PROSPECTS AND CHALLENGES OF AUTOMATED AND DRONE JOURNALISM IN NIGERIA

Gabriel T. Nyitse (PhD)

Department of Mass Communication,
Bingham University, Karu, Nigeria
ORCID ID: https://orcid.org/0000-0002-3292-190X
Email: gabrielnyitse@binghamuni.edu.ng
Phone: 08036150060

Jesse Ishaku

Department of Mass Communication,
Taraba State University, Jalingo, Nigeria
ORCID ID: https://orcid.org/0000-0001-5456-3966
Email: jesseishaku@gmail.com
Phone: 08030698545

Abstract

In recent years, the journalism industry globally has been completely disrupted by the use of algorithms to automatically generate news from structured data. Recent advancements in AI, automated news, robotics and camera drones present both opportunities and threats to the journalism profession especially in Nigeria. Anchored on the Technology Acceptance Model (TAM) and Social Responsibility Media Theory as its theoretical frame work, the study adopted integrative literature review method, to examine the subject matter under investigation. This study therefore investigates whether automated and drone journalism in Nigeria is a blessing or a curse. Consequently, using the two (2) dominant frames of news automation – optimistic "machine liberates man" and pessimistic "man versus machine" frames; the study established that, automated and drone journalism provides endless possibilities for generating a huge number of stories in several languages in a remarkably short amount of time, enabling management personnel to increase profit margins while simultaneously reducing production costs. However, this development aside from raising ethical concern on accuracy, transparency, bias, safety and privacy; it was also found that if this technologies eventually result in the progressive removal of such rank-and-file employment, algorithms cannot replace the void left by human journalists as algorithms are restricted in their capacity to monitor society and perform other important journalistic responsibilities such as public orientation, public opinion creation and establishing causation. Hence, the study recommends that, journalists should improve their capacity and adopt the "man-machine marriage" where journalists, AI, news automation and robotics will integrate and work very closely thereby forming mutually beneficial relationship in such a way that, algorithms will analyse data, find interesting stories and provide a first draft; which journalists will then enrich with more flesh, investigative and in-depth analyses and fact checking by interviewing key people.

Key Words: Artificial intelligence, drones, journalism, news automation, Nigeria

Introduction

Recent development in Artificial Intelligence (AI) which is the precursor for automated journalism and drones have opened up discussions particularly on the numerous and endless opportunities they offer as well as the challenges and threats they pose to different fields of study and human existence generally. Interestingly, these recent developments in Artificial Intelligence (AI) and robotics, camera drones and the use of algorithms to generate and create news stories has redefined and shifted the narratives of journalism practice beyond the impact of new media and social networking sites such as Facebook, Twitter (X), Instagram, WhatsApp, Blogs etc. Salaverra

& De-Lima-Santos (2020) predicted that, the field of journalism will be among those most impacted by this new technology. Robotic systems and Internet of Things (IoT) gadgets are introducing new approaches to the creation, consumption, and dissemination of journalistic material, transforming the news industry into a new paradigm known as ubiquitous journalism.

Globally, newsrooms are incorporating different types of Artificial Intelligence (AI) into the process of news collection, production, and delivery. Leading the development of AI in newsrooms are Western nations and China, who are testing technologies including machine learning, automated content production and moderation, and speech-to-text algorithms (Kothari & Cruikshank, 2022). The news media and journalism profession recently experienced the waves of the fourth industrial automation involving Unmanned Aerial Vehicles (UAVs) or drones technology and Internet of Things (IoT) integration that characterized the regime of extreme digital automation in its existential process modernism (Salaverra & De-Lima-Santos, 2020). According to Okocha, Agaku & Ola-Akuma (2021), Unmanned Aerial Vehicles (UAVs), an emerging technology in the news media sector, are quickly altering the narrative of journalistic practice in the twenty-first century, particularly the news collecting process in unruly or dangerous areas.

According to Dorr (2016), eleven businesses have been identified through a market analysis as offering automated content production for journalism-related products in various nations. Thereof, five are headquartered in Germany (AX Semantics; Text-On; 2txt NLG; Retresco; Textomatic), two in the United States (Narrative Science; Automated Insights) and France (Syllabs; Labsense), one in each of the United Kingdom (Arria) and China (Tencent). Interestingly, four (4) businesses offer their services in many languages, compared to eight (8) that concentrate on producing material in a single language. One example is the automatic content production in as many as twelve languages provided by the German business AX Semantics. Consequently, Graefe (2016) gave perspectives for anchoring discussion on the relationship between the journalism and Artificial Intelligence (AI) – optimistic and pessimistic frames, this categorization can be extended to accommodate the prospects and challenges of robot or drone journalism as well.

There is no gainsaying that, the nature of journalism and its ethical consideration are being profoundly and consistently altered by today's media revolution courtesy of the development in AI, automated news, camera drones and robotics. Undoubtedly, while revolutions like these open up new opportunities especially in the field of journalism, it has as well come up with varying challenges such as the closure of "traditional newsrooms", economic and identity or reputational crises caused by the proliferation of numerous drone hobbyists. Interestingly, these worries inspire the newest global test for media freedom and media innovations in areas like in-depth analysis and investigative reporting which are very important journalistic ingredients especially in a country like Nigeria where endemic corruption and different political scandals thrive. It is against this backdrop that this study seeks to examine the influence of news automation and drones on journalism practice in Nigeria.

Statement of the Problem
Artificial Intelligence (AI), automated news, robotics, drones and other digital technologies have revolutionized the journalism profession in diverse ways. For instance, while drone cameras have made it possible for journalist to capture/cover conflict zones with ease, AI tools equally have the potency to generate, write and report stories within the split of seconds. While corroborating, Nwanakwaugwu, Matthew, Okey, Kazaure & Nwamouh (2023) observe that, the desire to use technology to improve the direct engagement of eyewitnesses particularly in violent settings where physical and direct human involvement would be impracticable or with high expectations for survivability hazards was what gave research on automated and drone journalism its present impetus. According to Graefe (2016), since the Associated Press, one of the largest and most reputable news organizations in the world, started automating the production of its quarterly corporate earnings reports, the use of algorithms to automatically produce news from structured data has shaken up the journalism industry. Because of this, even though researchers and industry

experts also acknowledge the technology's potential to improve the quality of the news, this development has increased journalists' concerns (fear) that automated content production would eventually result in the loss of newsroom employment. This study therefore, examines some of the opportunities as well as threats which the development in news automation and drones pose to the Nigerian media landscape.

Objectives of the Study
The objectives of this is to:
1. Examine the impact of news automation and drones on journalism practice in Nigeria.
2. Assess the challenges for the adoption of AI and drone journalism in Nigeria.
3. To explore the emerging issues on automated and drone journalism in Nigeria.
4. Find ways to mitigate the negative impacts of AI and drones in the Nigerian media landscape.

Theoretical Framework
This treatise is anchored on two theoretical foundations which are the Technological Acceptance Model and the Social Responsibility Theory (SRT). The Technology Acceptance Model (TAM), was propounded by Fred Davis in 1985. The TAM model postulates that, adoption of a new technology is determined by a user's behavioural intention to use the technology (Chuttur, 2009, Wu & Wang, 2005). TAM puts forward two beliefs – "perceived usefulness" and "perceived ease of use", for explaining variance in user's behavioural intentions (Wu & Wang, 2005). Perceived usefulness implies a belief that a person's use of a given technology will improve his or her job performance. On the other hand, perceived ease of use is the extent to which a person believes that using a given technology will be free of effort. From these beliefs, perceived ease of use is a predictor of perceived usefulness.

Furthermore, researchers on technology adoption and information technology have done a lot of works on the TAM and concluded that it is valid in predicting an individual's acceptance of a technology (Ekwenchi, Morah & Adum, 2015). The TAM's constructs, nevertheless, according to some researchers, do not fully reflect the specific influences of technological and usage-context factors that may alter the user's acceptance (Luarn & Lin, 2005). It is important however, that future research on technology use and acceptance addresses how other variables affect usefulness, ease of use as well as acceptance (Chuttur, 2009) while also investigating what can motivate a user to adopt or use a technology. The TAM's main constructs, "perceived ease of use" and "perceived usefulness" perhaps may not fully explain user's behavioural intention towards the use of mobile phones and other electronic gadgets. Be that as it may, researchers have extended the TAM and added constructs like trust, perceived playfulness, cognitive absorption, product involvement and perceived enjoyment. Based on the foregoing therefore, TAM is relevant to this study as it has the potency to give an insight into the reasons journalists or media organizations are likely to adopt artificial intelligence tools or drone cameras in their daily professional practices.

On the other hand, Social Responsibility Theory (SRT) is equally considered as another relevant theory for this study. SRT which was propounded by Siebert, Peterson and Schramm in the mid-19th century rests on the notion that media outfits and journalists should accept and fulfil certain obligations within the society which they operate (McQuail, 1987). It was created as an offshoot of the libertarian theory in order to restrain the free press from going overboard. As much as the press should be free in society, the argument contends that freedom should come with concomitant responsibilities. In this view, the press has a duty to protect democracy by accurately educating the people and responding to societal needs and interests, even while it is free to criticize the government and other institutions.

According to the concept of free press, there should be an open flow of unbiased information that will enable the populace to make wise political and other decisions that will influence their lives. However, these goals were not accomplished as a result of the press deceptions, yellow journalism and sensationalism. During that time, the press indulged in

sensationalism, privacy invasion, character assassination, and other detrimental practices that fell short of the libertarian ideals. Sadly, similar scenario do play out on social media platforms in recent times where users disseminate unfiltered information without thorough investigation, fact-checking and scrutiny. The excesses of the press during the libertarian regime led to an outcry which gave birth to establishment of the Hutchin's Commission which later gave birth to the social responsibility theory. The core tenet of the theory is that, it charges media practitioners to ensure representation of all facets of the society without any form of prejudices or biases. This theory is relevant to this study as it implies that even as journalists rely on new technologies in their daily journalistic practices, they have the responsibility of ensuring that the end product of what they disseminate to the public is objective, balanced and of good taste while ensuring the safety and privacy of individuals in the society.

Conceptual Clarification

Artificial Intelligence (AI)
The term Artificial Intelligence (AI) is one of the trending concepts in contemporary literature. In other words, AI is a subject matter that scholars in different fields of endeavor are currently trying to harness its importance and applicability in their unique fields of endeavour. According to Manning, Brewer, Craigon, Frey, Gutierrez, Jacobs, & Pearson, (2022), AI is a term coined by emeritus Stanford Professor John McCarthy in 1955. He defined AI as the science and engineering of making intelligent machines. Even though in the past, most research on AI prioritizes the ability of humans to program machines to act in an intelligent manner, such as playing chess, whereas in the present day, the emphasis is on the ability of machines to learn, at least in part, in a manner analogous to human beings (Manning et al, 2022).

Pereira, Hadjielias, Christofi, & Vrontis, (2023), conceptualise AI as a branch of computer/mathematical science that solely focuses on creating intelligent machines that have the potency to perform diverse task that requires human intelligence. These machines are built in such a ways that they reason about information, perceive their environment and also learn from previous experiences. The sole purpose of AI experts is to develop algorithms and models that can possible replicate and stimulate cognitive functions, such as problem solving (Hussain, 2023). The above however, suggests that the goal of AI experts is to enable machines to think like humans, but in a way that surpasses the human way of thinking (Misselhorn, 2018). AI empowers machines with the ability to autonomously collect and process data from their environment in order to make decisions and solve problems, as well as to perform other tasks where human thought is required (Von Krogh, 2018). Consequently, AI according to Singh (2018), is increasingly being integrated into workflows to enhance task execution and productivity.

Automated Journalism
Schapals & Porlezza, (2020) claim that because automated journalism is still a relatively new issue, there has not been much academic research done on the topic. A few earlier research, though, have attempted to shed further light on the matter. These range from experimental trials where journalists were permitted to use the program directly (Thurman, Dörr & Kunert, 2017). According to Carlson (2015), automated journalism appears to have the most potential for disruption among the emerging data-centric approaches in journalism. The concept refers to algorithmic procedures that, beyond the initial programming decisions, transform data into narrative news texts with little or no human participation.

According to Graefe (2016), automated journalism provides endless possibilities for generating a huge number of stories in several languages in a remarkably short amount of time, enabling management personnel to increase profit margins while simultaneously reducing production costs. Consequently, there are a variety of current solutions available, ranging from straightforward code that pulls figures out of a database to fill in the blanks in pre-written template stories to more complex methods that analyze data to draw further conclusions and produce stories that are more gripping. These latter ones came out of the data-heavy field of sports reporting and rely on big data analytics and Natural Language Generation (NLG)

technologies. First, Automated Insights and Narrative Science, two of the leading US suppliers of NLG technology, created algorithms to automatically compose summaries of athletic events (Graefe, 2016). Schapals & Porlezza, (2020) however contend that, in an already "noisy" digital news environment, there is also a widespread concern that an increase in the number of articles available could cause information overload and cause a lack of orientation. Graefe, Haim, Haarmann, & Brosius, (2016, p. 12) corroborate that, "an increasing quantity of available news will further increase people's burden to find news that is most relevant to them."

Be that as it may, if technology does eventually result in the progressive removal of such rank-and-file employment, algorithms cannot replace the void left by human journalists. This is because algorithms are restricted in their capacity to monitor society and perform journalistic responsibilities, such as orientation and public opinion creation, because they are unable to analyze data or even establish causation (Graefe et al., 2016). Put differently, algorithms are able to describe what is occurring but not why (Haim & Graefe, 2017). Hence, it was suggested that journalists should concentrate on developing their abilities that would offer them a competitive edge over growing automation by improving their capacity in terms of in-depth analyses and investigative reports (Graefe, et al; 2016). Thus far, research has revealed how journalists themselves view automated journalism as a phenomena and its effects on the workplace. Based on "man versus machine frame", journalists belief that, automated journalism has the potency of taking up their roles in the newsroom thereby affecting their means of livelihood. Be that as it may, this shift helps to understand how journalists navigate through constantly evolving environment in order to assign meaning to their work (Deuze, 2005) as well as understand "how these technologies reproduce, embody, or alter norms of professional ideology" (Young & Hermida, 2015, p. 384).

Drone Journalism

Drone journalism, a field of media innovation, is all about redefining how news is captured and conveyed. It involves the use of Unmanned Aerial Vehicles (UAVs), popularly known as drones, to bring fresh perspectives to journalism. According to Ntalakas, Dimoulas, Kalliris, & Veglis, (2017), Matt Waite, a leading authority in this field, states that drones expand the horizons of journalism by offering a versatile and cost-effective means to access and document news events and phenomena from the air. This practice, often referred to as "drone reporting," integrates UAVs equipped with cameras and other sensors into the realm of news reporting and storytelling. Interestingly, drones, equipped with cameras and sensors, grant journalists access to a unique bird's-eye view, allowing them to document a wide array of news events, from natural disasters to human interest stories. This visual and auditory data can be used to provide a fresh perspectives on stories.

Furthermore, drone journalism is essentially a visual storyteller's dream come true. It involves narrating stories through aerial visuals captured by drones. These UAVs allow journalists to provide their audiences with immersive, engaging visuals that go beyond traditional reporting methods, making it an exciting tool in the modern journalist's toolkit. At its core, drone journalism values transparency and accountability. Journalists actively share information about the drones they use, the methods they employ, and any ethical considerations they take into account. This transparency is essential to ensuring a clear understanding of how the story was captured and presented to the public, as noted by experts in the field (Holton, Lawson, & Love, 2015). Ultimately, drone journalism empowers the field of journalism in numerous ways. Beyond visual appeal, it offers the public a deeper understanding of complex issues and events, enabling informed decisions and potentially driving change. By providing a new perspective and enabling access to hard-to-reach locations, drone journalism gives wings to storytelling, as suggested by Waite's work and other experts in the field (Holton, Lawson, & Love, 2015).

Methodology

This research study adopts the integrative literature review method in order to meticulously explore the subject matter under investigation. According to Christmals & Gross (2017, p.7), "an

integrative literature review method is a non-experimental method in which researchers objectively critique, summarize and make conclusions about a subject matter through systematic search, categorization, and thematic analysis of past qualitative and quantitative research studies on the subject matter under investigation". From the foregoing, it is obvious that the above method has the potency to enable the researchers to objectively critique, summarize and make conclusions from data obtained from the literature on AI, automated and drone journalism in Nigeria. However, because of the subjective nature of this method, the findings of this study cannot be generalised to a wider population.

Prospects and Challenges of Drones and AI in the Nigerian Newsrooms
The adoption of drones and AI in Nigerian journalism is a subject matter of growing concern. In addition to becoming the newest international test of press freedom, camera drones have made it feasible to record videos in hazardous or otherwise unreachable locations, deliver information and images instantly and with exceptional dependability, and create the illusion of "eyewitness" effects (Ishaku, 2023). Actually, the current surge in drone journalism can be attributed to the growing number of journalists who have died or suffered injuries while covering conflicts and other hazardous areas. For example, the International Federation of Journalists (IFJ) reports that throughout the past 20 years, over 2,000 journalists and media workers have passed away while carrying out their duties. In 2012, violent events claimed the lives of 121 media professionals across all specialties; among them were 33 foreign and Syrian journalists who perished while covering the Syrian civil war, 10 persons in Pakistan, and 18 in Somalia (Lauk, Uskali, Kuutti, & Hirvinen, 2016).

Drone journalism is clearly significant in Nigerian media, just like it is in other industrialized nations, according to statistical data and a report by the International Federation of Journalists (IFJ) (Lauk, Uskali, Kuutti, & Hirvinen, 2016). Therefore, it goes without saying that Nigeria is the nation most likely to take advantage of the trends and possibilities presented by automated and/or drone journalism. It would be possible for reporters to obtain images with some assurances regarding their personal safety without having to risk being drawn into unanticipated circumstances such as the ongoing insecurity issues in Nigeria or the Lekki Tollgate killings during the #ENDSARS protest in 2020 (Ishaku, 2023). In a similar vein, Nigeria is experiencing an insecurity issue due to the Boko Haram insurgency, abduction, banditry, conflicts between herders and farmers, etc., which further emphasizes the need of drone journalism in the nation. A camera drone would have successfully recorded the Nigerian Army's intermittent gunfire at the peaceful demonstrators at the Lekki Tollgate in Lagos State, Nigeria, on October 20, 2020. Amnesty International reports that the gunfire claimed the lives of at least 12 protestors. But if a camera drone had been used, the precise number of deaths at that time would have been known (Ishaku, 2023).

Consequently, use of drones in Nigerian media landscape will contribute to the development of new avenues for investigative reporting, provide an eyewitness effect for reports, give real-time information and images, ensure the safety and protection of journalists, and enable the seamless coverage of hazardous and conflict zones. However, it is often said that Nigeria may take at least eleven years to catch up with the global advancements in drones and AI integration, as highlighted by experts (Olanrewaju, 2018; Ndiomewese, 2017). This lag in AI adoption can be attributed to various pressing challenges and barriers inherent in the Nigerian context. According to Nwanyanwu & Nwanyanwu (2021), one of the most fundamental challenges faced by newsrooms in Nigeria is the erratic supply of electricity. Consistent power supply is critical for effectively powering of the AI applications that are becoming increasingly essential in modern journalism. AI relies heavily on computational processes, and frequent power outages disrupt the seamless operation of AI tools, making them unreliable in a newsroom setting.

Furthermore, there is a dearth of adequate infrastructure to support the integration of AI into newsrooms. AI systems require substantial computing power, storage, and network capabilities. Without the necessary infrastructure, implementing AI tools becomes a daunting task. The lack of investment in these critical areas hinders the progress of AI adoption. (Nnamdi,

& Nwanyanwu, 2021) Similarly, financial constraints are another significant roadblock to the incorporation of AI in Nigerian newsrooms. Purchasing and maintaining AI equipment, including hardware and software, can be expensive. For many media organizations in Nigeria, allocating the required funds for such investments is a significant challenge, especially given the already strained financial conditions they often operate under (Olanrewaju, 2018).

Cultural and socio-economic factors also play a substantial role in inhibiting the adoption of AI in newsrooms. These factors can encompass resistance to change, traditional work practices, and the perception that AI might replace human jobs. This resistance to change can further slowdown the integration of AI tools into the journalistic process (Nnamdi, & Nwanyanwu, 2021).

The cost of internet connection poses yet another obstacle. AI often requires a high-speed and stable internet connection for data retrieval, analysis, and sharing (Ndiomewese, 2017). In Nigeria, where internet infrastructure is still developing and access can be costly, this poses a significant challenge. Moreover, there is a shortage of skilled individuals who can effectively handle AI tools. Also, the training of AI handlers is an expensive and time-consuming process, and it can be challenging to find professionals with the necessary expertise in AI and journalism.

Consequently, Nigeria, like many other countries, has been slow in adopting technological innovations, as evidenced by its prolonged struggle to successfully implement a digital switch-over system. This inertia in adopting technological advancements contributes to the lag in AI adoption in the country (Olanrewaju, 2018). However, it is crucial to understand that AI is here to stay, and investment in the introduction, training, and retraining of editors and reporters is imperative. As AI tools find their way into newsrooms, journalists must equip themselves with the knowledge and skills needed to harness these new resources for storytelling. This involves not only understanding the ethical implications but also ensuring efficient use. One significant step in this direction is the development and promotion of shared guidelines among journalists and technologists, focusing on the ethical use of data and the public disclosure of AI methodology. AI should be viewed as an opportunity to apply editorial values and standards to the early stages of new journalistic technology. It's important to acknowledge that AI tools, despite their automation, are created and programmed by humans (Ndiomewese, 2017). This human element introduces the potential for hidden biases in AI algorithms. These biases, often unconscious, can skew the information or analysis provided by AI systems. Therefore, there is a pressing need for concerted and continued efforts to fight hidden bias in AI and journalists in particular, have a crucial role to play in this regard.

Be that as it may, journalists should strive to be transparent in their stories, explaining in familiar and non-technical terms how AI was used to aid in their reporting or production. This not only builds trust with the audience but also provides a window into the journalistic process, showcasing the responsible and ethical use of AI tools (Nnamdi, & Nwanyanwu, 2021). As with any intricate system, errors can arise, and the ramifications of these errors within AI can be grave. This underscores the vital importance of maintaining human oversight and thoroughly scrutinizing the work of AI systems. Robots, unfortunately, cannot be held accountable for any blunder or ethical breach as emphasized by various scholars who have delineated two distinct categories of challenges: professional and ethical challenges. Below are of the professional and ethical challenges of AI in journalism practice:

1. *Undermining creativity*: Creativity serves as the cornerstone of journalism, embodying human thought processes, encompassing imaginative writing, interpretation, and more. In this vein, Latar (2018, p. 24) observes that, "AI algorithms cannot think beyond the preconceived framework set by their human algorithm designers; they lack the capacity to venture into novel and unforeseen conceptual realms." For example, AI algorithms remain unable to create the ambiance necessary to evoke readers' emotional responses, like laughter (Aljazairi, 2016), or to adeptly respond to scenes of accidents, conduct street interviews, or engage in investigative work. Consequently, analytical skills and creativity remain the principal strengths of journalists when contrasted with algorithms (Van Dalen, 2012).

2. *Lack of monitoring*: Journalism stands as a pivotal force upholding the societal fabric and exerting a significant influence on the society. Thus, preserving journalism as a public good in the digital era is of utmost importance. As Latar (2018) contends, AI algorithms cannot be expected to comprehend and monitor unforeseen and alarming developments; they lack the human capacity to establish connections based on previously unexperienced phenomena.

3. *Bias*: The most glaring challenge inherent in automated journalism pertains to the potential for biases to infiltrate AI systems, encompassing gender bias (Larson, 2017) and racial bias. In this context, AI algorithms remain susceptible to human influence, thereby reflecting the values of their creators. Osoba, Welser & Welser (2017, p. 25) assert that, "the risks of errors and bias in algorithms and AI will persist as long as artificial agents play an increasingly prominent role in our lives, devoid of regulation." Notably, in 2015, Google issued an apology after its Photos app algorithms erroneously tagged two individuals of African descent as gorillas, likely due to inadequate representation in the training dataset. Moreover, a 2016 investigation by ProPublica revealed that the "COMPAS" AI-driven software," designed to assess criminal risk in the US, exhibited bias against individuals of color, particularly Black offenders, despite more severe criminal histories among White offenders (Angwin, Larson, Mattu & Kirchner, 2022).

4. *Transparency*: Transparency, fundamentally, entails openness regarding data collection and usage, along with minimizing unnecessary data gathering. Notably, transparency is indispensable in cultivating reader trust, necessitating the sharing of underlying data for interactive engagement. Leppänen, Munezero, Granroth-Wilding, & Toivonen, (2017) define transparency as trust in the system that transforms data into an article. Hence, publishers should distinctly delineate between content authored by human journalists and that composed by intelligent algorithms (Ombelet, Kuczerawy, & Valcke, 2016).

5. *Fact-checking*: In this regard, readers ought to possess insights into the selection of raw data, the rationale behind data choices, verification processes, potential processing of reader personal data, and the mechanisms ensuring source credibility and objectivity (Clerwall, 2017).

6. *Fairness*: Fairness implies the avoidance of detrimental biases and stereotypes impacting people's lives. Consequently, AI presents a fundamental challenge for journalism, especially when data serves as a means of invading privacy, orchestrating social manipulation, and perpetuating oppression. In October 2018, the International Conference of Data Protection and Privacy Commissioners (ICDPPC) released the Declaration on Ethics and Protection in Artificial Intelligence, affirming the necessity to mitigate unlawful biases and discriminations resulting from AI data usage.

7. *Data utilization*: Presently, ethical dilemmas surround data utilization concerning AI in automated journalism due to the lack of tailored laws and regulations. Siau & Wang, (2018) contend that, data security and privacy pose substantial risks not only for users but also for developers and governments. Addressing this concern, Monti, (2019) emphasizes the ethical obligation to employ accurate, objective, and precise data.

8. *Data quality*: An overarching concern stemming from the current implementation of AI in newsrooms centers on the quality of utilized data, potentially leading to misleading outcomes, encompassing data sources and accuracy. In this vein, the European Parliament (EP) endorsed a report on Robotics, outlining an ethical code of conduct that underscores key principles, including safeguarding privacy and responsible data use.

Emerging Issues on Automated and Drone Journalism in Nigeria
Discussions on automated and drone journalism can be anchored on two (2) important frames - optimistic "machine liberates man" and pessimistic "man versus machine" frames (Graefe, 2016; Ejiga, 2019; Onyebuchi, Matthew, Kazaure, Okafor, Okey, Okochi & Matthew, 2022). According to optimistic "machine liberates man" frame, the ability to automate routine tasks may offer opportunities to improve journalistic quality. The argument is that, automation frees up journalists

from routine tasks and allows them to spend more time on providing in-depth analysis, commentary and investigative work which are in turn skills that will become more important in the field of journalism. Associated Press (AP), New York Times and Los Angeles Times for instance are some of the media organisations around the globe that have adopted the use of automated news. Similarly, with Unmanned Aerial Vehicles (UAV) or Unmanned Aircraft Systems (UAS) commonly known as camera drones, journalists can access and report places that are dangerous and prone to crises. For example, drones can be deployed to areas of environmental hazards such as tsunamis, hurricanes, earthquakes etc. as well as crises ridden areas which may be difficult for journalists to access thereby ensuring their wellbeing and safety. Consequently, when compared to purchasing or hiring a helicopter to gather news from aerial viewpoints, the technology gives the news media sector a favourable cost advantage in addition to the safety cover it provides journalists covering unrest and perilous events in various regions across the world (Ejiga, 2019).

Aside from having eye-witnessing effect (Grafe, 2016), drones have also given investigative reporting a new dimension as information are being relayed with immediacy, fidelity and superior reliability. By using the disruptive technology paradigm, the digital revolution had disrupted journalistic information management, intelligence, and news gathering; robotic systems, digital platforms, and Internet of Things (IoT) devices are bringing new methods of journalism's creation, dissemination, and consumption to the mass media, changing it into a fresh, omnipresent distribution system (Susskind & Susskind, 2015). Through the use of IoT sensors that remotely operate devices and capture data through cloud technology infrastructures, twenty first century journalists may now construct data sets and produce insights more rapidly and easily than ever before (Onyebuchi, Matthew, Kazaure, Okafor, Okey, Okochi & Matthew, 2022). Journalists, for instance, may monitor the noises and vibrations from any public event such as political rallies and concerts, and use IoT drone monitoring to identify the speeches or quotes that had the most impact on the audience (Nwanakwaugwu, Matthew, Okey, Kazaure, & Nwamouh, 2023).

On the other hand, automated journalism competes with human journalism, according to the "machine versus man" framing. In other words, automated journalism is promoted as a means of "cost-cutting and software-replacing" journalists who just handle regular and routine media tasks. The natural outcome is that journalists who used to cover such information would need to either offer a better product or focus on activities and abilities where humans beat algorithms. According to Ejiga (2019), drone integration into newsroom practices in the Nigerian news media sector has been gradual, despite the possibilities, proficiencies, and potentials of drones for journalistic operations globally. Predictable safety concerns and security threats are to blame for Nigeria's poor adoption and development of technology. The slow adoption and development of technology in Nigeria has been attributed to predictable safety concerns and security threats; which also contributed to the ban on the use of aerial devices without authorization on May 8, 2016, the emergence of strict regulations, and the requirement that one must satisfy onerous requirements before being granted permission to use a civil drone in Nigerian airspace (Kazeem, 2016).

Like every new technology, the use of drones has also raised concerns both inside and beyond the news media sector. Most academic studies link safety, privacy, ethical, and legal restraints to the worries surrounding drone usage in journalism, and especially for newsgathering (Okocha, Agaku & Ola-Akuma, 2021; Ejiga, 2015; Duncan & Culver, 2020; Lauk, Uskali, Kuutti, & Hirvinen, 2016; Carroll, 2015; McKelvey, Diver & Curran, 2015). It is important to note however that, the type of government in power significantly determines how freely journalists should be able to utilize drones in the course of their work. Liberal democracies, as opposed to developing democracies or authoritarian systems of governance, tend to have less regulation or law on drones. For instance, it is more common to utilize drones for news gathering and reporting, particularly in Nordic nations like Norway, Finland, Sweden, Denmark, the Netherlands, etc., which are frequently scored high in Reporters without Borders' Press Freedom Index. Unexpectedly, some industrialized nations, like the United States, the United Arab Emirates,

Thailand, Cambodia, etc. as well as some developing countries such as Nigeria, Kenya and South Africa have over the years raised concerns over the use of drones in news gathering especially as it relates to issue bothering on people's safety and privacy (Ishaku, 2023).

Conclusion

The integration of AI and drones in Nigerian journalism has multifaceted challenges marked by technological, infrastructural, financial, cultural, and ethical considerations. As Nigeria strives to catch up with global advancements in AI, it is vital for stakeholders, including journalists, technologists, and policymakers to collaborate and address these challenges while upholding the ethical standards that underpin quality and objective journalism. The future of Nigerian journalism will depend on how effectively these hurdles are navigated and how AI is harnessed to enhance the quality and reach of news reporting. Finally, since the only thing that is constant in life is change, and since the development in ICT and the internet are not bad in themselves but on how individuals use these technological advancements, it has therefore become imperative on journalists to strive to protect their professional integrity at all cost while adopting the "man-machine marriage" where journalists, AI, news automation and robotics will integrate and work very closely thereby forming relationship in such a way that, algorithms will analyses data, find interesting stories and provide a first draft; which journalists will then enrich with more flesh and in-depth analyses by interviewing key people.

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