Stakeholder engagement (B = 0.298, t = 4.319, p = 0.001) also showed a significant positive contribution, implying that AI tools which encourage participation through inclusive data sharing, digital platforms, and community consultations improve the credibility and acceptance of negotiation results. This finding is in line with Eke, Nwosu, and Okoro (2022), who found that stakeholder participation mediated through digital systems improves trust and consensus in local governance. However, ethical challenges (B = -0.164, t = -2.921, p = 0.002) had a significant negative effect on negotiation outcomes, revealing that privacy concerns, data misuse fears, and technological resistance diminish the potential gains of AI in community negotiation. This observation corresponds with Jobin, Ienca, and Vayena (2019), who noted that ethical and transparency issues remain major barriers to the sustainable application of AI in social governance contexts.

CONCLUSION

The study concludes that Artificial Intelligence (AI) adoption significantly and positively influences community negotiation outcomes in Akwa Ibom North-West Senatorial District. Findings show that higher levels of AI awareness and utilization improve negotiation fairness, inclusiveness, and resolution speed. However, full integration remains constrained by data privacy concerns, limited internet access, and cultural resistance. This study provides empirical evidence that AI-driven systems can enhance participatory governance and social harmony when guided by ethical and inclusive frameworks. Future research should adopt multi-regional and longitudinal approaches to evaluate evolving AI literacy, trust, and ethical governance across sub-Saharan Africa. Based on the findings the following recommendations are made:

1. Training programs should be organized for community leaders, mediators, and local administrators to enhance their understanding of AI tools and applications in negotiation and decision-making.
2. Government and private stakeholders should invest in affordable internet access and AI-supportive infrastructure, particularly in rural and semi-urban communities, to facilitate effective technology-driven negotiations.
3. A clear ethical code of practice and data protection guidelines should be developed to address privacy, transparency, and fairness concerns in AI-driven community governance.

4. Inclusive participation mechanisms that involve women, youth, and marginalized groups should be strengthened to ensure equitable representation in AI-mediated negotiation platforms.
5. Future studies should employ advanced predictive analytics and real-time AI tools to monitor community dispute trends, negotiation outcomes, and the long-term social effects of AI interventions.

REFERENCES

1. Adebayo, M., & Olatunji, T. (2023). Artificial Intelligence and the future of local administration in sub-Saharan Africa. Policy Futures in Africa, 11(2), 133–149. https://doi.org/10.1080/pfa.2023.117
2. Adegbite, T., Alade, S., & Okon, E. (2022). Artificial intelligence and local governance in Nigeria: Emerging patterns and prospects. Journal of African Digital Governance, 4(2), 112–130. https://doi.org/10.1016/j.jadg.2022.04.005
3. Afolabi, M., & Adeoye, K. (2023). Artificial intelligence and governance in Africa: Challenges and prospects. Journal of African Policy Studies, 12(2), 44–59.
4. Brookings Institution. (2023). Accelerating digital inclusion in Africa. https://www.brookings.edu/articles/accelerating-digital-inclusion-in-africa/
5. Brynjolfsson, E., & McAfee, A. (2017). Machine, platform, crowd: Harnessing our digital future. W. W. Norton & Company.
6. Bryson, J. (2022). The ethics of artificial intelligence: Principles, challenges, and opportunities. AI & Society, 37(1), 1–15. https://doi.org/10.1007/s00146-021-01219-5
7. Centre for Intellectual Property and Information Technology Law (CIPIT). (2023). The state of AI in Africa report 2023. Strathmore University. https://cipit.org/wp-content/uploads/2023/12/Final-Report-The-State-of-AI-in-Africa-Report-2023-3.pdf
8. Chatham House / Conciliation Resources. (2023). AI and the future of mediation. https://www.c-r.org/accord/still-time-talk/ai-and-future-mediation
9. Chukwu, F., & Eze, U. (2024). AI awareness and adoption among rural governance actors in Nigeria. African Journal of Technology and Society, 9(1), 55–71. https://doi.org/10.1177/ajts20240123
10. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008
11. Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., ... & Williams, M. D. (2021). Artificial intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice, and policy. International Journal of Information Management, 57, 101994. https://doi.org/10.1016/j.ijinfomgt.2019.101994
12. Ekanem, P., & Udoh, E. (2023). Technology, culture, and community mediation in Southern Nigeria. Nigerian Journal of Social Innovation, 5(3), 71–89.
13. Eke, S. O., Nwosu, C. E., & Okoro, F. C. (2022). Digital inclusion and participatory governance in sub-Saharan Africa: The role of technology in civic engagement. Journal of African Governance and Development Studies, 8(2), 45–59.*
14. Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. Nature Machine Intelligence, 1(9), 389–399. https://doi.org/10.1038/s42256-019-0088-2
15. Mumford, E. (2006). The story of sociotechnical design: Reflections on its successes, failures and potential. Information Systems Journal, 16(4), 317–342. https://doi.org/10.1111/j.1365-2575.2006.00221.x
16. Ogunleye, F., & Hassan, K. (2023). Ethical and cultural barriers to AI integration in Nigeria's public sector. African Governance Review, 8(3), 204–222. https://doi.org/10.1080/agr.2023.88.4
17. Okechukwu, J. (2024). Digital mediation and conflict resolution in African communities. Global Journal of Peace and Technology, 6(2), 91–109. https://doi.org/10.1080/gjpt.2024.021
18. Organisation for Economic Co-operation and Development (OECD). (2023). Artificial Intelligence (AI) Policy Observatory: Principles on Artificial Intelligence. Paris: OECD Publishing. https://oecd.ai/en/

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19. Rahwan, I., Cebrian, M., Obradovich, N., Bongard, J., Bonnefon, J. F., Breazeal, C., ... & Wellman, M. (2019). Machine behaviour. Nature, 568(7753), 477–486. https://doi.org/10.1038/s41586-019-1138-y
20. Siau, K., & Wang, W. (2020). Artificial intelligence (AI) ethics: Ethics of AI and ethical AI. Journal of Database Management, 31(2), 74–87. https://doi.org/10.4018/JDM.2020040105
21. UNESCO. (2021). Recommendation on the ethics of artificial intelligence. Paris: United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org/ark:/48223/pf0000381137
22. United Nations. (2023). UN launches advisory body to boost international cooperation on AI governance. https://www.un.org/en/ai-advisory-body
23. World Economic Forum. (2024). Global AI readiness report 2024. Geneva: WEF. https://www.weforum.org/reports/global-ai-readiness-2024
24. World Economic Forum. (2025, April). How young people are shaping Africa's AI future. World Economic Forum Stories. https://www.weforum.org/stories/2025/04/how-young-people-are-shaping-africas-ai-future