INFLUENCE OF ARTIFICIAL INTELLIGENCE IN BRODCASTNG IN NIGERIA

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ABSTRACT

This abstract presents a comprehensive analysis of the influence of Artificial Intelligence (AI) on the field of broadcasting. This research explores the various ways in which AI has influenced broadcasting operations, which includes content creation, video analysis curation, automated language translation and localization ,audio dubbing, colour grading, broadcast graphics, animation, virtual and augmented reality, video editing, live broadcast, advertising targeting and personalization.These concepts were duly explained in order to understand how artificial intelligence influences broadcast in different ways. The challenges of artificial intelligence in Broadcasting in Nigeria was also stated, which stated. The are divided into two sections, the ethical challenges and the professional challenges.Ethical challenges are Bai's and fairness,privacy concerns. The professional challenges includes job displacement, availability of data, lack of self awareness, authencity, lack of access to resources and lack of expertise in artificial intelligence in broadcast in Nigeria.The theorical framework used in this work is diffusion of innovation theory. The methodology used in the study is survey method using questionnaire as instrument of data collection.Simple random sampling technique was used in selecting four States in the South East where the research would take place. Anambra, Ebonyi, Imo and Abia States were selected. The third stage was purposively selecting broadcast stations from each State according to its prominence. Another stage was adopting the availability sampling technique in sharing copies of questionnaire to the respondents. Analysis was done using the simple percentage and frequency. Findings reveal that artificial intelligence tools are hardly used in Nigeria. Some media and practitioners show that the artificial intelligence features are indeed good and aid in work activities.The study concluded that the future of AI in broadcasting looks unfavourable and the fear of loss of jobs could partly be the reason the use of AI is delayed in broadcast stations. The study recommended the investment in AI trainings for broadcasters and broadcast stations.

KEYWORDS: Influence, Artificial intelligence, Broadcasting, Challenges.

Introduction

From inception in 1895, broadcasting (introduced by Gulielmo Marconi who began the first commercial radio in the United States of America) has been a system subject to continuous improvements and modifications in content, operation and application from analogue to digital procedures. For all the arms of broadcasting, from programmes/programming, engineering, marketing, administration, editing, to presentation; change has been a recurring decimal. As Springer (1992, p.1) records "many broadcasting organizations in Europe and in other parts of the world (Nigeria inclusive), were set up as part of government owned corporations. They were and are structured like public administrations which are meant to serve the interests of their owners, therefore, are subject to change.

Typically, the early 2000 witnessed the beginning of the digital era when broadcast equipment like transmitters, cameras, studio equipment, editing as well as administration and some aspects of presentation, became digitized. It saw the gradual replacement of the human presenters by automated procedures especially in repetitive tasks like broadcast announcements and Transmission Continuity. The idea of full digitization of broadcasting began in 2004. Two years later (2006), countries of the world signed

an agreement to that effect and set the initial deadline for complete switch over of broadcast transmitters from analogue to digital for 17 June 2015, for all region 1 (that is Europe, Africa and the Arab Countries). However, Nigeria

could not meet up with the demands; therefore, The Economic Community of West African States (ECOWAS) extended the new date to 17 June 2017. Three years after the expiration deadline, the Nigerian broadcast media is still far from being fully

digitized. It has rather led to the rise and fall of several media organizations due to the high cost of digital equipment and technical knowhow. With digitization and the issues associated, came the introduction of Artificial Intelligence (AI) tools in broadcasting which according to Virtual Service Network (VSN) (2020) "has

opened the door for new possibilities".

Indeed something fundamental is changing in the media industry. New technological challenges and opportunities are encouraging a reflection about the deeper meaning and mission of broadcasting as well as the shape and ethics of the news industry in the era of Artificial Intelligence (AI). As a result, many realise the urgency to explore innovative solutions to sustain the business of news. Many media practitioners in Nigeria have little or no knowledge of what AI actually means, let alone what it can do for a newsroom. AI in its most basic form is a system that makes autonomous decisions, performing tasks that mimic acts of human intelligence like solving problems, understanding language or recognizing sounds and objects. To help computers perform their specific tasks, they need a set of step-by-step instructions that tell them what to do: an algorithm. To feed the algorithm, data is the basic ingredient for every AI. Algorithms and machines can augment the power of journalists, opening up new possibilities and unexplored territories. AI just does not work on its own, and we cannot expect it to fix all our problems, the best impact can be achieved as a partnership between humans and technology.

According to the father of Artificial Intelligence John McCarthy (Mattia 2019), AI is the science and engineering of making intelligent machines, especially intelligent computer programs. Artificial Intelligence (AI) is a way of making a computer, a computer-controlled robot, or a software think intelligently in the similar manner the intelligent humans think. AI is accomplished by studying how the human brain thinks and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of development. We can say that an artificial intelligent system is a system that thinks like humans, acts like humans, thinks rationally and acts rationally. The situation whereby machines (robots) perform the duties hitherto done by humans and even do them better and faster is the age we are fast approaching. The era would be dominated by Artificial intelligence AI, also known as machine intelligence and humans would be relegated to the background while machines take the lead in almost every field of human endeavour. Mattia (2019) posits that in the year 2025, robots and machines driven by artificial intelligence AI are predicted to perform half of all the productive functions in the workplace.

The development of AI- based tools has opened the door to new media cataloging, utilisation, and monetization possibilities. AI systems such as those of Microsoft Azure, Google or IBM allow the automation of repetitive tasks and processes that would normally require the allocation of greater time and resources, especially in the areas of production, cataloguing and media management. How can this technology help us make the most of our resources? production. However, the benefits of AI are not exclusive to the generation of information directly from the media. The accuracy, speed and amount of information generated with AI tools open the door to many other applications in other industry areas. The mass media and their operations including the teaching and practice of broadcasting, the world over are getting sophisticated daily due to technological advancement and development Guanah(2019).

The advent of the AI technology is causing disruptions, both positively and negatively in all aspects of human life including broadcasting studies and practice. Though it has the propensity to displace people from their jobs yet it enhances efficiency and the positive impact is more than the negative impact. The adoption or cloning of AI as broadcasters, however, comes with a sheer variety of being two sides of a coin. While some people fear its tendency for human displacement, some are also of the opinion that it cannot replicate human broadcasters since broadcasting is a "creative human practice" Miroshnichenkoj(2018). Many media practitioners in Nigeria as posited by Guanah (2020), have little or no knowledge of what AI

actually means, let alone what it can do for a newsroom. Majority of the mass communication training schools and media houses in Nigeria are yet to fully inculcate AI into their operations even though it has come to stay. Nsude (2022) has observed that mass communication schools in Nigeria do not imbibe e-learning and this makes students graduate without acquiring the adequate skill needed to enable them to be broadcasters. AI is an integral part of e-learning. It is now a global phenomenon. How it influences broadcasting learning and practices in Nigeria. The study serves as a call for recognition of the inevitability of AI in broadcast media practice.

Artificial Intelligence (AI) systems and tools have become useful in the broadcast industry. It is daily gaining ascendancy and gradually becoming a replacement of the human duties in broadcasting, but is it possible for machines to take over all aspects of broadcast presentation duties from human presenters with all the presentation styles, expertise, spontaneity of unforeseen on air decision making abilities in live broadcasts as well as the need to convey the feelings and moods of the presentation script? How would the broadcast audience feel if they woke up one morning to see a robot reading the news or presenting programmes on the broadcast media? Would they feel satisfied with that media content? In other words, would there come a time in future when the broadcast viewer would feel gratified for choosing a channel whose newscaster is a robot? These are questions begging for answers as well as the research gap in this paper. This study has the following objectives which are to:

1. To find out the level of awareness of artificial intelligence to broadcasters.
2. To find out the level of exposure to artificial intelligence by broadcasters.
3. To find out the level of usage of artificial intelligence in broadcasting.

Artificial intelligence

The advent of Artificial Intelligence has resulted in a quantum leap in the global technological advancement. This has aided scholars over the past several years to expand their knowledge and experiences, and attest that the efficiency of artificial intelligence evolves every year (de-Lima-Santos and Ceron, 2021). Meanwhile, the history of AI can be dated back to the last seven decades (Punchihewa, 2018).

Artificial Intelligence (AI) as a subfield of Information Technology (IT) is “an artificial system designed to think or act like a human, including cognitive architectures and neural networks; a set of techniques, including machine learning that is designed to approximate a cognitive task.” (CRS Report, 2020; cited in Nsude, 2022). Nsude (2022) citing the US Government in 115th Congress Public Law 232 (2019) asserts that AI is programmed as an intelligent software agent or embodied robot that uses logical perception, planning, reasoning, learning, communicating, decision-making, and acting to achieve goals. Basically, AI as a subfield of IT is a designed or programmed software or system with the focus to mimic and model human intelligence. The intelligence of the AI is likened to rationality by some scholars (Russell and Norvig 2021), for which it is understood as making correct decisions. The correct decisions, however, are tied to the correctness involved in the data it is provided. The effectiveness of AI to function and ‘compete’ with human intelligence is a result of the diverse algorithms working in its engine. The task in the engine could be to insert new data, process data, manipulate data, search for items, calculate, or do other forms of computer-related operations. Generally, algorithms are task-specific and seen as step-by-step methods of solving a problem (Punchihewa, ibid.). The algorithm works with data, and how efficiently it works depends on the data provided (Lee and Yoon, 2021).

Tayeh (2020) posits that the broadcast's traits of being time- sensitive and process- related make the broadcast media industry “a perfect candidate for automation via AI technology like Machine Learning (ML) and Natural Language Processing (NLP).” The advent of AI from the advancement of technology at a rapid pace is, therefore, giving significant changes to the face of the broadcast media industry.It is deployed to enhance productivity and efficiency. The integration of AI in broadcasting has been discussed by different scholars. Taye (ibid) pinpoints the application areas in cataloguing and metadata detection, live broadcast, and television advertising Frąckiewicz (2023) highlights automation of content creation, audience engagement, and advertising; and Punchihewa (2018) broadly looks atcontent creation and monitoring of live programmes in

and event. Thus, the application can be summarised as cataloguing and metadata, live broadcast monitoring, advertising, automation, content creation, and audience engagement and so on. Broadcast is very process-oriented and time-sensitive (news and live productions), making the industry a perfect candidate for automation via AI technology like Machine Learning (ML) and Natural Language Processing (NLP). The primary applications being transcribing, advertising, and enhancing live broadcast. Artificial intelligence (AI) has had a significant impact on the broadcasting industry, revolutionising various aspects of content creation, distribution, and audience engagement.AI is an integral part of e-learning. It is now a global phenomenon. How it influences broadcasting learning and practices in Nigeria. The study serves as a call for recognition of the inevitability of AI in broadcast media practice.

Artificial Intelligence (AI) systems and tools have become useful in the broadcast industry. It is daily gaining ascendancy and gradually becoming a replacement of the human duties in broadcasting, but is it possible for machines to take over all aspects of broadcast presentation duties from human presenters with all the presentation styles, expertise, spontaneity of unforeseen on air decision making abilities in live broadcasts as well as the need to convey the feelings and moods of the presentation script? How would the broadcast audience feel if they woke up one morning to see a robot reading the news or presenting programmes on the broadcast media? Would they feel satisfied with that media content? In other words, would there come a time in future when the broadcast viewer would feel gratified for choosing a channel whose newscaster is a robot?

The Nigerian media have not really embraced AI. This is a serious disadvantage. In a world where information is increasingly consumed online, media companies that can use AI to deliver personalised and engaging content will be the ones that succeed. There are a number of ways that the Nigerian broadcast media can embrace AI. One way is to use AI to personalise news feeds. This can be done by using algorithms to track what users read and watch, and then recommending similar content to them. Another way to use AI is to generate new content. AI can be used to write articles, create videos, and even generate entire news shows and programmes. Also AI helps in editing, dubbing videos, live coverage and so on. Finally, AI can be used to identify and fact-check misinformation. This is especially important in Nigeria, where misinformation and fake news is a major problem.

Here are some ways AI has influenced broadcasting:

AI in broadcast and AI film: The media and entertainment business is increasingly a substantial market for AI technologies, thanks to the popularity of virtual assets such as high-definition graphics and real-time virtual worlds. AI offers considerable benefits here, simplifying content management workflows, and offering everything from voice-controlled EPGs to real-time, high volume content analysis. The latter is becoming particularly central to broadcaster business models, delivering increased discoverability of older archive content.

AI and broadcast graphics: Not only are broadcasters extremely interested in optimised workflows, but the promise of virtual studios is proving a powerful incentive. By tapping into tools like Epic Games' Unreal Engine, entirely virtual worlds can be rendered in near real time, "For the producers, having an opening and catching the viewer's attention of course is super important, But the whole thing needs to be functional. This is because a story needs to be told. No matter whether it is a news show or a sports show, people will focus on how you present the content, and how you explain what was happening. In the end, data is the king so it should be present in the data or bring in new content. Those are the areas that are crucial for producers

AI in animation: AI is being applied in various aspects of animation production, such as character animation, virtual scene creation, and enhancing the overall animation process. Its influence has the potential to transform the creative process by generating stunning visuals, realistic characters, and dynamic environments.

AI in audio dubbing: Speech is one of the areas where this Accelerator used interesting new tools, such as Respeecher, software that effectively clones voices using Deep Learning techniques.

AI in colour grading: Similarly, AI is making its mark on the art form that is colour grading, with a variety of tools on the market using AI to intelligently colour grade projects in record time. One example, fylm.ai, uses a browser-based,

ACES colour managed, GPU-accelerated platform to simplify the process for those that want quick but reasonable results. The platform also offers pro-level grading controls for more advanced users.

Content Generation and content recommendation

AI technologies, such as natural language processing and deep learning, have enabled the automation of content creation. News agencies and sports broadcasters, for example, have employed AI algorithms to generate news articles or game summaries in real-time. AI can also create personalised content by analysing user preferences and behaviour. Streaming platforms are leveraging AI algorithms to analyse user preferences and viewing habits, enabling them to recommend content that aligns with individual tastes. This not only keeps viewers engaged but also helps broadcasters target specific demographics more effectively.

AI-powered recommendation systems play a crucial role in broadcasting platforms. These systems analyze user data, including viewing history and preferences, to suggest relevant content. By leveraging machine learning algorithms, broadcasters can provide personalized recommendations, enhancing user engagement and satisfaction.

Video Analysis and Curation

AI facilitates efficient video analysis and curation processes. It can automatically tag and categorize video content based on its visual and audio features, making it easier to search and retrieve relevant footage. Broadcasters can also use AI to identify specific scenes or objects from large video archives, streamlining the production and editing workflows.

Automated Language Translation and Localization

AI-driven language translation tools are breaking down language barriers by providing real-time subtitles or dubbing. This opens up a global audience for broadcasters and ensures that content can be enjoyed by viewers around the world. Transcription and translation AI-powered speech recognition and natural language processing techniques enable automatic transcription of live or recorded broadcasts. This feature enhances accessibility and allows broadcasters to repurpose content in various formats. AI can also facilitate real-time translation, enabling global audiences to consume content in their preferred languages.

Virtual and Augmented Reality

AI contributes to immersive broadcasting experiences through virtual and augmented reality technologies. AI algorithms can generate realistic virtual environments or overlay computer-generated information on live video feeds. This capability enhances sports broadcasts, allowing viewers to access additional data, statistics, and visualisations.

Enhanced Video Editing

AI-powered video editing tools can analyse raw footage and automatically generate highlight reels, eliminating the painstaking task of manually sifting through hours of footage. Moreover, AI in broadcasting can add visual effects, subtitles, and even suggest music that complements the content, enhancing the overall viewer experiences.

Live Broadcast

AI software in this regard can help to prevent any anomaly that might want to break out in a transmission or it could be used to create content. On the one hand, Punchihewa (2018.) asserts that while media stations are always at a fix during live broadcasts to discover any issue in the middle of a broadcast and resolve it, AI software can predict likely spikes in viewership and it would help the media station to enhance the capacity of the server and troubleshoot any issue before its emergence. On the other hand, Tayeh (2020.) pinpoints that live broadcast “calls for quick reactions and adjustments", therefore, AI needs to be adopted here. For instance, in a live sports broadcast, AI software can be deployed to track moving objects in a video, which could be the ball or a player. From this, short highlights can be created from the metrics of crowd noise and player gestures.

Advertising Targeting and personalization

While Tayeh (2020) looks at television advertising, Frąckiewicz 2023)looks at radio advertising.AI software can predict when there will be a break on the show and cue in an advert for that particular time, software designed to detect can also spot the logo or product of a brand (in the case of television) and push for airing in the next subsequent commercial break (Tayeh 2020). The audience's data can also be analysed by an AI algorithm to determine the audience's preferences and interests. The

reported feedback can subsequently be used to know the type of advertisements that will resonate with the audience, which will increase the audience engagement and higher conversion rates Frąckiewicz,(2023). Advertisers can also leverage this to reach their target audience. AI enables targeted advertising by analysing user data and behaviour patterns. Broadcasters can deliver personalised adverts based on individual preferences and demographics, increasing the relevance and effectiveness of advertising campaigns. AI algorithms optimise ad placement, leading to better monetization opportunities.

Challenges of AI in Broadcasting Media in Nigeria

It is important to note that while AI brings numerous benefits to broadcasting, it also raises ethical and professional considerations such as privacy concerns and biases in content recommendations, job displacement, availability of data, lack of awareness in Nigeria. As AI continues to evolve, it will likely shape the future of broadcasting by enabling more personalised, interactive, and immersive experiences for audiences worldwide. AI in the broadcast industry brings promising transformation. However, it also raises certain professional challenges and ethical considerations.

Ethical Challenges

Bias and Fairness: AI algorithms require high-quality data to function properly. Biased training data can result in skewed content recommendations, poor decisions, perpetuating stereotypes, or marginalising specific groups.

Privacy Concerns: Personalised content delivery relies on user data, raising concerns about privacy and data security. Broadcasters must ensure that user data is handled responsibly and transparently.

Professional challenges

Job Displacement: The automation of certain tasks through AI could lead to job displacement in the industry. Consequently, broadcasters will need to find ways to upskill their workforce to operate alongside AI systems effectively.

Availability of data: According to Okiyi and Nsude (2019) Machine learning is facilitated by sufficient data to enable itpick on patterns, learn from them and optimise the system accordingly. All requires large amounts of data to know what the correct response ought to be. Without the availability of data, the ability of AI is limited.

Lack of self-awareness: AI does not have the ability to explain its output. For instance, why it wrote what it did and how it got there

Authenticity: AI cannot distinguish whether the input it receives is accurate or not. If it receives false input, the output will equally be influenced negatively.

Lack of access to resources: AI is a complex technology, and it requires a lot of computing power and data to develop and use AI-powered applications.

Lack of expertise: There are not a lot of people in Nigeria with the skills and knowledge necessary to develop and use AI applications. Sadly, one would expect that where Nigeria is low on special resources, we would turn to collaboration, to ensure we aren't left behind, or turn to our government or parastatal companies to aid investment in the media landscape evolution, instead these routes are hardly explored.

Theoretical framework

This study is anchored on the diffusion of innovation theory. The Diffusion of Innovation Theory on the other hand was first discussed historically in 1903 by the French sociologist Gabriel Tarde (Toews, 2003) who plotted the original S-shaped diffusion curve, followed by Ryan and Gross (1943) who introduced the adopter categories that were later used in the current theory popularised by Everett Rogers. Katz (1957) is also credited for first introducing the notion of opinion leaders, opinion followers and how the media interacts to influence these two groups. The Diffusion of Innovation theory is often regarded as a valuable change model for guiding technological innovation where the innovation itself is modified and presented in ways that meet the needs across all levels of adopters. It also stresses the importance of communication and peer networking within the adoption process.

In simple terms, the diffusion of innovation refers to the process that occurs as people adopt a new idea, product, practice, philosophy, and so on. Rogers mapped out this process, stressing that in most cases, an initial few are open to the new idea you find until a saturation point is achieved.

Rogers distinguished five categories of adopters of an innovation: innovators, early adopters, early majority, late majority, and laggards. Sometimes, a sixth group is added: non-adopters. The original five categories are illustrated in the bell-shaped curve image which according to Rogers estimated the percentage of each category, which in fact, are very similar to the proportions found in a normal bell-curve. Leaning on this theory, as these early innovators 'spread the word' more and more people become open to it, which led to the development of a critical mass can assume that AI systems /tools may so feature in broadcast presentations in future to a point that the replacement of human presenters with robots may be tested for acceptance or otherwise by the first few adapters and as the media helps to popularise the innovation, more and more people may accept robotic broadcast presentation.

Methodology

The survey method was used to gather data for this work, using the questionnaire as instrument of data collection. The population of study comprised broadcast practitioners across broadcast stations in South East, Nigeria. The population is 297 according to the National Broadcasting Commission (NBC) and the sample size for the study according to the Wimmer and Dominick sample size calculator is 168. The first stage of the sampling technique was clustering the broadcast stations into the South East region. The second stage was using the simple random sampling technique in selecting four States in the South East where the research would take place. Anambra, Ebonyi, Imo and Abia States were selected. The third stage was purposively selecting broadcast stations from each State according to its prominence. The fourth stage was adopting the availability sampling technique in sharing copies of questionnaire to the respondents. Analysis was done using the simple percentage and frequency.

Results

Data collected for this research is as presented in the table below:

Obj. 1. To find out the level of awareness of artificial intelligence to broadcasters.	**Level of awareness of artificial intelligence in the society**	**Option**	**Frequency**	**Percentage (%)**
		VHL	17	10%
		HL	29	17%
		LL	59	35%
		VLL	63	38%
		Total	**168**	**100%**
	Level of awareness of artificial intelligence tools in broadcasting.	VHL	19	11%
		HL	24	14%
		LL	51	30%
		VLL	74	44%
		Total	**168**	**100%**
Obj. 2. To find out the level of exposure to artificial intelligence by broadcasters.	**Level of exposure to** **artificial intelligence in the society**	VHL	64	38%
		HL	59	35%
		LL	28	17%
		VLL	17	10%
		Total	**168**	**100%**
	Level of exposure to artificial intelligence tools in broadcasting.	VHL	4	2%
		HL	2	1%
		LL	89	53%
		VLL	73	44%
		Total	**168**	**100%**
Obj. 3. To find out the level of usage of artificial intelligence in broadcasting.	**Level of usage of artificial intelligence in content creation**	VHL	16	10%
		HL	13	8%
		LL	81	48%
		VLL	58	34%
		Total	**168**	**100%**
	Level of usage of artificial intelligence in editing.	VHL	17	10%
		HL	21	13%
		LL	69	41%
		VLL	61	36%
		Total	**168**	**100%**

Discussion of findings

The response gotten from the respondents indicated that broadcast stations and practitioners are not well aware of artificial intelligence and artificial intelligence tools in the society and broadcasting respectively. The response also from the respondents shows that they are well exposed to artificial intelligence in the society but when it comes to broadcasting, they are not exposed to artificial intelligence tools. The implication of this is that their jobs are safe as AI is not replacing them anytime soon. However, there have to be special trainings for broadcasters and broadcast stations on how to employ AI in broadcasting and expose them to substantial AI tools for broadcasting. The foregoing can be seen in subsequent research questions where the respondents indicated that AI is less used in programme content creation and editing.

Conclusion and recommendations

The future of AI in broadcasting looks unfavourable but its value to media and news broadcasting is already established. The fear of loss of jobs could partly be the reason the use of AI is delayed in broadcast stations. It is time for broadcasters and broadcast stations to embrace AI in order to work smartly. We need to invest in AI trainings for broadcasters and broadcast stations. We also need to start developing and using AI-powered applications. The following recommendations are made from the foregoing:

1. Broadcast practitioners and educators should ensure that AI systems/tools are used.
2. This is because machines cannot replace the human presenter in broadcasting.
3. For broadcast message effectiveness, it should be ensured that it is done appropriately to curtail the challenges and derive satisfaction from as well as trust for action.
4. Broadcast practitioners and educators should ensure to educate the broadcast audience on areas where AI systems /tools can be used in broadcasting so as to promote common understanding between used to complement human activities in broadcast presentation to win the

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