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## **FUTURE OF JOURNALISM: AN EXPLORATION OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN NEWSROOMS AMONG JOURNALISTS IN EBONYI STATE, NIGERIA**

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### **ABSTRACT**

The rapid evolution of artificial intelligence (AI) and machine learning (ML) has introduced profound transformations in global journalism, reshaping how news is gathered, processed, and disseminated. While advanced media systems in developed countries have integrated AI-driven tools for automation, personalization, verification, and data-driven reporting, the Nigerian media landscape remains at an early stage of adoption. This study investigates Future of Journalism: An Exploration of Artificial Intelligence and Machine Learning in Newsrooms, focusing specifically on journalists in Ebonyi State, Nigeria. Guided by the Diffusion of Innovations Theory and Technological Determinism Theory, the study examines journalists' awareness, understanding, and usage of AI and ML tools, as well as the perceived benefits and opportunities these technologies present for journalistic practice. A descriptive survey design was employed, and structured questionnaires were purposively administered to 180 journalists drawn from the Nigerian Union of Journalists (NUJ) and the Radio, Television and Theatre Arts Workers Union of Nigeria (RATTAWU) in Ebonyi State. The study achieved a 100% response rate. Findings reveal that although awareness of AI and ML is relatively high, practical understanding and application remain limited. Journalists primarily rely on basic digital tools, while advanced AI-driven applications such as automated news writing, predictive analytics, and algorithmic content curation are underutilized. Key barriers include infrastructural deficits, limited training, inadequate investment in digital innovation, and concerns about job displacement. The study concludes that Nigerian journalists are in the early stages of AI adoption, requiring targeted capacity building, improved technological infrastructure, and supportive policy frameworks to accelerate responsible integration. Recommendations include strategic collaborations between media houses and

technology firms, curriculum reforms in journalism education, and the development of ethical guidelines to ensure transparency, accountability, and the preservation of journalistic values in an AI-driven future.

**Keywords:** Journalism; Artificial Intelligence; Machine Learning; Newsrooms; Digital Transformation; Media Innovation.

## INTRODUCTION

The global media landscape is undergoing unprecedented transformation driven by rapid advancements in digital technologies. Among these innovations, artificial intelligence (AI) and machine learning (ML) have emerged as powerful forces reshaping the practice, production, and distribution of news. From automated content generation to real-time fact checking, audience analytics, and personalized news delivery, AI and ML are redefining the boundaries of journalistic work and newsroom operations. As media organizations worldwide adopt these technologies to enhance efficiency and competitiveness, journalism is entering a new era characterized by algorithmic decision-making, data-driven storytelling, and hybrid human machine collaboration. (Marconi, 2020; Diakopoulos, 2019).

AI refers to computer systems capable of performing tasks that typically require human intelligence, such as natural language processing, speech recognition, and pattern detection. ML, a subset of AI, involves algorithms that learn from data and improve their performance over time without explicit programming. In journalism, these technologies are increasingly used to automate routine reporting, analyze large datasets, detect misinformation, monitor social media trends, and tailor content to audience preferences. Global news organizations such as Reuters, the Associated Press, and the BBC have integrated AI-driven tools to streamline workflows, reduce operational costs, and enhance the accuracy and speed of news production. (Russell & Norvig, 2020)

However, the integration of AI and ML into journalism also raises

critical ethical, professional, and socio-economic questions. Concerns about job displacement, algorithmic bias, editorial transparency, and the erosion of human judgment have sparked debates about the future role of journalists in an AI-mediated media environment. As automated systems influence what news is produced and how it is disseminated, issues of accountability, trust, and democratic integrity become increasingly salient. Scholars argue that while AI can augment journalistic capabilities, it must be deployed responsibly to preserve the core values of journalism truth, accuracy, fairness, and public service. (Olayiwola, 2021)

In Nigeria, the adoption of AI and ML in journalism remains limited compared to global trends. Although digital transformation is gradually reshaping the country's media ecosystem, infrastructural challenges, limited technical expertise, and inadequate investment in innovation hinder widespread integration. Nigerian newsrooms continue to rely heavily on traditional reporting methods, with only a few digitally inclined organizations experimenting with AI-powered tools for data journalism, social media monitoring, and content management. Economic constraints, poor internet infrastructure, and limited training opportunities further impede progress.

Ebonyi State presents a unique context for examining these developments. As an emerging media environment with both public and private news organizations, the state reflects broader national challenges while offering opportunities for innovation. Understanding the awareness, perceptions, and readiness of journalists in Ebonyi State to adopt AI and ML is essential for shaping future policies, training programs, and technological investments.

### **Statement of the Problem**

Journalism in Nigeria is experiencing rapid digital transformation, yet the integration of artificial intelligence (AI) and machine learning (ML)

into newsroom operations remains slow, uneven, and poorly understood. While global media organizations increasingly deploy AI-driven tools for automated reporting, fact-checking, data analytics, and personalized content delivery, Nigerian newsrooms particularly those outside major urban centres struggle to keep pace with these technological advancements. Existing evidence such as Okonkwo, (2023) suggests that journalists in Nigeria face persistent challenges such as inadequate digital infrastructure, limited technical expertise, insufficient training opportunities, and minimal organizational investment in emerging technologies. These constraints hinder the adoption of AI and ML tools that could significantly enhance efficiency, accuracy, and innovation in news production.

Despite growing global discourse on AI in journalism, empirical studies within the Nigerian context remain scarce, fragmented, and concentrated in major cities like Lagos and Abuja. Little is known about the awareness, understanding, and readiness of journalists in less-studied regions such as Ebonyi State, where media organizations operate with fewer resources and face greater technological and infrastructural limitations. Furthermore, the ethical, professional, and organizational implications of AI adoptionsuch as concerns about job displacement, algorithmic bias, editorial transparency, and the erosion of human judgment remain underexplored in the Nigerian media environment.

This lack of empirical evidence creates a critical knowledge gap. Without understanding how journalists perceive and engage with AI and ML technologies, it becomes difficult for policymakers, media managers, and training institutions to design effective capacity-building programs, regulatory frameworks, and technological interventions that support responsible AI

### **Objectives of the Study**

The general objectives of the study was to investigate Future of Journalism: An Exploration of Artificial Intelligence and Machine Learning in Newsrooms, among journalists in Ebonyi State, while the specific objectives are to:

1. examine the level of awareness and understanding of AI and ML among journalists and media professionals in Ebonyi State.
2. determine the level of AI and ML tools currently used in Nigerian newsrooms among journalists and media professionals in Ebonyi State .
3. evaluate the benefits and opportunities AI and ML present for journalistic practice among journalists and media professionals in Ebonyi State

### **Research Questions**

1. What is the level of awareness and understanding of AI and ML among journalists and media professionals in Ebonyi State?.
2. What is the level of AI and ML tools currently used in Nigerian newsrooms among journalists and media professionals in Ebonyi State ?.
3. What are the benefits and opportunities AI and ML present for journalistic practice among journalists and media professionals in Ebonyi State?

### **Review of Related Literature**

#### **Journalism in the Digital Age in Nigeria**

The advent of the digital age has significantly transformed journalism worldwide, and Nigeria is no exception. The traditional modes of news

gathering, processing, and dissemination have been increasingly supplemented and sometimes replaced by digital technologies, reshaping how news is produced and consumed in the country (Ekeanyanwu, 2020). The rise of the internet, mobile technologies, and social media platforms has democratized information flow, enabling faster communication and wider reach for Nigerian journalists and media outlets. In Nigeria, digital journalism has grown rapidly, fueled by the expansion of internet accessibility and the proliferation of smartphones (Nwafor & Okoye, 2021).

Platforms such as Twitter, Facebook, and WhatsApp have become crucial for news distribution, public engagement, and citizen journalism, providing alternative avenues beyond the traditional newspapers, radio, and television stations (Ogunyemi, 2019). This shift has allowed more immediate reporting and interactive communication, but it has also introduced challenges related to misinformation, verification, and the quality of journalistic standards (Akinfeleye, 2018).

Despite these advancements, Nigerian journalism still grapples with infrastructural deficiencies, limited digital literacy among some journalists, and economic pressures that affect newsroom operations (Obaji, 2022). Many news organizations operate with outdated equipment and minimal investment in new technologies, constraining their ability to fully leverage digital tools for investigative reporting or multimedia storytelling (Ihekweazu, 2020). Furthermore, journalists often face ethical dilemmas related to speed and accuracy, balancing the demand for rapid news updates with the need for credible and responsible reporting in the digital sphere (Ezeani & Ibe, 2017). The digital age has also prompted shifts in the skills journalists need, emphasizing data analysis, multimedia production, and social media management (Ogbondah, 2021). Nigerian journalism schools and professional training bodies are gradually incorporating these competencies into their curricula, although gaps remain in ensuring

widespread capacity building across the sector. Journalism in Nigeria's digital age is characterized by dynamic opportunities for innovation and audience engagement, alongside persistent challenges related to infrastructure, ethics, and professional development. Understanding this evolving landscape is crucial for assessing how emerging technologies such as artificial intelligence and machine learning can be integrated effectively into Nigerian newsrooms (Okoro, 2023).

### **AI and Machine Learning in Global Newsroom Practices**

Artificial Intelligence (AI) and Machine Learning (ML) have become integral to newsroom operations across the globe, revolutionizing how news is gathered, produced, and disseminated. Leading media organizations in developed countries have embraced these technologies to improve efficiency, accuracy, and audience engagement (Napoli, 2019). Globally, AI-powered tools are increasingly used for automated news writing, especially for data-heavy reports such as sports, finance, and weather updates (Lewis, 2019). News agencies like the Associated Press and Reuters utilize natural language generation (NLG) algorithms to produce thousands of routine news stories daily, freeing journalists to focus on investigative and analytical reporting (Carlson, 2020). Machine learning algorithms also support fact-checking initiatives by cross-referencing claims against verified databases, thus combating misinformation in real time (Graves, 2018).

Furthermore, AI is leveraged for multimedia content analysis, including image recognition, video summarization, and voice transcription, streamlining newsroom workflows and enabling faster content delivery (Diakopoulos, 2019). Personalization algorithms analyze user behavior and preferences to tailor news feeds, increasing reader retention and satisfaction (Thurman et al., 2020). Machine learning also facilitates audience analytics by processing large datasets to understand consumption patterns, helping

newsrooms optimize content strategy and advertising revenue (Picard, 2021). Social media monitoring powered by AI allows journalists to track trending topics, public sentiment, and breaking news events globally (Molyneux & Holton, 2020).

### **Artificial Intelligence and Machine Learning in Nigerian Newsrooms**

While the digital age has transformed journalism in Nigeria, the integration of advanced technologies such as Artificial Intelligence (AI) and Machine Learning (ML) in newsrooms remains at an early stage. Globally, AI and ML are revolutionizing news production through automated content creation, data-driven reporting, personalized news feeds, and fact-checking algorithms (Diakopoulos, 2019). However, in Nigeria, adoption of these technologies is still limited due to various constraints including infrastructure deficits, low awareness, and lack of specialized skills among media practitioners (Iroanya & Chukwuemeka, 2022).

Studies reveal that most Nigerian media houses rely heavily on traditional methods and have yet to fully explore AI-powered tools like automated news writing, voice recognition, or audience analytics (Adeyemi, 2021). According to Nwosu and Eze (2023), the use of AI and ML in Nigerian newsrooms is predominantly experimental or pilot-based, with only a few leading organizations showing interest in integrating these innovations into daily news operations. Challenges such as high costs of AI implementation, unreliable internet connectivity, and inadequate training opportunities hamper the full realization of AI's potential in the country's media sector (Okonkwo, 2022). Furthermore, ethical concerns about AI's impact on journalistic integrity, misinformation, and employment threaten wider acceptance among Nigerian journalists (Ezeani & Iroanya, 2021).

Despite these challenges, the potential benefits of AI and ML are

recognized. Automated content generation could help overcome the shortage of skilled reporters, while AI-driven data analysis may enhance investigative journalism and real-time news verification (Umeh & Okwoli, 2024). These technologies also promise improved audience engagement through personalized news delivery, which is crucial in Nigeria's diverse and rapidly changing media market (Chukwu & Mbakwe, 2023). Therefore, research focusing on the awareness, readiness, and impact of AI and ML in Nigerian newsrooms, especially at the state level like Ebonyi, is imperative. Such studies can inform strategies for technology adoption, capacity building, and policy formulation to ensure that the country's journalism keeps pace with global digital transformations. Recent developments indicate a growing curiosity and incremental experimentation with AI and machine learning in Nigerian newsrooms, particularly among larger media organizations and digital startups. For example, some Nigerian online news platforms have begun to utilize AI-powered chatbots to interact with audiences and provide personalized news updates (Okafor, 2023). Additionally, rudimentary AI tools are employed to automate the transcription of interviews and streamline content management workflows, albeit on a limited scale (Odeh & Adamu, 2024).

### **Empirical Review**

Marconi and Siegman (2019) conducted a study titled "A Survey of Artificial Intelligence Use in Global Newsrooms," carried out across 71 news organisations in different regions of the world. The major objective of the study was to examine the extent to which artificial intelligence technologies were being integrated into newsroom operations and to identify the specific areas of journalistic practice where such tools were applied. The study was anchored on the technological determinism perspective, which explains how technological innovations influence institutional practices. Using a survey

research design, structured questionnaires were distributed to newsroom managers and editorial staff.

The findings revealed that more than 60 percent of the surveyed newsrooms had adopted AI driven tools, particularly for automated content generation in sports and financial reporting. The study also found that AI was used for data analysis, audience engagement metrics, and content recommendation systems. The authors concluded that AI had moved from experimental stages to operational integration in many global newsrooms. They recommended structured training programmes for journalists and the development of ethical guidelines to regulate AI usage in editorial processes. However, the study focused largely on technologically advanced newsrooms in North America and Europe, with limited representation from developing regions. It also concentrated mainly on quantitative adoption rates without deeply interrogating newsroom culture or contextual constraints. This creates a gap for studies examining AI integration in less digitised broadcasting environments, particularly within African media institutions.

Furthermore, Diakopoulos (2020), in a study titled “Automating the News: How Algorithms Are Rewriting the Media,” investigated the growing reliance on machine learning algorithms in journalism within the United States. The objective of the study was to explore how algorithmic systems influence news production, data mining, and audience analytics. The research was grounded in algorithmic accountability theory, which emphasises transparency, fairness, and ethical governance in automated systems. Employing qualitative methods, including in depth interviews and case analysis of selected American news organisations, the study assessed the operational and ethical implications of AI deployment.

The findings indicated that journalists increasingly relied on algorithms for trend detection, investigative data mining, and personalisation of content. However, significant concerns were raised about algorithmic bias, opacity in automated decision making, and diminished editorial

transparency. The study concluded that while AI enhances efficiency and analytical depth, it simultaneously introduces ethical dilemmas that require institutional safeguards. It recommended the establishment of transparency standards, algorithmic audits, and interdisciplinary collaboration between technologists and journalists. Despite its robust ethical focus, the study was largely limited to the American media context and did not provide comparative insights into how such accountability frameworks function in developing media systems. Furthermore, it concentrated more on digital newsrooms than on broadcasting institutions. This leaves a contextual gap regarding AI governance in broadcast media, especially within emerging democracies.

Similarly, Thurman (2021) conducted a study titled “Journalism and Artificial Intelligence: Adoption, Perception and Organisational Change,” examining 15 European news organisations. The major objective was to understand the drivers of AI adoption and journalists' perceptions of its impact on newsroom practice. The study was theoretically anchored on the diffusion of innovations theory, which explains how new technologies spread within organisations. Using a mixed methods approach that combined surveys and semi structured interviews, the research assessed both institutional motivations and individual attitudes toward AI integration.

The findings showed that AI adoption was primarily motivated by the need to improve efficiency, enhance productivity, and reduce production costs. Nevertheless, journalists expressed apprehension about job displacement, deskilling, and erosion of editorial autonomy. The study concluded that AI in journalism is evolving toward a hybrid model characterised by human–machine collaboration rather than total automation. It recommended continuous professional training, inclusive innovation strategies, and policies that protect editorial independence.

Although the study provided valuable insights into organisational change, its sample size was relatively small and geographically confined to

Europe. It also emphasised print and digital platforms more than broadcasting environments. The study did not sufficiently address how socio economic factors influence AI implementation in resource constrained media systems. This limitation creates a research gap for empirical investigation into AI integration within broadcasting stations in developing countries, where infrastructural and financial challenges may significantly shape adoption patterns.

Nwosu and Eze (2023) conducted a study titled “Artificial Intelligence Adoption among Journalists in South-eastern Nigeria,” carried out in selected media organisations across the South East geopolitical zone of Nigeria. The major objective of the study was to assess the level of awareness, access, and application of AI tools among practicing journalists in the region. The research was anchored on the Diffusion of Innovations theory, which explains how new technologies are introduced, adopted, or resisted within social systems. A survey research design was adopted, with structured questionnaires administered to 120 journalists drawn through purposive and simple random sampling techniques.

The findings revealed that AI adoption was still at a nascent stage. Most respondents reported indirect or unintentional use of AI driven tools through digital platforms such as Facebook and Google rather than through formally integrated newsroom systems. The study also found limited institutional frameworks for AI training and minimal managerial support for digital transformation. The authors concluded that although awareness of AI exists, structured adoption within newsrooms remains weak and uncoordinated. They recommended institutional investment in AI infrastructure, professional training workshops, and the formulation of newsroom policies to guide responsible AI use.

However, the study concentrated primarily on print and online journalists, with limited attention to broadcasting organisations. It also relied solely on quantitative data, which may not sufficiently capture organisational

dynamics and managerial constraints influencing adoption. This creates a gap for in depth empirical investigation into AI integration in broadcasting institutions, particularly focusing on structural readiness and policy frameworks.

Moreso, Adegbola and Ojebuyi (2021) carried out a study titled “Journalists' Perception of Artificial Intelligence and Misinformation Management in Nigeria,” conducted in selected urban media centres in Nigeria. The study sought to examine journalists' perceptions of AI's potential in combating misinformation and enhancing investigative reporting. The research was theoretically grounded in the Technological Determinism theory, which posits that technological innovations shape social and professional practices. A mixed methods approach was employed, combining survey questionnaires with key informant interviews among practicing journalists and media managers.

The findings showed that journalists largely recognised AI as a valuable tool for fact checking, data verification, and strengthening investigative journalism. Nevertheless, the study revealed minimal organisational investment in AI technologies, largely due to financial constraints and uncertainty about return on investment. The authors concluded that while attitudinal readiness appears positive, structural and economic barriers hinder meaningful AI deployment. They recommended increased funding, partnerships with technology firms, and policy support from regulatory agencies to encourage AI adoption in newsrooms.

Despite its contribution, the study focused predominantly on perception rather than actual operational integration. It did not critically evaluate the technical capacity of news organisations or measure the extent of AI usage in real production processes. This limitation leaves a gap concerning practical implementation challenges within specific media sectors such as broadcasting.

Another study by Umeh and Okwoli (2024), titled “Artificial Intelligence and Job Security Concerns among Nigerian Journalists,” undertaken across selected media organisations in major cities in Nigeria. The major objective was to explore journalists' attitudes toward AI adoption, particularly fears relating to job displacement and professional identity. The study was anchored on the Political Economy theory of the media, which examines how economic structures influence media labour and organisational decisions. Using a descriptive survey design complemented by focus group discussions, data were collected from practicing journalists across print, broadcast, and online platforms.

The findings indicated that while respondents acknowledged AI's benefits in improving efficiency, speed, and accuracy in news production, a significant proportion feared potential job losses and deskilling. Concerns were also raised about reduced editorial autonomy and ethical accountability. The study concluded that AI adoption in Nigerian media is shaped not only by technological factors but also by labour anxieties and economic uncertainties. The authors recommended capacity building initiatives, inclusive policy dialogue between management and staff, and regulatory frameworks to protect media employment standards.

Although the study addressed labour concerns comprehensively, it did not empirically assess the actual scale of AI deployment within specific media houses. The reliance on perception based data limits understanding of how AI tools are practically integrated into content production workflows. Furthermore, the study treated the Nigerian media landscape as homogeneous, without isolating broadcasting institutions for focused analysis. This presents a significant gap for research examining how AI is integrated into broadcasting production processes, organisational readiness, and content development within specific media organisations.

## **Theoretical Framework**

This study is anchored on two theories the Diffusion of Innovations Theory and the Technology Acceptance Model (TAM).

### **Diffusion of Innovations Theory**

Propounded by Everett M. Rogers (1962), the Diffusion of Innovations Theory explains how, why, and at what rate new ideas and technologies spread through cultures, organizations, and societies. Rogers identified five key stages through which innovations pass: knowledge, persuasion, decision, implementation, and confirmation. The theory also categorizes adopters into innovators, early adopters, early majority, late majority, and laggards each with varying attitudes and levels of readiness toward new technology. The study argued that innovation adoption is influenced by perceived attributes of the innovation (e.g., relative advantage, compatibility, complexity, trialability, and observability). Social systems, communication channels, and time significantly impact the diffusion process. People and organizations adopt innovations at different rates based on internal and external factors.

### **Technology Acceptance Model (TAM)**

Propounded by Fred Davis (1986), the Technology Acceptance Model (TAM) was developed to predict how users come to accept and use a technology. Davis identified two major factors influencing adoption: Perceived Usefulness (PU) the degree to which a person believes that using a particular technology will enhance their job performance, and Perceived Ease of Use (PEOU) the degree to which the person believes that using the technology will be free of effort. The study assumed that Users' acceptance of technology is influenced primarily by their beliefs about the technology's usefulness and ease of use. External variables such as user training, system

design, and organizational support can affect PU and PEOU. Attitude toward using technology predicts behavioral intention, which in turn predicts actual system use.

While the Diffusion of Innovations Theory offers a macro-level perspective on how technologies like AI and ML spread across media organizations, the Technology Acceptance Model provides a micro-level insight into individual journalists' attitudes and behaviors toward adopting these tools. Together, they provide a comprehensive framework to explore both institutional and personal dimensions of AI and ML adoption in Nigerian newsrooms. These theories are crucial in explaining not only whether AI is being adopted but also why or why not, thereby guiding the study in investigating factors influencing its integration into journalism practice in Ebonyi State.

### **Summary of Literature Review**

The reviewed empirical studies demonstrate that artificial intelligence has significantly transformed newsroom practices in advanced media systems, particularly in North America and Europe. Scholars have documented the growing use of AI in automated content generation, audience analytics, investigative data mining, and newsroom efficiency. These studies are largely anchored on theoretical frameworks such as Technological Determinism, Diffusion of Innovations, and Algorithmic Accountability, highlighting both technological opportunities and ethical concerns. In contrast, African and Nigerian based studies reveal that AI adoption remains relatively low and largely unstructured. Journalists show awareness of AI tools and recognise their potential benefits, yet institutional investment, professional training, and policy frameworks are limited. Many media organisations operate at the exploratory stage, with journalists often relying on externally embedded AI tools rather than newsroom integrated systems.

Concerns about job security, editorial independence, and transparency further shape attitudes toward AI adoption.

Despite the contributions of these studies, important gaps remain in the empirical literature. Across global, African, and Nigerian contexts, there is a noticeable absence of state level investigations, particularly in regions such as Ebonyi State. There is also low empirical focus on the application of machine learning technologies in newsroom operations, as most studies concentrate broadly on artificial intelligence without isolating machine learning tools. Furthermore, few studies have systematically examined journalists' readiness, competence levels, and specific training needs in relation to AI integration. Another significant gap lies in the limited policy oriented empirical work addressing AI ethics, regulation, and governance within Nigerian media institutions. This study addresses these identified gaps by providing context specific empirical evidence from Ebonyi State.

## **Methodology**

### **Research Design**

This study adopted a descriptive survey design to investigate the awareness, understanding, usage, and perceived benefits of artificial intelligence (AI) and machine learning (ML) among journalists in Ebonyi State, Nigeria. The descriptive survey design was appropriate because it enabled the researcher to collect quantitative data from a large population and describe existing conditions without manipulating variables. This design is widely used in communication and media research to assess attitudes, perceptions, and technological adoption patterns among practitioners.

### **Population of the Study**

The population consisted of 246 registered journalists in Ebonyi State drawn from two major professional bodies:

- The Nigerian Union of Journalists (NUJ)
- The Radio, Television and Theatre Arts Workers Union of Nigeria (RATTAWU)

These organizations represent journalists working across radio, television, newspapers, and digital media platforms in the state.

### **Sample Size and Sampling Technique**

The study adopted purposive sampling for the study. The study purposively selected 180 journalists who are ICT savvy from the total population. A total of 180 copies of questionnaire were administered to the selected journalist and all were successfully retrieved, resulting in a 100 percent response rate. The full participation of the respondents enhanced the reliability and credibility of the findings, as the data reflected the views of the study population who are ICT savvy.

### **Instrument for Data Collection**

Data were collected using a structured questionnaire designed to capture:

1. Awareness and understanding of AI and ML
2. Current usage of AI and ML tools in newsrooms
3. Perceived benefits and opportunities
4. Challenges hindering adoption

The questionnaire consisted of closed-ended items measured on a 4-point Likert scale (Strongly Agree to Strongly Disagree), as well as categorical and multiple-choice questions.

### **Validity of the Instrument**

Validity is a means of demonstrating how well an instrument measures the things it is supposed to measure. For the study, the researcher used content validation. Two research specialists from Ebonyi State University's Department of Mass Communication verified the researcher's

questionnaire structure, assessing it for appropriateness and thoroughness.

### **Reliability of the Instrument**

The researcher tested the reliability of the research instrument using pilot study which was conducted with a small sample of respondents from the population of interest. The data collected from the pilot study was analysed using internal consistency measures such as Cronbach's alpha to evaluate the reliability of the survey instrument. Necessary modifications were made based on the results of the pilot study.

### **Method of Data Analysis**

Data were analyzed using descriptive statistics, including tables, percentages, and mean scores. Results were presented in tables and interpreted in relation to the research questions. The analysis focused on identifying patterns of awareness, usage, and perceived benefits of AI and ML among journalists in Ebonyi State.

### **Data Analysis**

This chapter presents the analyzed data collected from 180 journalists in Ebonyi State. Results are organized according to the research questions and supported with descriptive statistics presented in tables.

### **Demographic Characteristics of Respondents**

The demographic profile of respondents provides context for interpreting their awareness and use of AI and ML tools.

**Table 1** shows the distribution of respondents by gender, age, and media organization.

Demographic Characteristics of Respondents (N = 180)

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	112	62.2
	Female	68	37.8
Age	20–29 years	34	18.9
	30–39 years	76	42.2
	40–49 years	52	28.9
	50+ years	18	10.0
Media Type	Radio	64	35.6
	Television	48	26.7
	Newspaper	38	21.1
	Online Media	30	16.7

**Interpretation:** Most respondents were male and between 30–39 years old. Radio and television journalists formed the majority, reflecting the media landscape of Ebonyi State.

#### 4.2 Research Question One

What is the level of awareness and understanding of AI and ML among journalists in Ebonyi State?

**Table 2 :** Awareness and understanding of AI and ML

Statement	SA	A	D	SD	Mean
I am aware of the concept of Artificial Intelligence (AI).	78	52	32	18	3.06
I understand how Machine Learning (ML) works.	34	46	58	42	2.27
I can differentiate between AI and ML.	40	52	54	34	2.42
I have received training on AI/ML tools.	18	26	64	72	1.98
I follow global trends on AI in journalism.	52	68	38	22	2.78

**Interpretation:** Awareness of AI is high (Mean = 3.06), but understanding of ML is low (Mean = 2.27). Training exposure is very low (Mean = 1.98). This aligns with the **knowledge stage** of the Diffusion of Innovations Theory, where individuals are aware of an innovation but lack deep understanding.

### Research Question Two

**What is the level of AI and ML tool usage in Nigerian newsrooms among journalists in Ebonyi State?**

**Table 3 :**Level of AI and ML Tool Usage in Newsrooms

AI/ML Tool	Very Often	Often	Rarely	Never	Mean
Automated transcription tools	46	58	48	28	2.71
Grammar/editing AI tools	52	64	40	24	2.82
Social media analytics tools	38	56	54	32	2.57
AI-powered fact-checking tools	12	26	68	74	1.87
Automated news writing (NLG)	6	18	52	104	1.52
Predictive analytics for audience engagement	8	22	48	102	1.61

**Interpretation:** Journalists frequently use **basic AI tools** (transcription, grammar checkers, analytics). However, **advanced AI tools** (NLG, predictive analytics, AI fact-checking) are rarely used. This places most journalists in the **late majority/laggard categories** of the Diffusion of Innovations Theory.

### Research Question Three

**What are the benefits and opportunities AI and ML present for journalistic practice in Ebonyi State?**

**Table 4:** Perceived Benefits and Opportunities of AI and ML

Statement	SA	A	D	SD	Mean
AI can improve newsroom efficiency.	72	78	20	10	3.18
AI enhances accuracy in reporting.	64	74	28	14	3.04
AI supports investigative journalism.	58	76	32	14	2.99
AI helps combat misinformation.	60	70	34	16	2.97
AI can improve audience engagement.	54	80	30	16	2.96

**Interpretation:** Journalists strongly believe AI offers significant benefits. This shows **positive persuasion**, a key stage in the Diffusion of Innovations Theory, indicating readiness for adoption if barriers are removed.

#### **Barriers to AI and ML Adoption**

**Table 5:** Barriers to AI and ML Adoption

Barrier	Frequency (f)	Percentage (%)
Poor digital infrastructure	148	82.2
Lack of training	136	75.6
High cost of AI tools	118	65.6
Fear of job displacement	94	52.2
Lack of organizational support	102	56.7
Limited awareness of advanced AI tools	128	71.1

**Interpretation:** The most significant barriers are **infrastructure**, **training**, and **cost**. These barriers reduce **reliability** and **compatibility**, slowing innovation diffusion.

## **Findings**

### **Level of awareness and understanding of AI and ML among journalists in Ebonyi State?**

#### **What is the level of awareness and understanding of AI and ML among journalists and media professionals in Ebonyi State?**

The findings revealed that while a significant proportion of journalists were aware of AI and ML, only few respondents demonstrated a good to very good understanding of their applications in journalism. Many respondents indicated only “fair” understanding, while 38.9% admitted to poor or no understanding at all.

This aligns with Oladokun (2022), who noted that although Nigerian journalists are increasingly exposed to emerging technologies, comprehension of advanced tools such as AI remains superficial. The results also support Afolabi and Aborisade (2021), who found that media practitioners in Nigeria often lack structured training in digital transformation tools, leading to a gap between awareness and actual skill.

The results suggest that Ebonyi journalists have heard about AI and ML largely through informal channels, but structured knowledge and training are lacking. For meaningful integration into newsrooms, capacity-building initiatives such as workshops, professional development courses, and collaboration with tech institutions are essential.

### **Level of AI and ML tool usage in Nigerian newsrooms among journalists in Ebonyi State**

The results indicated that minority of respondents currently use AI or ML tools, while majority do not. Among those who use such tools, adoption was skewed towards relatively simple applications such as automated transcription, social media monitoring, and fact-checking tools. More advanced uses, such as automated content generation and investigative data

mining, were less frequently reported.

The major challenges identified included lack of technical skills, limited access to tools, and high cost. These findings are consistent with Ekwueme and Okoro (2020), who observed that Nigerian media institutions often lag in adopting digital technologies due to inadequate funding, infrastructural limitations, and resistance to innovation.

Globally, however, newsrooms have moved further in embracing AI. For instance, Beckett (2019) reported that major news outlets such as Reuters, The Washington Post, and BBC employ AI tools for content personalization, audience analysis, and automated writing. The contrast highlights the slow pace of Nigeria's adoption relative to global peers. Ebonyi newsrooms are still at the foundational stage of AI/ML adoption. Without addressing the twin problems of training and accessibility, journalists will remain behind in the digital revolution.

### **Benefits and opportunities AI and ML present for journalistic practice in Ebonyi State**

The findings showed that respondents recognize several potential benefits of AI and ML, with majority of respondents emphasizing faster news gathering and reporting, followed by enhanced fact-checking and accuracy. Other benefits identified include improved audience engagement, reduction of repetitive tasks, and support for investigative journalism. These results echo Diakopoulos (2019), who argued that AI has the potential to transform journalism by automating routine tasks while freeing journalists to engage in more creative and analytical reporting. They also align with Fadeyi (2022), who stressed that Nigerian journalists stand to gain efficiency and credibility if AI is properly integrated.

However, concerns such as ethical risks, job displacement, and resistance to change were also identified. This tension reflects the global debate captured by Carlson (2020), who noted that while AI enhances

efficiency, it simultaneously raises questions of accountability, transparency, and newsroom employment. Journalists in Ebonyi State are cautiously optimistic about AI and ML. They perceive tangible benefits but are also wary of the risks. The success of AI in newsrooms will depend on balancing innovation with ethical safeguards and professional retraining.

## **Summary Conclusion and Recommendations**

### **Summary**

This study examined “The Future of Journalism: An Exploration of Artificial Intelligence and Machine Learning in Newsrooms” with a focus on Ebonyi State, Nigeria. The research was designed to assess the level of awareness and understanding of Artificial Intelligence (AI) and Machine Learning (ML) among journalists and media professionals, evaluate the extent of use of AI and ML tools in Nigerian newsrooms, and identify the perceived benefits and opportunities that these technologies present for journalistic practice.

The study was anchored on the Diffusion of Innovations Theory (Rogers, 1962) and Technological Determinism Theory (McLuhan, 1964), which provided useful insights into how journalists become aware of, adopt, and apply emerging technologies in their practice. A descriptive survey design was employed, and a total of 180 respondents were purposively selected from the registered members of the Nigerian Union of Journalists (NUJ) and the Radio, Television and Theatre Arts Workers Union of Nigeria (RATTAWU), Ebonyi State chapters. Data were collected using a structured questionnaire, with a 100% retrieval rate.

The literature review addressed key themes such as journalism in the digital age in Nigeria, the global use of AI and ML in newsrooms, the preparedness of Nigerian media for AI adoption, and the role of AI in enhancing investigative reporting and newsroom efficiency.

## **Conclusion**

This study explored the awareness, usage, and perceived benefits of AI and ML among journalists in Ebonyi State, Nigeria. Findings reveal that while journalists are aware of AI technologies, their understanding and practical application remain limited. Usage of advanced AI tools is low, largely due to infrastructural challenges, limited training, and organizational constraints. However, journalists recognize the potential of AI and ML to enhance newsroom efficiency, improve accuracy, support investigative reporting, and strengthen audience engagement. The study concludes that Nigerian journalists are at the early stage of AI adoption and require targeted interventions to accelerate responsible integration.

## **Recommendations**

- 1. Capacity Building and Training:** Journalism training institutions and professional bodies such as NUJ and RATTAWU should organize workshops and training programs focused on AI and ML applications in newsrooms. This will enhance both awareness and practical skills among journalists.
- 2. Investment in Digital Infrastructure:** Media organizations in Ebonyi State should invest in the acquisition and deployment of AI-powered newsroom tools such as automated transcription services, data visualization software, and AI-assisted content analysis to modernize operations.
- 3. Policy and Institutional Support:** Government and regulatory agencies should develop policies that encourage and support the integration of AI and ML in journalism. This may include grants or subsidies for media houses investing in digital transformation. Media organizations should collaborate with technology firms and academic institutions to co-develop AI solutions tailored for Nigerian newsroom challenges such as fact-checking, language translation, and data-driven investigative journalism.

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