



Ignatius Ajuru University of Education, Port Harcourt, Nigeria

Research and Development Centre

1st International Conference and Exhibition on Research, Innovation and Development (ICERID 2026)

Proceedings URL: <https://iauejournals.com/index.php/ICERID>

Website: <https://icerid.online>



ISBN: 978-978-63205-1-9

June 2026; Page No. 556-564

Artificial Intelligence-Based Programmes for Community Leaders to Prevent Digital Misinformation at the Grassroots in Omuma Local Government Area, Rivers State

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Abstract

This study investigated the perceived roles of Artificial Intelligence programmes in empowering community leaders to prevent digital misinformation at the grassroots in Omuma Local Government Area, Rivers State, Nigeria. Using a descriptive survey of 550 community leaders and a researcher-developed questionnaire (Cronbach's $\alpha = 0.88$), the study assessed four AI programme domains: AI-assisted media and information literacy, conversational virtual assistants, AI-powered translation/multilingual communication tools, and AI social-media monitoring. Respondents rated the extent to which each programme enhanced leaders' capacities to verify, translate, monitor, and respond to misinformation; all four domains recorded grand means above the 2.50 acceptance threshold (range ~3.01–3.10), indicating high perceived effectiveness. Findings suggest that AI tools can strengthen community leaders' ability to detect and curb misinformation, particularly by improving verification skills, multilingual communication, and early detection via monitoring. However, the study's purposive sampling and reliance on self-reported perceptions limit causal inference and generalisability. The authors recommend regular AI training for leaders, investment in connectivity and infrastructure, development of indigenous-language AI applications, and partnerships with fact-checking organisations to support evidence-based community communication.

Keywords: Artificial Intelligence, Community Leaders, Digital Misinformation, Grassroots, Development, Adult Education And Digital Literacy.

Introduction

In recent times, across the world, the digital revolution has strategically transformed the mode of communication. There is increased awareness and access to the internet and social media platforms, thereby fast-tracking communication between individuals and communities. Notwithstanding this significant development in information and communication technology, there is obviously a serious spike in misinformation. This is as a result of many people who are skilled in the use of digital tools and have access to information through the internet, and consequently make deliberate moves to dilute and circulate misleading information such as fake news, manipulated media and conspiracy narratives capable of misleading the public, causing unnecessary panic and chaos in security, public health, religion, politics, education, family/community relationships and sustainable development. This could be referred to as digital misinformation and is a major challenge to society (Wardle & Derakhshan, 2019; UNESCO, 2023).

According to Akinwale and Oloruntoba (2024), digital misinformation refers to false, inaccurate, misleading, or unverified information disseminated through digital channels without necessarily involving deliberate intent to deceive. It is therefore obvious that digital misinformation spreads speedily via online blogs, social media platforms,

informal digital networks and messaging applications in Nigeria, especially among the grassroots in Omuma Local Government Area of Rivers State. According to the organisation for Economic Co-operation and Development (OECD) (2024), there is an urgent need to properly scrutinise and fact-check information before it is circulated among community members, as this will eradicate mistrust and reduce social instability to its barest minimum. This explains the need for stronger community-level information verification mechanisms (World Health Organisation, 2022; UNESCO, 2023).

In combating misinformation, community leaders occupy a strategic position because they often enjoy high levels of trust among members of their community. According to Okolie and Eze (2025), Community leaders are individuals who possess recognised authority, influence, or responsibility within a particular locality and who contribute to decision-making, conflict resolution, mobilisation, and social development. They include traditional rulers, religious leaders, community development committee executives, youth leaders, women leaders, and civil society actors, who frequently serve as primary sources of guidance and interpretation within their communities. Their ability to verify information and communicate accurate messages can significantly influence public understanding and behavioural responses. Consequently, strengthening the digital competencies of these leaders represents an important strategy for enhancing community resilience against misinformation.

With the advent of Artificial Intelligence (AI), which is one of the most transformative technologies of the twenty-first century, detecting anomalies, analysing large volumes of data, processing natural language, generating content, and evidence-based decision-making have become possible. Artificial Intelligence (AI) refers to the capability of computer systems and software applications to perform tasks that normally require human intelligence, including learning, reasoning, problem-solving, language understanding, pattern recognition and decision-making (Ng, 2025). According to Bommasani et al. (2021), sectors such as education, agriculture, health, governance, security and communication have made a quantum leap through AI applications.

Types of Artificial Intelligence Programmes for Community Leaders

Bubeck et al. (2023) postulated the following Artificial Intelligence programmes for community leaders to combat digital misinformation at the grassroots. AI Literacy and Capacity-Building Programmes: These programmes expose community leaders to the basics of artificial intelligence, such as machine learning, natural language processing, generative AI, algorithmic bias, ethical considerations, and practical applications for community service. These programmes aim to equip community leaders to be versed in both the capabilities and limitations of AI systems. AI-Assisted Media and Information Literacy Programmes: Media and information literacy initiatives increasingly incorporate AI-enabled tools that help participants evaluate the credibility of digital content. These programmes train leaders to identify manipulated images, recognise synthetic media, assess source reliability and distinguish factual reporting from rumours or propaganda. AI-enhanced media literacy is particularly relevant in environments where social media platforms and encrypted messaging applications are primary channels of information dissemination. Algorithm literacy has become an important extension of traditional media literacy because recommendation systems significantly shape what users see and believe online.

Automated Fact-Checking Programmes: Automated fact-checking systems employ natural language processing and machine learning algorithms to compare public claims against verified databases and authoritative sources. These tools assist users in rapidly assessing whether widely circulated statements have previously been investigated or contradicted by reliable evidence. Community leaders can integrate such systems into local information verification processes before forwarding messages concerning elections, health interventions, security alerts, or emergencies. Although automated systems should not replace human judgment, they substantially reduce the time required for preliminary verification.

Conversational AI and Virtual Assistant Programmes: Conversational AI systems provide interactive support by responding to user questions in natural language. Properly supervised, these systems can assist community leaders in preparing educational materials, summarising official documents, translating information into local languages, and generating public awareness messages. For example, leaders organising health campaigns or civic education meetings may use conversational AI to simplify complex policy documents into language that is more accessible to community members while independently verifying factual accuracy before dissemination.

AI-Based Social Media Monitoring Programmes: Machine learning systems can monitor large volumes of online discussions to identify emerging rumours, coordinated misinformation campaigns, and rapidly spreading false narratives. These programmes enable early detection of misleading information before it becomes deeply embedded within communities. For local administrators and civil society organisations, social media monitoring facilitates timely interventions, including public clarification campaigns, engagement with trusted influencers, and dissemination of corrective information through official communication channels.

Predictive Analytics and Early Warning Systems: Predictive AI programmes analyse historical and real-time data to identify patterns associated with misinformation surges or coordinated influence operations. They can estimate which topics are likely to generate confusion or social tension, enabling proactive educational responses. Within community development contexts, predictive systems may support preparedness during elections, disease outbreaks, natural disasters, or security incidents by alerting authorities and community leaders to potentially harmful information trends.

AI-Powered Translation and Multilingual Communication Tools: Many grassroots populations communicate in indigenous languages, making multilingual AI systems valuable for inclusive information dissemination. AI-assisted translation programmes help convert verified information into local languages while preserving meaning and accessibility. These technologies can reduce misunderstandings arising from language barriers and improve access to reliable information among populations with varying educational backgrounds.

Deepfake Detection and Digital Forensics Programmes: Recent advances in generative AI have increased the prevalence of synthetic videos, manipulated images, and cloned voices. AI-powered forensic tools analyse visual and audio inconsistencies to identify possible deepfakes or digitally altered content. Community leaders equipped with relevant skills in artificial intelligence are better positioned to caution residents against accepting sensational multimedia content without independent verification, particularly during elections or communal crises. This therefore has the potential to reduce digital misinformation at community levels.

Against this background, this study investigates artificial intelligence programmes for community leaders as strategic tools for preventing digital misinformation at the grassroots in Omuma Local Government Area of Rivers State. It seeks to clarify the conceptual foundations of AI and misinformation, examine relevant theoretical perspectives, identify key AI programmes applicable to community leadership, assess implementation challenges, and propose recommendations for policymakers, educators, development practitioners, and local institutions seeking to enhance information integrity in Nigerian communities and beyond.

Artificial Intelligence, which is the capability of computer systems and software applications to perform tasks that normally require human intelligence, including learning, reasoning, problem-solving, language understanding, pattern recognition and decision-making, has contributed to significant innovations in several sectors of society, including education, health, governance, politics and information dissemination. Despite the significant contributions of Artificial Intelligence, there is still increasing digital misinformation through social media platforms, internet blogs, digital content and messaging applications at the grassroots in Omuma Local Government Area of Rivers State. This digital misinformation ranges from voice cloning to defraud unsuspecting community members to circulating misleading information and content capable of causing social mistrust, panic and chaos. Community members continue to rely on their community leaders for verified information to avoid being misinformed and misled. It is against this backdrop that it becomes imperative to examine Artificial Intelligence programmes for community leaders in preventing digital misinformation at the grassroots in Omuma Local Government Area of Rivers State.

The main aim of the study was to investigate artificial intelligence programmes for community leaders for preventing digital misinformation at the grassroots in Omuma Local Government Area of Rivers State. Specifically, the study was designed to:

1. Find out the extent to which an AI-assisted media information literacy programme empowers community leaders in preventing digital misinformation at the grassroots in Omuma Local Government Area of Rivers State.
2. Ascertain the extent to which an AI conversational virtual-assisted programme enhances community leaders' ability to prevent digital misinformation at the grassroots in Omuma Local Government Area of Rivers State.

Cite this paper as:

558 Nwaiwu, N., & James, T. (2026). Artificial intelligence-based programmes for community leaders to prevent digital misinformation at the grassroots in Omuma Local Government Area, Rivers State. In *Proceedings of the 1st International Conference and Exhibition on Research, Innovation and Development (ICERID)*, Ignatius Ajuru University of Education, Port Harcourt, Nigeria. (Vol. 1, pp. 556-564).

3. Investigate the extent to which AI-powered multilingual translation communication tools enable community leaders to prevent digital misinformation at the grassroots in Omuma Local Government Area of Rivers State.
4. Examine the extent to which AI social media monitoring programmes enhance community leaders' ability to prevent digital misinformation at the grassroots in Omuma Local Government Area of Rivers State.

The following research questions guided the study:

1. To what extent does an AI-assisted media information literacy programme empower community leaders in preventing digital misinformation at the grassroots in Omuma Local Government Area of Rivers State?
2. To what extent does an AI conversational virtual-assisted programme enhance community leaders' ability to prevent digital misinformation at the grassroots in Omuma Local Government Area of Rivers State?
3. To what extent does an AI-powered multilingual communication tool enable community leaders in preventing digital misinformation at the grassroots in Omuma Local Government Area of Rivers State?
4. To what extent do AI social media monitoring programmes enhance community leaders' ability to prevent digital misinformation at the grassroots in Omuma Local Government Area of Rivers State?

Methodology

The study adopted the descriptive survey research design. The population of the study comprised 570 community leaders in Omuma Local Government Area of Rivers State. 570 questionnaires were distributed, but 550 were retrieved and correctly filled. This was due to the fact that the community leaders, as respondents, were educated and properly guided. A purposive sampling technique was adopted to include all the community leaders in the study. The instrument used for data collection was a self-structured questionnaire titled "Artificial Intelligence Programmes for Community Leaders for Preventing Digital Misinformation at the Grassroots" (AIPCLPDMGQ). The instrument was validated by two experts in measurement and evaluation, while internal consistency was established using Cronbach's Alpha, which yielded a reliability coefficient of 0.88. Mean and Standard Deviation were used to answer the research questions. The instrument was based on a modified four-point Likert Scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE). The criterion mean for acceptance was 2.50. Therefore, any mean score below 2.50 was regarded as disagreement.

Results

Table 1: Mean ratings of respondents on the extent to which an AI-assisted media information literacy programme empowers community leaders in preventing digital misinformation at the grassroots in Omuma Local Government Area of Rivers State.(n=550)

S/N	Items	Mean ($\bar{X}$)	SD	Remark
1	AI-assisted media information literacy programme improve the ability to distinguish between credible and false information?	3.55	0.95	HE
2	AI-assisted media information literacy programme assist in verifying information before dissemination in communities?	3.00	0.83	HE
3	AI-assisted media information literacy programme improves understanding of fact-checking techniques for identifying misinformation?	2.78	1.03	HE
4	AI-assisted media information literacy programme increases confidence in educating community members about digital misinformation?	3.12	0.89	HE
5	AI-assisted media information literacy programme strengthens capacity to promote responsible dissemination of information within the community?	2.90	0.88	HE
6	AI-assisted media information literacy programme discourages negative reactions to digital misinformation?	3.10	0.93	HE
7	AI-assisted media information literacy programme equips community members to scrutinise digital information?	3.22	0.67	HE
Grand Mean		3.10	0.92	HE

Table 1 shows the mean ratings of Respondents on the extent to which AI-assisted media information literacy programmes empower community leaders in preventing digital misinformation at the grassroots in Omuma Local

Government Area of Rivers State. Item 1 had a mean score of 3.55 standard deviation of 0.95. Item 2 had a mean score of 3.0 standard deviation of 0.83. Item 3 had a mean score of 2.78 and a standard deviation of 1.03. Item 4 had a mean score of 3.12 and a standard deviation of 0.89. Item 5 had a mean score of 2.90 and a standard deviation of 0.88, while Item 6 had a mean score of 3.1, with a standard deviation of 0.93; Item 7 had a mean of 3.22 with a standard deviation of 0.67. The grand mean of 3.10 recorded was above the criterion mean of 2.50, which indicated that the majority of the respondents agreed that the AI-assisted media information literacy programme, to a great extent, empowers community leaders in preventing digital misinformation at the grassroots.

Table 2: Mean Ratings of Respondents on the extent to which an AI conversational virtual assistant programme enhances community leaders' ability to prevent digital misinformation at the grassroots in Omuma Local Government Area of Rivers State.

S/N	Items	Mean ($\bar{X}$)	SD	Remark
8	AI conversational virtual assistants provide timely answers that help verify doubtful information?	3.11	0.92	HE
9	AI conversational virtual assistants enhance the ability to identify misleading online content?	3.15	0.73	HE
10	AI conversational virtual assistants help in accessing reliable information for community activities	2.96	0.87	HE
11	AI conversational virtual assistants enhance decision-making when responding to misinformation within the community?	3.00	0.77	HE
12	AI conversational virtual assistants improve the ability to educate community members on identifying false digital information.	2.97	0.83	HE
13	AI conversational virtual assistants help to identify misinformation	2.99	0.86	HE
14	AI conversational virtual assistants limit the spread of misinformation	3.00	0.80	HE
15	AI conversational virtual assistants create awareness of misinformation	2.95	0.84	HE
16	AI conversational virtual assistants reduce the risk of cloning and spreading unverified information	3.02	0.79	HE
	Grand Mean	3.02	0.82	HE

Table 2 above for research question two shows the mean rating of the extent of how AI conversational virtual assistant programme enhances community leaders' ability to prevent digital misinformation at the grassroots. Item 8 had a mean score of 3.11, standard deviation of 0.92. Item 9 had a mean score of 3.15 and a standard deviation of 0.73. Item 10 had a mean score of 2.96 and standard deviation of 0.87. Item 11 had a mean score of 3.00 and a standard deviation of 0.77. Item 12 had a mean score of 2.97 and a standard deviation of 0.83. Item 13 had a mean score of 2.99 and a standard deviation of 0.86. Item 14 had a mean score of 3.00 and a standard deviation of 0.80. Item 15 had a mean score of 2.95 and a standard deviation of 0.84, while item 16 had a mean score of 3.02 and a standard deviation of 0.79. The grand mean of 3.02 recorded was higher than the criterion mean of 2.50. This indicated that the AI conversational virtual assistant programme enhances community leaders' ability to prevent digital misinformation at the grassroots to a great extent.

Table 3: Mean Ratings of the Respondents on the extent to which the AI-powered translation multilingual communication tool enables community leaders in preventing digital misinformation at the grassroots in Omuma Local Government Area of Rivers State.

S/N	Items	Mean ($\bar{X}$)	SD	Remark
17	AI-powered translation tools enable the communication of verified information in local languages to be possible and efficient?	3.08	0.80	HE
18	AI-powered translation multilingual communication tool improve the understanding of accurate information among community members from different language backgrounds?	3.04	0.77	HE
19	AI-powered translation tools reduce the spread of misinformation caused by language barriers?	3.02	0.83	HE
20	AI-powered translation tools help in disseminating verified information more efficiently across multilingual communities?	2.98	0.85	HE
21	AI-powered translation tools enhance community participation in identifying and correcting digital misinformation?	2.90	0.88	HE
22	AI-powered translation tools reduce community panic response to digital misinformation?	3.07	0.93	HE
23	AI-powered translation tools help community leaders to adequately filter and disseminate appropriate information to community members?	2.98	0.84	HE
	Grand Mean	3.01	0.84	HE

Table 3 above for research question three shows the mean ratings of respondents on the extent to which AI-powered translation multilingual communication tools enable community leaders in preventing digital misinformation at the grassroots. Item 17 had a mean score of 3.08 and a standard deviation of 0.80. Item 18 had a mean score of 3.04 and a standard deviation of 0.77. Item 19 had a mean score of 3.02 and a standard deviation of 0.83. Item 20 had a mean score of 2.98 and a standard deviation of 0.85. Item 21 had a mean score of 2.90 and a standard deviation of 0.88. Item 22 had a mean score of 3.07 and a standard deviation of 0.93, while item 23 had a mean score of 2.98 and a standard deviation of 0.84. The grand mean of 3.01 recorded was greater than the criterion mean of 2.50. This indicated that the majority of the respondents agreed that AI-powered multilingual communication tools enable community leaders to prevent digital misinformation at the grassroots to a great extent.

Table 4: Mean Ratings of respondents on the extent to which AI social media monitoring programmes enhance community leaders' ability to prevent digital misinformation at the grassroots in Omuma Local Government Area of Rivers State.

S/N	Items	Mean ($\bar{X}$)	SD	Remark
24	AI social media monitoring programmes help in detecting false information circulating on social media platforms?	3.25	0.83	HE
25	AI social media monitoring programmes enable prompt response to misinformation spread within communities?	3.00	0.75	HE
26	AI social media monitoring programmes assist in identifying sources of misleading online information?	2.78	0.97	HE
27	AI social media monitoring programmes improve the ability to monitor community discussions for misinformation trends?	3.12	0.86	HE
28	AI social media monitoring programmes strengthen efforts to educate community members on responsible use of social media?	2.90	0.83	HE
29	AI social media monitoring programmes help to prevent community members from disseminating negative information on social media platforms?	3.67	0.80	HE
30	AI social media monitoring programmes enhance community members' participation in mitigating the spread of harmful information at the grassroots?	2.91	0.87	HE
		3.09	0.84	HE

Table 4 above shows the mean ratings of respondents on the extent to which AI social media monitoring programmes enhance community leaders' ability to prevent digital misinformation at the grassroots. Item 24 had a mean score of 3.25 with a standard deviation of 0.83. Item 25 had a mean score of 3.00 with a standard deviation of 0.75. Item 26 had a mean score of 2.78 and a standard deviation of 0.97. Item 27 had a mean score of 3.12 and a standard deviation of 0.86. Item 28 had a mean score of 2.90 with a standard deviation of 0.83. Item 29 recorded a mean score of 3.67 and a standard deviation of 0.80. Item 30 had a mean score of 2.91 and a standard deviation of 0.87. The grand mean of 3.09 recorded was above the criterion mean of 2.50, which shows that the majority of the respondents shared a strong opinion that AI social media monitoring programmes enhance community leaders' ability to prevent digital misinformation at the grassroots to a great extent.

Discussion

The findings established that AI-assisted media information literacy programmes significantly empower community leaders to prevent digital misinformation at the grassroots, with a grand mean of 3.10. This further explains that digital misinformation is grossly reduced or controlled by AI-assisted media information programmes. This is supported by the views of Akinwale and Oloruntoba (2024) that community leaders should be constantly trained on AI-assisted media programmes to empower them to curb the spread of negative information within their communities. The reason is that negative information could result in communal conflict, as this could hinder sustainable community development.

The grand mean of 3.02 from the study indicated that AI conversational virtual assistant programmes enhance community leaders' ability to prevent digital misinformation at the grassroots to a great extent. The findings further show that AI conversational virtual assistants enhance the ability to identify misleading online content; AI conversational virtual assistants provide timely answers that help verify doubtful information; AI conversational virtual assistants enhance decision-making when responding to misinformation within the community. According to Bubeck et al. (2023), AI conversational virtual assistants enable community leaders to identify misleading information online and ensure that community members are promptly informed in order to prevent digital misinformation, which is capable of causing chaos among community members. This further explains the reason community leaders should constantly undergo digital literacy programmes for improved decision-making and effective community participation in development programmes (European Commission, 2024).

According to the findings, AI-powered multilingual translation communication tools enable community leaders to prevent digital misinformation at the grassroots to a great extent, as it recorded a grand mean of 3.01. Digital misinformation, according to Okolie and Eze (2025), has exposed many community members to bad health, social, economic and environmental choices or habits, where some bad elements in society go as far as cloning the image and voice of respected persons to peddle false information to deceive and/or extort unsuspecting members of society. Against this backdrop, Spitalé et al. (2023) therefore suggest that community leaders at all levels must be trained on the appropriate use of AI tools in order to prevent the spread of digital misinformation within and outside their communities.

With a grand mean of 3.09, the study found that AI social media monitoring programmes enhance community leaders' ability to prevent digital misinformation at the grassroots level to a great extent. Social media platforms are sites on the internet that community members visit regularly for education and entertainment purposes. Therefore, any unfiltered and unverified information picked up by community members, especially those at the grassroots, could engender social crises and vices. Therefore, social media monitoring programmes empower community leaders with the right digital skills to prevent the spread of digital misinformation from within or outside their community (Holmes & Fadel, 2021).

Conclusion

Based on the findings of the study, it is concluded that empowering community leaders with adequate skills in artificial intelligence has contributed to preventing digital misinformation at the grassroots in Omuma Local Government Area of Rivers State. Therefore, the spread of misleading information from the internet space can be effectively controlled using Artificial Intelligence Programmes specifically designed to prevent misinformation from spreading within

communities. Artificial Intelligence programmes for community leaders, therefore, are considered a veritable tool for eradicating the spread of misinformation, which can potentiate bad economic, social, relational and health choices capable of destroying sustainable community development. Therefore, digital misinformation as a social problem can be addressed by effectively arming community leaders with skills in Artificial Intelligence for preventing digital misinformation.

Recommendations

Based on the analysis presented in this article, the following recommendations are proposed to enhance the effectiveness of artificial intelligence (AI) programmes for community leaders in preventing digital misinformation at the grassroots:

1. Government agencies, non-governmental organisations and development partners should organise regular workshops, seminars and hands-on training for traditional rulers, religious leaders, youth leaders, women leaders and community development association executives on the practical use of AI-powered tools for information verification and public communication.
2. Federal, state and local governments should invest in reliable internet connectivity, stable electricity supply and access to affordable digital technologies in rural and semi-urban areas to ensure equitable participation in AI-enabled educational initiatives.
3. Community development programmes should include public awareness campaigns that educate residents on identifying misinformation, recognising AI-generated content, verifying online information and reporting suspicious digital materials before sharing them.
4. Policymakers, research institutions and technology developers should support the creation of AI applications capable of processing and communicating effectively in Nigerian indigenous languages. This will improve accessibility, reduce language barriers and ensure that verified information reaches diverse grassroots populations.
5. Partnerships with professional fact-checkers, journalists, civil society organisations, and academic institutions should be encouraged to facilitate rapid verification of public claims and dissemination of evidence-based information during elections, health emergencies, and security incidents.

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Cite this paper as:

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