

AI-Assisted News Production in Media and Journalism: A Systematic Literature Review

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Abstract—Artificial intelligence (AI) is reshaping news production by enabling faster workflows, scalable content generation, and new forms of human–AI collaboration. However, the evidence supporting its effective and ethical use remains fragmented. This study presents a protocol-driven systematic literature review of AI-assisted news production published between 2015 and 2025, following the PRISMA 2020 guidelines and a preregistered Open Science Framework protocol. Searches of Scopus and Web of Science identified 404 records; after deduplication, screening, and full-text assessment (24 reports could not be retrieved), 74 peer-reviewed publications met the eligibility criteria. Using structured data extraction, descriptive mapping, and thematic analysis, the review finds a research landscape dominated by natural language processing, particularly automated text generation and large language models. Technical and task-level performance is frequently evaluated, whereas evidence of sustained newsroom integration and long-term organizational impact remains limited. Ethical, social, and regulatory concerns are widely acknowledged, but none of the included publications was classified as empirically evaluating them. The findings point to a need for longitudinal, comparative, and interdisciplinary research that evaluates AI-assisted journalism as a socio-technical practice involving technology, professional workflows, human oversight, and ethical governance.

Keywords—AI-assisted journalism; automated news production; ethical governance of AI; human–AI collaboration; newsroom integration; systematic literature review

I. INTRODUCTION

Artificial intelligence (AI) has become a central force in professional news production, reshaping workflows, editorial decision-making, and content formats. From early rule-based automation to machine learning, natural language generation, and large language models, AI now operates across multiple stages of the news production process [20], [38], [63], [73], [75]. Early studies of automated and algorithmic journalism documented how machine-written news could transform professional roles, newsroom labor, and audience perceptions [1]–[3], while subsequent mapping efforts consolidated key themes and trajectories in the field [4].

Despite growing scholarship, research on AI-assisted journalism remains fragmented, varying widely in methodological rigor and conceptual focus. This diversity makes it difficult to assess the effectiveness of AI systems, their meaningful integration into newsroom practices, and the strength of the evidence supporting current claims. Although previous reviews have mapped major themes and research trajectories in AI-assisted journalism [5], [6], [29], important methodological

and analytical gaps remain. In particular, a clearer account is needed of how the available evidence is distributed across research designs, how methodological limitations affect the strength of reported findings, and how ethical concerns are examined in empirical rather than purely conceptual terms.

The present review addresses these issues by combining a preregistered review protocol, study selection guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines, five research questions, structured data extraction, and an analysis of methodological and ethical patterns across publications from 2015 to 2025. It also distinguishes study-level methodological appraisal using the Mixed Methods Appraisal Tool (MMAT) from review-level risk-of-bias assessment using the Risk of Bias in Systematic Reviews (ROBIS) tool. Its contribution is therefore not simply to catalogue AI applications in journalism, but to examine the nature and methodological limitations of the evidence supporting claims about their performance, newsroom integration, and ethical implications.

The remainder of this study is organized as follows. Section II describes the review methodology, including protocol registration, search strategy, eligibility criteria, study selection, data extraction, appraisal, and synthesis. Section III reports the results, organized around the five research questions. Section IV interprets the findings, outlines implications, and discusses the limitations of the review. Section V concludes the study.

II. METHODOLOGY

A. Review Design and Protocol Registration

This study adopts a systematic literature review (SLR) design to examine the use of artificial intelligence in professional news production and journalism. The review was conducted in accordance with the PRISMA 2020 guidelines [7], which were used to promote transparency, reproducibility, and methodological rigor throughout the review process.

To reduce analytical flexibility and selection bias, the review protocol was defined a priori and formally preregistered on the Open Science Framework (OSF). The preregistration specifies the research questions, eligibility criteria, information sources, search strategies, screening procedures, data extraction variables, quality appraisal methods, and synthesis approach. The registered protocol is publicly accessible under the following DOI: <https://doi.org/10.17605/OSF.IO/DWJS4>.

The review focuses on peer-reviewed scholarly publications addressing AI applications in professional news production contexts, including newsrooms, journalistic workflows, and automated or AI-assisted news writing systems. The temporal scope spans publications from 2015 to 2025, the period in which research on AI-based news production technologies expanded.

Methodologically, the review is designed as a descriptive and analytical synthesis rather than a meta-analysis. No causal inferences or statistical hypothesis tests are pursued. Instead, the review aims to map existing research systematically, characterize methodological approaches, identify reported outcomes and challenges, and assess the methodological characteristics and limitations of the available evidence. Study-level methodological quality was appraised using MMAT, whereas risk of bias at the review level was evaluated using ROBIS [8]. Fig. 1 summarizes the methodological frameworks and analytical tools used, from protocol registration to quality appraisal and narrative synthesis.

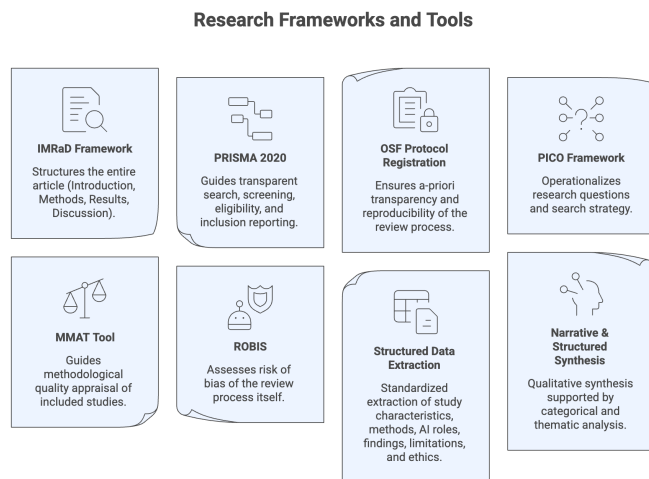


Fig. 1. Integrated methodological frameworks and analytical tools employed to structure, conduct, and synthesize the systematic literature review, from protocol registration to quality appraisal and narrative synthesis.

B. Research Questions and PICO Framework

This systematic literature review is structured around five predefined research questions, established prior to study selection and preregistered on the OSF. Together, these questions are intended to capture the technological landscape of AI-assisted news production, examine the reported evidence on its effectiveness, address its ethical and societal implications, and identify methodological limitations within the existing body of research.

Specifically, the review addresses the following research questions:

- What artificial intelligence approaches are currently used in professional news production, and what journalistic functions do they primarily support?
- What empirical evidence is reported regarding the effectiveness, accuracy, and performance of AI-assisted news production systems?

- How do existing studies describe the integration of AI systems within newsroom workflows and journalistic practices?
- How are ethical, social, and regulatory challenges associated with AI-assisted journalism reported and evaluated in the literature?
- What methodological limitations, biases, and evidence gaps can be identified across the included publications on AI-assisted news production?

To support a systematic and consistent treatment of these research questions, two complementary frameworks were employed: the Population, Intervention, Comparison, and Outcome (PICO) framework and a conceptual inclusion decision framework.

As illustrated in Fig. 2, the PICO framework provides a formal operationalization of the research questions. The Population component defines the professional journalism and news production contexts relevant to all five questions. The Intervention dimension captures the AI techniques examined in relation to RQ1, focusing on the types of AI systems and their journalistic functions. The Comparison dimension supports RQ3 by enabling analysis of human-only, hybrid, or alternative AI-assisted workflows when such comparisons are reported. The Outcomes component directly informs RQ2 and RQ4, encompassing reported evidence on system performance, newsroom integration, journalistic quality, trust, and ethical or societal implications.

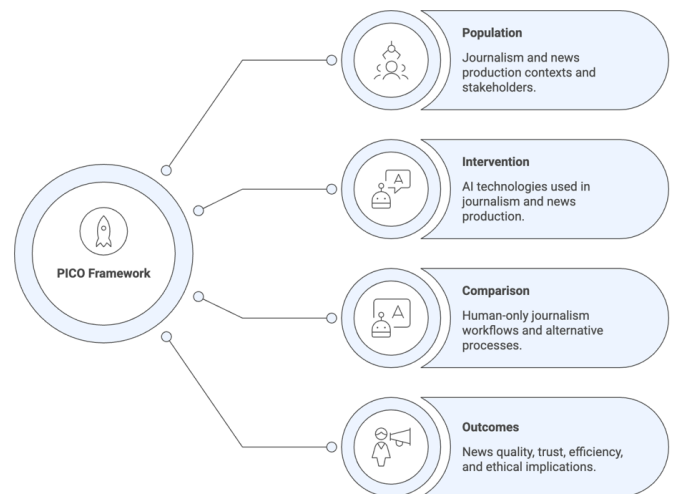


Fig. 2. Operationalization of the five research questions using the PICO framework, defining the population, intervention, comparison, and outcome dimensions guiding study identification, eligibility assessment, and data extraction.

Complementing this analytical structure, a conceptual inclusion decision framework was applied during study screening and eligibility assessment to operationalize the research questions in practice. As shown in Fig. 3, inclusion decisions were guided by five core conditions informed by the research questions: explicit AI involvement, anchoring within professional journalistic contexts (relevant to RQ3), specification of AI's functional role, articulation of human involvement, and reporting of outcomes, implications, or limitations. This

Should a study be included in the review?

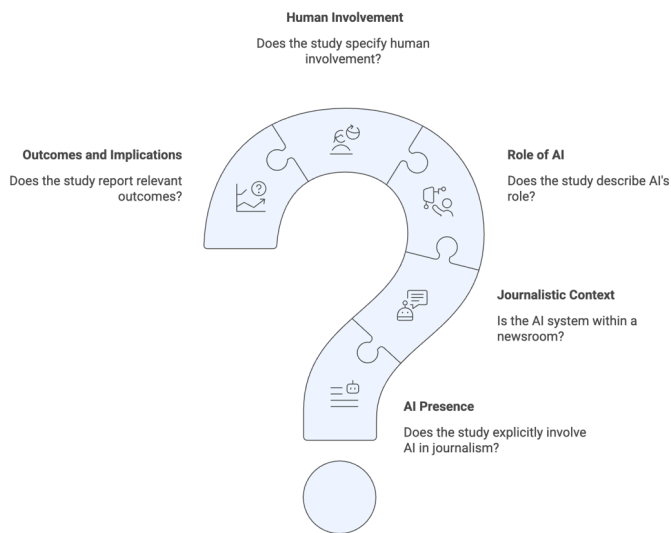


Fig. 3. Conceptual inclusion decision framework illustrating how the five research questions informed study screening and eligibility decisions, including AI presence, journalistic context, role of AI, human involvement, and reported outcomes or limitations.

framework was intended to ensure that retained publications could contribute empirical, technical, organizational, or ethical insights relevant to the research questions.

Together, these two frameworks show how the five research questions shaped both the analytical scope and the operational execution of the review. The PICO framework defines the types of evidence that were sought, while the inclusion decision framework illustrates how the criteria were applied during study selection, supporting methodological transparency and reproducibility.

C. Information Sources and Search Strategy

To support transparent and reproducible coverage of the literature, the review drew on two multidisciplinary bibliographic databases: Scopus and the Web of Science Core Collection. These databases were selected because of their extensive indexing of peer-reviewed research in journalism studies, communication science, and artificial intelligence, and because of their widespread use in systematic reviews in information science and media research. The use of two databases does not guarantee exhaustive coverage; this point is discussed in Section IV-J.

A structured search strategy was developed a priori and registered on the OSF. The search queries were designed to capture research on the application of AI in professional news production contexts, in alignment with the PICO framework and the predefined research questions. Search terms combined three core conceptual dimensions: 1) journalism and news production, 2) artificial intelligence technologies, and 3) production-related activities.

In Scopus, the Advanced Search was applied to titles, abstracts, and keywords using the following Boolean expression:

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TITLE-ABS-KEY(("news production" OR journalism OR newsroom OR "automated journalism" OR "robot journalism" OR "news writing") AND ("artificial intelligence" OR "machine learning" OR "natural language generation" OR NLG OR NLP OR LLM OR "large language model" OR "multimodal AI") AND (production OR writing OR generation))
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In the Web of Science Core Collection, a comparable topic-based query was executed:

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TS= (("news production" OR journalism OR newsroom OR "automated journalism" OR "robot journalism" OR "news writing") AND ("artificial intelligence" OR "machine learning" OR "natural language generation" OR NLG OR NLP OR LLM OR "large language model" OR "multimodal AI") AND (production OR writing OR generation))
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Search results from both databases were then restricted to English-language, peer-reviewed journal articles and conference papers published between 2015 and 2025. These language, document-type, and temporal restrictions were applied to reflect the period in which AI-assisted news production emerged and matured as a research domain.

All retrieved records were exported from the databases and merged into a single reference dataset for subsequent deduplication, screening, and eligibility assessment following the PRISMA 2020 guidelines.

D. Eligibility Criteria

Eligibility criteria were defined a priori in accordance with the registered protocol and the PRISMA 2020 guidelines, and were structured using the PICO framework [9] to ensure alignment between the research questions, search strategy, and study selection. Publications were included if they 1) were peer-reviewed journal articles or conference proceedings published in English between 2015 and 2025; 2) focused on the application of AI in professional news production contexts, particularly newsroom environments and functions such as content generation, news writing, editorial workflows, and decision support; and 3) reported empirical, technical, organizational, or ethical contributions. Publications were excluded if they addressed non-journalistic domains (e.g., social media-only contexts, marketing, or public relations); were purely technical without explicit relevance to news production; were non-peer-reviewed (e.g., editorials, tutorials, theses, and other grey literature); or focused solely on journalism education. The criteria were applied at both the title/abstract and full-text stages. Unclear cases were assessed in detail, and reasons for exclusion were documented to support transparency and reproducibility.

E. Study Selection and Screening Process

The study selection process followed the PRISMA 2020 guidelines and the registered protocol. Records retrieved from Scopus and Web of Science were exported, merged, and deduplicated to form a unified dataset. Title and abstract screening was then conducted using the predefined eligibility criteria to identify publications relevant to AI in professional news production. Eligible records progressed to full-text review, in

which objectives, methodology, empirical contribution, and newsroom relevance were assessed in detail. Screening was guided by the PICO framework to ensure consistency with the research questions. Four reviewers independently screened the records; full-text evaluation was then conducted collaboratively, and disagreements were resolved through discussion until consensus was reached. Reasons for exclusion at the full-text stage were documented. The overall selection process is reported in Section III-A using a PRISMA flow diagram.

F. Data Extraction and Coding Scheme

Data extraction was conducted using a structured, predefined coding scheme developed in alignment with the research questions, the PICO framework, and the registered protocol. For each publication, bibliographic information and methodological characteristics were recorded, including study design, research approach (quantitative, qualitative, mixed, or technical), and empirical basis. AI techniques (e.g., automated journalism, natural language generation, large language models, multimodal AI) and their associated journalistic functions were systematically categorized. Extracted outcomes covered effectiveness, performance, usability, and newsroom integration, along with ethical and regulatory aspects such as transparency, accountability, bias, and human oversight. Methodological quality indicators were documented to support MMAT appraisal, and potential biases were noted for ROBIS assessment. All data were compiled into a structured dataset for descriptive and thematic synthesis, and ambiguities were resolved through reviewer consensus.

G. Quality Appraisal (MMAT)

The methodological quality of included publications was assessed using the Mixed Methods Appraisal Tool (MMAT) [10], selected to accommodate the methodological diversity of AI-assisted journalism research. Appraisal was conducted after full-text screening and data extraction. Each publication was classified by design and evaluated against the five MMAT criteria relevant to its category, covering aspects such as design appropriateness, data collection, analytical coherence, and validity of findings. Each criterion was rated “Yes,” “No,” or “Cannot tell.” Publications were not excluded on the basis of quality; instead, the results were used descriptively to contextualize the strength and limitations of the evidence, with overall quality levels (low, moderate, high) derived following MMAT guidance. The appraisal informed the interpretation of the findings.

H. Risk of Bias Assessment (ROBIS)

Risk of bias at the review level was assessed using the ROBIS tool [8], which evaluates bias arising from the review process rather than from individual studies. The assessment followed three phases: confirmation of the review’s relevance, evaluation of concerns across four domains (eligibility criteria, study identification and selection, data collection and appraisal, and synthesis and findings), and an overall judgment. Each domain was assessed for transparency, consistency, and adherence to the preregistered protocol, with judgments recorded as low, high, or unclear concern, without numerical scoring. An overall qualitative judgment was then derived, and the results informed the discussion of methodological limitations.

I. Synthesis Approach

Given the heterogeneity of study designs, data, and outcomes, a structured narrative synthesis was adopted to enable systematic comparison without inappropriate statistical aggregation [11]. The synthesis combined descriptive mapping (e.g., publication trends, methods, AI techniques, and contexts) with thematic analysis to identify patterns related to AI roles, performance, newsroom integration, and ethical considerations. Publications were grouped according to predefined categories aligned with the research questions, from which higher-level themes were derived. MMAT and ROBIS assessments were used to contextualize the quality of the evidence but did not influence inclusion. No meta-analysis was conducted because the outcomes were not comparable, and the synthesis was explicitly structured around the research questions to support transparency.

III. RESULTS

This section presents the main findings of the review, organized around the five research questions. Subsections A–H report, in order, the study selection results; the temporal distribution of publications; the characteristics of the included studies; AI techniques and journalistic functions (RQ1); evidence on effectiveness and newsroom integration (RQ2–RQ3); ethical, social, and regulatory issues (RQ4); methodological characteristics and gaps (RQ5); and future research directions emerging from the literature. Together, these subsections address the five research questions and summarize the main patterns, limitations, and evidence gaps identified across the 74 included publications.

A. Study Selection Results

The study selection process resulted in a final set of 74 publications included in the review. A total of 404 records were initially identified through structured searches of Scopus and the Web of Science Core Collection. After the removal of 21 duplicate records, 383 unique records remained and were screened on the basis of titles and abstracts. Of these, 98 reports advanced to full-text review.

For 24 of the 98 reports, an accessible full text could not be obtained despite multiple attempts through institutional subscriptions, open-access repositories, and direct contact with corresponding authors. These reports could therefore not be assessed against the eligibility criteria and were excluded. The remaining 74 reports were assessed in full and met all eligibility requirements, and they constitute the final set of included publications.

The 24 unavailable reports represent 24.5% of the 98 reports that advanced to full-text review. Because these reports could not be examined, it cannot be determined whether they differ systematically from the accessible publications (for example, in venue or access model), or how their exclusion may have affected the composition of the final evidence base. This potential availability bias is acknowledged as a limitation (Section IV-J).

The complete study selection process and the number of records retained and excluded at each stage are illustrated in the PRISMA 2020 flow diagram (Fig. 4).

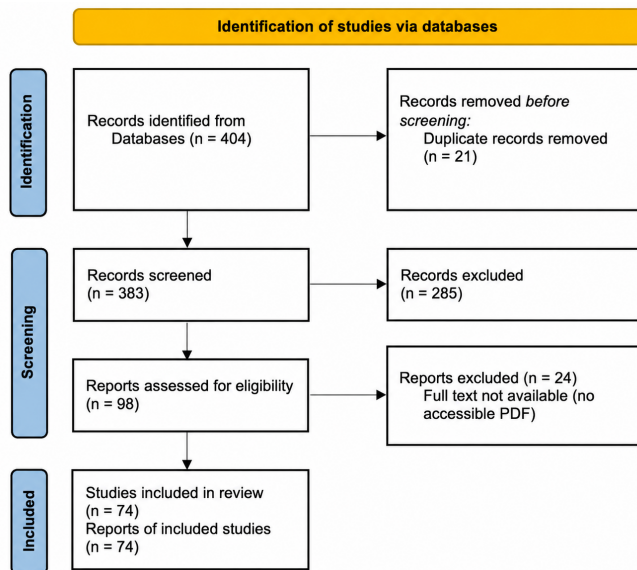


Fig. 4. PRISMA 2020 flow diagram depicting the identification of records from scopus and web of science, subsequent screening and eligibility assessment, and the final set of studies included in the review.

B. Temporal Distribution of Publications

The temporal distribution of the 74 included publications indicates a clear evolution of scholarly attention to AI in professional news production over the review period (2015–2025). Early research output appears sporadically in the initial years, reflecting exploratory investigations into automated journalism and data-driven news production.

From 2019 onward, the number of publications increases overall, with a marked concentration between 2020 and 2025. This period accounts for the majority of the included literature and coincides with the broader diffusion of machine learning, natural language generation, and, more recently, large language models within journalistic contexts. The year-by-year distribution is presented in Fig. 5, which illustrates the growing research activity and the recent acceleration of academic interest in AI-assisted news production. A similar concentration of publications in recent years has been reported in a prior systematic review of AI-assisted journalism [6].

Beyond indicating increased research activity, the concentration of publications after 2020 suggests that scholarly interest in AI-assisted news production has accelerated alongside recent advances in machine learning and large language models. Although a temporary decline is visible in 2022, publication levels rise again in subsequent years. Publication counts reflect research output and should not be read as direct evidence of adoption in newsrooms.

This pattern may also indicate that much of the existing evidence reflects early-stage adoption and experimentation rather than mature or stabilized forms of organizational integration. It may further reflect a reactive research dynamic in which scholarly attention follows technological breakthroughs, resulting in short innovation cycles and limited cumulative evidence on sustained newsroom adoption.

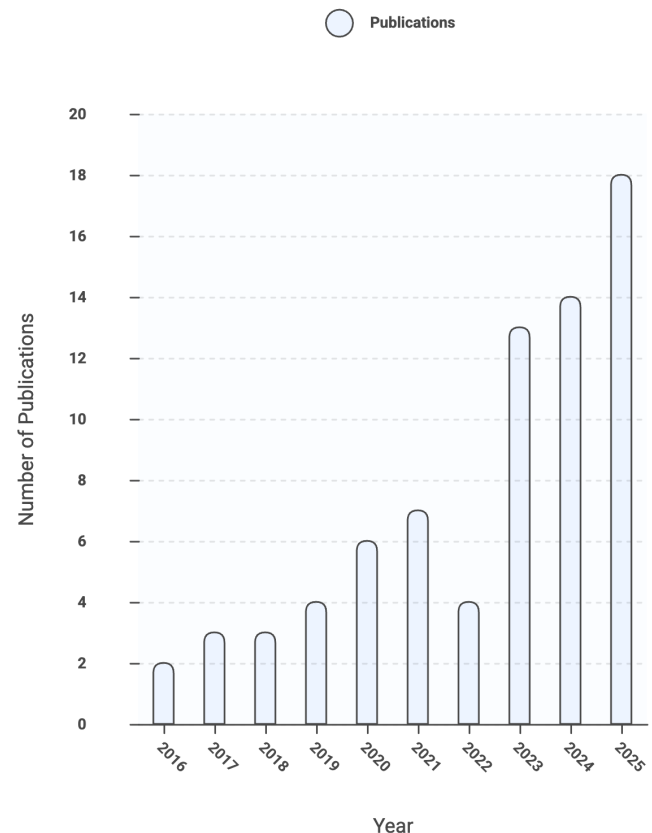


Fig. 5. Annual number of publications addressing artificial intelligence applications in professional news production among the 74 studies included in the systematic review.

C. Characteristics of Included Studies

The 74 included publications were characterized according to their methodological approach, research design, and focus within AI-assisted news production. This analysis distinguishes five categories: technical or system-oriented studies, quantitative empirical research, qualitative empirical research, mixed-methods studies, and conceptual or theoretical contributions. Fig. 6 summarizes the distribution of these categories and provides a basis for examining the balance between technical development, empirical investigation, and conceptual analysis in the reviewed literature.

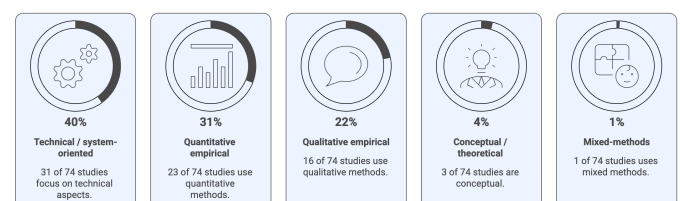


Fig. 6. Methodological characteristics of the included studies ($n = 74$), showing the distribution of technical/system-oriented, quantitative empirical, qualitative empirical, conceptual/theoretical, and mixed-methods research designs.

The predominance of technical and quantitative study designs suggests that AI-assisted journalism research in this

corpus has prioritized system performance and functional feasibility over in-depth examination of professional practice. This methodological distribution implies a limited empirical understanding of how AI systems are negotiated, interpreted, and sustained within newsroom cultures and organizational routines.

This imbalance suggests that the field's knowledge base is shaped more by technical feasibility studies than by socio-professional analyses of journalistic practice. Consequently, the literature may overestimate technological readiness while underexamining the institutional, cultural, and editorial conditions required for meaningful AI integration.

D. Artificial Intelligence Techniques and their Roles in Professional News Production (RQ1)

The included publications report a wide range of AI applications across stages of professional news production. The most frequently examined approaches rely on natural language processing (NLP), particularly natural language generation (NLG) and, more recently, large language models (LLMs). Several publications demonstrate the use of NLP- and NLG-based systems in structured domains such as sports, finance, and elections, where data availability facilitates automated narrative generation [12]–[14], [26], [28], [32], [35], [37], [43], [51], [53], [72], [76], [79]. These systems are primarily applied to news writing, summarization, headline generation, and personalization [47], [54], [57], [67], [83].

Beyond text-based methods, publications also examine data-driven and knowledge-based systems, including data-to-text pipelines, knowledge graphs, and recommender systems, particularly in data-rich reporting contexts [22], [40], [44], [61]. A smaller body of work explores multimodal AI, combining text, audio, and visual components [30], [49], [78]. Emerging research highlights applications such as automated video production, virtual presenters, and AI-generated anchors in broadcast journalism [15], [16], as well as conversational agents for audience engagement and information retrieval [48], [71].

Overall, AI systems in the reviewed literature support content generation, information extraction, editorial assistance, and workflow optimization [52], [65], [69], [70], [77], [81], [82], [85], [86]. However, most publications focus on routine production tasks [39], with comparatively limited attention to investigative journalism, editorial judgment, or long-form reporting. The distribution of AI technique categories is presented in Fig. 7.

The dominance of NLP- and LLM-based approaches suggests that, in the reviewed corpus, AI is largely oriented toward text-centric and data-driven forms of news production, where outputs can be standardized, evaluated, and scaled. This pattern indicates that AI is primarily framed as a productivity and automation tool rather than as a transformative editorial actor. Core journalistic functions related to investigation, interpretation, and contextual sense-making are comparatively less represented in the reviewed literature. This reflects the focus of the research and should not be read as evidence about the extent to which these functions are automated in practice.

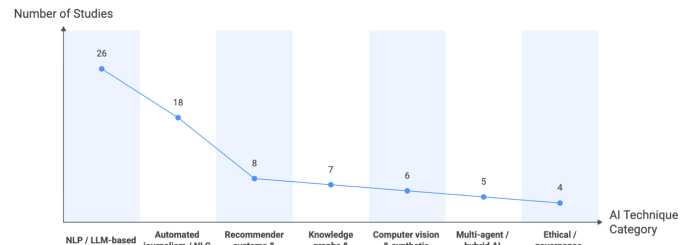


Fig. 7. Distribution of AI technique categories identified across the included studies, highlighting the dominance of natural language processing- and large language model-based approaches.

E. Evidence on Effectiveness and Newsroom Integration (RQ2–RQ3)

Evidence on the effectiveness of AI-assisted news production is reported through diverse metrics and designs, often relying on technical evaluations (e.g., accuracy, fluency, coherence, efficiency) conducted in controlled settings [21], [23], [27]. Some studies also examine audience outcomes such as credibility, trust, readability, and engagement [45], [46], [50], [58], [62], [80], [84], [87]. Some of these studies report that AI-generated content can be evaluated as comparable to human-written text for routine tasks [25], and some also examine how transparency or disclosure shapes audience evaluations [17]–[19].

In contrast, evidence on newsroom integration is limited. The studies that address it highlight hybrid human–AI workflows in which AI supports rather than replaces journalists, alongside challenges such as resistance, workflow disruption, skill gaps, and unclear editorial responsibility [24], [31], [36], [41], [55], [59], [60], [66], [68]. Overall, although technical performance is well documented, understanding of long-term organizational integration remains fragmented. This suggests that effectiveness is better understood as a socio-technical outcome shaped by professional practices, workflow alignment, and institutional trust.

F. Ethical, Social, and Regulatory Issues Reported (RQ4)

To enable a more systematic synthesis of ethical, social, and regulatory issues, the included publications were classified according to the level at which ethical considerations were addressed. Three analytical levels were identified (Table I). Ethical mention only refers to publications in which ethical concerns—such as transparency, bias, or accountability—are briefly acknowledged without further analysis. Ethical discussion encompasses publications that engage with ethical issues at a conceptual or normative level, articulating risks, professional values, or governance principles without empirically assessing their manifestation or impact. Ethical evaluation denotes publications in which ethical issues are operationalized through empirical methods, including interviews with journalists, audience experiments, observational studies, or the use of explicit ethical indicators.

Because each publication was assigned to the highest level of ethical engagement it explicitly reported, the three levels are mutually exclusive, and the counts sum to 74 (60 + 14 + 0). As shown in Table I, ethical engagement in the reviewed

TABLE I. LEVELS OF ETHICAL ENGAGEMENT IN STUDIES ON AI-ASSISTED NEWS PRODUCTION

Level of ethical engagement	Description	Typical study characteristics	Number of studies
Ethical mention only	Ethics briefly acknowledged without analysis	Short disclaimers, passing references in discussion or conclusion	60
Ethical discussion (conceptual)	Normative or theoretical discussion of ethical issues	Ethical principles, professional norms, governance or policy debates	14
Ethical evaluation (empirical)	Ethics operationalized through data or indicators	Interviews, experiments, observational or evaluative designs	0

Note: Studies were classified based on the highest level of ethical engagement explicitly reported in the “Ethical / Societal Considerations” field of the extraction dataset. Ethical evaluation refers to the empirical operationalization of ethical issues through data collection or measurement, rather than empirical studies that merely mention ethical implications.

literature was limited to brief mention (60 publications) or conceptual discussion (14 publications); no publication was classified as empirically evaluating ethical issues in AI-assisted news production. This result describes how ethics is addressed in the included publications. It does not imply that ethical safeguards are absent from newsroom practice, only that they were not empirically evaluated in the publications reviewed here.

G. Methodological Characteristics and Gaps (RQ5)

Analysis of methodological characteristics reveals recurring limitations across the reviewed publications. The literature is largely dominated by technical evaluations and quantitative designs, while qualitative and mixed-methods approaches remain underrepresented. Several publications rely on small-scale experiments, synthetic datasets, or single-case analyses, limiting generalizability. Longitudinal research on sustained newsroom adoption and long-term organizational impact is particularly scarce.

Comparative designs are also limited, with few publications systematically contrasting AI-assisted workflows with traditional journalistic practices across contexts. Methodological transparency varies, including inconsistent reporting of data sources, evaluation criteria, and levels of human involvement. Although ethical concerns are frequently acknowledged, they are rarely operationalized as measurable variables, reinforcing the gap between normative discussion and empirical validation. Similar imbalances have been identified in prior reviews [5], [6].

Overall, the reviewed corpus reflects high levels of technological experimentation but relatively low empirical maturity, with many systems tested in controlled environments rather than embedded in newsroom settings. Advancing the field will require more rigorous, longitudinal, and interdisciplinary research that treats AI not merely as a technical tool but as a socio-technical actor within journalistic organizations.

H. Future Research Directions Emerging From the Literature

Analysis of the included publications identifies several recurring future research directions emerging from reported limitations and methodological gaps. These directions are drawn from the gaps observed in the reviewed corpus; they are not empirically validated recommendations. A key priority is the need for longitudinal, in-situ newsroom studies, as existing work often relies on short-term or experimental settings

that limit understanding of sustained human–AI collaboration and organizational impact. The literature also highlights the importance of comparative and cross-contextual research to evaluate differences between AI-assisted and traditional workflows across domains, organizations, and cultural settings. Additionally, there is a clear need to operationalize ethical considerations—such as bias, transparency, accountability, and trust—within empirical research designs rather than treating them solely as conceptual issues. Methodological limitations further point to the necessity of stronger interdisciplinary collaboration, integrating technical, social, and media studies perspectives to better capture the complexity of journalistic practice. Finally, future work should expand beyond routine content production to address underexplored areas such as investigative journalism, editorial decision-making, and the evolving role of journalists in AI-augmented newsrooms [56]. Overall, the literature calls for a shift toward more comprehensive, empirically grounded, and ethically informed research that reflects the socio-technical nature of professional news production.

IV. DISCUSSION

A. Overview of Key Findings

This systematic literature review examines how AI is applied in professional news production, the evidence regarding its effectiveness and integration, the ethical and regulatory challenges reported, and the methodological gaps that persist. Synthesizing 74 peer-reviewed publications from 2015 to 2025, the review offers a structured overview of the evolving landscape of AI-assisted journalism. The findings show rapid growth in research, coinciding with advances in natural language processing and large language models. While technical feasibility and task-level performance are widely explored, evidence on organizational integration, ethical governance, and long-term newsroom impact remains limited. This is consistent with earlier arguments that automation first reshapes routine, data-driven tasks before transforming professional roles and authority [1], [3].

B. Interpretation of AI Techniques and Journalistic Roles (RQ1)

The dominance of NLP- and LLM-based approaches reflects a broader shift toward automating and augmenting text-based news production. The prevalence of publications on automated writing, summarization, and headline generation

suggests that AI adoption is most feasible in routine, data-intensive, and time-sensitive tasks, which is consistent with early arguments that automation would first reshape standardized reporting before affecting more interpretive or investigative roles [1]. This aligns with the application domains most frequently reported in the included publications, such as sports, finance, and elections (Section III-D). The limited focus on investigative reporting and editorial judgment indicates that, in the reviewed literature, AI is predominantly framed as a productivity-enhancing tool rather than as a substitute for core journalistic sense-making, echoing concerns about the redefinition of authority and professional labor [3], [4]. Emerging work on multimodal AI and synthetic media points to potential transformations in format and audience interaction, although their organizational implications remain underexamined.

C. Effectiveness and Newsroom Integration in Context (RQ2–RQ3)

Several included studies report that AI systems can perform competitively with human journalists on specific, well-defined tasks, especially in controlled or semi-automated settings. Measures such as accuracy, fluency, and efficiency sometimes indicate parity with human-written content in routine news production. However, newsroom integration reveals a gap between technical capability and organizational adoption. Several studies appear to treat AI as a standalone tool rather than as an element of complex editorial ecosystems. Where integration is examined, hybrid human–AI workflows are prominent, reaffirming the continued role of human oversight and editorial judgment and reflecting earlier analyses that framed automation as a reconfiguration, rather than a replacement, of journalistic labor and authority [3]. These findings suggest that effectiveness must be understood beyond technical performance, incorporating organizational fit, professional acceptance, and workflow compatibility, which remain underexplored in empirical research.

D. Ethical, Social, and Regulatory Implications (RQ4)

Ethical issues feature prominently in the literature but are addressed mostly through brief mention (60 of 74 publications) or conceptual and normative discussion (14 of 74), rather than through empirical examination. Recurring concerns include transparency, accountability, bias, and authorship [33], [34], [64], [74], reflecting broader tensions about professional authority and the legitimacy of machine-produced news [3], [4]. Social implications, such as professional identity, newsroom labor, and public trust [42], are acknowledged but rarely studied longitudinally, while regulatory discussions often reference emerging governance frameworks without assessing their practical impact. This imbalance reveals a gap between ethical awareness and empirical validation: although risks are widely recognized, systematic methods for measuring and governing them in real newsroom contexts remain underdeveloped in the reviewed literature. Notably, none of the included publications was classified as empirically evaluating ethical issues, which marks a substantial evidence gap. This finding concerns the reviewed publications; it should not be interpreted as evidence that ethical safeguards are absent in newsrooms.

E. Methodological Limitations and Research Gaps (RQ5)

The methodological profile of the reviewed publications reveals several structural limitations that constrain the current evidence base. First, the predominance of technical evaluations and small-scale quantitative studies limits generalizability across news organizations, cultural contexts, and journalistic traditions.

Second, the scarcity of qualitative and mixed-methods research reduces insight into how journalists experience, negotiate, and adapt to AI-assisted workflows. Longitudinal designs, which are essential for understanding sustained adoption and organizational change, are particularly rare.

Third, methodological transparency varies considerably across studies. Inconsistent reporting of data sources, evaluation criteria, and levels of human involvement complicates comparison and synthesis. Ethical dimensions are frequently discussed without being operationalized, reinforcing the gap between conceptual concern and empirical evidence.

Together, these limitations suggest that future research should shift from isolated proof-of-concept evaluations toward longitudinal, interdisciplinary, and context-sensitive studies of AI embedded in real newsroom environments. This need for greater methodological diversity and empirical grounding echoes earlier field-mapping work that identified structural imbalances between technical innovation and social-scientific investigation in algorithmic journalism research [4].

F. Implications for Future Research and Practice

Building on the gaps identified in Section III-G and the directions summarized in Section III-H, several implications emerge. These are proposals grounded in the reviewed evidence, not findings that have been empirically validated.

First, longitudinal and ethnographic studies are needed to examine how AI systems are embedded within newsroom routines over time. Such work would provide insight into organizational learning, resistance, and transformation.

Second, future studies should prioritize comparative designs that evaluate AI-assisted and human-centered workflows across multiple news domains and cultural contexts. This would support more robust conclusions about the conditions under which AI meaningfully enhances journalistic practice.

Third, ethical and regulatory concerns should be operationalized as measurable variables rather than treated solely as normative issues. Integrating ethical assessment frameworks into empirical study designs would strengthen the evidence base for responsible AI deployment in journalism.

Fourth, closer collaboration between journalism scholars, AI researchers, and news practitioners is essential to ensure that future research addresses both technological innovation and the professional values that underpin trustworthy journalism.

For practice, the evidence reviewed here is largely technical and task-level, and it therefore offers a limited basis for prescriptive recommendations on newsroom adoption. Reported performance results are better read as indications of task feasibility than as evidence of organizational outcomes.

G. Contribution and Positioning of the Review

By systematically synthesizing empirical, technical, and conceptual research on AI-assisted news production, this review contributes a structured mapping of the methodological and ethical characteristics of the evidence base. Unlike narrative overviews or tool-focused surveys [20], [73], the present study emphasizes methodological transparency, the strength of the evidence, and ethical accountability, in line with its preregistered protocol.

The findings highlight not only what is currently known about AI in journalism, but also where evidence remains fragmented or insufficient. As such, the review provides a foundation for future research agendas and informs ongoing debates about the role of AI in journalism.

H. Conceptual Synthesis of the Review Findings

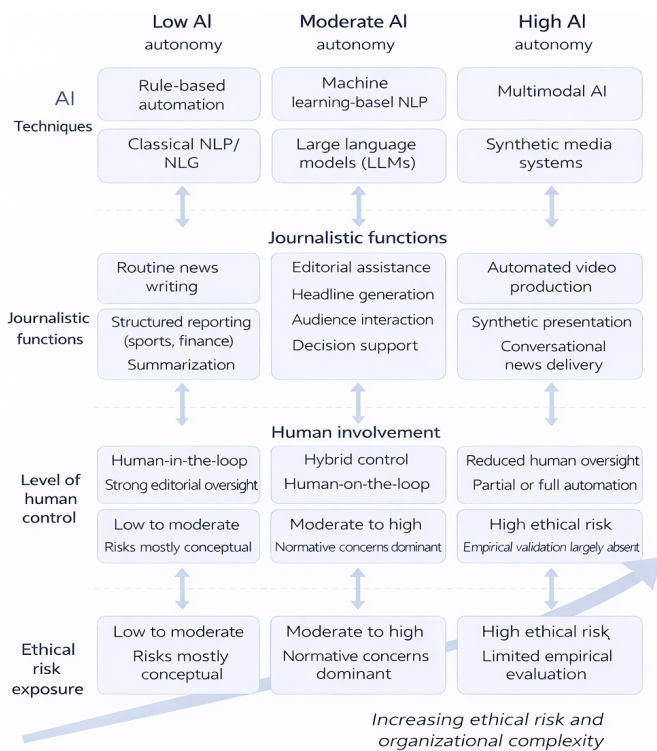


Fig. 8. Conceptual framework of AI-assisted news production: Techniques, journalistic functions, human control, and ethical risk exposure.

Fig. 8 presents an integrative conceptual synthesis of the patterns identified across the reviewed publications. It brings together four analytical dimensions examined in the review: the AI techniques reported and the journalistic functions they support (Section III-D), the degree of human involvement described (Sections III-E and III-G), and the ethical concerns mentioned or discussed (Section III-F). These dimensions correspond to elements of the extraction scheme (Section II-F) and of the inclusion decision framework (Fig. 3). The framework is intended to organize these dimensions and make their relationships easier to interpret; it is not a causal model, nor does it establish that a particular AI technique necessarily produces a specific ethical outcome. Consistent with the results, text-oriented applications and human oversight are prominent in

the included literature, while empirical validation of ethical and organizational implications remains limited. These patterns should therefore be interpreted in light of the scope and methodological limitations of the available evidence. The framework has not been empirically validated; it provides a conceptual basis for identifying questions that future empirical research could investigate, rather than a predictive model.

I. Reconceptualizing “Effectiveness” in AI-Assisted Journalism

Across the reviewed literature, effectiveness is most commonly operationalized through technical or task-level metrics such as accuracy, fluency, speed, or cost-efficiency. While these measures are useful for benchmarking system performance, they provide only a partial account of what effectiveness means in journalistic contexts. The findings of this review suggest that effectiveness in AI-assisted journalism may be better understood as a multidimensional socio-technical construct, encompassing not only output quality but also organizational integration, professional acceptance, and editorial accountability.

Some studies that engage more directly with newsroom practice indicate that technically capable systems may fail to deliver value if they disrupt established workflows, undermine professional norms, or introduce ambiguity in responsibility. For future research, this implies a need to move beyond isolated performance evaluations toward designs that assess effectiveness at the level of newsroom processes and outcomes, including coordination, trust, and decision-making. Such a shift would allow researchers to better capture the conditions under which AI systems meaningfully support journalistic work rather than merely replicate isolated tasks.

J. Limitations of the Review

Several limitations should be considered when interpreting the findings. First, the search covered only Scopus and the Web of Science Core Collection. Relevant publications indexed only in other databases, or not indexed at all, may have been missed, and the use of two databases should not be taken to imply exhaustive coverage. Second, the restriction to English-language publications may have excluded relevant research published in other languages. Third, the 2015–2025 publication period excludes earlier work, which is considered here only as background literature.

Fourth, 24 of the 98 reports that advanced to full-text review could not be retrieved and were therefore not assessed. These reports may differ systematically from the accessible publications, and their exclusion could have affected the composition of the evidence base; the direction and magnitude of any such effect cannot be determined from the available information.

Fifth, the included literature is heterogeneous in design, aims, and reporting, which constrains comparison across publications. The classification of publications into methodological and ethical categories relied on reviewer judgment resolved through consensus. No formal inter-rater reliability coefficient is reported, so the consistency of screening and coding cannot be quantified from the information presented.

Sixth, although the methods specify MMAT-based appraisal of individual publications and ROBIS-based assessment at the review level, the outcomes of these assessments are not tabulated in this article. The strength of the evidence is therefore characterized here through the descriptive synthesis of study designs and reported limitations rather than through formal appraisal scores.

Finally, the synthesis characterizes the research literature rather than newsroom practice. Publication frequencies and reported results should not be interpreted as direct evidence of real-world adoption, organizational outcomes, or the presence or absence of ethical safeguards, and the findings should not be generalized to all journalism organizations.

V. CONCLUSION

This systematic literature review examined research on artificial intelligence in professional news production published between 2015 and 2025, synthesizing 74 peer-reviewed publications identified through a PRISMA 2020-guided process. With respect to RQ1, the reviewed literature is dominated by natural language processing approaches—particularly automated text generation, summarization, and large language models—primarily applied to routine, data-driven news tasks such as sports and financial reporting. With respect to RQ2 and RQ3, technical performance is frequently demonstrated under experimental conditions, while evidence of sustained newsroom integration remains limited. With respect to RQ4, ethical, social, and regulatory concerns are widely acknowledged, but none of the included publications was classified as empirically evaluating them. With respect to RQ5, the literature relies heavily on technical and quantitative evaluations, with fewer qualitative or mixed-methods investigations into organizational dynamics and human–AI collaboration.

These findings describe patterns in the reviewed corpus. They should not be generalized to all journalism organizations or taken as direct evidence of real-world adoption or of the absence of ethical safeguards in newsrooms. Subject to the limitations discussed in Section IV-J, AI-assisted journalism research reflects advancing technical capabilities but still-maturing empirical foundations for long-term adoption and governance, underscoring the need for longitudinal, comparative, and interdisciplinary research.

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