

ARTIFICIAL INTELLIGENCE IN ADULT EDUCATION AND COMMUNITY DEVELOPMENT IN THE 21ST CENTURY

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Abstract

The effect of artificial intelligence (AI) has grown fast, penetrating many industries and changing the world significantly. Artificial intelligence (AI) has transformed the 21st century, impacting such different industries as science, business, adult education, and community development. This article analyzes the intersection of artificial intelligence (AI), adult education, and community development, shedding light on the promise, risk, and advantage of incorporating AI into the three areas. It takes into account how AI technology promotes community-level sustainable development, inclusive growth, and social empowerment. AI is transforming the existing adult education landscape. Adult learners are opening up to new opportunities through AI-driven learning platforms, personalized learning experiences, and courses that increase digital literacy and hands-on training. Individuals are empowered to succeed in a more changing world by these technologies, including workforce development, education for all, lifelong learning, and knowledge management. Artificial intelligence (AI) is extending to a large part of society, aside from the education system. It can help enhance agricultural production and food security, enhance environmental management, enhance public health systems, and enhance urban planning. Aside from helping communities become resilient and sustainable, it can further serve to promote social services as well as reduce poverty. While artificial intelligence (AI) will probably disrupt certain things, this paper's conclusion is that technology can also be a source of innovation for adult education and community development. The benefits of AI are far greater than the drawbacks, if they are adopted focusing on inclusion, ethics, and sustainability. Governments, schools, communities, and corporations must all collaborate to unlock this potential. Investment in digital skills, good legal frameworks, and infrastructure will be needed to incentivize large-scale uses of AI technologies that benefit society.

Keywords: Artificial intelligence, adult education, community development

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Introduction

The term "artificial intelligence" (AI) is used to describe the methods used to teach computers how to mimic human intelligence, learning, reasoning, seeing, comprehending language, and decision-making are all included. Artificial intelligence (AI) systems can do something that humans once did because they can simulate human intelligence. By facilitating personalized learning, expanding access, and improving the efficacy of education systems around the world, technology has already begun to reshape education.

Applying the same concepts differently, AI is applied in adult learning to bring about improvements in learner-centered experience development through the application of learning analytics, intelligent tutoring systems, adaptive learning systems, and other similar technologies. The use of these technologies in education has allowed for more individualised learning plans and has simplified the process by which schools teach and train their learners.

These benefits notwithstanding are not powerful enough to offset the challenges presented. One of the biggest issues is that AI has the potential to worsen current learning gaps even more. The ability to gain access to resources powered by artificial intelligence is hindered for some adult learners due to unequal access to stable technology and the internet (Bates, 2019). Another serious issue is prejudice; systems can subtly reinforce stereotypes or exclude certain groups of learners if the data with which AI models are trained is not representative. Another long-standing problem is poor training of teachers in how to harness AI technology most productively.

The study investigates the impact of AI on adult education and community development in the 21st century era. It reflects on how AI can close ethical issues, infrastructural gaps, and socio-economic inequalities simultaneously while ensuring inclusive growth, lifelong learning, and robust communities. The objective of this study is to offer practical recommendations for policymakers, educators, and development practitioners on the use of AI ethically and sustainably in adult education and community building.

AI in Adult Education

Adult learning encompasses a wide range of activities that adults engage in with the goal of learning more, expanding their ability, enhancing their position at work, and enhancing their position in society. Adult learning encompasses a wide range of learning opportunities, from basic literacy and vocational skills training to more concentrated lifelong learning, and seeks to serve the diverse needs of adult learners (UNESCO, 2016). By allowing learners to adjust to evolving economic, social, and technological conditions, such education can lead to civic engagement, employment, social integration, and community development (Merriam & Baumgartner, 2020).

With the increased accessibility, responsiveness, and personalization of education through AI, adult education has never been easier. Students are now able to learn smarter, respond faster to the needs of new job markets, and accept learning as the way of improving themselves and their communities through the use of smart technology. There are a number of major areas in which AI can make a positive impact on adult education:

Personalized Learning Experiences: By enabling more individualized learning, AI is changing adult learning. They promote student learning and involvement by adapting their teaching to each learner's individual needs. Especially in under-resourced schools or programmes, AI can increase access to quality learning and close learning gaps (Zawacki-Richter et al., 2019). This is particularly valuable for adult learners, as they tend to juggle educational pursuits with work and family responsibilities. Personalized training allows individuals to learn at their own speed and learn more effectively (Luckin et al., 2016). Adaptive technologies like Coursera and Duolingo use AI algorithms to monitor the progress of learners and adaptively change task difficulty. Through this process, learners are spared frustration with very challenging material and boredom with much too easy material (Zawacki-Richter et al., 2019). These strategies work best in adult education, because the students usually come with dissimilar backgrounds, objectives, and knowledge levels.

Intelligent Tutoring Systems (ITS): AI enables Intelligent Tutoring Systems which provide immediate support and feedback. They evaluate learners' responses, provide customized advice, and mimic the process of one-to-one mentorship. This method enables learners to

identify areas of weakness, tackle tricky topics, and monitor progress over time. For adults, most of whom fit in learning into many commitments, this instant feedback system is essential for ensuring motivation and enhancing outcomes (Zawacki-Richter et al., 2019).

Enhancing Learning Programs: The other benefit of AI is that it can process vast amounts of data, and using this, teachers can create more effective and focused learning programmes. By examining performance, attendance, and participation metrics, AI can spot patterns and forecast what activities are most likely to lead to learner success. This data-driven strategy enhances pupil achievement and allows facilitators to improve their pedagogy (Luckin et al., 2016). Further, AI can assist in repetitive tasks like grading and tracking attendance in class, leaving the instructor to engage in substantial interaction with students.

AI-Enabled Learning Platforms and Digital Literacy: Being able to utilize digital tools efficiently is a key competence for adult learners in the contemporary workplace. AI-powered e-learning platforms offer real-time guidance, information, and feedback through chatbots, smart tutors, and recommendation systems (Luckin et al., 2016).

Support for Inclusive Education: Screen readers, language translation capabilities, and speech-to-text software are some of the AI solutions that improve learning material accessibility for the disabled and multilingual groups (Bates, 2019). Text-to-speech software, translation tools, and voice-controlled platforms that assist learners with disabilities and learners from multilingual backgrounds are only a few of the means through which AI is attempting to address the diverse needs of adult learners (UNESCO, 2021). Equity and lifelong learning participation are enhanced by this interaction.

Workforce Development and Vocational Training: Adult learning activities are becoming increasingly geared towards reskilling and upskilling the digital economy. Artificial intelligence (AI)-powered simulations, virtual reality (VR), and predictive labor market analytics may help individuals acquire skills relevant to their industries and look ahead to employment needs (Holmes et al., 2019). New careers in the health industry, technology, and other fields are developing because of these advancements.

Lifelong Learning and Knowledge Management: Lifelong learning is encouraged by artificial intelligence (AI) and keeps people relevant in the rapidly evolving information economy through learning content automation curation, smart search, and web repositories (UNESCO, 2021).

AI in Community Development

Community development is a wide range of activities undertaken by individuals, associations, and organisations with the common goal of enhancing the local community and its surroundings. The general goal is usually to make their communities more sustainable, resilient, and inclusive. One of the fundamental tools for effecting societal change in this venture is artificial intelligence (AI). AI using communities have a better chance to enhance citizens' lives, make operations efficient, and solve chronic problems (Adejumo & Adeyemi, 2019). Since AI can improve infrastructure, solve social problems at hand, and foster overall well-being, it has excellent chances to revolutionise community development. Below are many ways through which AI plays a role in community development:

Smart Cities and Infrastructural Planning

- a. **AI Transportation Planning and Rural Connectivity:** Economic production, market access, health, and education are all positively increased by improved transportation and hence are an integral component of rural development plans. Saving post-harvest

crops, facilitating human movement, goods, and services, and connecting producers and traders to urban markets are all benefits of good roads, bridges, and infrastructure (World Bank, 2020). Artificial intelligence (AI) is already offering new means of enhancing these connections with data-based transport planning. Infrastructure investment can be virtually simulated, areas that are not served can be detected, and optimised transport routes can be built with the use of software that encompasses machine learning algorithms, predictive models, and GIS (Chen et al., 2021). Since efficient transport systems contribute to long-term community sustainability and reduce poverty, these habits facilitate rural communities to access the larger economy more readily (Adejumo & Adeyemi, 2019).

- b. AI Optimising Renewable Energy Use in Rural Electrification: Artificial Intelligence is increasingly becoming a principal force in rural electrification through the optimisation of renewable energy use. Using sophisticated predictive algorithms, AI can predict energy requirements, balance power supply and distribution, and optimize solar and wind power distribution to impoverished communities (Bhattacharyya, 2021). AI-driven smart microgrids maximize electricity distribution, reduce energy losses, and provide reliable access to remote rural communities (IEA, 2022). By doing so, AI not only enables clean energy for homes, schools, and small enterprises but also enables social inclusion, enhances livelihoods, and promotes grassroots entrepreneurship.
- c. Disaster Response at the Community Level with AI: Drones, machine learning, and predictive analytics are revolutionizing community disaster preparedness and response. AI-enabled drones enable immediate aerial mapping and monitoring, which enables rapid search-and-rescue operations in floods, landslides, or wildfires (Pescaroli & Alexander, 2018). Simultaneously, prediction systems analyze climatic and environmental data to make predictions, providing early warnings and facilitating prevention mechanisms (Kankanamge et al., 2020). The methodologies enhance community resilience as well as disaster recovery through diminishing catastrophe impacts.
- d. Urban Planning and Community Development: Development and adaptation in urban areas are also being impacted by artificial intelligence. By analysing massive amounts of data, such as traffic patterns, environmental factors, and population migrations, AI enables greater data-driven decision-making in social service provision and urban planning (Kang et al., 2020). Planners may use this data to build communities that are more inclusive, efficient, and sustainable, which will raise the living standards of community members.

Community Health

- a. Remote Diagnosis and Health Consultations: More people in remote areas may get the medical treatment they need thanks to advancements in telemedicine and artificial intelligence (AI) diagnostic tools. Mobile health applications powered by AI can do things like assess symptoms, decipher medical photos, and connect people with online doctors right away. According to Topol (2019), this technology allows for real-time diagnosis and treatment for patients in rural areas, thereby closing the gap in healthcare delivery between urban and rural communities.
- b. Analysis of Health Records for Outbreak Detection: Community health workers, hospitals, and local health clinics provide data that AI may analyse to identify signs of possible disease outbreaks like cholera, Lassa fever, or malaria. Predictive analytics helps stop the spread of diseases, and governments and NGOs are on board with it

- since it helps them allocate resources efficiently. Public health epidemics may be better responded to with the help of AI models, according to Rajkomar et al. (2019), which might lead to earlier intervention and the saving of lives.
- c. **Maternal and Child Health Support:** Mobile apps and AI chatbots provide customised pre-pregnancy assistance, dietary monitoring, and child care counselling to women in rural areas who need it. Artificial intelligence (AI) may be used to create meal planning and appointment reminders for pregnant women. Improved maternal and child health outcomes are crucial indicators of community wellness and development, and these technologies play a role in delivering vital health information directly to mothers (UNICEF, 2024).
 - d. **Nutrition and Food Security:** Integration of AI into localized programs enables families to get custom nutritional guidance based on locally consumed food sources. AI systems can also forecast agricultural loss or food shortages, enabling anticipatory planning that minimizes hunger and malnutrition. Besides food security, AI applications can search for social media trends, medical records, and economic metrics to predict increasing poverty or crime and thereby equip societies with the anticipation necessary to respond (Smith & Jones, 2021).

Environmental management

- a. **AI Models for Predicting Flooding, Erosion, and Environmental Risks:** Environmental degradation aggravates community development, especially in coastal areas and the Niger Delta regions of Nigeria, where erosion, flooding, and oil spill are rampant. Artificial intelligence (AI) provides instruments that support proactive catastrophe readiness, management, and resilience planning. AI models can determine areas that are susceptible to erosion and zones with high exposure to flooding through satellite imagery analysis, precipitation trends, and geography. Machine learning models have also been used in West Africa to predict seasonal flooding, enabling the authorities to prepare for evacuations and send out rescue supplies more efficiently (Adelekan & Asiyambi, 2024). Not only do these forecasting tools minimize mortality and loss of assets but also reduce disruption of livelihoods and population displacement from affected communities.
- b. **AI for Recycling and Plastic Reduction at the Community Level:** In cities like Lagos and Port Harcourt, where their waste management infrastructure is overstretched, plastic pollution poses a serious problem. AI-based interventions, such as intelligent bins and image-recognition technology, can help with trash classification, recyclable sorting, and route optimization for collection. These advancements support end-to-end efforts towards plastic reduction and recycling behaviors by local communities. Demonstration projects across Africa show that AI-based waste-sorting systems ease landfill pressures and enhance recycling efficiency (UNEP, 2023). Beyond the environmental impacts, such interventions empower the women's cooperatives and youth organizations involved in recycling, developing green jobs advancing local economies and fostering community capacity.
- c. **AI Drones for Monitoring Illegal Logging, Mining, and Oil Bunkering:** Computer Vision-enabled AI-Drug Drones may detect millions of illegal land clearances, illegal mining operations, or illegal oil tap-offs off pipeline installations in oil-producing areas. According to the World Bank (2024), such technologies have already been used in portions of Africa and Latin America to monitor deforestation and thwart theft of resources. Implementing this strategy in the Niger Delta would deter oil bunkering, minimize environmental degradation, and safeguard livelihoods and health of

communities—essential steps toward sustainable long-term economic development. Unregulated activities, including illegal logging, artisanal mining, and crude oil bunkering, remain drivers of forest degradation and depletion of Nigeria's natural resources, undercutting sustainable development and well-being of communities.

Agriculture and Food Security

- a. **AI-Powered Sensors and Drones for Precision Agriculture:** AI-powered sensors and drones can gather real-time data on soil health, crop stress, and weather patterns giving local farmers actionable insights in farming technique appropriate for a given time. Agriculture is still the mainstay of majority of our rural communities in Nigeria, but farmers struggle to manage soil fertility, identify crop diseases, and adjust to unpredictable weather. Small-scale farmers in East and West Africa have observed improved productivity in precision agriculture programs after the use of technology that monitors soils and crops based on artificial intelligence, Adegboyega et al. (2024) reports. Locally, they also established that this AI technique improves food security, improves productivity, and minimizes wastage of inputs.
- b. **AI Models for Forecasting Crop Yields and Identifying Risks:** Artificial intelligence models can leverage climatic data, histories of insect infection, and satellite images to forecast crop yield and risk such as floods, droughts, and infestation by pests. Predictive analytics can aid in planting decision-making as well as government food security policy in Nigeria where crop staples like cassava and maize are under threat from climate change. To assist farmers prepare responses before infestations spread, AI-driven forecasting techniques have been deployed in Sub-Saharan Africa to identify pest outbreaks like the Fall Armyworm (FAO, 2023). Such methods promote community resilience and sustainable rural economies by lowering agricultural losses.
- c. **AI Platforms Linking Farmers Directly to Buyers:** The exploitation of Nigerian farmers by intermediaries, who frequently undervalue produce and lower farmer income, is a recurring problem. Fairer pricing and greater market transparency can be achieved by directly connecting our local farmers with buyers, processors, and retailers through AI-powered digital marketplaces and e-commerce platforms. Though incorporating AI-driven demand forecasting and logistics optimization could increase their impact, mobile-based platforms like Farmcrowdy and Thrive Agric already show how technology can connect farmers to markets (Adenle et al., 2022). Such platforms promote young involvement in agriculture, empower farmers economically, and aid in the development of rural communities by lowering exploitation.
- d. **Social Services and Poverty Alleviation:** With the analysis of demographic data, artificial intelligence is being utilized more and more to focus social initiatives at specific demographics. This makes poverty reduction techniques in communities more effective and significant (Engstrom et al., 2020). Additionally, AI-driven job portals support economic inclusion by matching people with appropriate employment opportunities based on their talents and the demands of the local labor market (Autor et al., 2020).
- e. **AI-driven Market Analysis for Small Businesses:** Artificial intelligence (AI)-powered market-analysis solutions provide small businesses with actionable insights by combining sales data, rival prices, consumer behavior, and external indications such as local events, seasonality. Micro and small businesses can respond to local market signals (inventory levels, competitor moves, and demand elasticity) without the assistance of large analytics teams thanks to dynamic pricing engines and pricing

- optimization platforms; this boosts sales conversion, lowers stockouts, and improves margins (Neil, 2024).
- f. **AI Job-Matching, Connecting Community Members to Local Opportunities:** AI-powered job-matching systems use machine learning to map individual talents, informal experience, and local job openings for community members. These algorithms produce high-quality matches and personalized upskilling recommendations that go beyond keyword matching and recommend micro-credentials or short courses that address certain shortages by identifying transferable talents from a range of experiences (OECD, 2024). AI matching can help reduce rural-urban migration and promote community development in rural communities through two mechanisms: (1) visibility, which gives local businesses and informal employers access to a larger, better-profiled local talent pool; and (2) upskilling pathways, which allow community members to qualify for available roles by prescribing short, locally relevant learning steps (such as apprenticeships or mobile micro-learning). This matching protects community livelihoods and stabilizes regional labor markets when paired with digital access points (community centers, mobile kiosks) and local hiring incentives (OECD, 2024)

Benefits of AI in Community Development

The use of artificial intelligence (AI) in community development has multiple benefits, which encourage the creation of more resilient, inclusive, and sustainable communities. The following are some of the benefits most noteworthy:

- a. **Improved efficiency and resource utilization:** Data collection and processing are only two of numerous repetitive tasks that are automatable using AI, and they can dramatically improve productivity. This allows employees to focus on more complex tasks, thus improving the quality of services and lowering costs (Perez et al., 2022).
- b. **Improved decision-making:** With AI, municipal authorities can make better-informed choices based on actual, real-time data. Municipalities would be better equipped to handle residential shortages or changes in the employment market if AI-backed forecast models were able to analyze economic trends (Li & Wang, 2020).
- c. **Inclusive community engagement:** Through the collection of opinion on issues of interest and gauging public opinion, AI technologies enable inclusive community engagement. This contributes to increased public engagement in local decision-making and helps under-represented communities make their opinions known (Harris & Rea, 2019). Besides, the language barrier of the majority of people is likely to be reduced through the use of an AI-powered translation service, which promotes ease of comprehension (Holmes, 2020).
- d. **Economic growth and employment opportunities:** Artificial intelligence (AI) causes the economy to expand and guides the formulation of job-tailored training programs by revealing labour market trends and skills shortages. Autor et al. (2020) confirmed that such interventions improve employment opportunities. Further, AI-powered platforms can help local economies to expand more inclusively by connecting the unemployed with job vacancies that are highly matched to their abilities.
- e. **Enhanced public safety and emergency response:** AI improves safety through identifying patterns of crime in crime data and helping the police in the allocation of resources. Intelligent surveillance systems observe public areas for possible hazards, bringing down crime levels (Ferguson, 2017). In calamities like natural disasters, AI ensures speedy and effective relief distribution to devastated areas (Cui et al., 2018).

- f. Improved healthcare accessibility: Poor regions have improved healthcare accessibility through telemedicine and AI-based diagnostic machines. Through the analysis of patient data and instant diagnostic output, AI enables remote delivery of custom therapy by clinicians. This alleviates overburdening in adjacent health facilities and improves rural people's outcomes (Topol, 2019).
- g. Enhanced disaster preparedness and risk reduction: Natural disasters can be predicted and there can be enhanced early warning by artificial intelligence through analyzing past history and current meteorological conditions. Early warnings facilitate timely community response, preventing or minimizing damage (Wani et al., 2021).
- h. Reduced administrative workload: As Misuraca and van Noordt (2020) discuss, organisations and municipalities can mechanise clerical work like data entry and report preparation with the help of artificial intelligence. This frees up staff to engage in more strategic work. Additionally, by monitoring and reporting on government activity, AI enhances transparency, which builds trust in and accountability from the government.

AI Prospects for Community Development Future

Numerous significant effects will result from using artificial intelligence (AI) into community development:

- a. Data-Driven Decision Making: Community development is about to undergo a paradigm shift if artificial intelligence can scan through massive amounts of data for patterns that might enhance planning and policy. The AI application could analyse public documents, surveys, and social media data to assess community needs, foresee trends, and track activity. This idea builds on what is already available by leveraging current programs.
- b. Intelligent Infrastructure: Artificial intelligence will be the result of better community infrastructure planning. Public safety, energy consumption, and traffic flow congestion could all be optimized with the use of artificial intelligence (AI) systems that take advantage of real-time monitoring and predictive analysis. Better urban living, less impact on the environment, and more efficiency are just a few of the numerous advantages of using AI in urban planning.
- c. Community Engagement and Empowerment: There can be sustainable development only when the people are granted the tools and the right to make their own choices. People form the sense of common ownership and responsibility when they are in a position to play an active role in decision-making that affects their daily lives. Artificial intelligence systems can apply this approach to determine public opinion and preference, which improves people's communication and interaction with the institutions. Communication systems that optimize outreach efforts through the use of artificial intelligence can increase reach, engagement, and inclusion in decision-making.

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Challenges of AI in Adult Education and Community Development

Despite the promise, there are still great obstacles to using AI for community creation. The most persuasive among them are:

- a. **Privacy and Data Security:** The application of AI in community development and adult learning is extremely focused on data security and privacy. The threat to breaches or misuse is greatly enhanced because of the enormous amount of information about personal details. Public confidence and personal liberty can only be upheld by transparent and strong data privacy laws (Bennett & Raab, 2018).
- b. **Access and Equity:** AI benefits should be equitably shared; but, existing technical access and digital literacy inequalities pose a real danger to widen these disparities. Artificial intelligence solutions are likely to widen social and economic disparities unless taken into account in advance. We must bridge the digital gap to witness effective adult education and sustained community development if we want to witness.
- c. **AI Algorithmic Bias:** When AI systems are trained on biased data, they may perpetuate and amplify society's inequalities. This is a significant threat in sensitive domains like law enforcement and social services, where biased algorithms may generate biased or unjust conclusions for particular groups of individuals (O'Neil, 2016).
- d. **The Digital Divide:** Lack of access to digital infrastructure remains one major impediment to the large-scale deployment of AI. Some communities may not be in a position to enjoy AI innovations because they are inadequately linked. The gap between urban and rural settings, as well as that between the poor and rich, may continue to widen because of this (Norris, 2001).
- e. **Ethical Points to Take:** The application of AI presents ethical issues, namely with relation to justice and bias. Because AI systems can only be as objective as the material they are educated on, there is a chance that preconceived notions will be reinforced. To reduce bias and guarantee that all users are treated fairly, it is essential to put ethical standards into place and monitor AI systems on a regular basis.
- f. **Cultural Resistance:** Cultural resistance is one of the main barriers to the adoption of AI in community development and adult education. New technologies are frequently seen with distrust or as a replacement for traditional teaching methods, human teachers, and leaders in many communities, especially in rural and traditional settings. AI systems may seem scary or unrelated to everyday life to adults who are less accustomed to digital environments. AI-driven, technology-mediated learning platforms may conflict with cultural values that place a premium on in-person communication and oral traditions in some groups (Aduwa-Ogiegbaen & Iyamu, 2023). This opposition may restrict acceptance and impede the incorporation of AI in community and educational initiatives.
- g. **High Costs:** Drones, predictive models, and adaptive learning platforms are just a few examples of AI systems that frequently need large financial outlays. Expenses include software (licenses, AI algorithms, platforms), hardware (servers, sensors, gadgets), and continuing maintenance. These expenses can be unaffordable for governments, adult education facilities, and neighborhood organizations with tight budgets in low- and middle-income nations like Nigeria. After external financing ends, sustainability is called into question, even when donor-funded projects use AI technologies. Due to the high cost of implementing AI, underprivileged groups may be left behind as the digital divide widens (World Bank, 2024).
- h. **Lack of Skills:** Another obstacle is the lack of digital and AI literacy among facilitators and adult learners. Community development officers might find it difficult to understand AI-generated data for decision-making, and adult educators might not

have the technical know-how to incorporate AI into their teaching methods. AI platforms may seem overly complicated to adult learners, particularly those who are older or have poor levels of computer literacy. Communities run the risk of having "technology without users," where tools are available but cannot be used efficiently, if focused training programs are not implemented (UNESCO, 2023).

- i. **Weak Policies:** Many African nations still lack adequate policy frameworks governing AI in education and community development. Inadequate or nonexistent policies result in dispersed implementation, inadequate coordination, and hazards pertaining to data privacy, prejudice, and responsibility. Nigeria, for example, has written an AI plan, but it is not being implemented quickly, and there are no regulations that are tailored to community development and adult education. This gap undermines adoption and trust by permitting the uncontrolled or unethical deployment of AI (OECD, 2024). To match AI with national development goals, equity, and accessibility, strong governance is required.
- j. **Sustainability Problem:** Sustainability is a high concern in AI initiatives. Most of them start with a lot of enthusiasm, but they deteriorate over time due to the inability to provide sufficient finance, infrastructure, or technical staff. Consider remote communities, the limited access to the internet, unreliable power supply, or the absence of technical expertise locally can easily disrupt AI systems. The issue is aggravated when foreign funding ceases, since a lot of communities lack the ability to maintain or manage these technology, thus getting abandoned in the long run. Success over the long term calls for more than financing; it involves local ownership, technical education, and incorporation into prevailing community frameworks (Adenle et al., 2022).

Strategies for curbing AI's challenges in Adult Education and Community Development

To reduce dangers and enhance benefits, there must be special solutions for coping with the problems of AI in adult education and community development. The following solutions are proposed:

1. **Coping with Cultural Resistance:** Demystification and focus on advantages of AI can be done with public awareness and sensitisation campaigns. If AI-driven initiatives embrace participative methods, local values, and local language, people feel part of the team and not pushed aside. More trust and acceptance can be earned by creating local champions such as educators, opinion leaders, and community leaders (Lin et al., 2024).
2. **Reducing Excessive Costs:** Governments and others can prefer open-source AI systems that are inexpensive and for development and education. Public-private partnerships (PPPs) can reduce the cost burden by combining resources from IT firms, NGOs, and development organisations. Additionally, phased plan implementation can make it sustainable in the long term by increasing the cost incurred over time and starting with small and gradually increasing.
3. **Bridging the Skills Gap:** The aim of capacity development programs must be the betterment of both teachers and adult learners' life. People can acquire such skills for using AI in the right manner via online courses, training workshops, and literacy programs. Infusing AI and digital literacy in adult learning programs can also help pedagogical skills trickle down through the generations. Career prospects of facilitators are enhanced by partnerships with schools of learning as well as technical institutions.

4. **Strengthening Governance and Policy:** If governments want to control artificial intelligence in public spaces and classrooms, they should set transparent, inclusive, and legally enforceable standards. These need to include topics like fair access, ethics, data privacy, and algorithmic bias. The AI strategy of the African Union is an example of how regional cooperation may bring about standardisation while yet taking into account specific local circumstances. Appropriate monitoring and surveillance methods will guarantee progress in holding it responsible.
5. **Ensuring Sustainability:** It is simpler to merge AI initiatives into already community entities rather than to start them from scratch. In order to foster a sense of local ownership, it is crucial to secure funds for upkeep, empower residents to take on facilitator roles, and encourage local innovation. In areas without grid electricity, solar power plus offline artificial intelligence may provide dependable power. For efforts aimed at adult education and community development objectives to be sustainable in the long run, AI integration is essential.

Conclusion

The immense capability of AI to transform community development and adult learning schemes cannot be overemphasized. In the twenty-first century, artificial intelligence has transformed things, establishing community development and reshaping adult education. Smart agriculture, open markets, and climate risk prediction are some of the localized applications of artificial intelligence that present reform opportunities for Nigeria's community development. AI enables communities to cover the costs of lifelong learning through assistance in developing agriculture, healthcare, governance, and environmental sustainability through personalized learning, smart tutoring, and digital connectivity. These applications demonstrate the promise of AI in assisting individuals and groups to cope with change and be more resilient.

If AI is developed in a sustainable, ethical, and inclusive manner, the returns will easily outweigh the threats within the next few years. This is only possible through clearly established legal frameworks, massive investments in infrastructure and human capital by the public and private sectors and their close coordination. The objective of AI must not be to substitute humans in the job market but to assist people in getting connected to each other and learning continuously through their lives.

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