

JOURNALISTIC METAMORPHOSIS: ROBOT JOURNALISM ADOPTION IN NIGERIA IN A DIGITAL AGE

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Abstract

The headways in Artificial Intelligence have impacted on every aspect of society especially communications which is a vital part of any civilisation. AI revolution in multimedia applications have now become a means of guaranteeing stress reduction, speed, performance and in the face of a pandemic such as the Covid-19 a safe avenue for journalists. But sadly as a result of the issues faced by developing countries such as Nigeria, journalists are not current with innovations that will lessen the load of seemingly routine duties in the newsroom and collaborate with new technologies in order to stay relevant. In light of this, the purpose of this research was to examine journalists' perception on how robot journalism can (or has) transformed journalism. Hinged on the mediamorphosis theory, the study utilised quantitative survey as 389 former and current media practitioners were chosen through a purposive sampling technique. The research discovered that most Nigerian journalists though familiar with the concept of robot journalism believe Nigerians are not adequately prepared for its adoption. It was established that automation is the way of the future, and Nigerian journalists cannot afford to be consigned to oblivion in the final shift to an automated world, so they must be acquainted to embrace robot journalism. This study recommends that while media practitioners try to grapple with the reality of automated journalism and with concerns on the uncertainties such as pandemics, practitioners need to keep up with technology as supportive techs in their jobs in light of the Covid-19 protocols, around social distancing, ban on travels to ensure they stay on top of major happening without becoming victims.

Keywords: Artificial Intelligence, Pandemic, Robot Journalism, Newsroom, Nigerian Journalists.

Introduction

Every society is significantly reliant on information especially through the media which is responsible for disseminating a wide range of content to a diversified audience via many means, including newspapers, magazines, radio, television, and, of course, new media (internet). One may be able to appreciate the intelligence assistance, if you have ever said or heard any of these 'Hey Google', 'Hi Alexa' or 'Hi Cortana'. Or maybe while typing using Microsoft Word, wrong spellings or poor phrases are underlined red to draw the attention of the writer. This is Artificial Intelligence (AI) at work and shows how everyday lives are being reshaped by technology. Today there are even 'speech to text' options where you can simply hit the dictate button and speak for the system to type for you. Or consider the novel Corona Virus, discovered at the end of 2019 (Cvetković, et al., 2020) which raised concerns for media professionals around the world who had to take advantage of available technologies such as Zoom and Teams to conduct live interviews during the lockdown to observe the Covid-19 protocols especially around social distancing and to keep them safe while they work. In spite of the fact that it is difficult to tell whether journalists became ill at work or in their personal life, the Swiss Organization Press Emblem Campaign (PEC) announced in 2021 that the pandemic had claimed the lives of over 600 journalists worldwide. (Press Emblem Campaign, 2021). Thanks to technological advancements such as computers, the coast is larger for journalists who have access to digital tools to exchange information with others from laptops, smart phones and in a world where the internet is becoming the fastest growing media, software applications (apps) are innovations for disseminating information (Aten, 2020). The generation of software applications for varying sectors such as health care, economics, geopolitics, law, urban development, government, media, the military, and even the trade and investments demonstrate that AI has established itself in all sectors of human endeavor.

For mainstream media, something quite fundamental is changing how traditional media are going about news collection, writing, editing, storage, retrieval, and dissemination in the news industry. On the mission for data, information execution and need for speed in a datafied society are creating considerable opportunities that are inciting a reexamination of digital work tools that will enhance journalism's fundamental purpose and goal, as well as the

shape and ethics of the news industry. Welcome to the age of Artificial Intelligence (AI) where softwares source, write and tell stories in a matter of seconds. Across the world in Africa, Argentina, Britain, America, Sweden and China, software developers have recognised that there is a need to find new ways to keep the journalism industry afloat in an era of globalisation. Unfortunately, like other African countries, many Nigerian journalists have not fully grasped the concept of what artificial intelligence (AI) is, to adopt it for newsroom activities.

AI is a software or application that is designed and keyed with codes that will lead it to make independent decisions and perform activities that mirror human intellect such as generation of data, analysis, problem solving, language comprehension, and sound and visual recognition. With the help of the code which is referred to as an algorithm the AI is layered with stage processes of commands that allows it to work offline or online depending on its purpose. Unlike Google search engines or Yahoo which generates related information based on key words, the robot journalist, software journalism, automated journalism or algorithm journalism is intended to not only generate possible data but turn them into stories from different angles and the outstanding thing is that AIs such as Quakebot, Wordsmiths, Heliograf can generate hundreds of angles in a matter of seconds. How is this even possible? Online activities across various websites span across sports, company earnings, pandemics, wars, all of those seem like history but then as long as it was at any point produced, the virtual products can be intended to observe any data found anywhere across the web. This is because data is the most important component of any AI; the algorithm depends on.

From the aforementioned, robot journalism can help journalists do more with less, keep them safe, increasing the potential to even explore uncharted territory that may not have been possible due to location, space and time. Robot journalism does not work in a vacuum, it needs a code to function, and it needs data to be able to generate any reasonable information leading us to use the popular term 'GIGO' meaning garbage in garbage out (Rose & Fischer, 2011). Meaning we cannot expect it to find what is not already there. An example is the paraphrase tool by Grammarly, you need to upload text for it to work or else it is as useless to the user as a whiteboard.

Due to the pieces of data coming in around AI in today's world of communication, one may not be able to measure the full impact on journalism as such, it cannot be over-looked. Since its arrival automated or robot journalism

have certainly changed the way journalists around the world work, how stories are developed and disseminated. Robot journalism has had positive impacts, without doubt, but there are also concerns about their expansions and research abilities and the disruption it could have on journalists who have been used to the traditional working patterns. Just like the Google search engine, robot journalism could become like the journalistic tool buddy. The presence of artificial intelligence online has also created a dependency among those working in the media and many are unable to do without them.

While journalists in the west are becoming more sophisticated in their use of automated journalism, and are now using AIs to source news, it appear to be less of a topic for Nigerian journalists who are tied to regular news activities, audience engagement and productivity. This study set out to achieve the following goals in the face of these opposing viewpoints.

1. To know if journalists in Nigeria are exposed to robot journalism tools.
2. To examine the impressions journalists in Nigeria, have on the use of automated journalism.

Research Questions

1. To what extent are journalists in Nigeria exposed to robot journalism?
2. What are the views of journalists in Nigeria on the use of automated journalism?

Theoretical Framework

This research is based on Roger Fidler's mediamorphosis theory of mass communication, popularly known as the "digital metamorphosis," which he proposed in 1990. The idea describes and forecasts the changes in the digital world and culture. The shifting nature of traditional media is referred to as mediamorphosis. Although proposed in 1990, Ekeli and Enobakhare (2013) believe that as new media forms have evolved and developed, they have influenced the development of other existing media to varying degrees, such that rather than the emergent media displacing the existing ones, the existing ones simply converge with them to improve their operations. The migration of readers, viewers, and advertisers from hardcopy print newspapers, radio, and broadcast television to the internet is an example. The term "mediamorphosis" refers to the evolution of communication media as a result of a complex interplay

between perceived information demands, sociopolitical pressures, and ongoing social and technological developments (Fidler, 1997).

Significance of Mediamorphosis Theory to Traditional Newsroom Styles and AI.

Mediamorphosis, according to Fidler (1997), is a coherent viewpoint about the technological growth of communication media. From the concepts of co-evolution, convergence, and complexity, he derived his mediamorphosis principles. Mediamorphosis, according to Roger Fidler, show how by studying the communications system as a whole, we will see that new media do not emerge spontaneously and independently, but they emerge gradually from the transformation of media systems (Gillianrcomth, 2016; Bantigue, 2016). For example, there was nothing similar to mass communication as we have now in Nigeria hundred years ago. Despite this, from the first tabloid 'Iwe Irohin Fun Awon Ara Egba' on November 23, 1859, more have emerged as a result of technological progressions, which have followed not just by other prints but also by electronic media (radio, television) and now we have the Internet.

This illustrates according to mediamorphosis, new media only evolved to update and upgrade old media. In this way, we may say that AI or software journalism is primarily intended to improve upon the traditional labour of news sourcing (Nwammuo & Nwafor, 2019) that requires movement to various locations to source news, conduct interviews and return to writing, editing footages (tv broadcast) and publishing or broadcasting eventually. Considering these, robot journalism, like new media, did not emerge spontaneously or independently, but rather as a result of progressive improvements to an old medium or its concept. This historical pattern of evolution in the communication system caused Fiddler to assert that the emergence of a new medium or technology does not imply the end or death of an existing/old medium. Meaning newsrooms will continue to exist, but in a more sophisticated, advanced form. Journalists are now exposed to new media tools such as podcasts, blogs, YouTube, and other live audio-visual streaming platforms, (Mohammed, 2021) which the researcher believes are all intended to make work more fun and a lot easier. This theory was chosen as the best for this study since it discusses the current changes in how information is disseminated, as well as how the entrance of AI into journalism practice may influence information dissemination in better ways.

Literature Review

The Beginning of Journalistic Practices in Nigeria

Journalism is very important in Nigeria as in other climes because the role is to inform, educate and entertain and this is primarily in visual or audio form (print, radio, and television.) This undoubted role of journalism in developing countries, have led the media to become the most controlled for both technical and political reasons (Udomisor, 2013). The history of journalism in Nigeria can be traced back to the colonial regime by the British. The eagerness of Britain to civilise Nigeria helped to lay the foundation of Nigerian broadcasting (Adejunmobi 1974). Britain provided Nigeria with its first telegraph lines in 1895 to establish a railway between Lagos, the capital of Nigeria, and Abeokuta, in Nigeria's Southwest. This activity is what allowed for communication and corresponds to the birth and growth of journalism in Nigeria.

Newspaper History and Evolution

Reverend Henry Townsend, the founder of journalism in Nigeria, introduced the Newspaper profession in Nigeria by publishing the first tabloid 'Iwe Irohin Fun Awon Ara Egba' on November 23, 1859, although the content of the newspaper was news of church activities, arrival and departure of religious dignitaries, ordinations etc but it was later broadened to include stories that revolved around Abeokuta, including business news highlighting cotton and cocoa statistics (Pulse.ng, 2018). Although first published as a Yoruba-language fortnightly paper, it became bilingual eight years later when an English language supplement was added from March 8, 1860, also 'Iwe Irohin Fun Awon Ara Egba' moved on to incorporate advertisements from local firms and government agencies same year (Omu, 1967). Four years after 'Iwe Irohin', the second Nigerian newspaper Anglo-African was published in 1863 by Robert Campbell and was the first paper published in Lagos (Library of Congress, 2021). it was intended for African self-improvement through the consumption of Western and African systems of knowledge (Pulse.ng, 2018). By October 1867, 'Iwe Irohin' ended brusquely with the closure of the European property due to cultural and political clashes that occurred between the Egbas and the British which resulted in the expulsion of all Europeans in Egbaland (Oduntan, 2005).

Seventeen years following the Anglo-African newspaper, Richard Olamilege Beale Blaize a Nigerian businessman, and one of the richest Africans in Lagos in the early 20th Century came in from Freetown to Lagos in 1862 and worked first as a printer for Robert Campbell, editor of the Anglo-African and then

established the third Nigerian newspaper, known as The Lagos Times and Gold Coast Colony Advertiser (Teniola, 2012.). The newspaper was the first to condemn the overindulgence of the colonialist in one of its editions, issued in 1881. The Lagos Times and Gold Coast Colony Advertiser was quite unforgiving on many of the approaches and activities of the governing masters of the time. The newspaper also criticised the executive and legislative council, which had no African as one of its members (Omipidan, 2016). Nevertheless, the newspaper went out of distribution on October 24, 1883; though it re-surfaced seven years later but with little or no success.

Nationalists such as Hebert Macaulay (Lagos Daily News in 1925), Nnamdi Azikiwe (West African Pilot in 1937), and Obafemi Awolowo (Tribune Newspaper in 1949), among others, founded newspapers and later became embodiments of leadership in Nigeria as they fought for independence from British colonial rule (Olisa, 1989).

The Nigerian Press today constitutes of lines of Newspapers, who consistently championed the fight against colonialism, calling for democracy, including good governance (Umeh, 1989). One of such was Punch Newspapers which was debuted on Sunday, March 18, 1973, when its first weekly newspaper, Sunday Punch hit the newsstand. The newspaper was designed to provide a mix of serious and popular journalism with refreshing information and entertainment. According to an overview by The Punch (2021) this was followed 3 years later on November 1, 1976, with the daily tabloid, which The Punch, tagged as “the lively paper for lively minds”, the intent was to address most of the shortcomings and inadequacies of the established Nigerian newspapers and to be socially aware and responsible. For some years now, Punch titles: The Punch, Saturday Punch and Sunday Punch, have remained the market leaders in Nigeria (Punch, 2021).

Despite the constant assaults by successive repressive regimes, Nwogwugwu (2015) claims that the Nigeria newspaper industry has been regarded as one of the largest industries on the continent, as it has grown in leaps and bounds over the years, surviving draconian laws enacted to stifle the industry's development, with press freedom in Nigeria only appearing to be attainable between 1850 and 1983. This freedom according to Seng & Hunt (1986) had been manifested mainly in the diversification and private ownership of newspapers. The development of radio and later television brought a new dimension to news and events coverage in Nigeria (Asekun-Olarinmoye, et al., 2014). Before then, reporters for Nigerian newspapers and magazines were only relatively free to comment on the affairs of government a little to the point of negative criticism (Seng & Hunt, 1986).

Radio

Radio Broadcasting was introduced into Nigeria in 1933 by the Colonial Government although, some other sources say it was in 1932 (Adegbija, Fakomogbon, & Adebayo, 2013). The history can be traced to the Radio Diffusion System, (RDS) where information was relayed by the overseas service of the British Broadcasting Corporation (BBC) through a wired system with loudspeakers at the listening end (Media Nigeria, 2018). This translated to the Nigeria Broadcasting Service, (NBS) in April 1950 (Osa, 2018). It was a recommendation from a deliberate survey carried out by the British Government that enabled the establishment of radio stations in five (5) key regions at the time. Namely: Lagos, Kaduna, Enugu, Ibadan and Kano. The Nigerian Broadcasting Corporation, (NBC) was launched in April 1957 through an Act of Parliament No. 39 of 1956 (globefmbauchi, 2021) and the Director General was Mr. J.A.C Knott OBE (Omorotionmwan, 2016).

It is worthy of note that it was a radio broadcast that was utilised by the military when Major Chukwuma Kaduna Nzeogwu to announce Nigeria's first military coup using Radio Nigeria, Kaduna on January 15, 1966 (Vanguard, 2010). By then there were 6 radio broadcasting stations in Nigeria - Western Nigerian Broadcasting Corporation WNBC (in 1959), Eastern Nigerian Broadcasting Service ENBS (in 1960), Northern Nigerian Broadcasting Service NNBC (in 1962), Midwestern State Broadcasting Service, North Eastern State Programming Service, and South Eastern States Programming Service which was after 1967 (Adejunmobi 1974).

In 1978, the NBC was re-organised to become the Federal Radio Corporation of Nigeria, (FRCN). The NBC handed over Short Wave Transmitters from the States to the State Governments. Even though some experts consider the beginning of the civil war as a major shift in broadcasting services, it needs to be cited that radio stations such as Radio Biafra in Eastern Nigeria, likewise contributed to the evolution of ground-breaking practices of broadcasting even though it was only transitional within the Biafran experience but it is worthy of note that the station was used to conquer the home front when the Biafran government tactically exploited the propaganda potential of radio (Omaka, 2017). That experience may also have later contributed to the use of Radio Democrat also called Radio Kudirat owned by Wole Soyinka where the Nobel laureate, Africa's foremost dramatist, challenged the military administration of General Sani Abacha, possibly Nigeria's worst ever dictator (Osha, 2005)

FRCN at the time of this study, had eight (8) zonal stations across the country in Abuja, Lagos, Kaduna, Enugu, Ibadan, the Northeast. The Northeast Zonal Station of FRCN consists of Six FM Stations: Globe FM Bauchi, Jewel FM Gombe, Peace FM Maiduguri, Sunshine FM Potiskum, Fombina FM Yola, and Gift FM Jalingo (Abdulkadiri, 2021). The North Central Zone has five FM stations established by the Zone, namely: Harvest FM Makurdi, Benue State, Prime FM Lokoja, Kogi State, Harmony FM Idofian, Kwara State, Highland FM Jos, Plateau State and Precious FM Nasarawa State. The south-south zone has six FM stations Bronze FM Benin City, Treasure FM Port Harcourt, Atlantic Uyo State, Creek Yenagoa, Canaan City and Charity FM Asaba.

Raypower 100.5 FM was Nigeria's first privately owned and operated radio station. The station began test transmission on December 15, 1993 and began commercial broadcasting in Lagos the following year on September 1. It was also the first radio station in Nigeria to transmit 24 hours a day (Sherif, 2020; News24, 2021).

The Broadcasting Corporation of Northern Nigeria, BCNN, was converged with the NBC stations in Lagos, Ibadan and Enugu as the current FRCN. At the time of this study, according to NBC (2021), Nigeria had a total of 501 radio stations out of which 22 are owned and controlled by FRCN and 36 owned and controlled by the State Government. Lagos had the highest number of 43, followed by Oyo State and the Federal Capital territory which had 39 and 30, respectively. The states with the lowest presence of radio stations were Kebbi and Zamfara which had only 3 radio outfits. This feat only became possible from 1993 when the monopoly of government was broken to allow private media operations which gave the broadcast audience multiple choices for information sharing (Asekun-Olarinmoye, Sanusi, Johnson, & Oloyede, 2014).

Television

Nigeria has had television (TV) broadcasting for more than 60 years (1959-2021). The author of a 2013 paper Liwhu Betiang of the University of Calabar observes that the rise of television journalism in Nigeria has also resulted in a number of local responses to global socioeconomic and political contexts, as well as psychological impact. Prior to the final deregulation of television broadcasting in 1992, which was seen as the then Military President's diplomatic response to pressures from the Bretton Woods Institutions, which opened up national media markets to global penetration and accelerated media globalisation and its effects

in Nigeria (Betiang, 2013). But what was the origin of television transmission prior to that?

According to Umeh (1989), the Western Nigeria Television/Western Nigeria Broadcasting Service (WNTV/WNBS) in Ibadan became the first television station in Nigeria and Africa in 1959. This, according to the author, prompted the need for a replication in the eastern and northern regions, which resulted in the establishment of Eastern Nigeria Television (ENTV) in October 1960 and Radio Kaduna Television (RKTV) in March 1962 as a TV service of the BCNN. From the formation of the Midwest area in 1963 to the onset of the civil war in 1967, all of these stations served partisan political goals for subsequent governments between the 1970's wars until 1976, when the government (military) assumed control of regional television stations (Egbon, 1983). The Nigeria Television Authority was founded a year later by the military government (Umeh 1989). The establishment of the NBC in 1992 was a move to deregulate the broadcast industry (NBC, 2021). The deregulation of the broadcast industry in Nigeria made it competitive as a precursor to what we have in the present day, which has witnessed a shooting increase in the number of terrestrial and cable TV stations to more than 100 (Akeem, et al., 2013).

Developments in the Journalistic Field

From the aforementioned history of journalism in Nigeria, the media innovations, have led to the arrival of new media, there have been various changes in the journalistic sector that have opened the way for simpler news collection, analysis, documentation, and dissemination. The field of journalism is rapidly evolving. Pens were replaced by typewriters, which were replaced by desktops, which were replaced by laptops, notebook computers, and smart phones. A retired journalist puts the changes this way:

When I started in the 1980s, I used to send in copy by telex, or dictate it over the phone to a copy-taker. I used to spend days working on a single story and would spend many hours going to visit people and sites with photographers. I used to work in libraries, consulting books and old files or reading microfiche. I used to know that when I left my office and its landline phone behind, no-one could reach me. Those were the days... I used to handwrite articles, or type them on a manual typewriter, or type text onto a stencil to be printed off by a big-barreled duplicator... It is difficult to remember how we lived without email, without Google,

without Facebook, without Twitter, without WhatsApp, without Instagram, without Tumblr, without the Internet. And it is almost impossible to imagine how we managed with phones that were always attached to a wire in a room, and did not take photos, did not send texts, did not use GPS mapping, did not play music or video, and did not pay bills. (Edwards, 2017)

The internet has given rise to a plethora of new material sources that are linked all over the world. During the lockdown, media practitioners involved in scripted TV programmes and film making had to shut down or delayed their productions as reported by the Los Angeles Times (2021) & Mellor (2020). To stay on air and adapt to the Covid-19 safety protocols, network and local news programmes ensured that improvised studios were setups for anchors, correspondents and meteorologists across the country to be able to deliver reports from the comfort of their homes (Battaglio, 2021; Mellor, 2020) where they employed applications such as Zoom, Microsoft Teams and Blue Jeans to get across to guests. The Internet, and particularly its graphical interface, the World Wide Web, is reported to be approaching its fullness and extensive adoption around the globe, specifically, for online journalism, in an era of Computer-Assisted Reporting (CAR) (Deuze, 2001). Amongst other things, a more sophisticated CAR has emerged with News organisations like the BBC, CNN, Associated Press and the Los Angeles Times who have started to use Artificial Intelligence to generate automated content, which enables the tagging of digital text, and editing of articles. As technology advances, news outlets are seeing the need to rely on robot journalists to cover everything news worthy. Although technology is influencing the future of journalism, it will not eliminate the necessity for qualified and experienced reporters. Technology is also creating access for writers and editors who are able and willing to adapt to changes in the industry. For example, if you want to work in journalism, you don't have to go to a campus in Australia, Canada, or the United Kingdom; instead, you can enroll in an online bachelor's program that can help augment your writing or data analysis skills.

Podcasts, blogs, and social media are some of the AI advancements impacting the future of journalism. These are all new media tools with storytelling platforms that provide users with channels that are likely becoming even more important to the future of journalism. What is more is that these platforms are being utilised majorly by individuals and freelancers (Korreck, 2021). Spotify for

example as noted by ThisDay (2021) features a music streaming service whose Podcast listening became popular in Nigeria in 2018. Sources note that it has a record of 165 million paid subscribers. As at the time of this study there were over two million digital broadcast titles available to Spotify listeners in Nigeria. According to Caygill (2017) Podcasting is also changing the face of journalism and audio media around the world and competing the space now for radio journalism which as an offline tool would have declined, if not that most radio stations have also moved online. With podcasting, journalists have an opportunity to recount events via audio media and reach a new and growing world of listeners (Newman, 2021) who can access content on their mobile smart phones such as Spotify, Stitcher, Google Podcasts, other Android podcast apps, Listen Notes, Deezer, iheartRadio, Tunein and RSS.

Developments of AI in Journalism

In automated journalism, also known as algorithmic journalism or robot journalism (Caswell & Dörr, 2018), news stories can be generated by computer programs. According to Cohen (2015), thanks to AI technology, stories are generated automatically by computers rather than by human reporters in robot journalism. These programs examine, organize, and present facts in a form that people can comprehend.

According to Lindén (2017), the digital revolution has increased the volume and availability of data that may be used for quantitative journalistic processes, as well as the ability to predict events to a greater extent than hitherto. What is also available today is data journalism, which is the process of making a sense of data collected, producing articles based on the information, and including visualizations in the articles to assist readers grasp the story's significance (O'Reilly Media, 2012; Manovich, 2011; Cai & Zhu, 2015). It fuses several disciplines thereby justifying the mediamorphosis theory as posited by Fidler (1997). According to Bradshaw (2010), data can be acquired through an in-depth study and statistics to design and programming. Volumes of available data can be retrieved, analysed using a variety of multi-article structures, vital points organized, and significant details such as identities, places, amounts, ranks, averages, and other numbers included using an algorithm without human contribution or physical contact. Audiovisuals or audio only output can be further tweaked to a given voice, tone, or style (Montal & Reich, 2017). Narrative Science and Automated Insights are a few of the significant companies that are teaching computers to write news stories (Levy, 2012).

Cases of Robot Journalism

According to Arenstein (2017), automation in journalism has already begun in several nations, with Africa (Namibia and Zimbabwe) not left out of the AI fest. The notable one in Africa is called afriBOT which is simplifying reportage processes. Some of the first examples of robot journalism were by news providers such as the Associated Press, Forbes, ProPublica, and the Los Angeles Times (Montal & Reich, 2017), which covered stories that could be understood through numbers. This early adoption by the media industry focused on productivity and efficiency improvements (Cohen, 2015). The author of a 2019 article, Matteo Monti links the origins of automated journalism to an AI that was first used in a newsroom by the New York Times (NYT) in a project called 'Editor' which according to Underwood (2019), the software dubbed 'Editor' was created to make the journalistic process easier. Keywords, sometimes known as tags, are commonly used to make an article searchable on the internet. The AI was coded to distinguish, sort, and apply these tags to news stories that had previously been created (Monti, 2019; Underwood, 2019). The AI can also search through information in real time, retrieving information based on categories such as occurrences, prominent figures, geography, and time periods. 'Editor,' according to Underwood (2019), can make contents more accessible, make the research process easier, and offer journalists with quick and precise fact checking. This affirms Linden's (2017) position that even the field of journalism requires support for stories, reports and research in the newsroom which can be made easier through automated news. This increases not just efficiency but job satisfaction too with automation of monotonous and error-prone routine tasks.

The Really Simple Syndication (RSS), usually recognized as RSS, was another early algorithm. RSS files are XML files that can be read by a computer that automatically update information on financial news, sports, and weather (Dickinson & Miller, 2005). This has simplified the effort of trying to discover all news sources by putting them all in one location. RSS.com lists CNN, New York Times, Huffington Post and Fox News as some of its top feeds for 2021.

Mittmedia, which owns dozens of Swedish newspapers, was reported to be effectively developing and combining AIPs, automation tools, and robotics into workflows to boost the capabilities of newsrooms at the International Press Communications Council's (IPTC) Spring Meeting in 2016. Mittmedia Company,

which owns 19 Swedish newspapers, launched their first robot journalism project in which the AI was designed to gather data from the Swedish Meteorological and Hydrological Institute to make weather reports. (Finnäs & Tjernström, 2016).

Thomson Reuters had demonstrated how automated journalism could generate financial news pieces on its online news platform as early as 2006 (Dalen, 2012). By 2016, Reuters has built an interactive data visualization (IDV) platform spanning a wide range of themes, including entertainment, sports, and journalism, allowing news organizations and publishers to access the data through the Reuters Open Media Express platform (Shahzad 2020). The company then revealed in March 2018 that it was working on a technology that would help journalists analyze data and even propose article ideas. The product, Lynx Insight, has now been distributed to newsrooms all around the world. Thompson Reuters, the AI's owners, claim that through their software solutions and services, they've been employing technology to make detailed content more available to clients.

One of the sophisticated uses of AI in news writing was when the Washington Post (WP) created a software called Heliograf to cover the 2016 Olympic Games in Rio; What this AI did, was to auto circulate stories on the Rio Olympics by collecting data related to the events such as the schedule, the results, and medals awarded (Antonopoulou & Kyriazis, 2018).

The BBC News Labs created the 'Juicer' and 'SUMMA' news aggregation and content extraction APIs to make the workflow easier. 'Juicer' is designed to take news content, automatically tag it, then provides a fully featured API to access this content and data (BBCNewsLabs, 2017) while 'SUMMA' is targeting media streams across many languages and is programmed to analyse the myriads of data it finds and transform them to text even low quality audio files (Sun, 2017). Shahzad (2020) notes that 'Juicer', has been used to also extract more than 1000 global news outlets and RSS feeds.

The Associated Press (AP), began using AI to write corporate earnings stories on public companies and it was necessary to stay ahead because there are more than 4,000 public companies in the US meaning their staff could not possibly write all of the required pieces every three months, but by using AI, Associated Press produced more than 3,700 corporate earnings stories per quarter in 2015 (Gopalan, 2017). This feat by AP was achieved principally because AI performed the writing of the more routine corporate earnings accounts. Then in 2018, MittMedia's Newest Automation the 'Homeowners Bot' was reported to have

written 10,000 articles in four months of House Sales (Govik, 2018). In 2015, an algorithm named Dreamwriter was designed by one of the largest Chinese Internet firms called Tancent, which delivered the first piece of Chinese automated news at a record of a thousand words in a minute (Huifeng, 2015; Jung, et.al. 2017 in Jia, 2021).

United Robots has provided robot journalism experience for many media outfits such as Roularta Media Group in Belgium and Dutch regional media group NDC. For example, Roularta Media Group is able to publish live weather forecast texts for the 64 municipalities of the West-Vlaanderen (West Flanders) province all automated. The AI system allows for text updates for all morning, afternoon and evening weather so that readers can use the map on the De Krant van West-Vlaanderen website to choose weather forecasts for their own municipality and area. While NDC in 2020 was set to cover every single local match for the entirety of the season meaning 60,000 football games which ordinarily was far beyond the capacity of the orthodox newsroom. The robots are programmed to write the match reports, and with the internet, social media platforms and citizen journalists the photos and comments from coaches will be generated (United Robots, 2020; PressGazette, 2021).

The Guardian Australia published its first news item written by its in-house automated scheme, 'ReporterMate,' on February 1, 2019. The AI was trained to take datasets and a story template file and turn them into a news story with little to zero human intervention (Evershed 2019). Another feat by the Guardian in automated news was revealed to the public on September 8, 2020, when the neural network known as 'GPT-3' wrote a full article and the published parts were hand-picked by a human editor who finished the story (The Guardian, 2020). GPT-3 is a cutting-edge language model that employs machine learning to generate text that appears to be written by a person. To steer the piece, key phrases and an introduction required to be fed into the system. According to the program GPT-3, eight (8) alternative versions of the essay were created, each one original, engaging, and with a separate advanced argument for "why robots were no threat." According to the editorial staff for the Guardian, the GPT-3 article was not treated differently compared to editing a human op-ed. Same editorial actions were still carried out such as cutting of lines and paragraphs and rearranged the order of them in some places. But then, overall, it took less time to edit than many human op-eds (The Guardian, 2020; Metz, 2020).

Latar (2016) opines that robot journalism has served as a telepresence technology and can be quite effective in collecting data from war zones without risking the

lives of human journalists. In a disaster such as the 2014 California earthquake, Quakebot was used by the Los Angeles Times to publish the story on their website within three minutes after the quake with no staff having to be affected and no time being lost (Levenson, 2014; Oremus, 2014). During the Pandemic, Samuel Danzon-Chambaud a Knight News Innovation fellow for the Tow Center for Digital Journalism did examine nine news agencies (broadcast and print) across eight countries: Germany, United States, Canada, Finland, Norway, Sweden, United Kingdom and Switzerland. Findings showed that all nine media organizations used automated news specially to report on COVID-19 through new media products. Even after most of the restrictions have been removed, Bach (2021) notes that most news agencies still plan to hold onto the online interviewing and news sourcing platforms.

In Nigeria, an internet-based data mining tool was launched by the Centre for Disease Control and Prevention (NCDC) in 2016 which was established as an event-based surveillance (EBS) system for data generation (Beebeejaun, et al., 2021). In the face of the Coronavirus, the agency in partnership with UNICEF designed and released another AI, that would provide citizens with timely and accurate information on COVID-19 through an SMS-based interactive Chatbot (UNICEF, 2020).

Merits and Discrepancies of Robot Journalism

1. Before the advent of digital tools, much of the information communication between individuals required physical presence. Until the Coronavirus Pandemic Lockdown, most Nigerian journalists were constantly on the move, sourcing material on their own (Adegboyega, 2020). After an interview, a reporter had to rush back to the newsroom as quickly as possible in order to beat the competition to print and then publish the story. As the digital revolution has progressed, the roles of journalists have changed. The internet is one of the numerous advantages of the advancement of information transmission technology, as it allows people to learn about events without having to attend them. During the country-wide shut down, certain news organizations, such as TVC News and Channels TV, attempted to use video conferencing software like Skype to keep the conversations going. Journalists can utilise artificial intelligence to report on breaking news moreover as used by the Quakebot in 2014 during the earthquake in California. AI could help future newsroom tasks become more efficient if it is integrated into the process.

2. Fact-Check: Journalists may employ AI technologies to help them fact-check in real time and develop automated news coverage. A few examples are the FANDANGO and GoodNews project (Cassauwers, 2019) which is helping Journalism benefits from the AI innovation as it entails seeking for and analysing contents to determine whether or not a story exists or is fake.
3. Speed: In an article by Roose (2014) Robots Are Invading the News Business, and It's Great for Journalists (Roose, 2014) the author describes how it took less than a second for an AI known as Automated insights to recap the quarterly earnings of Alcoa, the giant metals company, for the Associated Press. The likes of Mittmedia goes a long way to show how AI in news media is being used in new ways from speeding up research to accumulating and cross-referencing data and beyond (Corinna, 2019).

There are quite a few discrepancies when it comes to robot journalism. Some of which are:

1. News Objectivity: One of the advantages of robot journalism is that, unlike humans, it lacks built-in bias, making it a more reliable source because – for the most part, data does not lie (Montal & Reich, 2017). However, Wu (2019) discovered substantial variations in the objectivity and credibility ratings of auto-written and human-written news stories in the journalistic disciplines of politics, economics, and sports news stories, which partially refutes this argument. Sports news articles for instance were assessed as more impartial and credible in auto-written news stories, whereas financial news stories were rated as more biased. Financial news stories were evaluated as more neutral and reliable in human-written pieces. Finally, political news stories, demonstrated more bias among human-written news items and when auto-written and human-written stories were merged.
2. News/Source Credibility: As more news articles are written via collaboration between journalists and algorithms, questions have arisen regarding how automation influences the way that news is processed and evaluated by audiences Waddell (2017) in a study observed that as more news articles are written via collaboration between journalists and algorithms, concerns have arisen pertaining how automation influences the way that news is processed and evaluated by audiences. Waddell used the expectation violation theory and the MAIN model to perform two

examinations that would show how the effect of alleged machine authorship on news believability affected people's perspectives. According to the first study, it was observed that news credited to a machine is thought to be less trustworthy than that attributed to a human journalist. In a second investigation, negative effects of machine authorship and the moderating of robotics by prior recall were identified, resulting in negative expectation violations. This shows the relevance of authorship, where there are practical reasons, as articulated by Montal & Reich (2017), where the public feels entitled to know the source of a news story so that they may make practical judgments like buying stock or unlocking a video game sequence.

3. Ownership/Authorship: For news organizations, journalists, and their readers, Montal & Reich (2017) notes that the growing dependence on algorithms to generate news automatically has important practical, legal, and professional ramifications. The algorithmic authorship is one of the most contentious yet unexplored parts of it. According to Montal & Reich, their research found significant differences between authorship perceptions and crediting policies. This could mean that journalists may have to be freed from the source protection clause, a core tenet in journalism that even the courts cannot compel a news agency or reporter to reveal (SPJ, 2014). Or maybe not, in an era where attribution is the norm, especially for scientific literature (Omoniyi, 2018).
4. Liability: When it comes to legal issues, there have been conflicts about who is responsible for unethical or libelous content. Or who should be given credit for a robot-generated piece. Is it the robot, the editor, or the news organization? Is there a need for robot journalism legislation? Despite the fact that Article 22 of Nigeria's 1999 constitution provides for objective, truthful, and comprehensive coverage of newsworthy activities in Nigeria, Popoola (2012) notes that Boko Haram sect terrorism, banditry, kidnapping, and crisis situations have emerged as the country's greatest threat to press freedom. Nigeria's political environment is likewise a string cautiously zone for journalists. Several issues have hampered the public's right to know about government policy, most notably under the military administration, when a slew of decrees were enacted to curtail journalistic freedom and jeopardize the public right to know and receive information (Aghamelu, 2014). Much has been done politically in the democratic age to limit journalists' ability to examine and disseminate information. For example, in June 2021, a political decision was made to simply make

information unavailable to the general public – Twitter was banned. This is due to the fact that today's audiences choose what they read, and the majority of them believe they should be able to contribute content and thoughts (Harper, 2010). One thing is certain: no government, no matter where it is located, can function without journalism, which documents official activities for the benefit of the public.

These disagreements connect this research to some of the ethical and legal issues surrounding AI, which Monti (2019) and Graefe (2016) argue are the editor's or fact-checker's responsibility. For example, would anyone hold Google liable if a fake post was generated using their "search engine optimization" (SEO) services? But everyone has a license to post and create contents whether academic papers, blog posts, and articles which can be published online. This requires the author to provide a range of tags so that the document may be identified using key phrases. However, how sufficient is that? One thing is sure content creators do not go out there labelling their pieces as phony, so as consumers utilise the SEO to collect data, all contents are bound to appear as either locked, unrestricted, or genuine search results. This is practically what the AI is supposed to achieve. As of March 2021, Google searches every second were reported at 90,460 (Chang, 2021), and because AI is reliant on what is saved online by individuals and organisations, sources must be recognized by the AI to prevent liability difficulties if the content is incorrect, discriminating, or libelous. This would explain Montal & Reich's proposed disclosure transparency clause posited in 2017.

5. Job Loss: One of the growing concerns among journalists is the loss of job that could happen as a result of the adoption of robot-writers (Kim & Kim, 2017). There are fears that news automation would obviate the need for journalists. These arguments follow a deterministic line of reasoning since working with AI promises better efficiency and job satisfaction through automation of repetitive and error-prone routine chores; nevertheless, automation of these routine duties may result in job losses. However, findings from study conducted in Germany by Aljosha Karim Schapals and Colin Porlezza in 2020 contradict this position, revealing that newsroom workers believed automated journalism will enhance their positions. Also, according to OSF journalism (2018), those interested in becoming journalists should be aware that, while AI can aid with content creation, it cannot replace human reporting. Reuters' Lynx Insight and the Guardian's GPT-3, for example, are not designed to replace reporters, but

rather to comb through data to find trends and allow human workers to examine, ask questions, and comprehend context before publishing. To summarize, United Robots, a Malmo, Sweden-based AI startup, claims that robot journalism does not pose a danger to newsroom jobs; the company has been automating journalism in Sweden since 2015 (Karlsson, 2019). When an editor receives news, he or she might opt to change it or publish it as it is (Cant, 2018). Human journalists are adept at cultivating connections with sources, conducting in-depth data analysis, and deciding if a certain issue is newsworthy all of which AI is incapable of. Journalists will just have to adapt to a new type of work that necessitates computational thinking (O'Connell, 2019).

Methodology

This is a survey study, and the research instrument was a questionnaire with a series of questions designed to collect data from respondents.

All of the respondents were media practitioners. According to the Nigerian Union of Journalists, the total number of registered journalists in Nigeria was twenty thousand eight hundred and sixty-eight (20,868) as of July 6, 2021. The sample size was carefully drawn from Nigerian media practitioners past and present (N = 389). Although the sample size of 378 was calculated using a digital sample size calculator that is similar to Cochran's formula, with a confidence level of 95% and a margin of error of 5%. As a result, 378 or more surveys were required to achieve a confidence level of 95%, implying that the real value is within 5% of the measured/surveyed value. Hence the researchers used a sample size of 389 replies. The questionnaire was created using Google Forms, an online survey tool. The survey was done entirely online, which was made feasible by the expansion of the Internet and the use of email as a means of communication, making the electronic survey a more generally used survey method, and thus it was chosen.

Purposive sampling was used since it is a non-probability sample strategy that will allow the researchers to identify registered journalists across Nigeria, where these individuals are difficult to find. Purposive sampling has several advantages, including:

1. The capacity to enroll hard-to-reach people
2. Ability to acquire primary data at a low cost.

With every advantage, presents its weaknesses some of which are:

1. Respondents may be hesitant to provide names of peers and asking them to do so may raise ethical concerns
2. Oversampling a particular network of peers can lead to bias,
3. There is no guarantee about the representativeness of samples or to determine the actual pattern of distribution of the population.

With these weaknesses in view, the researchers tried to mitigate these occurrences by selecting journalists across the six (6) geopolitical zones in Nigeria to ensure the results will reflect findings from North Central (NC), Northeast (NE), Northwest (NW), Southwest (SW), Southeast (SE) and South (SS).

Data Analysis and Interpretation

The questionnaire was designed to get data around the 3 research questions and the findings are presented under the following major questions

Data gathered was presented using charts and data spread sheet from excel. The preliminary questions were analysed across demographics, media sector and ownership.

1 - Disaggregation by sex

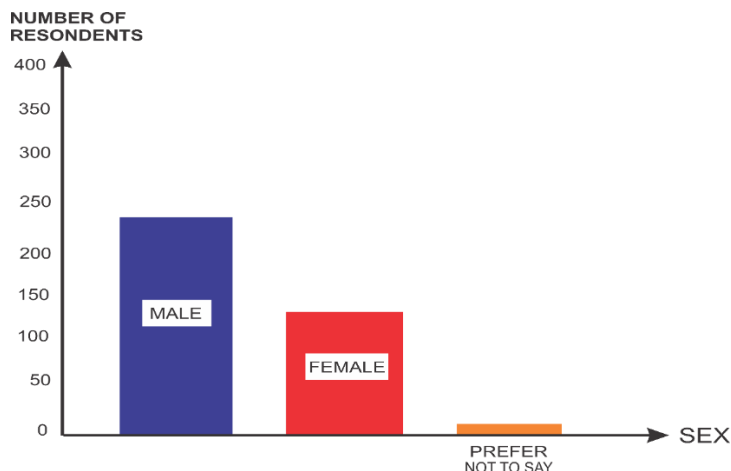


Figure 1: Bar chart showing disaggregation by sex

The bar chart above shows the number of media practitioners classified by their sex. The total number of respondents were 389, with males constituting 243 (62.5%), females constituting 136 (35%), and those who preferred not to state their sex making up 10 (2.5%).

2 - Media sector

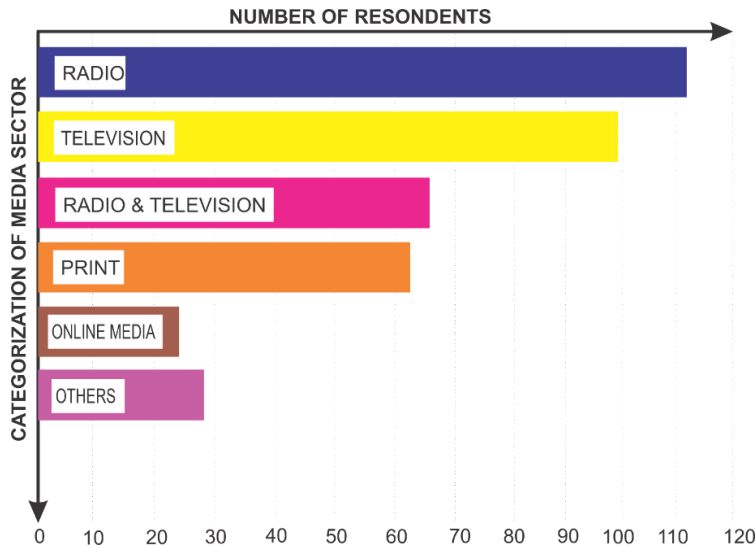


Figure 2: Bar chart showing classification by media sector

The chart above shows the aggregated number of respondents based on the media sector they work with. Respondents from Radio sector are 111 (28.5%), Television sector 99 (25.45%), Radio and Television 66 (16.9%), Print 63 (16.2%), Online Media 23 (5.9%), and others 27 (6.9%).

3 - Ownership

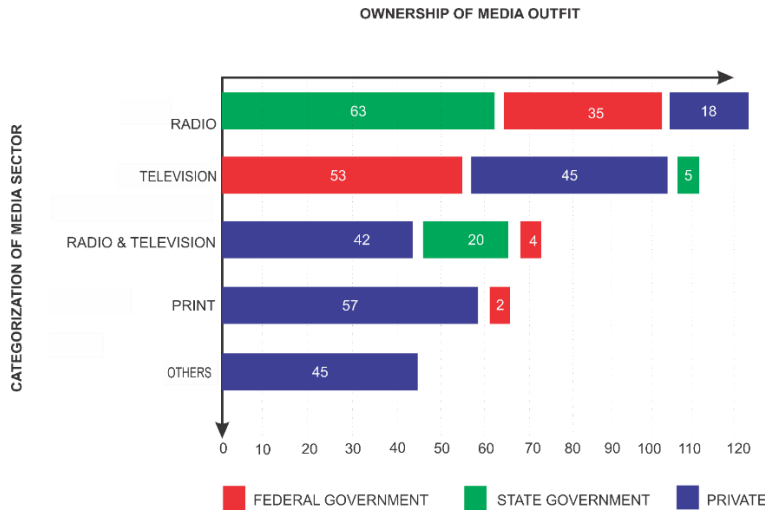


Figure 3: Bar chart showing the classification of respondents by media ownership

The chart above shows the ownership of the different media outfits by the Federal Government, State Governments, and private organizations/individuals. Media practitioners from the radio formed the highest number of respondents with 29.8% (116) and based on ownership, 16% (63) of the respondents worked with radio stations owned by a State Government. 9% (35) owned by the Federal Government, and 5% (18) of the respondents were from radio stations run by private organizations. 103 respondents from the television with over 50% run by the Federal Government.

Some of the respondents work with media outfits that are both radio and television stations a total of 66 (16%) and others in the print media, with a total of 59 15% from private print organisations and also uncategorized outfits that are represented by “others” with a total of 45 (12%) respondents.

4- Location/new media tools

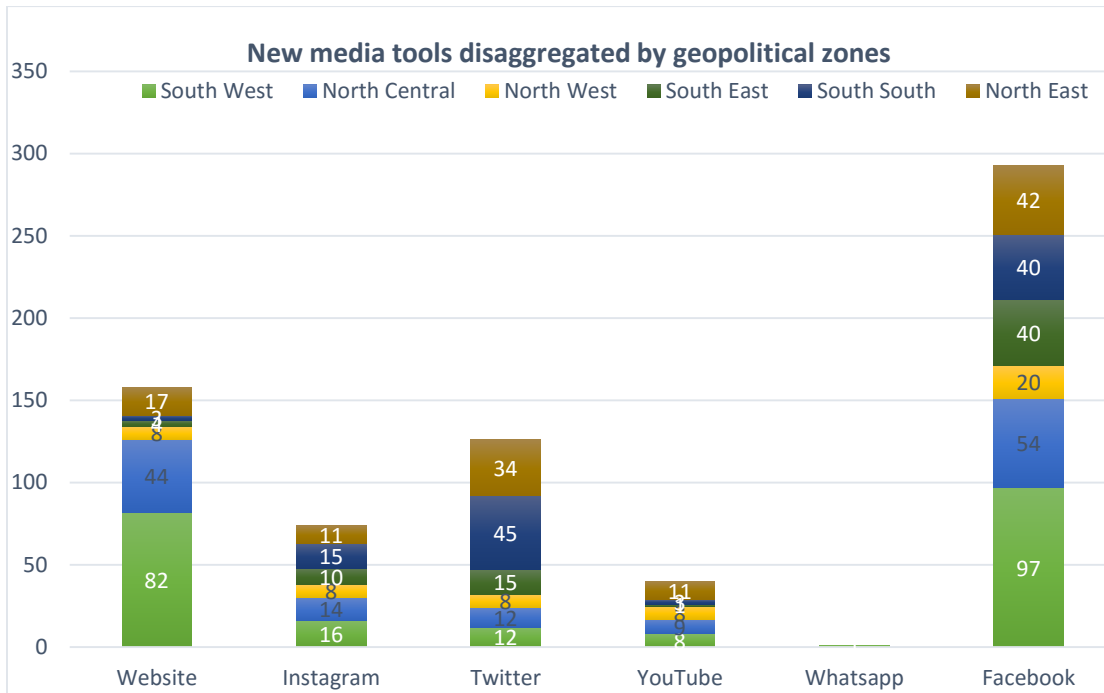


Figure 4: Bar chart showing new media tools used by media agencies

In the bar chart above, Facebook has the highest record of users total of 293 (75%) as all the geopolitical zones represented did say their agency has a Facebook Page to connect with their audience or clients. 158 (40%) of the respondents did say that their media agency did operate an official website. Following up third, fourth and fifth were twitter usage evident from 126 (32.4%) of the respondents, Instagram at 74 (19%) and YouTube at 40 (10%) respectively. WhatsApp was only considered as a tool for connecting to audience by 1 (0.3%) agency.

5 - Issues faced by journalists:

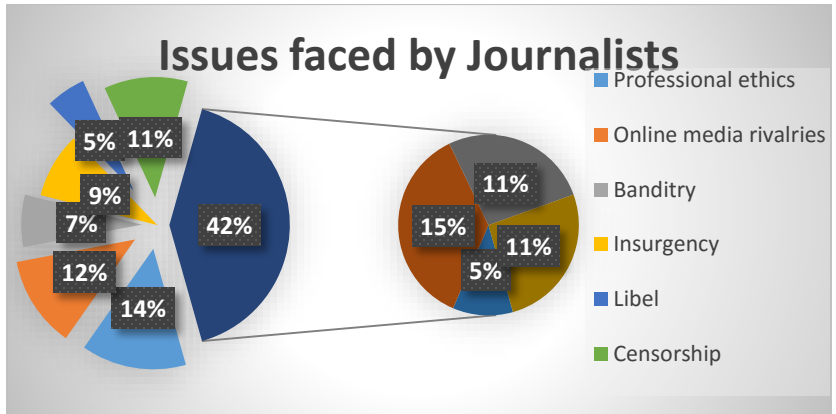


Figure 5: Pie chart showing issues faced by journalists

According to the pie chart above, 15% (57) of respondents said that harassment from security personnel was a rising concern, with 14% (53) agreeing that professional ethics was one of the challenges journalists face. Online media rivalries were cited by 12% (46) of respondents as a key setback for journalists, followed by censorship, unlawful arrests and tight budget which was mentioned by 11% (43) each as issues facing journalists in Nigeria.

Insurgency was only selected by 9% (33) of the respondents, indicating that less than half of the respondents considered it was only a growing problem. Banditry, libel, and sexual harassment received 7% (26), 5% (20), and 4% (17) of the vote, respectively.

Others included copyright, kidnapping, inadequate remuneration, poor working conditions, lack of technology know-how and lack of information which accounted for the remaining 42% (157) of responses.

6 – Present practice of journalists

A total of 388 submissions were received in response to the question about emerging issues facing journalists today. The pie chart below represents the different issues that media practitioners have identified.

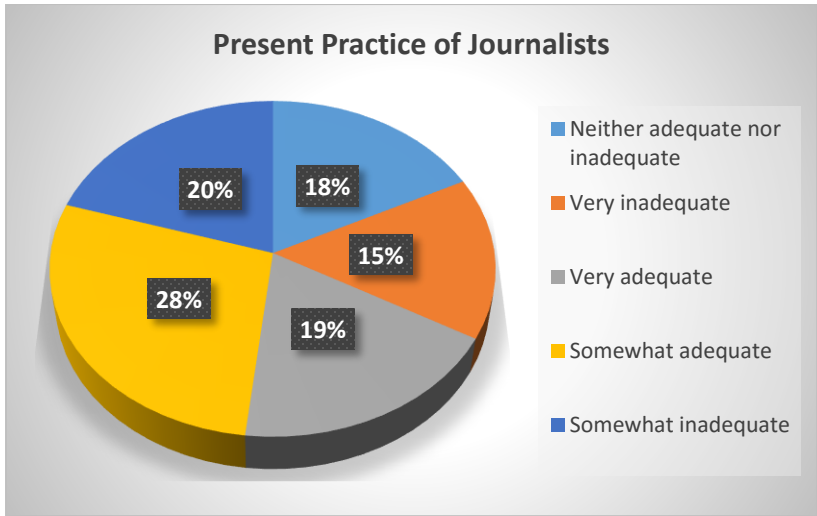


Figure 6: Pie chart showing the present practice of journalists in Nigeria to face emerging issues

To determine whether the present practice of journalism in Nigeria was adequate to address those emerging or present issues in the country, the pie chart above represents the perceptions of journalists. A total of 138 (35%) of respondents thought that the present practice of journalism was somewhat inadequate or totally inadequate, while a total of 181 (47%) thought that it was adequate or somewhat adequate.

7. Level of awareness of Robot Journalism

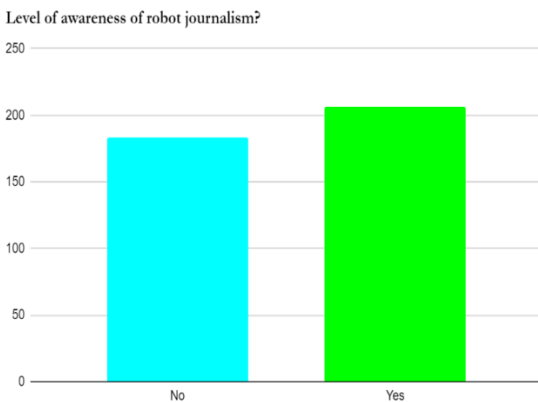


Figure 7: Level of awareness of robot journalism

This chart shows that over 50% (202) of respondents were aware of the concept robot journalism, while 47% (187) were not.

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8. Nigeria media sector is well positioned to adopt robot journalism

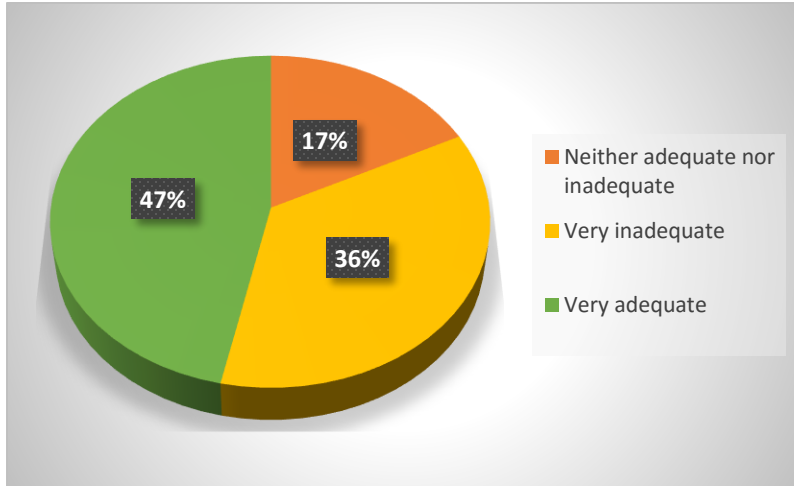


Figure 8: Showing the Perception on media sector readiness to adopt robot journalism

Disaggregated by media ownership, responses showed that a majority of 36% (138) did say the media industry was not well positioned to adopt robot journalism (These were the ones that disagreed or strongly disagreed). A total of 47% (180) of the practitioners agree that the media industry in Nigeria was ready for robot journalism.

9. Perception of media practitioners over robot journalism

Perception	Frequency	Percentage
Robot Journalism will not increase journalists' voice in news coverage and dissemination.	131	33.7
News coverage through robot journalism is necessary for the achievement of increased news coverage and data collection	189	48.6
There is need for close collaboration between journalists and software	281	72.2

experts.

There should be media training on robot journalism for all journalists.	280	72
Political action will be required to address the problems behind information technology adoption.	184	47.3
Robot journalism is necessary to reduce workload of human journalists.	194	49.9
Robot journalism would help to provide better and improved journalistic service to news agencies.	187	48.1
Human Journalists should continue to cover news in order to save true journalism.	247	63.5
Robot Journalists will make the audience to be more responsive while providing information needs.	114	29.3
Journalists are not to be blamed for the low coverage news.	189	48.6
War and Conflict report is of high news worthiness.	226	58.1
Robot journalism does not require any special training anyone with a phone can do it.	61	15.7
Robot Journalism will make human journalism to be boring.	101	26
Robot Journalism will increase journalist socio-economic status.	83	21.3
Human Journalists cannot be available at all times for every breaking news, hence there is need to adopt robot journalism.	190	48.8

Media owners/editors are slow to appreciate and adopt technology and innovation.	169	43.4
Many media agencies do not have funds to purchase new technologies that support the work of journalists.	248	63.8
Adoption of Robot Journalism will lead to loss of employment for human journalists.	203	52.2
Adopting Robot Journalism on a long-term basis, will mean committing professional suicide.	139	35.7
Actually, I do not care much about robot journalism because it will not increase journalist's productivity.	107	27.5
There is need for legislation on the adoption of robot journalism in Nigeria.	166	42.7

Table 1: Showing the perception of media practitioners over robot journalism

The table above shows the perceptions of media practitioners on robot journalism. According to the table above, 203 (52.2%) of the respondents perceived that the "adoption of robot journalism will result in the loss of jobs for human journalists" while 83 (21%) of the submissions agreed that "robot journalism will improve journalist socio-economic standing."

101 (26%) people chose the statement "Robot Journalism will make human journalism uninteresting," with 131 (33%) saying it will not strengthen journalists' voice in news coverage and dissemination, and 139 (35%) believing that adopting robot journalism on a long-term basis will be "career suicide." As a result, 247 (63.5%) said that human journalists should keep covering news in order to safeguard authentic journalism.

This could explain why 107 (27%) of the media professionals said, *Actually, I don't care much about robot journalism.* being that they felt it will not increase journalists' productivity.

In response to positive reactions to the adoption of robot journalism, 114 (29%) respondents believe that *robot journalists will make audiences more responsive while providing information needs*, while 187 (48%) of the media practitioners believe that *Robot journalism would help to provide better and improved journalistic service to news agencies*.

Indeed, 166 (43%) of the respondents believe that *legislation on the use of robot journalism in Nigeria is necessary*. This could explain why 184 (47%) of the media practitioners believed, *political action will be required to address the issues surrounding information technology adoption in the country*.

189 (49%) of the respondents agreed that robot journalism was important for increased news coverage and data collecting, as did another 49% who did not believe that journalists were to blame for low news coverage, and 190 respondents who added that human journalists cannot be present at all times for every news story as a result, robot journalism is required. Robot journalism, according to 194 (50%), is required to alleviate the workload of human journalists.

While 280 (72%) of the respondents believe that all journalists should be trained in robot journalism, 281 (72.2%) affirmed that there was a need for close collaboration between journalists and software engineers. However, 61 (15.7%) of respondents said robot journalism did not require any specific expertise because anyone with a phone could do it.

Many media organizations, according to 248 (63.8%) of the respondents, lack the financial resources to invest in innovative technology that benefit journalists in their work. According to 169 (43.4%) of media practitioners, this could be the reason why media owners/editors are sluggish to embrace and adopt technology and innovation.

Discussion of Findings

This study set out to answer 2 questions:

To what extent are journalists in Nigeria exposed to robot journalism? Findings revealed that although journalists in Nigeria were exposed to social media tools with Facebook being the highest but were not necessarily ready for the adoption of robot journalism as seen from the responses of 17% of the practitioners in *figure 8*. It is important to add that Facebook, WhatsApp and Instagram are corporate businesses based on algorithms (UNESCO, 2019) and Facebook is by

far the most powerful media company in the world today, with more than three billion recurrent users (internetlivestats 2021). It is about automating communication. The response of respondents shows that they may have heard about robot journalism but not currently using it as knowledge of technology does not equal to usage. This view is supported by Mwantok (2019) who notes that although journalists around the world are increasingly turning to digital media tools, but as of 2017 Nigerians were arguably still struggling to keep pace with digital technology that would make their work easier. This may explain why journalists in Nigeria are still faced with issues such as harassment from security personnel was a rising concern reported by 15% of respondents, professional ethics by 14% agreeing that was one of the challenges journalists face. Matters of unlawful arrests, the insurgency which is a growing problem along with banditry, libel, kidnapping, and sexual harassment made it on the list. Adopting robot journalism will help reduce or better still eliminate some of these issues threatening the lives and safety of journalists who are faced with reporting stories even in unfavourable situations. This supports the position of Latar (2016) who described the usage of AI within journalism as a telepresence technology that can be quite effective in collecting data even from war zones without risking the lives of human journalists. This could also keep journalists safe in cases of pandemics.

The second objective was to x-ray the perceptions of journalists in Nigeria on the use of automated journalism. Data gathered revealed that over 50% of the respondents did perceive that the "adoption of robot journalism will result in the loss of jobs for human journalists" - this perception seems to be legit following the report by PremiumTimes on the replacement of 50 human journalists working for Microsoft's news arm MSN which occurred in 2020. This could additionally provide an explanation as to why over 70% of media practitioners did not accept that "robot journalism will improve journalist socio-economic standing" because how can this be possible if the journalists are replaced by robots like in the MSN saga? Although 65% of respondents did not perceive that adopting robot journalism on a long-term basis will be "career suicide." But for the sake of authentic journalism, 63.5% said that human journalists should keep covering news to safeguard that aspect.

74% are of the opinion that "Robot Journalism will make human journalism interesting supported by 67% who believed it was an avenue that will strengthen journalists' voice in news coverage and dissemination, and it is supported by 73% of media professionals who cared much about robot journalism being that

they felt it will increase journalists' productivity. These findings have been supported by Schapals & Porlezza (2020) whose study revealed that newsroom staff sensed that automated journalism would indeed advance their roles.

Robot journalists will help to provide better and improved journalistic service to news agencies this is also a matter of speed as illustrated by Roose (2014). This could make audiences more responsive to automated stories while providing information needs.

With regards to matters of legislation on the use of robot journalism in Nigeria, a majority thought it was not necessary. One would recall that the Anti-social Media Bill which was introduced by the Senate of the Federal Republic of Nigeria on 5 November 2019 to criminalise the use of social media in peddling false or malicious information (Umoru, 2019) received a whooping backlash from the majority of Nigerians, this study gathers that over 50% of the media practitioners did not believe, political action was necessary to address the issues surrounding information technology adoption in the country. Information technology adoption is in the hands of the people.

Another perception of media practitioners was that there was a need for increased news coverage and data collecting. In the face of Covid-19, this may also confirm why 49% of the respondents added that human journalists cannot be present at all times for every news story as a result, also as such over 50% of the respondents affirmed the need for such a technology that would support in alleviating the workload of human journalists.

This leads to the next steps for training where 72% of the respondents believe that all journalists should be trained in robot journalism, especially through a close collaboration between journalists and software engineers. This will justify what Schapals & Porlezza (2020) observed that most journalists might not (yet) make use of the technology in the actual production of journalistic work, but their organisations do deploy algorithms to assist editorial work. The majority of respondents said robot journalism did require specific expertise because not everyone with a phone could do it.

Most media organisations are lacking the financial resources to invest in innovative technology that benefits journalists in their work. According to 169 (43.4%) media practitioners, this could be the reason why media owners/editors are not motivated to embrace or adopt digital technology and innovation.

Conclusion

Findings showed that 53% of media practitioners were aware of the concept of robot journalism but the Majority of media practitioners 52.2% did submit that the adoption of robot Journalism was going to lead to loss of employment for human journalists while 21.3% agreed that Robot Journalism will increase journalist socio-economic status. This means that the remaining 78.7% did not believe that robot journalism would contribute to the socio-economic status of the journalist.

The continuous mundane tasks of gathering stories around beats such as sports, finance, and weather are some of the activities that can be delegated to automation which could explain why 74% believed Robot Journalism will make human journalism to be interesting. With 66.3% who did not agree that 'Robot Journalism will not increase journalists' voice in news coverage and dissemination. This means that a majority of the respondents believe that Robot Journalism will increase journalists' voice in news coverage and dissemination. This is because as they get the time to handle other beats, the time that would have been spent on sourcing some news will yield more.

Robot journalism is an innovation in information technologies. This paper does not only seek to report it but also proposes its usage by demonstrating some of the ways robot journalism is enhancing the productivity of journalists across newsrooms. With a look at AI usage across the globe such as 'afriBOT' already explored in Namibia and Zimbabwe, New York Times (NYT) AI called 'Editor' and Reuters' 'Lynx Insights' amongst others all designed with the goal to gather data to make weather, sports, financial and political reports. The story does not just end at the 2016 Olympic Games in Rio with the use of Heliograf, but more and more news agencies are seeking ways to integrate AI into their daily operations. This justifies the mediamorphosis theory that talks about the unified system as a media need is seen, innovative tools are designed to support the process.

The study also revealed that journalism in Nigeria needs to experience a regeneration in terms of adoption and not just report it. This confirms what Okon (2001) said that technologies and new media forms are unfamiliar to Nigerian society. precisely, media houses and journalists ought to try as much as possible to acquire the required skills so as to adopt and adapt to global standards in gathering, packaging, and disseminating news and other relevant information to the public.

It is clear from journalists' perception that human journalists cannot be present at all times for every news story. So far over 600 journalists have lost their lives as a

result of the pandemic and with the restrictions across the world and safety protocols of social distancing, this study makes a strong case for the adoption of robot journalism to not just enhance the productivity of journalists but also ensure the safety of journalists. Automation is the way of the future, and Nigerian journalists cannot afford to be consigned to oblivion in the final shift to an automated world, so they must prepare and embrace robot journalism. This study's advice was that while media practitioners tried to grapple with the reality of automated journalism, media schools need to develop a variety of courses that keep up with technology and adequately prepare future communicators for the use of supportive techs in their jobs.

Recommendations

Following the findings from this study, the following recommendations will support robot journalism adoption:

1. Newsrooms should champion the use of AI so Nigerian journalists can easily verify and fact-check information before publishing their stories.
2. In the face of pandemics, banditry, kidnapping, and risky locales such as crises, robot journalism makes it safe for journalists. As a result, news organizations must begin to budget for the possibility of implementing technologies that will make news sourcing easier while not sacrificing the human journalist.
3. Journalists must be trained in robot journalism, which should be done in close collaboration between journalists and software engineers.
4. Universities should introduce curricula that would boost the technical know-how of journalists and media students.
5. To stay afloat in an era of digital transformations across the globe, journalists must continue to build their capacities to handle more digital tasks creatively so that robot journalism will not take over their jobs but perform supportive roles.
6. There is a need for the National Broadcasting Commission to provide a code of conduct that will guide the use of robot journalism to avoid ethical infractions or abuse.

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