

Data Journalism in Africa: A Systematic Review

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ABSTRACT

This study examines the state of Data Journalism scholarship within the African context. The analysis is based on 11 published academic articles retrieved from, Google Scholar, and Sage, ResearchGate and Taylor&Francis and a content analysis process obtained from the existing literature. The review reveals that most of the data journalism research on the African continent is empirical and qualitative in nature. More so, the majority of the studies focused on the practice of data-driven journalism by journalists in print newsrooms. This systematic review is a significant contribution to data journalism research in literature. It serves as the first attempt to aggregate the corpus of literature on data journalism within the African context. It specifically exposes scholars to the focus of the current studies on the phenomenon, the theories and methods that have been employed as well as the gaps that are yet to be explored by researchers on the phenomenon.

Keywords: Data-driven journalism, data journalism research, appropriation of data-driven journalism, journalism practice, Africa.

INTRODUCTION

The phenomenon of data journalism has received research attention as an innovation in the journalism practice in recent years (Bhaskaran et al, 2022). This is because Coddington (2015) has argued that journalism is now seeing a quantitative turn where journalists are expected to integrate and interpret big data to tell a story-thus, the increased incorporation of data-driven journalism. Data journalism is defined as a journalism practice that employs datasets, computational tools, and algorithms to compose news stories (Heravi & Lorenz, 2020). Studies have examined this phenomenon and have concluded that data journalism is a special form of journalism that is different from the traditional form of journalism practice (eg, Borges-Ray, 2020; Coddington, 2015). These data-driven news stories make use of texts and audiovisuals

as well as data visualizations (Heravi, 2019). The authors add that data visualizations are mostly interactive in nature and go beyond just a single image. Other studies have also confirmed its adoption by media organizations (eg, Appelgren & Nygren, 2014; Beiler et al, 2020; Knight, 2015). Although there has been an increase in scholarly attention to this phenomenon, there are growing concerns about inadequate studies on comparative case studies. The focus of existing articles on the phenomenon has been on isolated case studies (Ausserhofer, 2020).

However, even though data journalism has received the attention of scholars, most of the attention has been given to studies that fall within the western context (Ferrer-Conill & Cheruiyot, 2017). This can be attributed to the fact that the concept is still new in other parts of the world and its practice is still in the developing stage. That notwithstanding, it is expedient for scholars outside the west to provide scholarly works on the state of data journalism in their various continents, regions, and countries. It is for this reason that this systematic review of data journalism within the African continent becomes imperative. This will provide an overview of the state of data journalism research within the continent by providing scholars with the focus of the identified studies, methods, and theories that have been employed by scholars and the various research gaps that require researchers' attention. Bhaskaran (2022) argues that recent examples of systematic reviews in the field of journalism are scant. This paper, therefore, seeks to add to the scant systematic review in the field by systematically reviewing the literature on data journalism as a contribution to the scant literature. More so, although the phenomenon of data journalism has received some attention in relation to systematic reviews (Ausserhofer, 2020; Bhaskaran, 2022; de Souza, 2018; Heravi, 2021) the reviews are all situated outside the African continent. For instance, Heravi et al (2021) conducted a systematic literature review on preserving data journalism. The paper aimed at studying the current and past practices of how data journalism and related digital object outputs are preserved and the recommendations that have been made for their preservation. The review further provided recommendations for the preservation of dynamic visual objects in data journalism. Similarly, Ausserhofer et al (2020) conducted a systematic review of the literature on data journalism between 1996 and 2015. The study relied on forty (40) publications to answer the various research questions posed in the study. The findings of the review show an increase in data journalism research since 2010. The study revealed that before 2010, only a small number of isolated research publications focused on the issue of data journalism. The year 2015 (12 publications) recorded the highest number of publications on the subject followed by 2016 (11 publications) with 2010, 2011, and 2017 recording 2 publications each. In terms of the context of the studies, the US and the UK dominated with 26 of the studies focusing on case studies from these countries. There was no study from the African continent reviewed.

Bhaskaran et al's (2022) systematic review on teaching data journalism focused on data journalism training to ascertain the present state of research on the subject. The study found that data journalism educators face challenges such as tight journalism curricula schedules which make it difficult to accommodate new courses, and the fear of delving into the realm of mathematics by journalism students hinders the teaching of data journalism. The evidence, therefore, shows that there appears to be no literature that has attempted to aggregate the extant literature situated within the African continent to aid researchers to appreciate the

developments in the field as well as identify the gaps that exist. This review, therefore, appears to be novel within the African continent on the subject area.

The purpose of this systematic literature review is to describe the development and current state of scholarship on data journalism in the African continent. This will assist researchers to assess the phenomenon relative to its development and work on the current state. Specifically, this paper seeks to establish the thematic areas in the literature on data journalism in the African context, the theories, and the methods employed in the studies. In furtherance, Petticrew and Roberts (2008) assert that an important purpose for conducting a systematic review is to identify gaps in the literature to assist future researchers to pursue or conduct further studies in those areas. In line with this, the current study intends to establish the various research gaps available in the existing corpus of literature on data journalism in Africa for researchers to initiate attempts to direct their inquiries into the area.

METHOD AND PROCEDURE

Fink (2005) postulates that a systematic literature review is meant to provide a comprehensive and reproducible method for the identification, evaluation, and synthesis of the existing body of works produced by scholars and practitioners. In consonance with Fink's assertion, this review identified, evaluated, and synthesized the available body of literature on data journalism within the African continent. Okoli (2015) advanced Fink's postulation by adding that for a systematic review to be rigorous, it must follow an unequivocal methodological approach that explains the procedures by which the review was conducted. The author adds that the approach must be comprehensive in such a way that the scope will include all available and relevant materials. For Petticrew and Roberts (2006), systematic reviews help researchers to reconcile existing evidence on a particular issue or subject to inform policy and practice. Consequently, this review is an attempt to aggregate various perspectives from systematically collected literature on data journalism in Africa to inform academics and practitioners on the current developments and state of research in the field of data journalism. To identify the appropriate methodology for this systematic review, the study reviewed methods that have been employed by other scholars who have conducted systematic reviews in several fields including journalism. In previous systematic literature reviews, researchers have employed various methods. For instance, Ausserhofer et al (2020) adapted Massaro et al's (2016) literature review protocol in their systematic review on data journalism. Heravi et al (2021) in their systematic review on preserving data journalism employed Okoli's guidelines for conducting a systematic review. Bhaskaran (2022) employed Gough, Oliver, and Thomas's (2017) steps to conduct a systematic review to select the corpus of literature for the study. Additionally, the study applied Thomas and Harden's (2008) framework to systematically analyze the collected literature to answer the formulated research questions for the study.

This paper adopted a framework for a systematic review developed by Heravi et al (2021). The author in his systematic review adopted ideas from Kitchenham and Charters (2007) and Okoli (2015).

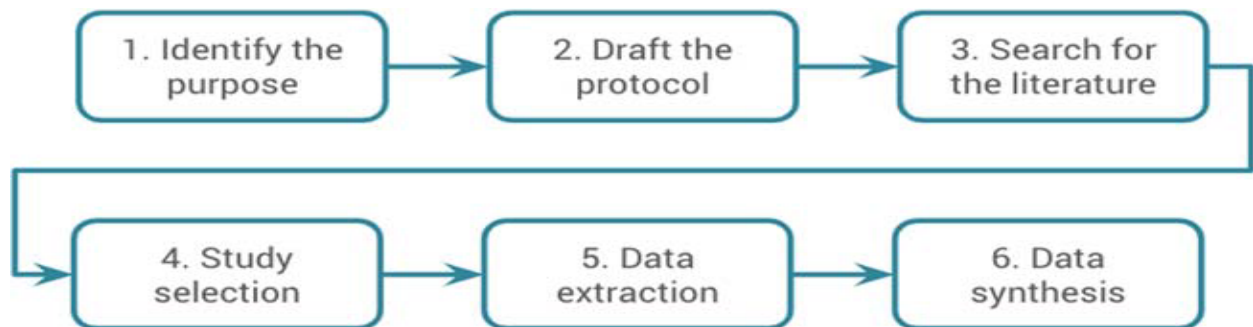


Figure1. Literature Review Procedure (Heravi et al., 2021).

In line with the above procedure, the current study, first of all, identified the purpose of this systematic review, which was to provide an aggregation of scholarly work on data journalism within the African continent. This was necessary because there appears to be a gap in the literature in this regard. Secondly, the procedure requires that a protocol should be drafted. Because this review is authored by one person, the sole author developed the protocol for this review. This included the purpose of the review, the objectives and research questions, and the methods employed. These have been discussed throughout this review. The next step was to search for literature. The researcher identified relevant research database that will be useful for this study. To start with, the researcher used *Google Scholar*, *Sage*, *ResearchGate*, and *Taylor&Francis* as the research database to search for literature using specific keywords as well as the Boolean operator OR. The keywords employed were: “Data Journalism in Africa” OR “Data Journalism in Africa” OR “Data Based Reporting in Africa” OR “Computer-Assisted Reporting in Africa” OR “Computational Journalism” OR “Computational Journalism and Data Visualization. In the selection of the studies from the literature search, the researcher screened the data to identify the scholarly works relevant to this study. The researcher purposively selected all articles published in a journal and or as book chapters. This is because journal articles and book chapters go through peer reviews and could be accorded some high level of credibility. The search was not limited by date. All available journal articles and book chapters that have been published within the African continent on data journalism were selected for this study. Another inclusion criterion was on the issue of the language of publication. Article and book chapter selection was limited to works published using the English language. This is because the researcher has advanced knowledge in the English language only and can critically assess such works written in the English language. The next procedure in this framework was data extraction. In this case, the researcher is expected to read thoroughly the selected articles to identify the areas needed for the systematic review. For this purpose, the study relied on a qualitative content analysis procedure. The researcher went through all the selected articles rigorously. The researcher color-coded the parts relevant for achieving the objectives of the systematic review. For instance, the focus of the study, theories and methods employed were code-colored. The close and continuous reading of the selected data was to satisfy the immersion criterion proposed by Braun and Clarke (2018) to help the researcher familiarize himself with the data. The researcher developed a table with columns that contained data on the study focus, theories, methods, and the findings and discussion sections in each literature (Bhaskaran et al, 2022). The last thing the researcher did was to synthesize the data extracted from the selected works. This was done through an examination of the final extracts under each column to translate the issues identified. Translation according to Thomas and Harden (2018) as cited in Bhaskaran et al (2022) is the process of recognizing and organizing similar concepts

from individual studies. The results of the synthesis are found in the findings and discussions section of this paper.

FINDINGS AND DISCUSSIONS

Table 1: Summary of findings

Author/Title	The focus of the study	Theory	Method	Journal
Okocha, D. O., & Odeba, B. (2022).	Data Journalism practice by Nigerian journalists	Field theory and Normalization Theory	Qualitative	Covenant Journal of Communication
Gondwe and White (2021)	Journalists' perception of Data-driven journalism practices in Zambia and Tanzania	Theory of public sphere and theory of Communicative action	Quantitative	African Journalism Studies
Munoriyarwa (2020)	The adoption of data-driven practices in news on business reporting in South Africa	Sociology of news production theory	Qualitative	Journalism (Sage)
Sewchurran and Hofmeyr (2020)	Digitalization and journalism education in South Africa	N/A	Literature Review N/A	Acta Academica
Moyo (2019)	Data journalism and investigative journalism in Africa	N/A	Qualitative	Palgrave Macmillan
Muneri (2019)	Prospects for data journalism in Zimbabwe	N/A	Qualitative	Palgrave Macmillan
Ndubura (2019)	The appropriation of data journalism in Rwanda	N/A	Mixed Method	Palgrave Macmillan
Akinfemisoye-Adejare (2019)	Print journalists' appropriation of data-driven journalism practices in the coverage of the 2019 elections	N/A	Qualitative	Palgrave Macmillan
Moyo and Munoriyaran (2019)	Newspaper journalists practice data journalism in South Africa in the coverage of events leading up to the 2019 elections	Sociology of news production theory	Mixed method	Palgrave Macmillan
Cheruiyot, Baack and Conil (2019)	Non-media organizations' practice of data journalism in Europe and Africa	N/A	Qualitative	Digital Journalism
Hassan Alhaji Ya'u (2018)	Perception of journalists in Kano on data journalism	Media Determinism Theory	Quantitative	Journal of Information and Technology Management

Source (Author: Compiled for this study)

Research rate

The table above indicates that scholarly works on data journalism within the African context is quite recent. In all, eleven articles were available for analysis in this systematic review. The first article from the available literature was published in 2017. The table shows that only one article was published in that year. One article was also published in 2018, six articles were published in 2019 representing the highest for a year. The year 2020 witnessed a decline from six in 2019 to two in 2020. The year 2021 also saw one publication. As of September 2022, only one article had been published in the year 2022 on the phenomenon of data journalism within the African continent. In 2019, five of the six articles were book chapters from a Palgrave Macmillan publication on data journalism in the global south. This dedicated book on data journalism invited chapters from countries in the global south. This dedicated Volume perhaps justifies the tremendous increase in publications on data journalism within the African continent. It is worth noting that the last 4 years accounted for more than 80% of the selected publications. This shows an improvement in the interest of scholars in studying the phenomenon on the continent. However, as indicated by scholars like Ya'u (2018) and Gondwe and White (2021), scholarship on data journalism in Africa is on the low as compared to that of the west. With regards to journal representation, the analysis reveals that five of the articles were published by Palgrave Macmillan as book chapters in their book on data journalism in the global south. One of the articles was published in the *Journal of Digital Journalism*, whiles Journals like *African Journalism Studies*, *Journalism (SAGE)*, *Journal for Information System*, *Technology Management* and *Acta Academica* published an article each. It is therefore worth noting that half of the research papers found on the African continent were published by Palgrave Macmillan. Souza et al (2018) argued in their systematic review paper that journals that publish works on data journalism are not just from the journalism and mass communication discipline, but also from other disciplines like Computer Science and Engineering. Within the context of this study, only one study was published in a journal outside the journalism and mass communication discipline. What this means is that scholars in data journalism research within the African continent prefer to publish articles on the phenomenon in journals within the discipline.

Focus of research

The paper sought to identify the focus of scholarly articles on data journalism within the African continent. The findings revealed that all the studies focused on the practice of data journalism from different contexts. However, under this focus, three themes emerged. These are the appropriation of data-driven journalism in work routines, the importance of data-driven journalism in investigative journalism, and the perception of journalists on data-driven journalism. In relation to the appropriation of the phenomenon by journalists, seven of the articles focused on that phenomenon based on findings from 6 countries. For instance, Moyo and Munoriyaran's (2019) study explored the practice of data journalism in three selected newspaper organizations in South Africa on the coverage of events leading up to the 2019 elections. The study found that the selected newspapers do not frequently practice data-driven news reporting, however, they were pushed to do more of that during the period of study. The study concluded that data journalism is yet to be seen as a newsroom culture in the selected newspaper organisations. Similarly, Akinfemisoye-Adejare (2019) examined how print journalists in Nigeria appropriated data-driven journalism practices in their coverage of the 2019 elections. The findings of the study reveal that Journalists did not shy away from practicing some form of data-driven reporting during the 2019 elections. Munoriyarwa (2020) also conducted a study on Data journalism updates in South Africa's mainstream quotidian

business news reporting practices. The study examined the adoption of data-driven practices in news reports on business or business reporting and how they have changed their news reporting routines. The study realized that there is slow but steady progress in the adoption of data-driven reporting. This finding corroborated that of Moyo and Munoriyaran (2019) and Akinfemisoye-Adejare (2019). However, journalists were concerned about their capabilities in integrating data-driven reporting into their work. The study concluded that there is a need for journalism education to be recalibrated to ensure the sustainable implementation of data-driven reporting in newsrooms. Ndubura (2019) likewise ascertained how journalists in Rwanda appropriate data in their news reports and the accompanying challenges that emerge. In consonance with previous findings, the study revealed that journalists do not have adequate knowledge of data reporting. The study concluded that although journalists have a strong commitment to the practice, media organizations seem skeptical to embrace the phenomenon. It is worth noting that almost all the studies focused on media organizations as case studies in the research. However, one study on the practice of the phenomenon expanded the scope to include organizations that are not into mainstream journalism but practice data journalism as part of their organizational goals. Cheruiyot, Baack and Conil (2019) studied Data Journalism beyond legacy media and focused on the case of African and European Civic Technology Organizations. The aim was to investigate how non-media organizations that are into data journalism in Europe and Africa practice the phenomenon. The study found that these organizations mostly dominate in the practice of data journalism on the African continent. The study concluded that the practices and roles of these non-profit organizations relative to journalism are similar; however, culture and context influence and shape how they practice data journalism.

Concerning the perceptions of journalists on the practice of data-driven reporting, two of the studies focused on identifying the views of journalists on the practice. For instance, Gondwe and White (2021) conducted a study on Data journalism practice in Sub-Saharan Africa with a focus on identifying journalists' perception on the phenomenon in Zambia and Tanzania. The researchers found that Journalists from Zambia and Tanzania do not regard themselves as data journalists although they practice it. In general, journalists' perception about data journalism in Zambia and Tanzania was negative. This situation was not different from a case study in Nigeria. Alhaji Ya'u (2018) measured the perception and application of Data-driven journalism among Kano Journalists in Nigeria. The study focused on registered journalists in Kano state. The study also found a negative perception of journalists regarding the practice of data-driven journalism. The authors attributed this to the fact that although 56% of journalists in Kano have basic knowledge on data-driven journalism only 1.6% understand and apply the principles of data journalism in their news stories. The study concluded that there is very low awareness, knowledge, understanding and application of data journalism principles among journalists in Kano.

The last area under the practice of data journalism within the African continent has to do with the argument for the relevance of the phenomenon in enhancing the growth of investigative journalism on the continent. This study was conducted by Moyo (2019). The research explored the potential of data journalism in changing the practice of investigative journalism in Africa. The author argued that data-driven journalism has enhanced investigative journalism in Africa. This was because findings from the Panama Papers that cited African countries and

personalities exposed investigative journalists on the African continent to new ways of generating and acquiring data to aid their investigative reports.

Theoretical Review

One objective of this review is to identify the various theories and frameworks that have been employed by scholars on data journalism works within the scope of this review. The review of the literature revealed that the phenomenon of data journalism within the African continent is under-theorized. This is in line with Gondwe and White (2021). Thus, most of the scholarship on data journalism on the continent relies on western theories to explain findings within the continent. For instance, Moyo and Munoriyaran (2019) and Allen Munoriyarwa (2020) anchored their studies on Schudson's (1989) Sociology of News Production theory, whiles Hassan Alhaji Ya'u (2018) draw on Innis and McLuhan's (1964) Media Determinism theory. Sewchurran and Hofmeyr (2020) on the other hand relied on the theory of the Public Sphere and theory of Communicative Action by Habermas to critically reflect on digital tools in journalism such as how data visualization has affected the journalism practice and journalism education in South Africa. Okocha and Odeba (2022) also anchored their study on the Field Theory by Lewin (1947) and the Normalization Theory. The analysis shows that out of the eleven articles, six of the papers had no theoretical or conceptual frameworks that underpinned the studies. The dominant theory, the Sociology of News Production explains how news work is socially constructed and as such could be altered. Whiles the Media Determinism theory employed by Hassan Alhaji Ya'u (2018) on the other hand explains the relationship between technology and society. Thus, it argues that technology drives societal behaviors.

Methodologies

The analysis revealed that most of the papers used in this systematic review were empirical in nature. Thus, ten of the papers were empirical while one was a literature review paper. The dominant nature of empirical studies on the phenomenon within the African continent is in line with findings from similar reviews from other contexts (Ausserhofer, 2020; Bhaskaran et al., 2022; de Souza, 2018; Heravi, 2021). Most of the literature corpus employed qualitative research as the approach for the study. In total, six of the eleven articles used the qualitative research approach. The quantitative and mixed method had two papers each. Similarly, Heravi (2021) and Bhaskaran (2022) also found that majority of the empirical studies on data journalism employed the qualitative research approach. With regards to the research designs adopted by these studies, the analysis shows that nine of the studies employed the case study design while two of the studies employed textual analysis as a design. All those that used the case studies approach presented the experiences of journalists on data journalism practices within the continent (Gondwe & White, 2021; Moyo & Munoriyaran, 2019; Muneri, 2019; Ya'u, 2018). The textual analysis studies focused on analyzing news content to identify data journalism elements in the news stories (eg, Akinfemisoye-Adejare, 2019; Munoriyarwa, 2020).

Research gaps

Bhaskaran (2022) argues that in aggregating scholarly works on the development of a phenomenon, a systematic review provides a definite representation of the main focus of scholars on the state of the particular field's development. For Gough et al (2012) a systematic review also serves as an effective way of identifying prevailing lacunae in the current literature. This is expedient because the recommended gaps help to direct the focus of future research.

Consequent to these assertions, one objective of this systematic review was to establish existing research gaps in the aggregated literature on data journalism in Africa.

The current study has identified several gaps in the existing literature. To start with, methodologically more than half of the studies relied on the case study design to conduct their studies to understand the phenomenon in-depth within a particular context (eg, Cheruiyot, Baack & Conil, 2019; Munoriyarwa, 2020; Ya'u, 2018). This reinforces the argument in the literature by other scholars who have conducted a systematic review on subjects in the field of journalism (Bhaskaran 2022) that there is a lack of diversity in methodology when it comes to research on data journalism in Africa. The current study argues that future scholars interested in understanding in a more in-depth manner how journalists have appropriated data-driven journalism techniques in their news reporting should employ the ethnographic design to perform newsroom ethnography to better appreciate the culture in the newsroom. Again, more comparative studies should be encouraged since there appears to be no comparative study on data journalism on the African continent. The focus has been on multiple and single case studies. The current systematic review also realized that the two studies that sought to identify the perceptions of journalism on data-driven journalism (ie, Gondwe & White, 2021; Ya'u, 2018) situated their studies within the quantitative research approach. This study, therefore, recommends that future studies should adopt the qualitative or mixed method approach to fill the methodological gap in understanding audience perspectives on the phenomenon. This approach will afford the researchers and research participants the opportunity to be more in-depth and share their experiences.

Furthermore, the analysis shows that there is a contextual gap in the literature on the phenomenon. Thus, the literature within the African continent is scant and as such researchers should be encouraged to pay more attention to this growing phenomenon by directing attention to countries and regional cases, especially from North and West Africa. As evident in the analysis, only one country (ie, Nigeria) in West Africa was cited in three of the case studies (ie, Akinfemisoye-Adejare, 2019; Okocha & Odeda, 2022; Ya'u, 2018). across the continent Moreso, there appears to be no study from North Africa on the phenomenon under investigation.

Another gap identified is a knowledge gap. The focus of these studies within the African context has been on the practice of data journalism. Some of the studies attributed the low progress with the appropriation of data-driven journalism in journalistic practice to inadequacy in skills and organizational commitment which can be attributed to the lack of appreciation for data-driven journalism (Moyo & Munoriyaran, 2019; Munoriyarwa, 2020; Ndubura, 2019; Ya'u, 2018). Studies have not focused on the relevance of data-driven journalism in the practice of journalism, hence, the need for scholars to fill this gap by interrogating the phenomenon within that context. Also, the issue of inadequate skills in data-driven reporting calls for studies that will analyse journalism curriculum within the continent to ascertain whether there is a gap between the growing needs in the newsroom and the classroom in relation to data journalism. Another gap in focus has to do with the site or bounded cases employed in the existing studies. Existing works that narrowed their scope on just one type of media paid attention to only the print media as a case study for examining the practice of data-driven journalism on the African continent. For instance, Akinfemisoye-Adejare's (2019) study in Nigeria focused on newspaper journalists. The study recommended that further studies should look at the broadcast media. Similarly, Moyo and Munoriyaran (2019) recommended the same perspective in their study

that focused on newspaper journalists in South Africa. In furtherance, Ndubura's (2019) study in Rwanda also focused on newspaper journalists. Consequently, there exist a gap in the literature in relation to studies that focus on the broadcast media (such as Radio, Television and Internet) and how journalists in the broadcast media are practicing data-driven journalism as well as their perspectives.

CONCLUSION

This systematic review is a demonstration that scholarly attention has not been given to a review on data journalism in Africa. This study is an aggregation and synthesis of research studies that have been conducted on Data Journalism within the African context. The comprehensive literature search identified 11 academic papers comprising five book chapters and six journal articles. These articles were critically examined through content analysis to identify research focus and gaps. The review shows that while research on data journalism in Africa is still at its infant stage, there appears to be steady but slow progress in the last four years. Findings also revealed that most of the studies have focused on the appropriation of data-driven journalism in journalistic works. Insights from the review suggest a gap in the literature relative to journalism education and data journalism in Africa. Again, even though these studies paid attention to the practice of the phenomenon, the various cases for the study are all from the print media, leaving that of the case of journalists in the broadcast media unattended. Furthermore, even though these studies focused mostly on case studies within the continent, literature from the north and west of Africa is scant. Other areas of interest for further research directions revealed by this review include the need for more interpretive data journalism perspectives from journalists. This has the potential to reveal more persuasive evidence on journalists' views on the phenomenon on the continent. These are important observations for future scholars because this paper, plausibly, appears to be the first to provide a review that shows the state of data journalism research within the African context.

LIMITATIONS

It is worth reiterating that the primary purpose of this systematic review was to examine the existing scholarly research works on data journalism in Africa. Curran (2007, as cited in Bhaskaran (2022), postulates that a foremost challenge with systematic reviews in journalism studies is the existence of grey data (thus unpublished and non-peer-reviewed materials such as research reports, working papers, conference proceedings, theses, etc). This challenge limited the scope of this systematic review. The scope of this review does not include grey data. Paez (2017) argues that a systematic review that includes grey literature is able to comprehensively gather more useful information about the topic and to further reduce the biased nature of systematic reviews that only involves peer-reviewed research works. However, the diverse nature of the available grey literature on the subject made it difficult for them to be added to the corpus of literature used in this study. It is worth noting that a recent study by Hartling et al (2017) found that the inclusion of grey literature in a systematic review does not significantly change the results of the review. Lastly, another limitation of this study was the fact that all articles selected were written in the English language. Thus, any studies within the study context which was written in other languages were excluded. Future researchers may want to address these shortcomings.

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