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Redefining Journalism in the AI Era: Constructing A New Model for Harmonizing AI Technology with Traditional Journalist Ethos and Values

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Redefining Journalism in the AI Era : Constructing A Model for Harmonizing AI Technology with Traditional Journalist Ethos and Values

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Introduction

The development of artificial intelligence (hereafter referred to as AI) has permeated various industrial sectors, significantly transforming organizational dynamics and strategic approaches. The rapid proliferation of information and communication technology (ICT) and the ongoing process of datafication across society have extended their impact to journalism as well (Gelgel, 2020; de-Lima-Santos & Ceron, 2021). The range of AI tools adopted in newsrooms is diverse. AI in journalism is conceptualized as a series of algorithmic processes that produce and disseminate text, images, and videos for public consumption, with minimal human oversight (Carlson, 2015a; Moran & Shaikh, 2022). However, the swift pace of technological advancement has left media companies grappling with confusion. Since the advent of AI, the processes of agenda setting, content gathering and production, and news distribution have radically evolved (Hernandez Serrano et al., 2015; Örnebring, 2010; de-Lima-Santos & Ceron, 2021). These technologies surpass conventional expectations. For instance, Open AI's GPT software series, developed through deep learning, showcases text quality remarkably akin to human writing (Floridi & Christy, 2020; Moran & Shaikh, 2022).

Such technological shifts pose fundamental challenges to the roles and values of journalists. According to Van Dalen (2012, p.649), “journalistic labor has traditionally been defined on the basis of the people who do the work and

the skills they possess. The idea that journalistic tasks can be completely automated clashes with our general understanding of the nature of journalism” (see also Örnebring, 2010; Moran & Shaikh, 2022). Automated technologies that can replace certain tasks present a threat to the professional and social identities of human journalists. In the context of newsrooms, AI can be defined as automated systems designed to imitate human cognition (Linden et al., 2019) or as “cognitive technologies” aiming to emulate human intelligence (Chan-Olmsted, 2019, p.194).

Research on the impact of automated algorithms on journalism, particularly their practical applications, has gained momentum since the late 2010s (e.g., Lindén, 2017b; Thurman, Dörr, & Kunert, 2017; Siitonen et al., 2023). Furthermore, the rapid development of generative AI technologies such as ChatGPT and Midjourney, especially following the COVID-19 pandemic, demands new perspectives from both journalistic organizations and scholars studying journalism. The commercialization of AI-based tools (e.g., transcription, translation, or text generation using natural language models like Open AI's GPT software) offers new avenues for utilizing technology in journalism (Jones et al., 2022). The research also identifies the 2010s as “the first decade to provide practical options for integrating automated algorithms into routine journalistic tasks” (Siitonen et al., 2023). The 2020s, however, should be studied in a different context from the 2010s.

The evolving values and roles of

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journalism can be examined in conjunction with the opinions expressed by newsroom practitioners regarding AI. Scholars have emphasized the need for more empirical data from journalists to better understand the relationship between AI-enhanced journalism and dynamic newsroom practices (e.g., Carlson, 2015; Kim & Kim, 2018; Lindén, 2017b; Missaoui et al., 2019; Siitonen et al., 2023). However, empirical research exploring the scope and implications of AI as perceived by journalists remains scant (Moran & Shaikh, 2022). Against this backdrop, this study focuses on journalists' perceptions and practices regarding AI within organizational and group contexts since 2020. It specifically examines how traditional journalistic values and ethics can be harmonized with cutting-edge AI technology. To this end, the study aims to answer two research questions: RQ1) What are journalists' perspectives on AI? RQ2) What frameworks are employed to integrate AI with journalistic ethics?

Data and Analysis

This study conducts a comprehensive and systematic review of scholarly articles published between 2020 and 2024, utilizing three distinct academic databases: Google Scholar, Web of Science, and SCOPUS. The decision to set 2020 as the starting point for the review is linked to the onset of the COVID-19 pandemic. COVID-19, which emerged in November 2019 in China and spread globally within three months, led the World Health Organization (WHO) to declare it a pandemic in March 2020, prompting a significant transformation across all industries, including journalism and media. The structured data of mortality rates and infection statistics worldwide provided predictable story frames. Many media outlets viewed the COVID-19 crisis as an opportunity to automate news production processes (Danzon-Chambud, 2021; de-Lima-Santos & Ceron, 2021).

The three databases were selected to broaden the sample without excluding significant scholarly works related to AI in journalism

(Calvo-Rubio & Ufarte-Ruiz, 2021; Parratt-Fernández et al., 2021). Utilizing Web of Science, SCOPUS, and Google Scholar together is effective for searching scientific outputs on specific topics (Martín-Martín et al., 2018; Parratt-Fernández et al., 2021). Google Scholar's first 100 results were limited to ensure the most relevant results appeared at the top of the list. It is important to note that Google Scholar searches are not as systematic as other databases due to Google's personalized search algorithm (Siitonen et al., 2023). The search for the study was conducted from November 15, 2023, to May 15, 2024. After several trial searches, the following keyword combinations were selected to ensure a comprehensive search:

("AI" OR "artificial intelligence" OR "automated" OR "computational" OR "robot" OR "algorithm" OR "technology" OR "Data") AND ("journalism" OR "journalist" OR "News" OR "Media" OR "Newsroom" OR "News Organization").

The initial search results included many studies not directly related to media, particularly journalists and newsroom organizations. To refine the sample, abstracts and keywords were initially reviewed to exclude papers discussing news algorithms or AI technology from business, legal, or information systems perspectives. Papers examining AI technology from the news consumers' perspective were also excluded. Meta-analyses and systematic literature reviews were filtered out. The second stage focused on studies revealing opinions and judgments based on the experiences of current journalists, experts, and managers working in news production roles. Additionally, the studies had to specifically address the following research questions:

- (1) How are AI technologies utilized in newsrooms?
- (2) What attitudes and evaluations do newsroom members have regarding the adoption of AI technologies?
- (3) How are the meanings and values of journalism realized in the context of AI adoption?

To maintain consistency in selection

criteria, conference proceedings and reports were excluded in favor of peer-reviewed journal articles. Narrowing the focus, 23 publications were ultimately selected.

The final sample of publications revealing the empirical perspectives of journalists and news production stakeholders was categorized into three main formats: interviews (N=13), surveys (N=4), ethnographies (N=3), case studies (N=2), and focus groups (N=1). Interviews facilitate thorough exploration of the research topic and provide researchers with qualitative insights into respondents' answers to research questions (Christine & Holloway, 2002; Jamil, 2023). Semi-structured interviews, useful for collecting qualitative data reflecting interviewees' insights within socio-political and economic contexts, were conducted (Wimmer & Dominick, 2014; Allam & Hollifield, 2021). Some studies employed mixed methods, using more than one of the aforementioned formats. To build a systematic perspective on the analyzed publications, the following aspects were summarized for each study: (1) research purpose, (2) methodology, (3) key theories, models, and concepts, (4) research conclusions, and (5) implications for future research.

Results

RQ1: What are Journalists' Perspectives on AI?

The majority of participants indicated that the introduction of AI in news organizations is either in its early stages or becoming more concrete. AI systems that automatically generate news articles based on data sets and templates save time and resources for news organizations. Automated technologies are particularly useful for generating large volumes of articles on specific topics (Haim & Graefe, 2017; Ahmad et al., 2023). Journalists cited saving work time and maximizing efficiency as major advantages of AI. Tools that automate transcription, image and video tagging, and story creation in the news production process can reduce temporal and physical variable costs (Keefe et al., 2021; Ahmad

et al., 2023). The benefits of autonomously produced journalistic content through algorithms became more apparent in time-sensitive newsroom environments (Wölker & Powell, 2021; Ahmad et al., 2023).

AI plays a central role in automating computation-intensive processes, allowing journalists to access and extract key information that was previously difficult to reach (Beckett, 2019; Fridman et al., 2023). Data journalism applies AI technologies to analyze vast amounts of information and visualize it. Visualization is especially crucial for presenting complex information in a simple and comprehensible format (Rodríguez, Nunes, & Devezas, 2015; Fridman et al., 2023). By leveraging these tools, journalists can more effectively pursue in-depth topics, contributing to the public through investigative journalism.

The organizational structure and culture of newsrooms significantly influenced journalists' perceptions and adoption of AI systems. Organizational culture in media organizations is a crucial determinant in executing journalistic innovation (Steensen, 2018; Zaragoza Fuster & García Avilés, 2022). The analysis revealed that journalists working for large media groups that emphasize public service and are not under significant financial pressure showed relatively positive and proactive attitudes toward AI adoption. This aligns with existing research suggesting that technology adoption is influenced by the surrounding sociological context and is shaped by political, social, economic, and cultural environments (Burr, 2015; Pinch & Bijker, 1984; Yu & Huang, 2021). For instance, the BBC in the UK and RTVE (Radio y Televisión Española) in Spain have established specific innovation departments, such as media labs, to provide journalists with the knowledge and tools needed to develop innovations in content production and distribution (Nunes & Mills, 2021). These efforts create a "collaborative space for innovators from within and beyond companies to engage with each other or be a loose network of communities of

practice within a specific geographic cluster, brought together to solve a problem, experiment or play” (Mills & Wagemans, 2021, p. 1469). The efforts of European public service media (PSM) to integrate technology with journalistic values have become more pronounced, particularly during the COVID-19 pandemic, when the risk of misinformation increased (Túñez-López, Fieiras-Ceide & Vaz-Álvarez, 2021).

However, financial resources and environmental assets are prerequisites for reaping the benefits of AI in newsroom organizations. The challenges in securing or supporting resources (funds and personnel for technology adoption, development, and maintenance) act as barriers from the initial stages of AI infrastructure establishment. The necessary algorithmic tasks for journalistic organizations include storytelling, layout, headline optimization, and selecting story-related materials such as images and photos (Bold-Erdene, 2020; Munoriyarwa et al., 2021). Nevertheless, implementing the requisite technologies entails substantial costs (Litskevich, 2020). Despite the recognition that AI can enhance productivity and efficiency, media companies may find this insufficient motivation for investment. This contradiction—that AI can reduce costs in news production and operations but does not receive organizational financial input—may be linked to a lack of knowledge about AI’s potential (Noain-Sánchez, 2022; Canavilhas, 2022). Such concerns were frequently shared by journalists in Portugal, Nigeria, the United Arab Emirates, Pakistan, South Africa, and smaller or regional media organizations. This stands in contrast to the active algorithmization of news production processes by well-funded media organizations in Europe and the US, such as *The Guardian*, *The New York Times*, and *The Washington Post* (Jamil, 2020; Munoriyarwa et al., 2021). Insufficient capital, lack of technical understanding, and institutional environment are prominent barriers to AI adoption in journalistic organizations (Boczkowski, 2005; de-Lima-Santos & Mesquita,

2021b; Lindblom et al., 2022; Krumsvik et al., 2019; Paulussen, 2016).

Journalists’ skepticism and anxiety regarding AI have impeded the adoption and diffusion of the technology. Concerns about job security and social status manifest as vague fears about technology. Although perceiving innovative technology and automation as job threats is not unique to journalists, the journalistic logic in newsrooms differentiates this profession. Journalism ideology is often interpreted as “how journalists give meaning to their newswork” (Deuze, 2005, p. 444; Helberger et al., 2022) and frequently serves as a normative framework in media studies (Lindén, 2017; Usher, 2017; Danzon-Chambaud & Cornia, 2021). However, the data and algorithm formation processes provided by AI are technically complex and challenging to understand. Fundamentally, many algorithm-based tools are not specifically designed and developed with journalistic values and norms in mind (Diakopoulos, 2019; de Haan et al., 2022). Journalists suggest that more contextual information is needed to enhance the quality of news content generated by AI. From a journalistic perspective, providing context that explains the reasons and methods behind news events, enabling readers and viewers to connect the dots, has become increasingly important (Zaid, Ibahrine, & Fedtke, 2022; Ahmad et al., 2023).

The discourse on AI in newsrooms is predominantly divided into optimism and pessimism. As noted, “in contrast to popular portrayals of AI in the English-speaking West, which tend to be either exaggeratedly optimistic about what the technology might achieve, or melodramatically pessimistic” (Cave et al., 2018). Journalists displayed a relatively balanced perspective, showing both hope and skepticism. No one presented fixed opinions of pure optimism or pessimism. Instead, they conditionally judged whether AI would enhance or undermine journalistic values based on specific conditions (Jones et al., 2022). There is still insufficient consensus within news organizations on the

impact of AI. AI can indeed open up new avenues for journalistic research and reporting, but such technologies are far from neutral (Moran & Shaikh, 2022). The debate on how AI will advance or hinder the normative vision that journalism holds has spurred extensive scholarly discussions (Broussard et al., 2019; Carlson, 2015a; Lewis, Guzman et al., 2019; Stray, 2019; Kothari & Cruikshank, 2021; Gutierrez Lopez et al., 2022).

RQ2: What Frameworks Are Used to Integrate AI with Journalistic Ethics?

The fundamental issue when introducing AI into newsrooms is how the editorial judgment and ethical values of human journalists can be incorporated into AI-generated content (Ward, 2018; Bell et al., 2017; Jamil, 2021). Journalists are concerned about whether essential ethics and values such as integrity, social responsibility, transparency, trust, and fairness can be technically implemented. This concern is related to data workers and engineers who develop and implement AI technologies in news organizations being aware of and expressing journalistic values. The significance of new entrants to journalistic work in the form of data scientists is growing (Chew & Tandoc, 2022; Lischka et al., 2022). Editorial technologists work “at the intersection of traditional journalist positions and technologically intensive positions that were once generally separate” (Kosterich, 2020, p. 52). The advancement of AI based on digital technologies has prompted the phenomenon of “the blending of journalist-technologists” (Hermida & Young, 2017, p. 171) and created an “intersectional ‘techno-journalistic space’” (Ananny & Crawford, 2015, p. 192) (Lischka et al., 2022). Data managers, analysts, algorithm developers, and other newsroom members are now incorporated into the realm of ‘journalists’.

Journalism's autonomy and the intricate power dynamics and hierarchies among journalists are significantly explained by Pierre Bourdieu's field theory (Bourdieu & Wacquant,

1992; Lindblom et al., 2022). Although field theory was not designed to explore technology-driven organizational changes, research inspired by Bourdieu has rapidly increased, analyzing how digital technology is altering the journalism field (Schultz, 2007; Hovden, 2008; Vos, Craft, & Ashley, 2012; Craft, Vos, & Wolfgang, 2016; Lindblom et al., 2022). “Field theory can therefore provide a “vector of power dynamics” (Anderson, 2013, p. 1013) to the study of technological innovation” (Danzon-Chambaud & Cornia, 2021, p. 175). Practitioners from diverse areas develop a sense of journalism ‘doxa’ and implement journalistic ethics (Jannie Møller & Bonde Thylstrup, 2024).

The study's findings indicate that the boundaries of the journalism profession are expanding. Newsrooms now include journalists, data technologists, and policy makers who collaborate on implementing AI technologies. Developers, programmers, and designers are now considered representatives of the journalism profession in newsrooms (Lischka et al., 2022). These technology professionals continuously introduce new information technologies into the organization, representing the avant-garde community of journalism (Hepp & Loosen, 2021). Thus, the perspective that ‘IT experts and developers should be considered key actors in news organizations’ (Anderson, 2013; Diakopoulos, 2020; Moran & Shaikh, 2022) is gaining traction. The inclusion of diverse practitioners within the journalist group plays a crucial role in maintaining news operations (Lewis & Westlund, 2015; Jamil, 2021). Traditional journalists are still regarded as the core agents upholding journalism (Ryfe, 2019; Jamil, 2021).

The Human-Computer Interaction (HCI) framework, as presented by communication scholars, defines “humans as communicators” and “machines as intermediaries or facilitators” (Barnlund, 2008; Weiswasser, 1997; Jamil, 2021). Jamil (2021, p.1405) further elaborated, “Human-machine communication (HMC) framework,

which is an emerging area of communication research ... posits technologies and machines as communicators". According to Guzman (2018, p. 1), the HMC concept is concretized into three areas: Human-Computer Interaction (HCI), Human-Robot Interaction (HRI), and Human-Agent Interaction (HAI). Within the context of HCI, it is possible to design systems to verify news sources (including instances where news content is revised and republished over time), measure media bias, and more (Evans et al., 2020; Komatsu et al., 2020; Cruz et al., 2020). Understanding the algorithms representing AI development, machines, and technologies interacting with human journalists can better realize the journalistic values of trust, objectivity, and transparency.

The Technology Acceptance Model (TAM) is one of the most influential and widely used theories for analyzing factors that determine the adoption of new technologies by individuals or groups (Davis, Bagozzi, & Warshaw, 1989; Venkatesh et al., 2003). The core components of this model are 'Perceived Ease of Use' and 'Perceived Usefulness.' 'Perceived Ease of Use' refers to the degree to which a person believes that using a particular technology would be free of effort. 'Perceived Usefulness' is the degree to which a person believes that using a particular technology would enhance their job performance. When individuals perceive a technology as easy to use and useful, they are more likely to have a positive attitude toward its adoption. TAM has provided a theoretical foundation for connecting technology and journalism across various cultural contexts (Goni & Tabassum, 2020; Patabandige, 2019; Zhou, 2008). With the evolution of new technologies, TAM has been expanded to include various additional variables, resulting in more nuanced models. TAM2 (Venkatesh & Davis, 2000) introduced additional determinants of technology adoption, such as 'job relevance' and social influence factors, bridging the gap between technology adoption and journalism research (Ayyad et al., 2023). TAM later evolved into

TAM3 (Venkatesh & Bala, 2008), which detailed variables like computer self-efficacy and experience, and into UTAUT (Venkatesh, Morris, Davis, & Davis, 2003) and UTAUT2 (Venkatesh, Thong, & Xu, 2012), which incorporated factors like price value and habit. While TAM's broad applicability is an advantage, it has been criticized for providing only general information about users' opinions on systems (Mathieson, 1991; Ayyad et al., 2023). This critique is particularly relevant when attempting to navigate the complex equation of merging technology with journalistic ethics.

Conclusion

Journalists responding to the 23 reviewed papers worked in various countries, including the United Arab Emirates, Egypt, Pakistan, the United States, China, South Africa, Nigeria, Portugal, Bolivia, Brazil, Colombia, Cuba, Peru, Venezuela, the UK, Spain, the Netherlands, Denmark, Sweden, and Germany. Despite differences in AI perceptions based on newsroom organizations and regional conditions, journalists generally predicted that AI adoption in newsrooms was inevitable. The terminology referring to AI was inconsistent, reflecting varied terminologies in the selected papers (e.g., automated, computational, robot, algorithm, data) and indicating a lack of clear conceptualization among journalists using the technology. The potential of generative AI technologies is vast, and journalists are calling it by various names to suit their areas of emphasis.

Experience studies connecting AI and journalism most frequently referenced Bourdieu's field theory. Before AI adoption, journalists had almost exclusively held symbolic, social, and cultural capital as dominant actors in the field(newsroom). However, as computer programmers, software engineers, and algorithm designers, previously considered separate from journalism, entered newsrooms, they began generating new forms of capital. With the evolution of AI, these professionals are likely to

secure more capital and expand their influence within newsrooms, potentially causing new tensions and conflicts within the organization.

Journalists strongly believed that they must work autonomously, free from any form of influence, including power. While autonomy is an ideological value that journalism should pursue, it can also morph into exclusivity towards other actors entering the journalist domain. This study included existing literature defining technology personnel as journalists. However, the expansion of the term 'journalist' must also occur within the workspace.

This study proposes the concept of a 'journalistic algorithm.' 'Journalistic' conveys traditional journalistic spirit and values such as reliability, fairness, and truth-seeking. Combining it with 'algorithm,' often referred to as a black box, aptly expresses the magical nature of AI technology. Newsrooms can move beyond merely adopting or using the technology presented to them by developing it and directly participating in discussions to bring algorithms into an 'explainable' realm. By engaging in the 'creation of meaning' process, journalists can emphasize the professional logic unique to human journalists. This study focused on technology acceptance and diffusion perspectives, with in-depth concentration on the expansional occupation scope of journalists and the industry-wide focus on AI in the 2020s. It combined the perceptions and attitudes of practitioners working in newsrooms with technology, organizational culture, and the spirit of journalism.

Limitations

Several limitations should be considered when interpreting the results of this study. First, since only English-language papers providing answers to the research questions were included, the scope of the research might have been minimized. Second, literature reviews can be criticized for being a vulnerable research method. It is not easy to combine search strings optimized for the research topic to find highly relevant

papers. Databases are continuously updated, so the final sample may vary slightly depending on the timing, even with the same strings. Of course, even with the same papers for review, subjectivity can be involved depending on the author's perspective and choice. This is a fact inherent in all qualitative research.

Furthermore, the concepts and models proposed and highlighted in this study need to be substantiated through future empirical research. To test the applicability of these models in journalistic environments, both qualitative and quantitative methods must be employed.

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