



Artificial Intelligence, Immersive Technologies and the Future of Broadcast Media in Nigeria: Trends, Challenges and Prospects

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Abstract

The pace at which technology is emerging is transforming the global media landscape with profound changes in the way media contents are created, distributed and consumed. It is against this premise that this study investigates emerging technologies and the broadcast media in Nigeria. The study specifically identifies the different emerging technologies used by the Nigerian broadcast media industry as well as examining the trends, challenges and prospects of these technologies in the industry. Anchored on Diffusion of innovation theory, this study adopted the narrative method approach, where relevant secondary literatures were reviewed to gain insight to the topic of discussion. The study revealed that the introduction of new media technologies come with more opportunities to the broadcasting sector in the area of curating advanced programmes and also, the opportunity of gaining a wider audience which brings about efficiency and productivity. These emerging technologies specifically Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), automation and algorithmic contents are reshaping both the mainstream and the digital media outlets by driving innovation. The study therefore looks at the trends, challenges and prospects of these technologies in the Nigerian broadcast industry.

Keywords: emerging technologies, artificial intelligence, virtual reality, augmented reality, journalism

Introduction

The broadcast media industry is currently experiencing a technological revolution, shifting it from the manual, hardware-dependent form of production to a redefined phase of the integration of Artificial Intelligence, automation, and immersive technologies like Virtual and Augmented Realities, even though Emwinromwankhoe (2020) argues that the broadcasting sphere in Nigeria and indeed the world over, has never been static. The integration of these emerging technologies in a country like Nigeria with its dynamic media landscape, collectively redefine media production processes, enable smooth workflows, audience engagements, personalized viewer experiences and is a necessity for the broadcast media to thrive in a competitive environment. Broadcast media outlets such as the Nigerian Television Authority (NTA), Channels Television and Federal Radio Corporation of Nigeria (FRCN) amongst others, are navigating digital migration (Ofurum, 2025). These technologies have transformed media and communication systems especially through the use of immersive technology which acts as the main driver behind this transformation. By harnessing emerging technologies, broadcast media outlets can deliver well-tailored contents and craft interactive environments that cater to individual preferences. According to Anorue and Onyike (2021), the days of broadcasting exclusively using analogue equipment are long gone. Due to technological advancements, there is a growing need for high-quality broadcasting. Audiences today are loyal to broadcast stations that value aesthetics and technology in order to produce exceptional work.

The growing use of Artificial Intelligence (AI), has further strengthened this transformation by improving many stages of broadcast production. AI is now used to assist with news gathering,



speech-to-text transcription, video editing, content recommendation, audience analysis and the automation of routine production tasks. Rather than replacing media professionals, these tools help broadcasters complete repetitive work faster and give them more time to focus on content quality, improving on their creativity and become more productive (Lee & Suh, 2018 as cited in Akintayo, et al, 2026; Onyejelem & Aondover, 2024). As audiences increasingly consume media through digital platforms and mobile devices, AI also helps broadcasters understand audience preferences and recommend programmes that match viewers' interests. This has improved audience satisfaction and encouraged stronger engagement across different broadcasting platforms (EBU, 2024; Newman et al., 2024).

Immersive technologies such as Virtual Reality and Augmented Reality have revolutionized broadcasting, and have also changed how stories are presented to audiences. They moved audiences from passive viewership to highly active participatory connections with media content (Adewojo, 2025). News organizations, sports broadcasters and documentary producers now use these technologies to create realistic environments that allow audiences to experience events in more engaging ways. For instance, viewers can explore a virtual disaster scene, follow election results through interactive graphics or enjoy sporting events with enhanced visual information displayed in real time. These developments have made broadcasting more informative, attractive and interactive than in the past.

Despite these opportunities, the successful integration of AI and immersive technologies into the broadcast media in Nigeria, shows slow development as it faces extensive technological, economic and infrastructural challenges to adopt (Kperogi & Ishiekwene, 2025). Adopting it also, depends largely on the knowledge and skills of broadcast professionals as well as the broadcast media organization's readiness. In order to fill in this gap, media organizations need continuous staff training, investment in modern equipment and clear ethical guidelines to ensure that these technologies are being acquired and used responsibly. Issues such as misinformation generated through AI, data privacy, copyright protection and transparency in automated content production require careful attention from both media organizations and regulators. As the broadcast media industry continues to evolve, stations that invest in technological innovation while maintaining professional ethics and editorial standards are more likely to remain competitive and meet the changing expectations of modern audiences (UNESCO, 2023; International Telecommunication Union (ITU), 2024).

Statement of the Problem

The gradual adaptation of AI, Virtual and Augmented Realities in broadcasting is redefining the operation of broadcast media in Nigeria. While this innovation has created several opportunities and has also made journalism to be immersive and engaging, there is a growing fear of privacy breach, emotional manipulation and high production cost and misinformation by especially generative AI (Ngene et al., 2023). Virtual and Augmented realities also portend the danger of misuse if there is no clear regulation and guideline to guide its usage. These technologies have changed the way media contents are produced and consumed, there is dearth of scholarly evidence on investigating their prospects and challenges so as to harness their potentials and minimize their concomitants effects. It is against this premise that this study investigates these technologies and the broadcast media in Nigeria, focusing on the current trends, challenges and prospects.



Objectives of the study

The main objective of this study is to examine the state of AI, VR and AR and the broadcast media in Nigeria. However, the specific objectives would be;

1. Identify the technologies used by the broadcast media in Nigeria
2. Examine the challenges and prospects of these technologies in the Nigerian broadcast media space.

Conceptual Review

The concept of emerging technologies is reviewed to unravel the nuanced perspective and the concept in order to gain new insight.

Emerging technologies

Emerging technologies refer to new or rapidly developing digital tools and systems that are changing how people communicate, live, work, learn and access information. They include but not limited to Artificial Intelligence (AI), cloud computing, the Internet of Things (IoT), blockchain, fifth generation (5G) networks, big data analytics, robotics, Virtual Reality (VR), Augmented Reality (AR) and other digital innovations (Sadiku, et al, 2025). Although many of these technologies are still evolving and their adoption in the newsroom nascent, they are already influencing different sectors such as education, healthcare, agriculture, finance, manufacturing and the media (Ajijola & Yahaya, 2025; Ukwela, 2021). According to the World Economic Forum (2024), emerging technologies are reshaping economies and societies by improving productivity, encouraging innovation and creating new opportunities for businesses and individuals. Similarly, the Organization for Economic Co-operation and Development (OECD, 2024) explains that these technologies continue to transform industries by supporting faster decision making, improved service delivery and stronger digital connections.

The communication and media industry have become one of the major beneficiaries of emerging technologies. Broadcast organizations, newspapers and digital media platforms now rely on Artificial Intelligence to support content creation, audience analysis, language translation and newsroom operations (Mandela, 2024). Cloud computing enables journalists and media organizations to produce, store and distribute content from different locations, while Virtual Reality and Augmented Reality provide audiences with more engaging, immersive and interactive experiences. Data analytics also helps media organizations understand audience behaviour and develop content that matches viewers' interests and expectations ((Ofurum, 2025). The Reuters Institute Digital News Report notes that digital technologies continue to shape the way audiences consume news, with increasing demand for personalized and interactive media experiences across different platforms (Newman et al., 2024). Likewise, the International Telecommunication Union (2024) observes that expanding digital infrastructure and improved internet connectivity have accelerated the adoption of emerging technologies across communication industries worldwide.

Despite their many benefits, emerging technologies also present important challenges that require careful management. Organizations adopting these technologies often face issues such as high implementation costs, shortage of skilled personnel, cybersecurity threats, data privacy concerns and the need for regular staff training. In addition, the rapid development of Artificial Intelligence has raised concerns about misinformation, copyright protection, algorithmic bias and ethical use of automated systems (Adewojo, 2025). UNESCO (2023) emphasizes that emerging technologies should be developed and applied in ways that respect human rights, transparency and accountability. Therefore, the successful use of emerging technologies depends not only on access



to digital tools but also on appropriate policies, continuous capacity building and responsible governance that ensure technology benefits society as a whole.

Theoretical Framework

Diffusion of innovation theory was selected to serve as the theoretical underpinning for the study. The theory was developed by E. M. Rogers in 1962, to explain how over time, an idea or product gains momentum and diffuses or spreads, through a specific population or social system, with the end result of people, as part of a social system, adopt the new idea, behaviour or product (Asemah, et al, 2022). This idea or product flows through networks. The nature of networks and the roles opinion leaders play in them determine the likelihood that the innovation will be adopted (University of Twente, n.d). Rogers (1995) studying how innovation occurs, argued that it consists of four stages: invention, diffusion (or communication) of the innovation through the social system, time and social systems of the innovation.

Diffusion of Innovation Theory explains how new technologies adopted through a social system over time, tends to appeal to the needs of the people, influenced by factors such as perceived usefulness, compatibility, complexity, and observability (Ajijola & Yahaya, 2025). The theory further explains that people do not adopt new ideas or technologies at the same time. Instead, adoption happens gradually as different groups respond based on their level of interest, knowledge, experience, and willingness to accept change. Rogers as cited in Ukwela (2021), identified five categories of adopters, namely innovators, early adopters, early majority, late majority, and laggards. Innovators are usually the first to try new ideas, while early adopters often influence others through their opinions and experiences. As more people observe the benefits of an innovation, the early and late majority begin to accept it, whereas laggards adopt it only when the innovation has become widely accepted or unavoidable. Recent studies have shown that factors such as organizational support, access to training, digital skills, cost, and trust in technology play important roles in shaping the adoption of emerging technologies across different sectors. This makes the theory useful for explaining why some organizations or individuals quickly embrace innovations while others are slower to do so, even when the same technology is available to everyone (Venkatesh et al., 2022; Dwivedi et al., 2023).

Diffusion of Innovation Theory provides a useful explanation of how emerging technologies can become part of media practice across the country. The theory suggests that the successful adoption of technologies such as artificial intelligence, mobile journalism, cloud-based news production, data journalism, and digital broadcasting depends not only on their availability but also on how media professionals perceive their usefulness, ease of use, and relevance to their daily work (Mariani, 2024). It also shows that media organizations, government agencies, journalism training institutions, and professional bodies all have important roles in creating awareness, providing training, and encouraging confidence in the use of these technologies. As more journalists and media organizations experience the benefits of emerging technologies through improved news gathering, faster content production, wider audience reach, and better audience engagement, their acceptance is likely to increase across the Nigerian broadcast media industry. Therefore, the theory supports the need for continuous digital skills development, favourable government policies, improved technological infrastructure, and stronger investment in innovation as important steps toward advancing the Nigerian broadcast media sector in the digital age.



Methodology

A narrative review method was used where journals, books and organizational documents, that are similar to this particular area of study were reviewed and synthesized to uncover nuanced perspectives and gain new insights.

Thematic Synthesis and Discussion

Artificial Intelligence (AI) and Trends in Broadcasting

The emergence of AI came about in the bid to simulate human intelligence using digital platforms and tools (Muller & Bostrom, 2016). The use of AI technologies has been instrumental in identifying new opportunities in various industries, including healthcare, where they aid in early diagnosis and treatment strategies (Zhang, 2021). Similarly, in broadcast media, AI can automate and optimize content creation processes, making them more efficient and cost-effective (Santy et al., 2021). The application of AI in media management is not just about efficiency; it also involves enhancing creativity and innovation, which are critical for engaging contemporary audiences (Santy et al., 2021). Also, AI-driven analytics platforms allow stations to track digital audience behaviour in real time. More sophisticated deployments involve AI-assisted content scheduling, automated news summary generation, and voice cloning for continuity purposes (Srivastava, 2023).

Major broadcast stations like CNN, BBC and even Reuters have integrated AI into their operations especially when it comes to their targeted advertising, generating news summaries and even the entire news articles, amongst others (Onyejelem & Aondover, 2024), as BBC News for example, uses AI-generated voiceovers and automated subtitling in nearly 50% of its online clips, significantly improving turnaround time and accessibility (BBC, 2023). In Nigeria, broadcast stations like Ebonyi State Broadcasting Corporation (EBBC), Abakiliki, have integrated AI into their newsroom, particularly for content creation, script editing, information verification, studio presentation, and social media engagement, with significant enhancement in speed, efficiency, productivity, and workflow, reflecting a high level of perceived usefulness (Odoh, et al., 2026). Also, iROKOTv utilizes AI-powered chatbots and recommendation engines to streamline user interaction and predict preferred African film categories for its diverse audience base (TechCabal, 2015), this is in line with Ratten (2024) who stated that AI technologies enable the creation of interactive content and real-time engagement with viewers through chatbots and other interactive tools. Premium Times used data analytics to uncover corruption and track government spending (Premium Times, 2020). Also, the National Broadcasting Commission (NBC), uses AI-powered transcription tools to provide subtitles for broadcast content (NBC, 2020). This is a very helpful development considering Nigeria's diversity in terms of spoken and written languages.

AI no doubt provides considerable ease in human lives. Lath (2018) as cited in Ukwela (2021), itemized six areas where AI is applied, namely; "eCommerce, healthcare, retailing, manufacturing, self-driving cars as well as marketing a business" (Ukwela, 2021, p. 81). This goes to show that AI is gradually gaining grounds in almost all facets of human life.

In as much as the integration of AI into broadcast media activities tends to help ease media personnel of loads of work, humans still control how it should work as it is programmed to assist with labourious and monotonous human tasks. This aligns with Ukwela (2021) who stated that, AI systems/tools cannot replace human activities in broadcasting but can only improve all aspects of broadcasting. This submission also aligns with one of the resolutions of communication experts at



the 2020 International Conference of Association of Communication Scholars and Professionals of Nigeria (ACSPN) (2020), that “Journalism needs AI, just as AI needs journalism”. The significant edges the AI presenter has over the human presenter is in terms of error detection, productivity, diversification and timeliness. Some unfamiliar words could also distort the anchor's reading process as he or she struggles to pronounce them correctly, potentially leading to awkward pauses, mispronunciations, or loss of fluency, which can distract from the overall professionalism and credibility of the broadcast. The Nigerian broadcast industry makes use of AI to streamline operations, reduce costs, and increase productivity. For instance, AI-powered automation is being used to generate news summaries, sports updates, and weather forecasts, freeing up human journalists to focus on in-depth reporting (*Premium Times*, 2020).

The recent rapid progress of artificial intelligence has opened up new opportunities for the future development of radio and television (Hu, et al, 2021). AI technologies facilitated automated journalism, where systems could generate news articles, reports, and summaries by analyzing data sets and identifying key trends. This allowed for real-time reporting and reduced the workload on human journalists. AI tools are also used to play a crucial role in video editing, selecting the best clips, arranging sequences, and suggesting creative edits based on the content's context and intended audience. In scriptwriting, AI provided suggestions for dialogue, plot development, and character interactions, enhancing the creative process for writers (Ugwuagbo, 2024). This gradual integration of AI into the broadcast media is aimed at supporting predictive analytics, newsroom innovation, automated content creation, and audience sentiment monitoring (Vitalis et al., 2025).

Virtual Reality (VR) and Augmented Reality (AR)

Virtual reality (VR) is another fascinating technology that is revolutionizing media practice and journalism in Nigeria. VR is a way of simulating or replicating the environment and giving the user sense of being there (Matahari, 2018.). It allows a person to be immersed in interactive computer-generated environment. It incorporates mainly auditory and visual feedback. Several broadcasters are already exploring best possibilities using Augmented Reality (AR) or VR. Mostly, AR is used in news explanatory, where it allows for the interaction between sets, talents and virtual objects, through attaching virtual content on a real-world environment without physically changing the appearance of a broadcasting studio (Mandela, 2024). These provide visually engaging representations of the data and information, which can better be explained by the presenters placed on the set. It also enables the broadcaster to change the look and feel of his studio environment and create compelling virtual set pieces to elevate production value, better engage viewers, and enhance storytelling (Matahari, 2018). On the other hand, the audience engagement of immersive technologies stimulates both intellectual and emotional responses of users which transforms their media behaviour patterns (Ja'afaru & Anagu, 2025). AR is similar to VR, but serves a very different purpose. The core value of AR is that components of the digital world merge with human perception of the real world, not as a simple display of information, but through the integration of immersive senses. AR is used to enhance natural environments or situations and offer an enriched perceptual experience. With the help of advanced AR technologies (such as adding computer vision, embedding AR cameras in smartphone applications and object recognition), information about the real world around the user becomes interactive and processed digitally (Mammadova, 2023).

A comparative analysis with findings from Hollebeek and Macky (2019) and Cummings et al. (2022) corroborates that immersive technologies enhance presence, empathy, and cognitive



absorption, which are essential components of effective media communication. In a study conducted by Ja'afaru and Anagu (2025), their findings imply that media professionals embrace immersive tools not solely for knowledge acquisition but also for identity expression and the enhancement of professional and peer relationships. Odediran (2021) states that journalism is in transition. The skills of old are no longer adequate for the practice of journalism in the digital age. The changing knowledge requirement is not just within the established functions but also in new media, such as the social media, virtual reality and augmented reality.

On the flip side, emerging tools allow for realistic fake videos, cloned voices, and AI-generated images, which can be used to spread political propaganda, defame individuals or institutions and confuse the public during crises (Ofurum, 2025). Hence, the media has to be careful with what they broadcast as it can have legal implications. This behooves that there must be clear regulation on the usage of emerging technologies in order to curb the concomitant effects that accompany its usage for audience deception and manipulation.

Automation and Algorithmic Content

On March 17, 2014, a magnitude 4.4 earthquake shook southern California. The first story about the quake on the LA Times' website was a brief, factual account posted within minutes which was written entirely by an algorithm (Will, 2014). Since then, 'robot reporters' have produced stories in major news outlets on topics ranging from minor league baseball games to corporate earnings announcements. In automated journalism, also known as algorithmic journalism or robotic journalism, "news is generated automatically by computers using artificial intelligence (AI) software" (Dörr, 2016). These programmes interpret, organize, and present data in an easy-to-read format. According to Diakopoulos, "the process of creating news using algorithms consists of the following steps: "extracting information, calculating whether the information is newsworthy or not, identifying and prioritizing relevant information, linking relevant information to news, creating news text, publishing news on a website." (Diakopoulos, 2019). Automation and robotics technologies are revolutionising journalism as well as other professions immensely. Technology is already able to do some of our jobs almost perfectly, from news gathering, interpretation, story writing, editing, photo journalism, graphics generation and layout, TV programming, advertising research to video production (Odediran, 2021). Along with the economic downturn in the online news industry, the need for speed in online journalism makes the practice of automated or robotic journalism relevant in the process of creating online news texts. Some of the benefits of using automated journalism as outlined by Mammadova (2023), include but not limited to:

- a. Personalized news content: Based on reader behaviour on a news site, algorithms determine the types of news readers like, the times they live in, the regions they live in, and can offer 'personalized' content for each reader, etc.
- b. Speedy generation of news text: Thanks to automated journalism expertise, news production can be done faster. Algorithms take information about the news text being created, turn it into a long news text and post it on the news site in a few seconds.
- c. Creation of more news: With robotic journalism, algorithms can create more news than a journalist can write.

In spite of these promising benefits, this development also comes with its shortcomings such as the threat of unemployment for journalists. The fact that news can be written and organized by algorithms, and the task of writing news traditionally performed by journalists is transferred to



algorithms, puts journalists at risk of unemployment. There is also the tendency of errors occurring due to technical glitches, leading to incorrect or incomplete presentation of data as Ogbuoshi (2021) stated, a robot starts to malfunction when viruses are introduced into the system or its programmed instruction. At this instance, the reliability of a robot is highly low.

Challenges and Prospects of these Emerging Technologies in Nigeria

Despite its numerous benefits, the integration of these emerging technologies into broadcast media comes with substantial challenges. The revolutionary transformation of journalism through VR, AR and AI-driven automation occurs in developed nations but these technologies face adoption challenges in Nigeria ranging from technological, economic and infrastructural, high implementation costs, skill gaps, resistance to change, to ethical and regulatory concerns (Kperogi & Ishiekwe, 2025; Kim, 2024; Ngene et al., 2023; Syafi'i et al., 2023; Wu, 2022; Aleem et al., 2021; Yin & Zhao, 2021). Also, several other factors like cost of acquiring technological tools, poor funding of the media organization, and privacy concerns are mitigating the pace of adoption and utilization of these technologies among media practitioners and journalists in Nigeria. Government and media proprietors in Nigeria must make deliberate efforts in investing on the acquisition of these emerging technologies in the broadcast media industry as well as the training of journalist on the efficient use of these technologies to discharge their responsibilities effectively. This aligns with findings from (Odoh, et al, 2026) who stated that the potential for transforming broadcast journalism, its sustainable integration within public broadcasting organizations operating in emerging economies depends on addressing these structural and organizational constraints. But with a balanced approach that addresses these challenges, the broadcast media industry can harness the full potential of especially AI, to drive innovation and efficiency (Rostamian & Kamreh, 2024). The singular advantage of AI-powered tools to spot anomalies, such as fake news, more swiftly than humans is a good reason to adopt AI (Wilson, 2021).

The benefits of integrating these emerging technologies into the broadcast media are enormous as discussed extensively above. The combination of virtual reality technology with journalism strengthens audience-member bond while deepening societal issue awareness (Salzmann et al., 2023). The user-capturing capability of immersive environments becomes enhanced through haptic feedback physical movement and sensory integration features (Shin & Biocca, 2018). Engaging audiences profoundly results in better information memory functions and increased customer loyalty which drives media market success (Jung et al., 2020). AI-powered VR/AR can also enhance immersive storytelling and viewer engagement in Nigeria, like that of the New York Times, which uses AI-powered VR to create immersive experiences for readers (*The New York Times*, 2020).

Conclusion

Findings from the study reveals that these emerging technologies are gradually being incorporated into the broadcast media space with a number of media outlets already exploring them. In line with the Diffusion of Innovation Theory, which explains that the adoption of new technologies through a social system over time, tends to appeal to the needs of the people, influenced by factors such as their perceived usefulness and compatibility with the system, the use of AI and immersive technologies has a wide range of possibilities in the broadcast media when its potentials are properly harnessed. As Rodríguez-Abitia, et al. (2022) clearly stated, the knowledge of immersive tools coupled with digital content creation abilities helps individuals and



the media experience increased innovation alongside better technological competence. Content creation in the media generally especially in Nigeria has gained grounds, then incorporating the use of AI and immersive technologies to the content creation, will enhance production and also audience engagement. Despite the challenges that come with their adoption, it will be of great importance if these technologies are appropriately utilized for the good of the broadcast media in Nigeria. This will however require bespoke policy drive on emerging technologies to serve as regulatory framework on the use of AI and VR/AR in the broadcast media industry in order to curb incidences of abuse and misuse.

Recommendations

1. There is the need for adequate funding and investment on emerging technologies in the broadcast media industry in order to fully integrate these technologies to enhance journalism practice in Nigeria.
2. Policy makers and media regulatory bodies in Nigeria such as the National Broadcasting Corporations (NBC), need to design and implement policies that will guide and regulate the use of the technologies especially in the broadcast media industry.
3. There should be media staff capacity building, where they are trained on the usage of these technologies in order to make them relevant in the organization.

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No AI tool was used at any stage of this study.
