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ORIGINAL ARTICLE

The Role of Artificial Intelligence and Algorithms in the Automation of News Media and Its Implications

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EXTENDED ABSTRACT

Interdiction:

Journalism, commonly termed news reporting, is a profession in which individuals—known as journalists, reporters, or news correspondents—operate within the editorial divisions of newspapers, periodicals, news agencies, and radio, television, or online news platforms. Their responsibilities encompass sourcing, conveying, preparing, editing, and publishing news and reports on societal events, alongside analyzing and interpreting public opinion. Alternatively, a journalist may be defined as an individual who, drawing upon personal aptitude and specialized training, and acknowledging the social responsibility inherent in the role, is tasked with acquiring, preparing, compiling, editing, and disseminating news to audiences via mass media (Badiei & Ghandi, 2013, p. 16). At a professional level, this occupation demands independence, impartiality,

objectivity, balance, and fairness in the selection and presentation of news, as well as a politically open environment, freedom from governmental interference, and unhindered competition—conditions absent in numerous nations (Farahani, 1999, p. 26). The core functions of a journalist can thus be summarized as recording, reporting, and explicating events.

The initial phase of journalism commenced in the early 17th century with state-controlled, authoritarian periodicals. The subsequent era, marked by Western democratic revolutions, witnessed the emergence and expansion of an audience-oriented press, culminating in the political ascendancy of the bourgeoisie. The rise of commercial and news publications heralded the professional era and the third phase of press development (Moetamednejad, 2003, pp. 456-457). Presently, advancements in news-gathering and processing technologies, particularly through artificial intelligence (AI) and algorithmic systems, are driving profound transformations in news dissemination. This has given rise to automated journalism—a mode of reporting utilizing intelligent machines and software to collect and disseminate news with minimal human intervention.

Automated journalism, also referred to as algorithmic or robot journalism, describes contemporary technological processes integrated into journalistic practice. These technologies employ natural language generation (NLG) algorithms, powered by AI and robotic systems, to automatically convert structured data into news narratives, images, videos, and data visualizations. Its applications are prominent in four domains: automated content creation, data mining, news broadcasting, and content optimization. While offering benefits such as enhanced speed, accuracy, efficiency, and cost reduction, it also presents challenges related to content quality, credibility, ethical considerations, and the potential displacement of human journalists.

The primary objective of this research is to elucidate the characteristics and impacts of automated journalism as shaped by AI and algorithmic processes, employing a descriptive-analytical methodology. Consequently, the central research question is: How does automated journalism function in the age of artificial intelligence and algorithms, and what are the defining features and implications of this novel journalistic approach?

Method:

This study adopts a qualitative approach, utilizing qualitative data—including documents, scholarly articles, and related materials—to interpret and explain social phenomena. Data collection was conducted through documentary and library-based methods. The documentary method is particularly pertinent when investigating historical contexts or contemporary developments. The validity of documentary research hinges on the sources consulted; despite the variety of available indices and records, written books and references remain paramount for social inquiry (Marshall & Rossman, 1997, p. 97). Accordingly, this research draws upon the most recent articles and studies concerning the influence of AI and algorithms on journalism and news dissemination.

Findings:

The impact of algorithms on the news industry is extensive and multidimensional, significantly affecting three primary domains: news writing, data processing, and news distribution. The

consequences of algorithmic integration in these areas are substantial, reshaping journalism and the broader news landscape.

Leading global news organizations have begun implementing algorithms to produce news content, including articles and brief reports. Notable examples include Bloomberg's "Cyborg" project, the Washington Post's Heliograph, the Associated Press's "Automated Insights" platform, and Tencent's Dream writer in China. Initiated in 2016, Bloomberg's Cyborg project involved a dedicated team developing automated news writing and reporting capabilities, resulting in "smart automated content." By 2019, Cyborg was generating approximately one-third of Bloomberg's news content—primarily financial and business reports—and could analyze published news to promptly produce follow-up reports highlighting the most relevant topics (Pizza, 2019).

Although currently confined to major news entities, the adoption of algorithmic news production is expanding, facilitated by global progress in natural language generation (NLG). NLG, a subfield of AI, involves the automated creation of natural language from structured data. By leveraging AI and computational linguistics, NLG systems generate coherent texts in languages such as English. In journalistic terms, NLG can be understood as the codification of news principles—including news values and stylistic conventions—into executable algorithms (Visi, 2023). These developments indicate that robots are increasingly producing news with remarkable precision and speed, assuming tasks traditionally performed by human journalists.

Conclusion

Algorithms—defined as structured sequences of steps designed to accomplish specific tasks—are now pervasive in journalism, employed for news writing, data collection, analysis, processing, distribution, and prioritization. Their integration has catalyzed the emergence of automated journalism, which may be concisely defined as the algorithmic automation of data conversion into news stories following predefined formats.

Beyond automated writing, algorithms are increasingly utilized for data collection, analysis, and processing, streamlining activities such as data aggregation, cleansing, visualization, and sharing. The advent of search engines, news feed algorithms, and news bots has further altered how news is distributed and selected for audiences, reshaping the perceived significance and relevance of news items.

The incorporation of algorithms into journalism has transformed journalistic practices, required skill sets, and output quality, yielding multifaceted consequences. As journalists' roles evolve from mere news producers to service providers, they must acquire new competencies. While concerns about job displacement are currently limited to repetitive and routine tasks, significant challenges persist regarding algorithmic accountability—including the influence of external interests, lack of transparency, and embedded biases. Journalistic logic is grounded in normative principles and professional values, which are not inherently aligned with the operational logic of algorithms. In general, it appears that the greater the synergy and convergence between algorithmic and journalistic logics, the more automated news will advance, further transforming the nature and methodologies of journalism.

Data Availability Statement

Data available on request from the authors.

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Ethical considerations

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Conflict of interest

The authors declare no conflict of interest.

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