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New Technologies and Journalistic Practices at the Time of COVID-19 in Africa

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Abstract

This article aimed to show how new information technologies have influenced and innovated journalism practice during COVID-19 in terms of collecting, processing and disseminating news and information. The study was literature based. A literature-based study primarily relies on existing published literature rather than collecting primary data through experiments or surveys. The findings reveal that the management of new information technologies has led to the rise of infodemia, a phenomenon of misinformation that disrupts the informational ecosystem due to the prevalence of erroneous or misleading news. As a result, the media's role as a watchdog is compromised. Infodemia has become the most prominent dimension of this challenge, with traditional media struggling to maintain their status as reliable source of information amidst the influence of amateur journalism on social media. The traditional media plays a crucial role in covering COVID-19 but faces challenges in producing and disseminating accurate information due to the specialization of journalism and the shortage of specialists. The emergence of new categories of journalistic practices, including terrorist journalism, diversionary journalism, ideological journalism, and journalism as a business, poses a major threat to the credibility, trust, and timeliness of real news. New technologies, particularly social media, have filled the void left by traditional media and facilitated the spread of fake news and rumors. Despite the challenges, information and communication technologies have brought innovation to journalistic practices in raising awareness against COVID-19 in Africa. The study provides several recommendations based on its findings. Traditional media outlets in Africa are recommended to prioritize hiring and training specialist journalists to cover health-related topics, establishing measures to combat the spread of fake news and rumors related to COVID-19, continuing to adapt to the use of new technologies in disseminating information, upholding ethical standards in reporting, and prioritizing public health

awareness and prevention. Lastly, the study suggests the need for further research to better understand the impact of new communication technologies on journalistic practices in Africa in the context of COVID-19.

Keywords

New Technologies, Traditional Media, Journalism, COVID 19 Pandemic, Infodemia

1. Introduction

The COVID-19 pandemic has had a significant impact on the world, affecting every aspect of life, including the media landscape (Matsilele, Tshuma, & Msimanga, 2022). The media has played an essential role in providing information to the public on the pandemic, particularly in traditional media. However, the challenges of producing and disseminating accurate information in a rapidly evolving situation cannot be ignored. The media's construction of the pandemic is influenced by the social space in which it occurs, and analyzing media practices requires taking into account the specificities of each entity (Matsilele, Tshuma, & Msimanga, 2022). In Africa, journalism is specialized, with scientific journalism remaining a poor relation of the profession, even in traditional media. While print, radio, and television newsrooms have organized to produce health information on COVID-19, generalist journalists outnumber specialists, posing further challenges to accurate reporting (Santos & Mare, 2021).

The professional trajectories of journalists covering COVID-19 should be taken into consideration, particularly in the era of new technologies, in the field of scientific journalism as an analytical category of the African field. Thus, the study examined the new technologies and journalistic practices at the time of COVID-19 in Africa. The study was literature based. A literature-based study is one that primarily relies on existing published literature rather than collecting primary data through experiments or surveys. In a literature-based study, the researcher collected and synthesized information from previous studies, books, articles, and other forms of published literature.

The COVID-19 pandemic has drastically reshaped the collection, processing, and dissemination of news and information, bringing technological determinism to the fore of journalism studies (Appelgren, 2023). In the collection of news, disruptions in Southern African media during the COVID-19 crisis highlighted a significant impact on traditional news-gathering practices (Chibuwe, Munoriyarwa, Motsaathebe, Chiumbu, & Lesitaokana, 2022). These disruptions opened new dialogues around the role of technology in societal changes, engaging debates on technological determinism, including its typologies, scope conditions, and mechanisms. Processing news during the pandemic era required a marked adaptation and reconfiguration of journalism practices. Newsrooms across Africa were forced to integrate technology into their workflows to re-

spond effectively to the crisis (Matsilele, Tshuma, & Msimanga, 2022). The necessity for media viability amidst the ongoing health crises became evident as journalists and newsrooms sought ways to stay relevant and operational (Dralega, 2022). This change in news processing reflects broader global dialogues on technological determinism and urban fragmentation, where the influence of technology on society's spatial and temporal dimensions can be observed.

Dissemination of news and information also witnessed transformation, especially concerning the role of Information and Communication Technology (ICT) in shaping public health awareness. Challenges were observed in public health awareness and prevention in countries like Cameroon, emphasizing the significance of ICT in today's information landscape. Concurrently, a transition from traditional learning spaces to virtual environments was observed, reflecting the dynamic relationship between technology, education, and information dissemination (Nyarko & Serwornoo, 2022). These phenomena align with more extensive discussions on organizing and reframing technological determinism, whereby technology's deterministic influence on society is both recognized and critiqued (De la Cruz Paragas & Lin, 2016).

The intersection of technology, journalism, and public health underscores the multifaceted and continually evolving relationship between these domains. Research focusing on digital technologies and changing journalism cultures in countries such as Zimbabwe (Ndlovu & Sibanda, 2022) along with studies on the use of information technology to manage the pandemic (Ye, Zhou, & Wu, 2020) provide a comprehensive view of this symbiotic relationship. This intersectionality also resonates with broader debates surrounding professional use of information on the Internet and the complex dilemmas of technological determinism (Dafoe, 2015), painting a vivid picture of the contemporary challenges and opportunities in collecting, processing, and disseminating news and information.

Thus, the study sought to examine the relationship between new technologies and journalistic practices at the time of COVID-19 in Africa. During this unprecedented period, the role of technology in journalism underwent significant transformations. As traditional news-gathering practices faced disruptions, there was an increasing dependence on digital tools and Information and Communication Technology (ICT). This shift not only changed the way news was collected but also how it was processed and disseminated, highlighting the challenges and potentials of ICT in public health awareness. By delving into these facets, the study aimed to contribute to a comprehensive understanding of how technological advancements were both challenging and innovating journalistic practices in the context of a global health crisis.

1.1. Problem Statement

The media, both traditional and new, has long served as an essential intermediary, providing interaction between individuals and fostering a media culture (Jacobs, 2016). However, during the COVID-19 pandemic, the management of

new information technologies led to the rise of infodemia, a phenomenon of misinformation (Larson, 2020) that disrupted the informational ecosystem due to the prevalence of fake news. In this context, information falls into two categories: potentially true and possibly false. Aoun & Aoun Barakat (2023) highlights the differences in communication management between traditional and social media during the pandemic. Social media pushed many to doubt the existence of COVID-19, while traditional media generally emphasized its reality. When the pandemic reached Africa in February 2020, it significantly disrupted traditional media's communication management, causing them to lose their watchdog role due to infodemia and disinformation (Mazari, 2022).Thus, the problem is that the convergence of traditional and new media during the COVID-19 pandemic has given rise to a complex and concerning informational landscape. The media, both traditional and new, though essential in fostering interaction and media culture, faced severe disruption with the onslaught of infodemia and the prevalence of fake news. While social media platforms were inclined to propagate doubts about the reality of COVID-19, traditional media was caught in a whirlpool of misinformation, losing its essential watchdog role. This bifurcated environment has not only undermined journalistic practices but also led to a critical crisis in information trust and credibility. As we continue to navigate a world increasingly reliant on digital information, the imperative to innovate journalistic practices and integrate new technologies in a manner that safeguards the truth becomes a pivotal challenge, bearing significant implications for policy formulation and societal trust. This raises important questions: do new technologies only undermine journalistic practices, or can they also innovate them? And how can journalism be improved in the age of new technologies to be more successful and reliable? The conducting of the study was regarded worthy for policy formulations

1.2. Objectives

The objectives included;
- To explore the challenges traditional media faced in managing communication during the COVID 19 health crisis in Africa, a crisis amplified through new technologies.
- To analyze the new journalisms born because of the influence of the uses of the new technologies in the media field.
- To propose innovative ways, through new technology, in journalism practices, in terms of collecting, processing and disseminating news and information in the wake of the COVID-19 pandemic, so that traditional media can remain the reference for accurate, truthful and reliable news.

2. Literature Review

2.1. Theoretical Framework

The study was founded on technological determinism theory. The theory was developed in 1921 by Thorstein Veblen (1921). Technological determinism is a

theory that suggests that technology plays a decisive role in shaping society, culture and human behavior. According to this theory, technological advancements drive social and cultural changes and people's values, beliefs and actions are largely determined by the technologies available to them (Dafoe, 2015). Technological determinism posits that technological innovations can have profound and irreversible effects on human life and societal structures. There are two main perspectives within technological determinism: hard determinism and soft determinism (Smith & Marx, 1994). Hard determinists believe that technology is the primary force driving societal change, and human actions and social structures are determined by technological advancements (Oliver, 2011). They argue that society is passively shaped by technology, and human agency has a limited role in shaping the outcome of technological innovation (Leonardi & Barley, 2008; Klinger & Svensson, 2015). Hard determinists often focus on the ways in which technology can lead to unforeseen consequences and how it can alter the course of human history (De la Cruz Paragas & Lin, 2016).

Soft determinists, on the other hand, acknowledge the influence of technology on society but emphasize the importance of human agency and social context in determining the outcomes of technological advancements (Zimmerman, 2019). They argue that technology is a tool that can be used and shaped by humans to achieve various ends, and its impact on society depends on the choices and actions of individuals and institutions. Soft determinists highlight the complex relationship between technology, society, and human behavior, recognizing that technology can both shape and be shaped by social forces (Appelgren, 2023). Critics of technological determinism argue that it oversimplifies the relationship between technology and society, neglecting the complex interplay of social, political, economic, and cultural factors that influence the development and adoption of technology (Burgess, 2005). They contend that focusing solely on technology's role in driving societal change ignores the importance of human agency and the power dynamics at play in shaping the technological landscape (Selwyn, 2015).

The theory was relevant to the current study. The relevance of technological determinism theory to the current study examining new technologies and journalistic practices at the time of COVID-19 in Africa can be discussed in terms of how technology has influenced the production, dissemination, and consumption of news during the pandemic. Technological determinism suggests that the adoption of new technologies, such as social media platforms, mobile applications, and livestreaming services, has significantly influenced how news is produced during the pandemic (Wyatt, 2008; Burnett & Marshall, 2004). Journalists and news organizations have had to adapt their practices and workflows to accommodate these technologies, which enabled remote work, facilitated communication and collaboration, and allowed for real-time reporting of the evolving situation.

The theory of technological determinism also highlights how new technologies have impacted the distribution of news during the COVID-19 pandemic.

Digital platforms and social media have played a crucial role in disseminating information and updates about the virus, enabling journalists and news organizations to reach wider audiences more quickly and efficiently than traditional media channels. This has led to a shift in the traditional gate keeping roles of news organizations, as information can now be accessed and shared through various digital platforms. Technological determinism theory also posits that the ways in which people consume news have been shaped by the availability of new technologies. During the COVID-19 pandemic, the reliance on digital platforms and social media for news consumption has increased, as people have sought real-time updates and information from diverse sources. This has implications for journalistic practices, as journalists must adapt to the changing preferences and expectations of their audiences.

Applying technological determinism to the current study highlights the importance of considering the digital divide in Africa, which refers to the gap between those with access to information and communication technologies (ICTs) and those without. The digital divide can impact the ability of journalists and news organizations to effectively use new technologies during the pandemic, potentially exacerbating existing inequalities in information access and journalistic representation. The rise of new technologies has led to the growth of citizen journalism, where individuals create, share, and consume news content without the need for traditional news organizations. During the COVID-19 pandemic, citizen journalism played a vital role in providing real-time updates and grassroots perspectives on the situation in Africa. Technological determinism helps explain the emergence of citizen journalism as a powerful force during the pandemic, and how it has influenced journalistic practices in the region. In conclusion, the relevance of technological determinism theory to the study of new technologies and journalistic practices at the time of COVID-19 in Africa is apparent in various aspects of journalism, such as news production, distribution, consumption, the digital divide, and the emergence of citizen journalism.

2.2. Empirical Review

The study by Müller, Mueller, Navarini and Brandt (2020) found that the COVID-19 pandemic led to a significant increase in publication productivity, with many new COVID-19-related articles being published daily. The study used a cross-sectional, observational, retrospective design to compare and correlate 17 epidemiologic, health care system-related, and health-economic factors from medical databases and intergovernmental organizations potentially influencing the COVID-19 and non-COVID-19 publication productivity between January 1 and April 30, 2020, among the 30 countries most severely affected by the pandemic. The study found that COVID-19 and non-COVID-19 publication rates correlated strongly with access to and quality of health care, COVID-19 cases per capita, GDP per capita, health spending per capita, and the pre-COVID-19 Hirsch-Index. The study also found that countries with a stable scientific infrastructure appear to maintain non-COVID-19 publication productivity

nearly at the pre-year level and at the same time use their resilience to produce COVID-19 publications at high rates.

Ye, Zhou and Wu (2020) aimed to develop a technical framework for health informatics response to the COVID-19 epidemic in China. The study collected health information technology-related information to understand the actions taken by the health informatics community during the COVID-19 outbreak and developed a health information technology framework for epidemic response. The study found that health information technologies, including mobile and web-based services, big data analyses, cloud computing, the Internet of Things, artificial intelligence, 5G telemedicine, and clinical information systems, played a pivotal role in responding to the COVID-19 epidemic. The study highlights specific health information technology practices used in China to manage the outbreak, discusses the critical issues to consider when using health information technology, and emphasizes the importance of health informatics in epidemic response. The methodology used in this study was a literature review of health information technology-related measures and methods used during the COVID-19 epidemic in China.

Matsilele, Tshuma and Msimanga (2022) did a qualitative cross-national comparative study on how media in Zimbabwe, Botswana, and South Africa responded to the COVID-19 pandemic. The study used semi-structured interviews with journalists and editors to investigate the impact of the pandemic on news operations, newsroom cultures, news gathering, and news dissemination practices. The study noted that the pandemic affected journalists and editors, resulting in changes in some journalistic practices. The findings revealed that journalists suffered traumatic experiences, such as job losses, COVID-19-related illness, and fatalities. The study also found perennial challenges with media freedoms in the region, with South Africa being an outlier. Lastly, newsrooms had to maximize digital affordances for news gathering and dissemination as old revenue streams dried up, resulting in print media scaling back its operations in response to containing the spread of the virus.

The findings of Abramowitz et al., 2017 and Smallman, 2015 reveal that the management of new information technologies has led to the rise of infodemia, a phenomenon of misinformation that disrupts the informational ecosystem due to the prevalence of erroneous or misleading news. As a result, the media's role as a watchdog is compromised. Infodemia has become the most prominent dimension of this challenge (Mazari, 2022), with traditional media struggling to maintain their status as a reliable source of information amidst the influence of amateur journalism on social media.

Ndlovu and Sibanda (2022) explored the adoption and appropriation of digital technologies by Zimbabwean journalists covering the COVID-19 pandemic. The methodology used was a qualitative research design that drew upon first-hand accounts of 21 journalists. Despite challenges such as lack of internet access and protective gear, Zimbabwean journalists increasingly relied on interactive digital tools such as WhatsApp and Twitter to generate story ideas, con-

duct diary meetings, and for virtual sourcing. The study suggests that although factors such as lack of Internet access and prohibitive costs are constraining the adoption of NICTs in most African countries, journalists are creatively appropriating these digital tools in their everyday professional work.

Santos and Mare (2021) examined how newsrooms in Namibia, South Africa and Zimbabwe responded to the challenges of COVID-19 pandemic by reconfiguring their news work. The study used technology-mediated interviews to investigate the impact of COVID-19 on news work in terms of newsgathering, processing, distribution, and funding of media organizations. The study found that COVID-19 severely affected news work, resulting in news sources becoming unreachable, marginalized groups and communities being excluded, government becoming unaccountable, and advertising revenue being reduced. To address these challenges, media organizations accelerated the adoption of digital media technologies, launched new content distribution channels, implemented paywalls and subscriptions, and monetized virtual events.

Msimanga, Tshuma and Matsilele (2022) investigated how selected Southern African journalism schools reconfigured their teaching and learning methods during the COVID-19 pandemic. The study draws from two South African universities and two Zimbabwean universities, using semi-structured interviews with students and journalism educators to understand the strategies adopted in the deployment of lectures. The study found that teaching practical courses was challenging due to equipment being housed on campus, and students in Zimbabwe were not given data for online learning. However, lecturers received training on conducting online lessons and restructured their syllabus to meet the demands of the new normal.

Dralega (2022) explored the impact of COVID-19 on media viability in Southern Africa. The study used political economy predicates to understand the influence and balance between politics and economics of media systems in the region. The research draws from interviews with leading industry experts from eight countries, examining the impact and paradoxes of the pandemic on the media industry. The study highlights media-house size and ownership, trustworthiness, and the ability to switch fully to digital operations as key to survival. The study also raises concerns over the threats to press freedom, journalists' welfare, and the relegation of the media's public interest role.

Chibuwe, Munoriyarwa, Motsaathebe, Chiumbu and Lesitaokana (2022) examined how the COVID-19 pandemic has disrupted news production practices and opened up opportunities for mainstream media in Botswana, South Africa, and Zimbabwe. The researchers used in-depth interviews with journalists and drew on Schudson's sociological view of news production and Bourdieu's field theory. They found that the pandemic disrupted news sourcing routines and compromised the quality of news production, but it also led to improved media-state relations and increased trust in mainstream media. The study suggests that the pandemic provided an opportunity for mainstream media to reset their existential purpose and revitalize their relations and declining trust in them. The

researchers conclude that COVID-19 may have breathed new life into a declining journalism industry.

Nyarko and Serwornoo (2022) evaluated the challenges and opportunities of COVID-19 driven virtual learning in undergraduate media programs at Ghanaian public universities using a mixed-method approach and technology acceptance model/diffusion of innovation theory. A survey of 270 participants (250 students and 20 lecturers) found weak commitment from both lecturers and students towards virtual instruction, with little consultation or orientation provided for the learning platforms used. However, some participants noted the importance of virtual learning in media studies going forward, and the study proposes a blended learning approach that merges physical and virtual instruction in a framework termed CHALLOPP workflow.

Tshabangu and Salawu (2022) used a conceptual framework of digital journalism to analyze the institutional, contextual, and human agency factors that affect technology innovation and adoption of digital journalism practices by indigenous African-language newspapers. The study focused on uMthunywa, Zimbabwe, a legacy newspaper that positions itself as a digital-only news outlet due to political economy challenges exacerbated by the COVID-19 crisis. Through interviews and virtual ethnography, the paper finds that technological innovation at uMthunywa is very limited, with a selective adoption of new digital journalism practices that contribute to the newspaper's survival. The study contributes to debates about journalism innovation and the practice of digital journalism in Africa by indigenous-language newspapers.

Papadopoulou and Maniou (2021) argue that during the COVID-19 pandemic, many governments around the world used the crisis to push through restrictions that hamper critical journalism. The study uses press freedom monitoring tools from various credible global organizations to show that the pandemic crisis exacerbates existing obstacles to press freedom and adds new threats, not only in authoritarian states but also in western democracies. The threats documented specifically aim to silence digital journalism, which has gained significant momentum as a result of the pandemic crisis. The study offers an enriched conceptual approach to the types of threats that press freedom faces in the context of global crisis situations.

2.3. Summary of the Literature Review

The study is based on the theory of technological determinism, which suggests that technology has a decisive role in shaping society, culture, and human behavior. There are two main perspectives within this theory: hard determinism and soft determinism. Hard determinists view technology as the primary force driving societal change, while soft determinists emphasize human agency and social context in determining the outcomes of technological advancements. Critics argue that this theory oversimplifies the relationship between technology and society. The relevance of technological determinism to the current study of new technologies and journalistic practices during COVID-19 in Africa is discussed,

touching on areas such as news production, distribution, consumption, the digital divide, and citizen journalism. The theory highlights how digital platforms and social media played a crucial role in disseminating information during the pandemic, the rise of citizen journalism, and the impact of the digital divide in Africa.

The empirical review provides a comprehensive overview of various studies conducted on different aspects related to new technologies, journalism, and COVID-19. It includes research on increased publication productivity during the pandemic, the use of health information technologies in response to COVID-19, the adoption of digital tools by journalists, the challenges and opportunities of virtual learning in media studies, and the effects of COVID-19 on media viability and news production practices. Studies explored aspects such as infodemia, media's role as a watchdog, digital journalism by indigenous African-language newspapers, and the threats to press freedom during the pandemic. Collectively, these studies provide valuable insights into how the pandemic has affected journalism, media industry, technological adoption, and the ways in which news organizations have responded to the unprecedented challenges and opportunities posed by COVID-19.

3. Methodology

The study was literature based. A literature-based study is one that primarily relies on existing published literature rather than collecting primary data through experiments or surveys. In a literature-based study, the researcher collected and synthesized information from previous studies, books, articles, and other forms of published literature. This approach can be useful when primary data collection is not feasible or practical, and it can provide a cost-effective way to conduct research. A literature-based study can be a valuable and informative approach to research, but researchers must carefully consider the strengths and limitations of this approach and ensure that the sources used are reputable and relevant.

Thus, since the given methodology is literature-based, the data sources are derived from previously published works, including academic studies, books, articles and other scholarly materials. In this approach, the specific design of surveys or experiments from primary research is not directly conducted by the researcher; rather, the insights and findings from these original studies are synthesized and analyzed. This requires a careful selection of reputable sources that are relevant to the research question. It is essential that the researchers ascertain the validity and reliability of these sources, and understand the methodologies employed in the original studies, including the design of any surveys. By critically evaluating these underlying methods, the literature-based researcher can acknowledge potential biases, limitations, or inconsistencies in the data. This secondary analysis does not allow for direct control or customization of the research design, so a deep understanding of the original data sources is crucial for an accurate and robust interpretation of the findings.

4. Findings, Analysis and Interpretation

Based on our three objectives, we have formulated our findings under three themes, of which we present a summary:

1) Journalistic practices in the traditional media in Africa and the COVID-19.

2) New Journalisms Emerging from the Influence of Technology in the Media.

3) Innovations in journalistic practices by new communication technologies in the time of COVID 19.

4.1. Journalistic Practices in the Traditional Media in Africa and the COVID-19

These results highlight the important role of traditional media in covering COVID-19 and the challenges that come with producing and disseminating accurate information in a rapidly evolving situation. The media construction of the pandemic depends on the social space in which it occurs, and analyzing media practices requires taking into account the specificities of each entity. In Africa, the treatment of COVID-19-related information poses a challenge due to the specialization of journalism, which remains a poor relation of the profession even in the traditional media. Print, radio, and television newsrooms are organizing to produce health information on COVID-19, but generalist journalists outnumber specialists, posing further challenges to accurate reporting. The professional trajectories of journalists covering COVID-19 should be taken into consideration, especially in the era of new technologies, in the field of scientific journalism as an analytical category of the African field.

4.2. New Journalisms Emerging from the Influence of Technology in the Media

The study found there is the emergence of new categories of journalistic practice in Africa, namely, terrorist journalism, diversionary journalism, ideological journalism and journalism as a business. Terrorist journalism refers to the unethical relaying of information that causes terror, fear, and anxiety. This type of journalism may push recipients to reject even useful information. Diversionary journalism refers to the fabrication of fake news and rumors. It poses a major threat to the credibility, trust, and timeliness of real news. Ideological journalism is concerned with providing information that promotes politics and politicians. In contrast, journalism as a business refers to the marketing of COVID-19 as a product to sell, an expensive product consumed worldwide, with new technologies showing COVID-19 as the most dangerous disease.

The terrorist journalism, facilitated by social media, exacerbates anxiety, leading to scapegoating and the fabrication of fake news and rumors, posing a major threat to the credibility, trust, and timeliness of real news. Diversionary journalism, on the other hand, creates a collective psychosis that leads to scapegoating and the fabrication of fake news and rumors. Ideological journalism tends to provide information that promotes politics and politicians, and journalism as a business markets COVID-19 as a product to sell. In this regard, social

media are the most taken hostage, creating journalism that is encased in selfish ideologies.

4.3. Innovations in Journalistic Practices by New Communication Technologies in the Time of COVID-19

The study highlighted the role of new technologies, particularly social media, in filling the void left by traditional media in reaching all segments of the population with COVID-19 related information. The introduction of new communication technologies in the field of health has made it one of the most computerized fields and most present on the internet. The deployment of information and communication technologies (ICTs) has caused a shift from medical information to health information, as pointed out by Romeyer (2008). TV stations are also using information technology to spot fake news, although this practice still has limitations. Aoun & Aoun Barakat (2023) highlights the challenges of new technologies in public health awareness and prevention in Africa, which range from citizen adherence to public action to the need for greater proximity of organizational actors to citizens. Overall, information and communication technologies have brought innovation to journalistic practices in the traditional media in raising awareness against COVID-19 in Africa.

4.4. Summary

The three sections, 4.1, 4.2, and 4.3, offer a rich and interrelated insight into the complexity of journalistic practices within Africa during the COVID-19 pandemic. Section 4.1 sets the stage by examining journalistic practices within traditional media in Africa during the COVID-19 pandemic. It brings attention to the role of media in conveying accurate information and the inherent challenges in a rapidly changing landscape. A specific emphasis on the African context highlights the struggle between specialized and generalist journalists, revealing a challenging environment where the lack of specialist journalists poses further difficulties in accurate reporting. This section anchors the subsequent analysis by establishing the media's central role and the challenges faced, particularly in the complex field of scientific journalism.

Section 4.2 builds on the foundation laid by 4.1, exploring the emergence of new forms of journalism influenced by technological advancement. This is where the dynamic between traditional and new media begins to unfold, depicting a dichotomy between innovation and ethical compromise. The introduction of categories like terrorist journalism, diversionary journalism, ideological journalism, and journalism as a business adds complexity to the landscape. The struggle for accuracy and ethical integrity, initially brought up in 4.1, is intensified here as technology facilitates both creativity and misinformation. This section is pivotal as it bridges the traditional practices outlined in 4.1 with the innovative technologies explored in 4.3, showing a continuum of influence and change.

Finally, section 4.3 synthesizes the previous themes by concentrating on the

innovations brought about by new communication technologies in the time of COVID-19. It represents the culmination of the evolution from traditional journalistic practices to the incorporation of technological advancements. By highlighting how information and communication technologies have not only facilitated a shift from medical information to health information but have also enabled traditional media to reach broader audiences, this section provides a counterpoint to the challenges and ethical dilemmas raised in 4.2. While acknowledging limitations and challenges, it offers an optimistic view of technology's role in enhancing media practices.

The internal connection among these three sections can be seen as a progressive exploration of journalistic practices during a critical time. Starting with traditional journalistic challenges (4.1), moving into the complexities introduced by new technologies (4.2), and culminating with an examination of how those technologies can innovate and enhance traditional practices (4.3), they create a comprehensive narrative. The overarching theme is the transformative and multifaceted role of technology within journalism, both as a catalyst for new forms of practice and a tool for enhancing the reach and credibility of traditional media. In essence, the relationship among these sections paints a rich, interconnected picture of a journalistic landscape in transition. It captures the push and pull between tradition and innovation, ethics and opportunity, challenge and adaptation. It underscores the need for a considered and responsible approach to leveraging technological advancements, recognizing both the vast potential and the inherent risks. It's a snapshot of a profession at a crossroads, reflecting broader themes of change, adaptation, and ethical responsibility within an unprecedented global crisis.

5. Conclusion

In conclusion, the study highlights the challenges and innovations in media coverage of COVID-19 in Africa. Traditional media play an important role in producing and disseminating accurate information, but the challenges of specialization and accuracy remain. The emergence of new categories of journalistic practice, such as terrorist journalism and diversionary journalism, facilitated by social media, has exacerbated anxiety and led to the fabrication of fake news and rumors, posing a threat to the credibility of real news. However, new communication technologies, particularly social media, have filled the void left by traditional media and brought innovation to journalistic practices in raising awareness against COVID-19 in Africa. Overall, the study emphasizes the need for accurate and responsible journalism in the face of a pandemic, especially in the era of new technologies.

6. Recommendations

Based on these results, the following recommendations can be made:
1) Traditional media outlets in Africa should prioritize hiring and training

specialist journalists to cover health-related topics, particularly in the context of COVID-19.

2) Governments and media regulatory bodies in Africa should establish measures to combat the spread of fake news and rumors related to COVID-19, particularly through social media. This may involve implementing stricter regulations and penalties for spreading false information.

3) Traditional media outlets in Africa should continue to adapt to the use of new technologies in disseminating information about COVID-19, particularly through social media platforms.

4) Journalists and media practitioners in Africa should uphold ethical standards in their reporting on COVID-19, particularly in avoiding the unethical relaying of information that causes terror, fear, and anxiety (i.e., terrorist journalism) and the fabrication of fake news and rumors (i.e., diversionary journalism).

5) Media organizations in Africa should prioritize public health awareness and prevention by increasing the proximity of organizational actors to citizens through the use of techno-informational and communicational devices such as SMS.

Finally, further research should be conducted to better understand the impact of new communication technologies on journalistic practices in Africa, particularly in the context of COVID-19.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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