Digitisation, AI and Algorithms in African Journalism and Media Contexts

Practice, Policy and Critical Literacies

Edited by

Carol Azungi Dralega

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EDITED BY

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Dedication

To my Late father Mr Jerome Dralega whose great sacrifices, wisdom and love are the reason for all my successes. To Late David Dralega, for unconditional love and for being the best big brother a little girl could ever ask for. To my children, Aleni and Amani, for sustaining me. I hope you are proud of your mamma. To all 'team Azungi' for being in my corner. And to God, for unconditional love and for being my rock and anchor.

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About the Editor

Carol Azungi Dralega is a Professor at the Department of Journalism, Media and Communication, NLA University College, Norway. She is involved in several research projects including *Violence-Inducing Behaviour Prevention in Social-Cyber Space of Local Communities Funded by the Norwegian Research Council* (2022–2026). *Preparing Media Practitioners for a Resilient Media in Eastern Africa* funded by the Norwegian Development Agency (2021–2026). Other recent projects include *Beyond the Gender Paradox: Women's Careers in Technology-Driven Research and Innovation in and Outside of Academe*, funded by NORDFORSK (2017–2022). *Building Capacity for a Changing Media Environment in Uganda* funded by the Norwegian Development Agency (2014–2021). Dralega has co-edited two books: Dralega, C. A and Napakol A. (2022) *Health Crises and Media Discourses in Sub-Saharan Africa*. Springer Nature and Dralega, C. A and Napakol A. (2022) *Covid 19 and the Media in Sub-Saharan Africa: Media Viability, Framing and Strategic Crisis Communication*. Emerald Publishers.

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Foreword

The hype surrounding the launch of a Microsoft-backed OpenAI's ChatGPT that is capable of producing high-quality essays with minimal human input and Alphabet's conversational artificial intelligence (AI) service, Bard, is indicative of the accelerated growth in the area of AI, algorithms, bots and other autonomous agents. ChatGPT and Bard, join a number of many other AI-driven apps and platforms of the past decade, that leverage deep learning and natural language processing to mimic human behaviours, imitate or replace human users to perform certain tasks commonly associated with human beings. Recent AI advances have uses that cut across all sectors and functions that humans do today. AI is transforming all sectors of society, including the journalism.

How do AI services, tools and infrastructures impact on the profession of journalism? AI applications and services transcend virtual every aspect of journalism, from newsgathering, production, distribution and business analytics (Marconi, 2020; Simon, 2022). AI is increasingly pervasive in everyday mundane tasks such as selected a film on Netflix and casually browsing through popular social media platforms like Twitter, Facebook, TikTok and Instagram. Recommendation algorithms embedded in the social media platforms provide newsfeeds that inadvertently lead to stories in the media. The same algorithms enable the media houses to broadcast their latest news and headlines on social media. The impact of social media on journalism practices and news consumption patterns have attracted the attention of researchers in Africa (Daniels, 2016; Jordaan, 2013; Verweij & van Noort, 2014).

How is AI impacting on the newsgathering practices, globally and in the African context? Global trends in the field show that the AI is driving precursor processes to news reporting by leveraging information seeking and processing processes in the newsgathering stage. Information discovery via social media, digital databases and search engines like Google Search are increasingly mediated through AI-enabled data processing software, that sift through big data, filters, sorts and recommends material input that enable journalists to write their stories. The influence of AI does not end in the newsgathering stage but permeates also the news production phase through editing and formatting of content, data visualisation, tagging, publication and archiving. There are indeed various other areas where AI is being leveraged. Commenting on the use of AI in financial reporting, an executive of an American media corporation, CNBC aptly captures what an advanced application of AI can do in the context of financial newsgathering and analysis, 'We will take 5,000 balance sheets, read it within seconds, be able to extract all the financial information,

calculate a risk score, and be able to make a decision on the risk of a portfolio' (Rosenbaum, 2023). This a typical scenario in highly digitalised environments, where much of the information exists in digital format. That remains a distant horizon for journalists in many African countries that still grapple with the realities of digital divide.

Realities on the ground show that the digitalisation tools are not commonplace. Media technology continues to pose a major problem for media houses. Unreliable electricity supplies, low and costly internet connectivity and capacity, outdated equipment mean that some journalists have no adequate access to modern tools that efficiently leverages the AI-enhanced capacities and affordances. The adoption of digital technology remains complex.

Data-driven journalism, though still at its nascent stages of development in most Africa countries is gained traction in the newsrooms. Research on Africa newsrooms has shown an increased practice of data-driven journalism (Mabweazara, 2015; Moyo et al., 2019). Some journalists practice data-driven journalism even though they do not consider themselves as data journalists (Gondwe & White, 2022). Media houses and journalists continually use social media platforms like Twitter as a journalistic tool for newsgathering, breaking news events, live blogging and crowd-sourcing. AI influences the processes and culture of news selection and dissemination.

This edited volume captures explore the current developments on Artificial intelligence (AI), algorithms and data or metrics-driven practices in the African newsrooms. The contributors underscore the various uses, opportunities and limitations of AI in the African context. They provide insights on the current trends on data-driven journalism. AI is being leverage for problem-solving initiatives such as combating the scourge of fake news and other forms of disinformation.

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Preface

In 2019, I attended a conference in Bergen, Norway on AI-driven journalism. One presentation captured my interest. It was made by an editor at one of the large regional newspapers who shared his newsroom's approach to AI-driven journalism giving fascinating insights into the post-humanist era that we find ourselves in today. One particular example of interest involved an international investigative story that was covered using AI, algorithms and data. It was a splendid integrated human-centred approach using technology to investigate, monitor and visually present the story in real time to consumers. This was in a Nordic newsroom context, so what was the status in African newsrooms contexts, I wondered! Currently, the research is sparse but then, it was almost non-existent and that is how *Digitisation, AI and Algorithms in African Journalism and Media Contexts: Practice, Policy and Critical Literacies* was born – out of academic curiosity and the need to fill knowledge gaps from eastern African contexts.

The literature is budding. AI, algorithms and data-driven practices are already pervading all sectors of societies across the globe (Stalph, 2020). It is safe to say that AI and algorithms are the present 'power brokers' governing, what information is produced, consumed and what networks they engage with (Emmert-Streib, 2021). The media industry is one of the sectors that is increasingly embracing AI, algorithms and data to harness the ever-changing potential of information and communication technologies. The Reuters Institute report (2022) projected that algorithms, AI and data-uptake within newsrooms would increase in the near future. The explosion of ChatGPT in November 2022 and similar tools affirms this prediction, a factor acerbated by the dramatic digital influx of consumers, advertisers and media outlets that we saw with the onset of the Covid-19 pandemic (Dralega & Napakol, 2022a, 2022b).

Already before the pandemic, AI, robots, algorithms and data/metrics were pervasive in many newsrooms, increasingly dictating and rapidly changing journalistic and newsroom practices, cultures and norms, i.e. from editorial agenda setting, to news production processes, to audience and advertiser targeting (Moyo et al., 2019). Social media platforms have particularly been at the core of the AI and algorithmic turn offering real-time consumer analytics and newsfeeds for insatiable and borderless digital citizens. The algorithms within these platforms make them powerful news aggregators, redirecting consumer habits and advertisers, making them vital in the journalism practice and media viability across the globe (Ali & Hassoun, 2019).

Nevertheless, the scholarship on AI, algorithms and data-driven journalism from the Global South especially in sub-Saharan Africa context remains sparse (Mutsvairo, Bebawi, & Borges-Rey, 2020; Gondwe & White, 2022). Most of the empirical studies are Western-oriented. Moreover, there are knowledge gaps relating to the post-Covid state of AI, algorithms and data-driven journalism as well as the implications for political, social, cultural, markets and media viability. As a social construct, technology appropriation often comes with repercussions – so what are the prospects and repercussions on the development and democratic agenda especially in reference to Universal declarations and SDGs/2030 Agenda for sustainable development? Debates on the role of international players in the AI/data journalism practices in the Global South, especially in the modernisation theoretical and post-colonial perspectives. Can the AI/data journalism optimism found in the western world be transferred to the Global South wholesomely? The unresolved consequences around issues on the digital divide and marginalisation need to be brought to the research agenda. In this volume, insights are also shared on policy developments, media education and critical literacy fields (Kothari & Hickerson, 2020), which are largely research deserts.

This edited book provides new knowledge on some of the key issues surrounding automation, algorithms, data-driven journalism and digitisation in post-truth, post-human and post-Covid sub-Saharan Africa contexts. It includes highly rigorous theoretical and empirical chapters unveiling related media innovations and developments. It also includes, interdisciplinary perspectives, comparative, ethnographic studies along with multi-genre (i.e. Social media, Television, Newspapers, Radio, community/alternative media, etc.) perspectives and methodologies. This book is a welcome resource for media researchers, students, academics, media practitioners and policymakers who seek to understand and make sense of these 4IR technologies and how they are set to revolutionise journalism practice in sub-Saharan Africa. Potential investors interested in AI solutions for Journalism (education/training, app development) in African contexts would also find this book of interest.

This volume would not have been possible without the Emerald Team who provided guidance and support throughout the processes. Special gratitude to all the authors without whose rigorous, critical contributions and patience, there would not be a book. I am also eternally grateful to the reviewers who took their time to offer valuable and constructive feedback that enriched the quality of the chapters. I am also deeply grateful to NLA University College for supporting this project. Asante!

10.06.2023
Carol Azungi Dralega
Kristiansand, Norway

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Part I
AI and Algorithms in Journalism and Media Practice

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Chapter 1

Towards Automated Fact-Checking in Africa: The Experience With Artificial Intelligence at Africa Check

Irene Larraz

Abstract

This research examines the evolution of automated fact-checking at Africa Check, a prominent fact-checking organisation based in South Africa, Kenya, Nigeria and Senegal, through the integration of artificial intelligence (AI) tools into its fact-checking process. The progress focuses on three phases, which include claim detection to identify check-worthy claims, claim matching to retrieve already verified information and robot-checking to validate claims. The methodology used in this study involved analysing the experiences of reporters and editors from Africa Check. In-depth interviews were conducted to reveal the advances in time and effort required to verify information, providing key insights into the relationship between technology and journalism. The findings also shed light on how AI can be used to combat misinformation and promote media literacy in Africa, demonstrating how the adoption of AI has helped Africa Check to expand its reach and increase its impact. As a result, these improvements have profound implications for political accountability, trust in the media, and the fight against misinformation. This research offers valuable contributions to the ongoing debates about the adoption of technology in journalism and the importance of leveraging technology to strengthen the relationship between journalists and their audiences.

Keywords: Artificial intelligence; automated fact-checking; disinformation; fact-checking; Africa Check; robot training

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Introduction

In 2019, *Africa Check*, a non-profit fact-checking organisation and the first of its type in the region partnered with *Full Fact* and *Chequeado* to receive a $2 million grant from Google to use artificial intelligence (AI) to scale automated fact-checking.[1,2] With this funding, the alliance built three tools to help fact-checkers detect claims made by politicians, cross-check them against previous fact-checks and validate data with external sources. Hybrid work with algorithms increased the number of claims that fact-checkers could process by a factor of 1,000, resulting in a significant boost in efficiency and bringing claim detection to 100,000 per day (Dudfield, 2021). These efforts and new technologies developed over the years positioned *Africa Check* as one of the few newsrooms on the continent using automation to verify political discourse.[3]

AI tools proved to be some of the most effective ways to empower journalists to achieve greater efficiency in their work (Miranda et al., 2019; Newman, 2022). The role of technology is particularly relevant for fact-checking organisations that lack resources and staff to monitor political discourse, and most of their processes were entirely manual, despite the fact that some tasks could be easily automated (Mantas, 2021; Nakov et al., 2021; Sarr & Sall, 2017). In addition, most of the tools were developed by external companies under pressure and without scrutiny (Moy, 2021; Rosen, 2020). Therefore, building this kind of technological expertise among fact-checking organisations was crucial to scale their fact-checking efforts.

This chapter analyses the strategy and impact of African media expertise in the fight against disinformation through AI systems. We present the case of *Africa Check* as a thermometer of the continent since it was the leading benchmark in fact-checking (Ireton & Posetti, 2018; Xiaou, 2021) and the first independent fact-checking organisation established on the continent.

The study addresses the following research questions:

RQ1. How did *Africa Check* automate fact-checking?

RQ2. What were the challenges and strengths of automated fact-checking?

RQ3. How is automated fact-checking impacting the African media landscape?

Conceptual Frames

Automation has been on the roadmap of fact-checking since 2015 (Babakar & Moy, 2016), and the academic literature studied advances in the systems of machine learning, deep learning and natural language processing to train systems capable of

[1] https://fullfact.org/blog/2019/may/full-fact-and-international-partners-win-google-ai-impact-challenge/.

[2] https://newsinitiative.withgoogle.com/dnifund/report/battling-misinformation/scaling-fact-checking-with-artificial-intelligence/.

[3] The only country office in which it is not in use is in Senegal, because of the idiomatic problems with other languages such as French, in which there is a lack of annotations for training the algorithm on its specificities to ensure that it works for the context of the instance.

assisting human fact-checkers. A growing interest in the topic led to an increase in experiments with different technical approaches to develop new tools. Several studies proposed new solutions to address the challenges facing automated fact-checking from a computational perspective. Solutions to each task of the fact-checking protocol were a major focus in the literature, including claim detection, check worthiness, claim matching and data validation, with examples of end-to-end models that aimed to automate the whole process (Guo, Schlichtkrull, & Vlachos, 2022; Cazalens et al., 2018; Lazarski, Al-Khassaweneh, & Howard, 2021; Hassan et al., 2017a; Barron-Cedeno et al., 2020; Elsayed et al., 2019; Nakov et al., 2018; Thorne et al., 2019).

These approaches led to several debates and new experiments, including research conducted to expose model trials (García-Marín, 2022; Hassan et al., 2017b; Nakov et al., 2018; Sarr & Sall, 2017; Thorne & Vlachos, 2018), propagation networks, to analyse how disinformation spreads (Horák, Baisa, & Herman, 2021) and credibility enhancement through automation and technology (Banas et al., 2022).

However, the journalistic perspective on the real needs and the adoption of these tools in the newsrooms was neglected. The last and least explored area was the impact of automated fact-checking in the media, with the study of the factual use of automation and its application, including the observation of how it transforms media relationships and roles. Academia has devoted limited space to the adoption of these AI technologies by newsrooms, with notable exceptions (Konstantinovskiy, Price, Babakar, & Zubiaga, 2021; Miranda et al., 2019; Nakov et al., 2021).

The literature on the use of AI technologies in Africa is still limited (Kothari & Cruikshank, 2021). Although there are advances in research on the use of AI in journalism (Munoriyarwa et al., 2021), there are few examples of its specificities in fact-checking. Cheruiyot and Ferrer-Conill (2018) draw a study on the epistemologies of fact-checking, data and journalistic discourse in Africa. In this same arena, there are some studies on fact-checking in Africa (Agyepong & Mahami, 2022; Porter & Wood, 2021; Tannous et al., 2019), but with no focus on automation or AI applied to the verification process. Finally, Amakoh (2020) investigates how both fact-checking and technology can increase readers' trust in the media in Nigeria, while Okiyi and Nsude (2019) highlighted challenges to the adoption of AI technologies in Nigerian newsrooms, such as a lack of training and data, as well as other barriers. This chapter fills that gap.

Methodology

This research adopts a qualitative methodology to analyse the organisation's case study (Johansson, 2007; Saltzis & Dickinson, 2008). Qualitative interviews with editors, reporters, and researchers from *Africa Check* show how AI tools can improve the practice of journalism and impact the scale of the work done.

The incorporation of the journalistic perspective in the discussion and the theoretical framework used dictated the use of this research design, which allowed the formulation of follow-up questions and deep insights on the topic. Issues related to journalistic concerns and the impact on workflow go beyond the data to

reflect conceptual and perceptual changes, among other insights on the detection of problems and challenges faced (Danneels, 2008; Labrouche, 2014), making it the most suitable methodology to capture the adoption of AI capabilities within the newsroom. This distinctive integration of human and technological agency is grounded in an institutionalist theoretical context (Napoli, 2013; Thurman et al., 2019).

Africa Check, by the time this research was conducted, was Africa's leading and oldest fact-checking, with an established presence and operations in four countries and three languages (Funke, 2019). The media is also one of the three African fact-checking organizations signatories of the International Fact-Checking Network (IFCN), and the only one of them using an automated approach for fact-checking the political discourse.[4,5]

The experience with two other international partners – *Full Fact*, and *Chequeado* (Dudfield, 2020) – is unique on the continent, granting access to scalable tools with different ways of incorporating them into their work environments and different attitudes towards them depending on each context. The case study provides an in-depth understanding and nuances of the use of AI-guided Journalism in Africa, drawing on the impressions and experiences of the participant's responses to the questions.

Interviews with Africa Check professionals in South Africa and Kenya newsrooms were conducted through Google Meet between January and July 2022, audio-recorded and transcribed with Otter.ai. Those included talks with Kate Wilkinson, Africa Check Deputy Chief Editor and head at the South Africa division, Keegan Leech, Researcher at the South Africa newsroom, and an anonymous source from the Kenya branch at *Africa Check*, who expressed a preference for anonymity and requested not to be quoted by name. The profiles of the interviewees span different roles in the organisation, with a diversity of backgrounds and contexts to ensure representativeness.

One limitation of this methodology is the relatively small number of informants, with only three participants being interviewed. While this sample size may restrict the generalisability of findings, it is important to note that these interviewees were selected based on their expertise and professional roles within Africa Check. As experts in the field, their insights and perspectives carry weight and provide valuable insights into the subject under investigation.

In terms of ethical considerations, the decision to maintain anonymity for the third informant aligns with the need to safeguard him from potential conflicts of interest. Therefore, this approach ensures that his contribution to the study is acknowledged and incorporated while maintaining his confidentiality and protecting him from any potential professional or personal consequences.

[4]According to the Duke Reporters' Lab's census, there are 17 fact-checking branches operating across Africa. Facebook also maintains its fact-checking partnership with seven media.

[5]https://ifcncodeofprinciples.poynter.org/signatories.

Results

Three main themes emerged from the interviews to show how the implementation of the tools influenced fact-checkers' work; the strengths and weaknesses of the tools in a real-world environment; the entry barriers to other media outlets; and how automation places the media outlet as game-changer in Africa's fact-checking landscape.

Infodemic Challenges and Verification Routines: Phases of Automated Fact-Checking

Many of the tasks in the fact-checking process are not yet amenable to automation. *Africa Check* and its partners attempted to automate three tasks, always as a hybrid approach with a human in the loop (Dudfield, 2020). The system, as shown in Fig. 1.1, was designed to (i) identify and categorise claims in news and social media or *claim detection*; (ii) check whether the claim was verified and published, *claim matching* and (iii) enrich it with data to support the fact-checker, which is called *robot-checking* (Dudfield, 2020; Konstantinovskiy et al., 2018; Nakov et al., 2021). As *Full Fact* summarises it: knowing what is the most important thing to check every day; knowing when someone repeats something false and checking it as close to real-time as possible.[6]

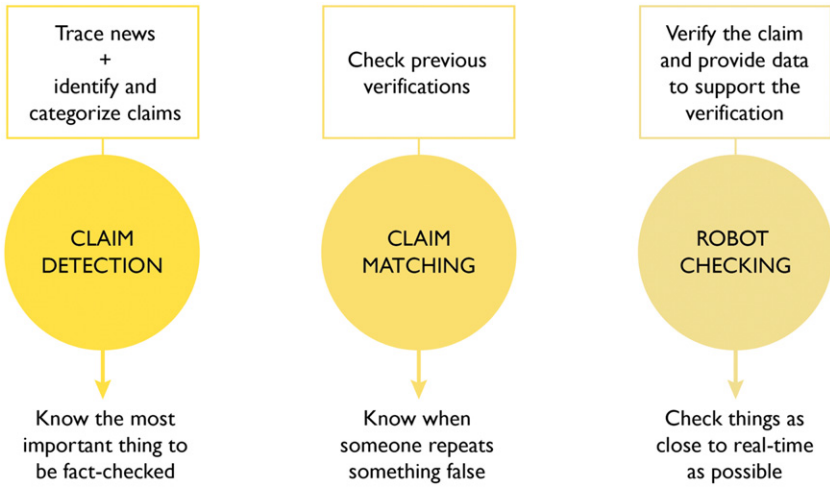

Fig. 1.1. AI Tools for the Fact-Checking Process. *Source:* Prepared by the author based on the interviews.

[6]https://fullfact.org/about/automated/.

The Bot Training Process

Developing automation tools takes time before they start to become useful. To train the models, journalists had to dive into scrapped sentences from traditional media to underline factual statements, driving them through a long process of annotations to show the algorithm how they decide what is checkable and what is not. Wilkinson highlighted this when she introduced the process they follow.

> We had to get through these thousands of annotations, where a fact-checker would be at their computer, it would show them a sentence, and would say: 'Is this a factual claim?'. The fact-checker would say 'yes' or 'no'. And then, further to that, if it was a factual claim, they would say: 'What type of claim is it?'; 'Is it a claim about quantity?', 'Is it a claim about correlation?', 'Is it a claim about the future?', 'Is it a claim about a rule?' So we were building an understanding of what a claim looks like, and then the indicators on the claim for what sort of claim it is. And we did that in all the countries where we're operating. (Kate Wilkinson)

Building an understanding of what a claim looks like required exposing the reasoning behind each decision. However, it was not a straightforward path, and the criteria were not always applied the same way. It depended on multiple factors, including the interpretations of each annotator, the context or the approach to each topic. The lack of data, and especially of quality data, was one of the major challenges emerging from the academic literature and resembled in the interviews, as algorithms needed to feed on large databases (Chi & Liao, 2022; Hanselowski et al., 2019). This emerged as a first adoption barrier.

Claim Detection

The first tool was created to extract factual information from text from different sources such as national media outlets, transcripts, and official sites. In the vast majority of newsrooms, this process is manually done (Cazalens et al., 2018). In automated newsrooms, the team provided the algorithm with a list of media sources to monitor in the search for factual statements. The system pulled up to 15,000 claims per day and allowed filtering based on the type of claim, author, party, keywords, publication, or categories such as quantitative, cause-effect, or predictive, among others.

This phase faced two challenges. First, the lack of audio-to-text conversion systems that provided accurate transcripts. The content analysis could only be done if the format was readable by the bot, which left many other formats unattended, such as speeches or audio-visual interviews, and sources behind a paywall, as explained by Wilkinson and Shiundu.

> One of the difficulties and this is often in non-native English-speaking countries, is in our Parliament we have a wide range of people who have very different first languages. And