

The applications of artificial intelligence in content production and dissemination in electronic journalism in Iraq

Ali Abdul Hassan Alabbas*, Ehsan Shahghasemi, Abdollah Bicharanlou

Department of Communication, Faculty of Social Sciences, University of Tehran,
Tehran, Iran. (*Corresponding author: ✉ alabaasy@gmail.com, 
<https://orcid.org/0009-0000-9777-1028>).

Article Info	Abstract
Original article	Background: Artificial intelligence is reshaping news production and dissemination, yet most evidence comes from Global North newsrooms, leaving Global South media systems underexplored. Iraq, whose electronic-journalism sector has grown rapidly, has figured only marginally in this literature. Aims: This article examines how AI is applied in Iraqi electronic journalism and how practitioners weigh its usefulness against its drawbacks. Methodology: The study adopts a sequential exploratory mixed-methods design. Semi-structured interviews with seventeen Iraqi journalists, editors, and academics were analysed thematically to build a model, which was then operationalised as a questionnaire administered to 303 practitioners and analysed in SPSS and LISREL using confirmatory factor analysis and one-sample t-tests. Findings: The qualitative phase distilled 174 codes into twenty-two basic themes, four organising themes, and one global theme, yielding four newsroom functions: optimising the news-production process, intelligent language and text processing, news personalisation, and the management of multimedia tools. Confirmatory factor analysis validated this structure with excellent fit ($\chi^2/df= 2.33$; RMSEA= 0.022), and one-sample t-tests confirmed that all four dimensions are used significantly above the scale midpoint ($P < 0.001$), with multimedia management most pronounced and personalisation least. A consistent ambivalence emerged: practitioners embrace AI as an efficient technical assistant while resisting its extension to analytical and narrative judgement. Conclusion: The study contributes evidence from a largely absent context and a transferable, validated model. It identifies technical infrastructure, not practitioner willingness, as the principal constraint on adoption, implying that returns depend less on persuading staff of AI's value than on infrastructural investment, tool-literacy training, and safeguards preserving human oversight.
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1. Introduction

For most of its history, journalism has been an artisanal craft, its authority resting on human judgement about what matters and how it should be told. Over little more than a decade, that assumption has been unsettled by artificial intelligence, a broad family of computational methods that approximate tasks once thought to require human intelligence, which now touches almost every stage of newswork, from the gathering and verification of information to the writing, editing, and distribution of stories (Broussard et al., 2019). The earliest applications were narrow: software that converted structured data into formulaic reports on corporate earnings, sports results, and the weather, generating them faster, more cheaply, and often with fewer errors than any human could manage (Graefe, 2016). What began in these data-rich niches has since spilled into far more varied and creative territory, as natural language generation matured and, with the public release of generative systems, the boundary between human and machine authorship grew harder to locate (Dörr, 2016; Pavlik, 2023). The question this raises is deceptively simple, and it is the one this study takes as its starting point: what, in day-to-day practice, is AI actually being used to do inside the newsroom, and how do the journalists who work alongside it weigh its usefulness against its costs?

Answering that question means looking across the whole arc of production and dissemination rather than at writing alone. Contemporary newsrooms deploy AI to sift large volumes of data, to tailor stories to the interests and behaviour of individual readers, to process images, audio, and video, and to schedule and publish content automatically across social platforms (de-Lima-Santos & Ceron, 2022; Dörr, 2016). Nor are these applications marginal experiments. Early audience research found that readers could rarely tell software-written articles from those produced by journalists, even as they judged the automated versions comparatively flat and lifeless (Clerwall, 2014). More recent work complicates any straightforwardly technological reading of the shift, showing that how publics and practitioners regard AI in journalism is conditioned as much by prevailing economic circumstances and expectations as by what the systems can actually do (Moravec et al., 2024).

If the promise of AI has been rehearsed at length, its diffusion has been anything but frictionless. In an early and influential study of the automated-journalism vendor Narrative Science, Carlson (2015) showed how automation reopens a long-running tension between technological efficiency and human labour, throwing into question the compositional forms of news and the profession's claim to authority. A second cluster of unease surrounds the opacity of the systems involved and the difficulty of holding them to account, which has prompted sustained calls for greater algorithmic transparency (Diakopoulos & Koliska, 2017). For working journalists, these are hardly abstract

worries: studies of newsroom practice repeatedly surface anxieties about job security, editorial independence, and the propriety of delegating consequential decisions to machines (Al-Zoubi et al., 2024). Generative AI has sharpened the stakes again, coupling the lure of efficiency to the twin risks of misinformation and a gradual erosion of professional skill (Pavlik, 2023).

Yet almost everything just described has been learnt in a particular kind of place. The evidence base is overwhelmingly the product of well-resourced newsrooms in North America and Western Europe, and it does not travel automatically to settings with different linguistic, economic, and infrastructural conditions. The point is not merely that other regions lag behind but that they differ in kind. Studying South Africa's mainstream newsrooms, Munoriyarwa et al. (2023) found a slow, uneven, and largely discretionary uptake— AI confined to tasks such as transcription, research, and fact-checking— shadowed by an "AI phobia" rooted in fears over jobs, cost, and ethics, and they concluded pointedly that the optimism observed in European and American newsrooms could not simply be transposed to the South African case. Work on Pakistan tells a comparable story from a different vantage, tracing how journalists' hesitancy is compounded by scarce economic and technical resources, limited access to reliable data, weak AI literacy and training, and a persistent digital divide (Jamil, 2021). Research on Arab journalism has grown quickly but remains lopsided; in a recent scoping review, Al-Rawi and Saad (2025) found the empirical literature dominated by survey studies and concentrated in a handful of countries— chiefly Egypt, Jordan, and Saudi Arabia— while the distinctive constraints facing media systems across the Global South attract comparatively little notice. Where such studies do exist, as in analyses of Jordanian broadcasters, they tend to report a cautious optimism tempered by concerns about accuracy, ethics, and organisational readiness (Sharadga et al., 2022).

Iraq sits almost entirely outside this map. Its electronic-journalism sector has expanded rapidly and now operates under acute pressures of speed, resource scarcity, and uneven technical infrastructure, and it does so in Arabic; a language whose particular demands on automated text processing rarely feature in scholarship built around English-language tools. The result is a conspicuous mismatch between the pace at which Iraqi newsrooms are reaching for these technologies and the slender evidence available to make sense of that adoption. It is this gap that the present study addresses.

The article asks how AI is being applied in the production and dissemination of content within Iraqi electronic journalism, and how practitioners themselves balance its advantages against its drawbacks. It adopts a sequential exploratory mixed-methods design: in-depth interviews with Iraqi journalists, editors, and media academics are used first to build a grounded model of AI applications, which is then

operationalised as a survey instrument and tested, through exploratory and confirmatory factor analysis, on a larger sample of practitioners. The contribution is threefold.

Empirically, the study documents AI adoption from a context that has been largely missing from the international conversation, adding a Middle Eastern case to a comparative record that has so far leaned on East Africa, Southern Africa, and a few Arab states.

Conceptually, it offers a compact, empirically validated model that gathers a sprawling set of applications into four coherent dimensions. And substantively, it foregrounds the ambivalence that runs through the Iraqi newsroom, where enthusiasm for AI as an efficient technical assistant coexists with a firm reluctance to hand analytical judgement and storytelling over to automated systems.

In doing so, it answers a growing call to carry research on AI and journalism beyond its established centres and to take seriously the socio-cultural and economic particularities of media systems in the Global South (Al-Rawi & Saad, 2025; Broussard et al., 2019).

2. Methodology

2.1. Research design and approach

The study set out to describe and model a phenomenon, the use of AI in the production and dissemination of content in Iraqi electronic journalism, as it is understood by those who work with it, and it therefore adopted an interpretive, phenomenological stance, seeking to grasp the phenomenon within its own professional and national context. Its analytic logic ran in two directions. It began abductively, drawing on the existing literature to distil a coherent conceptual framework from a scattered and heterogeneous body of applications; it then moved deductively, subjecting that framework to empirical test and validation in a specific setting. In terms of its intended outcome, the research is at once applied, in that it addresses a practical problem confronting Iraqi newsrooms, and developmental, in that it proposes a new framework rather than merely testing an existing one.

These commitments are realised through a sequential exploratory mixed-methods design, in which a qualitative phase precedes and informs a quantitative one (Creswell & Plano Clark, 2018). In the first phase, qualitative data gathered through interviews were used to build a grounded model of AI applications; in the second, quantitative data gathered through a survey were used to assess and validate that model across a larger sample. Each phase drew on a distinct analytic strategy— thematic analysis in the qualitative phase, and exploratory and confirmatory factor analysis in the quantitative phase. Qualitative coding was managed in MaxQDA, and the quantitative data were analysed in SPSS and LISREL.

2.2. The qualitative phase

The qualitative population comprised experts in journalism and AI working in Iraq. Participants were selected through purposive, judgemental sampling, and recruitment continued until theoretical saturation was reached. No new codes emerged after the fifteenth interview; two further confirmatory interviews were then conducted, neither of which yielded additional codes, giving a final sample of seventeen experts ranging from senior news journalists to university media instructors.

Data were collected using semi-structured interviews. The interview guide was developed in line with the thematic-analysis strategy and was progressively refined and deepened as the early interviews proceeded. Interviews were conducted face-to-face by prior arrangement and lasted, on average, between 40 and 90 min. The researcher posed open questions, allowing participants to answer freely, and probed for clarification wherever a response was ambiguous. Interviews were audio-recorded and supplemented by contemporaneous field notes; because some participants declined to be recorded, the researcher transcribed the relevant portions of those interviews by hand; a demanding step that nonetheless deepened immersion in the data ahead of systematic coding.

Analysis followed the six-phase thematic procedure of Braun and Clarke (2006)—familiarisation with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the account—while the hierarchical organisation of the resulting themes into basic, organising, and global themes drew on the thematic-networks approach of Attride-Stirling (2001). Coding was carried out with the support of MaxQDA, and the coding frame was independently reviewed by two expert coders, on the basis of whose assessments a number of codes were merged, relabelled, or removed while the higher-order structure was retained. The procedure yielded a single global theme supported by four organising themes, which in turn defined the four dimensions operationalised in the survey that followed.

The trustworthiness of the qualitative phase was addressed through the four criteria proposed by Lincoln and Guba (1985)—credibility, transferability, dependability, and confirmability—understood as the qualitative counterparts to conventional notions of validity and reliability. Inter-coder reliability was assessed using Holsti's method, in which the material is coded in two stages and agreement is calculated as the observed percentage of agreement between coders (Holsti, 1969); the participation of two expert coders in reviewing and refining the frame served the same end.

2.3. The quantitative phase

The survey instrument was derived directly from the qualitative model. It comprised three sections: a short introduction stating the study's

purpose and inviting cooperation; five demographic and background questions covering gender, age, education, the amount of AI use, and the type of AI used; and a set of closed items measuring the study variables. The variable items were organised under the four dimensions identified qualitatively: optimising the news-production process (five items), intelligent language and text processing (eight items), news personalisation (five items), and the management of multimedia tools (four items); for a total of twenty-two indicators. Responses were recorded on a five-point Likert scale anchored by frequency of use, from *never* (1) through *rarely*, *sometimes*, and *often to always* (5).

The quantitative population was estimated at 520 eligible practitioners: editorial managers, editors, and news reporters at independent, state, and party-affiliated electronic newspapers and websites in Iraq— all with experience in editing news and publishing data— together with media instructors at Iraqi public universities. Because the population was finite, the required sample size was determined using a standard finite-population formula incorporating the population size, an acceptable sampling error (set between 1% and 5%), a confidence coefficient ($Z=1.65$), and the variance and mean of the study variable. On this basis, 303 questionnaires were distributed and collected through available (convenience) random sampling.

Two forms of instrument evaluation were undertaken before the main analysis. Content validity was established through review by three subject-matter experts, whose judgements informed the wording and coverage of the items. Reliability was assessed by administering the questionnaire to a pilot sample of thirty respondents prior to the main study and computing Cronbach's alpha in SPSS. The overall alpha coefficient was 0.92, comfortably above the conventional 0.70 threshold, and the dimension-level coefficients were likewise acceptable— 0.89 for optimising the news-production process, 0.72 for intelligent language and text processing, 0.80 for news personalisation, and 0.73 for the management of multimedia tools— indicating that the scale was internally consistent.

2.4. Data analysis

Quantitative analysis was conducted in SPSS and LISREL and proceeded in a fixed sequence. The sample was first described using frequencies and percentages, and the twenty-two indicators were summarised using measures of central tendency and dispersion. The assumption of normality was examined with the Kolmogorov–Smirnov test before any inferential testing. Construct validity was then assessed in two steps: the adequacy of the data for factor analysis was checked using the Kaiser–Meyer–Olkin measure and Bartlett's test of sphericity, and the four-dimensional structure was evaluated through confirmatory factor analysis within a structural-equation-modelling framework, examining the loadings of the indicators on their dimensions, the

loadings of the dimensions on the higher-order construct, and a range of absolute and comparative fit indices. Finally, the four research hypotheses— each holding that one dimension of AI application is meaningfully used in Iraqi electronic journalism— were tested using one-sample t-tests comparing the mean of each dimension against the theoretical midpoint of the scale.

3. Findings

This study employed a sequential exploratory mixed-methods design in which a qualitative phase preceded and informed a quantitative phase. In the first phase, semi-structured interviews with Iraqi journalism and AI experts were analysed thematically in order to inductively construct a conceptual model of how AI is used in the production and dissemination of news content in electronic journalism. In the second phase, that model was operationalised as a survey instrument and tested on a larger sample of media practitioners in order to assess the prevalence, structure, and significance of the applications identified qualitatively. Qualitative coding was managed in MaxQDA, and the quantitative data were analysed in SPSS and LISREL using descriptive statistics, a Kolmogorov–Smirnov test of normality, exploratory and confirmatory factor analysis, and one-sample t-tests. The findings are reported below in two corresponding parts: the thematic analysis and the resulting model, followed by the descriptive, psychometric, and inferential results of the survey.

3.1. Qualitative findings: Thematic analysis

The qualitative analysis followed the six-phase thematic procedure of Braun and Clarke (2006), while the hierarchical organisation of themes— basic themes, organising themes, and a global theme— drew on the thematic-networks approach of Attride-Stirling (2001). Because thematic analysis is inherently recursive, the researcher moved repeatedly between the raw interview data and the developing coding frame, refining categories until a stable structure emerged. Data collection continued until theoretical saturation was reached: no new codes were identified after the fifteenth interview, and two further confirmatory interviews were conducted, yielding seventeen interviews in total, neither of which produced additional codes. Each interview lasted, on average, between forty and ninety minutes.

3.1.1. Familiarisation and the discursive field

Repeated reading of the transcripts revealed a distinctive discursive field among Iraqi media professionals. The tone of the responses combined technical admiration with economic pragmatism: participants—ranging from senior news journalists to university instructors of media—consistently framed AI not as a marginal tool but as the driver of a paradigmatic shift in the newsroom. The data were

saturated with recurrent references to speed, time-saving, and personalisation. Yet beneath this enthusiasm ran a clear undercurrent of concern about the erosion of the human role and the challenge of misinformation. A productive tension animated the interviews: on one hand, AI was credited with improving accuracy and reducing error; on the other, fully autonomous content-management systems were seen as a potential threat to human editorial oversight. Several participants also stressed that, despite this eagerness, technology adoption in Iraq remains at an early stage and that a digital gap persists relative to more developed media markets. Because some interviewees declined audio recording, the researcher transcribed portions of the interviews by hand; while methodologically demanding, this deepened the researcher's immersion in the data prior to systematic coding.

3.1.2. Generating initial codes

Coding was performed manually, with the researcher labelling shared or analogous meanings with codes appropriate to their content. The earliest codes clustered around the automation of journalistic tasks, the acceleration of production, and the automatic correction of linguistic errors. Representative extracts illustrate the interpretive basis of these codes:

“These programs include the automation of routine tasks, the analysis of big data, and content generation.” (M1Q1)

“Many electronic newspapers in Iraq use AI programs daily in various areas, including editing, publishing, and drafting news.” (M2Q1)

“AI will contribute significantly to preparing, writing, and editing news reports in less time and with less effort than human editors.” (M6Q1)

“The automatic correction of linguistic errors in news ... without human intervention ... provides the advantage of speed.” (M9Q1)

As coding proceeded, meanings that at first appeared discrete were found to overlap—editing, publishing, and drafting, for example, frequently co-occurred in the same accounts—prompting the researcher to consolidate and rename codes so that each captured a distinct facet of practice.

3.1.3. Searching for, reviewing, and defining themes

In the third phase the codes were sorted into candidate themes, and the coded extracts were organised so that related codes could be combined into broader patterns. This phase produced, after the required refinements, a set of basic themes drawn directly from the interview data. In total, 174 initial codes were identified and grouped into 22 basic themes. The theme with the highest frequency of mentions was the reduction of the time and effort required to prepare news (21 mentions), followed by a cluster of themes each mentioned thirteen times: the

automation of routine news tasks, intelligent news summarisation, and the enhancement of news-image quality. Content rewriting in simpler language and the use of video-production and editing tools were each mentioned twelve times, and keyword extraction eleven times. The relative salience of these themes indicates that the discourse gravitated most strongly toward applications that compress editorial labour and accelerate throughput rather than toward applications that displace human judgement.

The fourth and fifth phases involved reviewing the coherence of the thematic map and defining and naming the themes. During review, two expert coders examined the coding frame; on the basis of their assessments, a number of codes were removed, merged, or relabelled, while the higher-order structure remained stable. Critically, the number of principal dimensions was confirmed at four, and the 22 basic themes were retained under those four organising themes. The consolidation collapsed near-duplicate categories (for example, news compression was absorbed into intelligent summarisation, and content management without human intervention was reframed as precise content management), and the emergent concern with misinformation was captured as a distinct basic theme, fake-news detection. The final outcome of the review-and-naming process is the conversion of basic themes into organising themes and, ultimately, into a single global theme.

The interview material lent concrete texture to the most prominent basic themes. Under the automation of routine tasks, participants described AI programs that perform “the automation of routine tasks, the analysis of big data, and content generation” (M1Q1), while others reported that Iraqi electronic newspapers “use AI programs daily in various areas, including editing, publishing, and drafting news” (M2Q1). Automated narrative generation was linked to natural-language-generation systems: one participant referred to tools that convert structured data— “financial reports, sports results, or weather updates”— into complete news stories, citing an application such as Quill as a global example (M6Q5). Intelligent summarisation and compression were valued for their speed and reach; respondents noted that AI “summarises long news articles, providing readers with quick and effective summaries”, and that its capacity to condense news and data, when enriched with background and documentation, can raise the quality of Arabic-language coverage (M2Q1).

Within news personalisation, participants highlighted chatbots that “interact with the public, answer readers’ questions, provide personalised news updates, and even conduct preliminary interviews to gather information” (M7Q2), together with a monitoring capability described as a “response technology” that tracks and replies to public comments on Iraqi newspaper websites (M8Q2). Automated publishing was tied specifically to social platforms— Facebook, Telegram, and X

were named as principal channels, with Facebook identified as the most heavily used (M6Q2). Under multimedia management, editors placed strong emphasis on video-production and editing applications (M11Q2) and on tools for creating, editing, and transcribing audio content (M13Q3), alongside applications that enhance the quality of news photographs (M9Q2). The same accounts, however, registered the countervailing anxieties noted earlier: fully autonomous content management — running “without human intervention or the participation of a human editor”— was presented as capable of operating the newsroom independently of human oversight (M7Q4), while Arabic-language editors voiced the expectation that fully AI-generated news be at least as accurate and error-free as traditionally edited copy, an expectation that both motivates adoption and sets a demanding standard for it.

3.1.4. The four organising themes

The analysis yielded one global theme, AI applications in the production and dissemination of content in electronic journalism in Iraq, supported by four organising themes, each subsuming a set of basic themes. Table 1 presents the resulting thematic network.

Table 1. Conversion of basic themes into organising themes and the global theme

Global theme	Organising theme	Basic themes
AI applications in the production and dissemination of content in electronic journalism in Iraq	Optimising the news-production process	Automation of routine journalistic tasks; automation of text editing; automated news drafting; reduction of news-preparation time; improved translation speed
	Intelligent language and text processing	Automatic article classification; AI-assisted headline suggestion; keyword extraction; intelligent news summarisation; content rewriting in simpler language; automated news-narrative generation; automatic correction of linguistic errors; fake-news detection
	News personalisation	Personalisation of news content; automated audience interaction (chatbots); automated publishing of news on social networks; precise content management; automated monitoring of and response to comments
	Management of multimedia tools	Big-data analysis for news discovery; use of video-production and editing tools; audio-to-text generation and conversion; editing and enhancement of image quality

a) Optimising the news-production process. This organising theme gathers the applications that participants associated most directly with efficiency and throughput. Interviewees described how AI automates routine reporting tasks, edits text, drafts news items, and

shortens the overall time required to prepare a story; several also emphasised the speed of machine translation as a means of importing and repurposing foreign-language news. The dominant framing here is that of AI as a tireless production assistant that lowers the marginal cost of each published item. As one participant put it, AI “will contribute significantly to preparing, writing, and editing news reports in less time and with less effort than human editors,” increasing the speed with which news is edited, published, and delivered to readers.

b) Intelligent language and text processing. The second, and most populated, organising theme concerns the linguistic and semantic capabilities of AI. It comprises eight basic themes spanning the automatic classification of articles, the suggestion of headlines, keyword extraction, intelligent summarisation, the rewriting of content in simpler language, automated narrative generation, the automatic correction of linguistic errors, and the detection of fake news. Participants repeatedly noted that AI tools can summarise long articles, extract key points rapidly, and rewrite material for accessibility, and that error correction—performed “without human intervention”—is among the most widely used capabilities in Iraqi newsrooms. The inclusion of fake-news detection within this theme signals that participants understood language processing not only as a productivity gain but also as a safeguard for editorial quality and credibility.

c) News personalisation. The third organising theme addresses the relationship between the newsroom and its audience. Its basic themes include the personalisation of content on the basis of reader interests and behaviour, automated audience interaction through chatbots, the automatic publishing of news on social platforms, precise content management, and the automated monitoring of and response to reader comments. Participants observed that AI can tailor news to individual preferences, thereby improving the user experience and increasing engagement and time-on-platform, and that chatbots can answer readers’ questions and deliver personalised updates. Automated publishing was described as concentrated on social networks — with Facebook, Telegram, and X named explicitly, and Facebook identified as the most heavily used channel for this technology.

d) Management of multimedia tools. The fourth organising theme concerns AI applications beyond text. It comprises big-data analysis for the discovery of newsworthy trends, the use of video-production and editing tools, audio-to-text generation and conversion, and the editing and enhancement of image quality. Participants framed these capabilities as the most tangible and operational face of AI in the newsroom: editors of Iraqi newspapers placed particular emphasis on video-production and editing applications, on the transcription and generation of audio, and on tools that raise the quality of news images. Big-data analysis was valued for its capacity to scan social media and

search engines and to surface popular topics and hidden stories that merit coverage.

Taken together, these four organising themes were rendered as an integrated model of AI applications in electronic journalism, developed and visualised in MaxQDA. The model portrays a newsroom on the threshold of structural transformation, in which the adoption of AI extends well beyond simple tool-use toward a redefinition of editorial workflows. At the same time, the analysis preserved the tension noted during familiarisation: enthusiasm for assistive, technical capabilities coexisted with reservations about autonomous systems, the loss of human oversight, and the risk of misinformation, situating the model within a realistic account of an emerging and unevenly resourced media environment.

This ambivalence was not incidental but structural to the discourse. The data juxtaposed, often within a single interview, an appreciation of AI's capacity to improve accuracy and reduce error against a wariness of technologies that manage content without human participation; and one reporter's account made explicit that, for all the enthusiasm, adoption in Iraq remains at an early stage, with a digital gap still separating the country from more developed media markets. The model that emerges from the qualitative phase therefore describes not a completed transformation but a transition in progress — one whose direction of travel is clear even as its pace is constrained by resources, skills, and infrastructure.

3.2. Quantitative findings

The quantitative phase proceeded in a fixed analytic sequence: the sample was first described demographically; the twenty-two indicators were then summarised using measures of central tendency and dispersion; respondents' broader perceptions of AI were tabulated; the normality assumption and the reliability of the instrument were verified; construct validity was examined through exploratory and confirmatory factor analysis; and, finally, the four substantive hypotheses were tested. The results of each step are reported in turn below.

3.2.1. Sample characteristics

The survey instrument derived from the qualitative model was distributed to media practitioners— editorial managers, editors, and news reporters at independent, state, and party-affiliated electronic newspapers and websites, together with university media instructors— and 303 usable questionnaires were obtained. With respect to gender, 176 respondents (58.1%) were men and 127 (41.9%) were women. The age distribution was concentrated in the middle of the career span: 86 respondents (28.4%) were aged 20–30 years, 126 (41.6%) were aged 31–40 years, and 91 (30.0%) were aged 41–50 years. In terms of

education, 214 respondents (70.6%) held a bachelor's degree and 89 (29.4%) held a master's degree or higher. The sample therefore comprised a predominantly mid-career, university-educated body of practitioners well positioned to report on the operational use of AI in their organisations.

The quantitative sampling frame comprised an estimated 520 eligible practitioners, from which the 303 questionnaires were collected using an available (convenience) random procedure, a sample size consistent with the finite-population formula applied in the study. This survey sample was distinct from, though drawn from the same professional community as, the seventeen experts who participated in the qualitative phase; the latter had been selected through purposive, judgemental sampling and interviewed until theoretical saturation was reached.

Table 2. Demographic profile of respondents (N= 303)

Characteristic	Category	n	%
Gender	Male	176	58.1
	Female	127	41.9
Age	20–30 years	86	28.4
	31–40 years	126	41.6
	41–50 years	91	30.0
Education	Bachelor's	214	70.6
	Master's or higher	89	29.4

3.2.2. Descriptive statistics of the study variables

Because the questionnaire used a five-point Likert scale, item means fall between 1 and 5, with 3 representing the theoretical midpoint. The descriptive results reveal a clear hierarchy of acceptance among the twenty-two indicators. Practitioners expressed the greatest enthusiasm and the strongest consensus for AI tools that ease time-consuming, operational work. The automatic correction of linguistic errors recorded the highest mean ($M = 4.42$) together with the smallest standard deviation ($SD = 0.65$), marking it as an all-but-indispensable capability in electronic journalism. It was followed in acceptance by audio-to-text generation and conversion ($M = 4.30$) and keyword extraction ($M = 4.21$), with big-data analysis for news discovery and the reduction of news-preparation time each at $M = 4.10$ and the use of video tools at $M = 4.00$. The relatively low dispersion around these high means indicates broad agreement that such assistive functions are valuable.

At the opposite pole, more complex and creativity-dependent applications met with visible resistance. Automated news-narrative generation received the lowest mean ($M = 2.80$) and the largest standard deviation ($SD = 1.40$), indicating both limited acceptance and pronounced disagreement among respondents; the automated

monitoring of and response to comments ($M= 3.00$), automated audience interaction through chatbots ($M= 3.10$), and the improvement of translation speed ($M= 3.20$) likewise clustered near the midpoint with wide dispersion. The pattern is coherent: respondents were strongly receptive to AI in the role of an intelligent assistant for data management, translation, and technical editing, but adopted a markedly more cautious stance toward systems that would substitute for analytical thinking and human storytelling. In short, trust in AI for creative and narrative journalism has not yet matured, whereas trust in AI for repetitive technical labour is well established.

Table 3. Descriptive statistics for the twenty-two indicators, by dimension

Dimension / indicator	Mean	SD
Optimising the news-production process		
Automation of routine journalistic tasks	3.80	0.95
Automation of text editing	3.60	1.10
Automated news drafting	3.40	1.20
Reduction of news-preparation time	4.10	0.80
Improved translation speed	3.20	1.30
Intelligent language and text processing		
Automatic article classification	3.70	1.05
AI-assisted headline suggestion	3.50	1.15
Keyword extraction	4.21	0.75
Intelligent news summarisation	3.90	0.98
Content rewriting in simpler language	3.80	1.05
Automated news-narrative generation	2.80	1.40
Automatic correction of linguistic errors	4.42	0.65
Fake-news detection	3.61	1.25
News personalisation		
Personalisation of news content	3.90	1.00
Automated audience interaction (chatbots)	3.10	1.35
Automated publishing on social networks	3.30	1.30
Precise content management	3.70	1.10
Automated monitoring of/response to comments	3.00	1.40
Management of multimedia tools		
Big-data analysis for news discovery	4.10	0.85
Use of video-production and editing tools	4.00	0.90
Audio-to-text generation and conversion	4.30	0.70
Editing and enhancement of image quality	3.59	1.20

These quantitative rankings closely echo the qualitative record. The applications that attracted the highest survey means— automatic error

correction, audio-to-text conversion, keyword extraction, and the reduction of preparation time— correspond to the basic themes mentioned most frequently and most approvingly in the interviews, where speed, accuracy, and the compression of routine labour dominated the discourse. Conversely, automated narrative generation, which received the lowest mean and the widest dispersion, matches the hesitancy participants expressed about ceding creative and analytical authorship to machines. This convergence between the frequency of qualitative mentions and the magnitude of quantitative endorsement strengthens confidence in the model: drawn from overlapping but distinct segments of the Iraqi media community, the two phases point independently to the same hierarchy of acceptance.

3.2.3. Respondents' perceptions of AI use, familiarity, risk, and prospects

A set of stand-alone questions probed the wider context in which these applications are deployed. Asked to evaluate the current extent of AI use in producing and disseminating news content in their own electronic newspaper, respondents reported substantial uptake: 192 (63.4%) rated their use as “high” or “very high”— that is, AI either assists with many key tasks or performs a large share of them independently— while 65 (21.5%) described their use as “moderate”, confined to auxiliary tasks, and 46 (15.2%) reported “low” use or none at all. The prevailing orientation in the sample is therefore one of broad adoption and integration of AI into news workflows.

Familiarity with specific AI tools and platforms (for example, GPT, Midjourney, and Jasper) was more evenly spread and somewhat lower than usage. A total of 80 respondents (26.4%) reported “high” or “very high” familiarity— 26 (8.6%) claiming full mastery and continuous use and 54 (17.8%) reporting complete familiarity and regular use— whereas 122 (40.3%) reported “moderate” familiarity, and 101 (33.3%) reported “low” or “very low” familiarity, in several cases amounting only to recognition of the tools’ names. The gap between reported use and reported familiarity suggests that AI is often embedded in editorial systems and applied in practice more extensively than practitioners’ explicit, tool-level knowledge would imply.

Concern about the possible loss of jobs to automation was distributed across the full range of responses. Combining the two highest categories, 127 respondents (41.9%) expressed “high” or “very high” concern— 43 (14.2%) very high and 84 (27.7%) high— while 96 (31.7%) reported “moderate” concern; at the lower end, 29 (9.6%) reported “low” concern and 51 (16.8%) reported “very low” concern or none. Anxiety about displacement is thus a substantial but not dominant sentiment, coexisting with the widespread enthusiasm documented above and reinforcing the ambivalence identified in the qualitative phase.

Respondents were markedly optimistic about the medium-term trajectory of the technology. Asked to forecast the role of AI in Iraqi

electronic journalism over the coming five years, 213 respondents (70.3%) anticipated that AI would play either a “very central and decisive” role (91 respondents, 30.0%) or an “important and growing” role (122 respondents, 40.3%). By contrast, 44 respondents (14.5%) expected AI merely to “maintain its current role” without significant change, while a comparable minority held pessimistic or uncertain views: 25 (8.3%) expected a “diminished” role and 21 (6.9%) considered its future “unclear and unpredictable.” The balance of expectation is therefore strongly weighted toward expansion.

Table 4. Respondents’ perceptions across five contextual questions (N = 303)

Item / response category	n	%
Current extent of AI use		
Very high	111	36.6
High	81	26.7
Moderate	65	21.5
Low	31	10.2
Not used at all	15	5.0
Familiarity with specific tools		
Very high	26	8.6
High	54	17.8
Moderate	122	40.3
Low	70	23.1
Very low	31	10.2
Concern over job loss to automation		
Very high	43	14.2
High	84	27.7
Moderate	96	31.7
Low	29	9.6
Very low / none	51	16.8
Anticipated role of AI in five years		
Very central and decisive	91	30.0
Important and growing	122	40.3
Maintains current role	44	14.5
Diminished role	25	8.3
Unclear / unpredictable	21	6.9
Suitability of technical infrastructure		
Very suitable and facilitative	23	7.6
Suitable and somewhat facilitative	62	20.5
Moderate / needs improvement	123	40.6
Unsuitable and somewhat obstructive	63	20.8
Very unsuitable and a serious obstacle	32	10.6

Perceptions of the enabling technical infrastructure— high-speed internet and processing capacity— were considerably more guarded, and stand out as the principal reservation in an otherwise favourable picture. Only 85 respondents (28.1%) judged the infrastructure to be “suitable” or “very suitable” and facilitative (23 very suitable and 62 suitable), whereas a plurality of 123 (40.6%) rated it “moderate” and in need of improvement, and 95 (31.4%) considered it “unsuitable” or “very unsuitable” and to some degree an obstacle (63 and 32 respondents, respectively). Infrastructure thus emerges as the most salient practical constraint on the wider deployment of advanced AI tools, consistent with interviewees’ remarks about the early stage of adoption and the persistent digital gap.

Read together, the five contextual questions sketch a coherent adoption profile. A clear majority of practitioners already use AI extensively and expect its role to grow, yet their explicit familiarity with named tools lags behind their reported usage, and a substantial minority remains anxious about employment effects. The most consistent brake on this trajectory is infrastructural rather than attitudinal: even among respondents who embrace AI, few regard the available internet and processing capacity as fully adequate, and the modal judgement is that the infrastructure needs improvement. This profile is consistent with a market in the early-to-intermediate stage of diffusion, in which willingness and demand outpace the technical and institutional conditions required for mature, large-scale deployment; precisely the gap that interviewees invoked when they contrasted their enthusiasm with the digital divide separating Iraq from more developed media systems.

3.2.4. Normality and reliability

Before testing relationships among the variables, the assumption of normality was examined using the Kolmogorov–Smirnov test. The significance values for all four dimensions exceeded 0.05 (optimising the news-production process, 0.95; intelligent language and text processing, 0.25; management of multimedia tools, 0.32; and news personalisation, 0.49), so the null hypothesis of normality could not be rejected and the study variables were treated as normally distributed. The reliability of the instrument was assessed via Cronbach’s alpha on a pilot sample of 30 respondents administered before the main study. The overall alpha coefficient reached 0.92, comfortably above the conventional 0.70 threshold, and the dimension-level coefficients were likewise acceptable: 0.89 for optimising the news-production process (five items), 0.72 for intelligent language and text processing (eight items), 0.80 for news personalisation (five items), and 0.73 for management of multimedia tools (four items). Content validity was established through review by three subject-matter experts.

Table 5. Reliability (Cronbach's alpha) and normality (Kolmogorov–Smirnov) by dimension

Dimension	Items	Cronbach's α	K–S sig.
Optimising the news-production process	5	0.89	0.95
Intelligent language and text processing	8	0.72	0.25
News personalisation	5	0.80	0.49
Management of multimedia tools	4	0.73	0.32
Overall instrument	22	0.92	—

3.2.5. Construct validity: Exploratory and confirmatory factor analysis

The adequacy of the data for factor analysis was confirmed first. The Kaiser–Meyer–Olkin measure of sampling adequacy was 0.84, well above the minimum acceptable value of 0.50, and Bartlett's test of sphericity was significant ($\chi^2=1505$; $df=171$; $P<0.001$), indicating that the correlation matrix contained sufficient shared variance to proceed. Construct validity was then evaluated through confirmatory factor analysis in LISREL. In the initial measurement model, indicator 19 failed to achieve an adequate factor loading and was removed, after which the model was re-estimated. In the revised model, membership of all indicators in their respective factors was confirmed. The second-order loadings of the four dimensions on the global construct were strong and statistically significant— 0.95 for optimising the news-production process ($t=9.87$), 0.75 for intelligent language and text processing ($t=10.07$), 0.93 for news personalisation ($t=9.92$), and 0.62 for management of multimedia tools ($t=5.30$)— while the first-order loadings of individual indicators ranged from approximately 0.57 to 0.79, with all freely estimated t-values exceeding the critical value of 1.96 in absolute terms.

The pattern of second-order loadings also indicates how tightly each dimension coheres with the overarching construct. Optimising the news-production process and news personalisation loaded most strongly on the global factor (0.95 and 0.93, respectively), marking them as the dimensions most central to the shared meaning of AI application in electronic journalism; intelligent language and text processing loaded at 0.75, while the management of multimedia tools, though still significant, loaded more modestly (0.62), reflecting its somewhat more specialised and equipment-dependent character. Because all four paths were significant, each dimension makes a genuine contribution to the higher-order construct, and the measurement model reproduces, in psychometric form, the four-part structure that surfaced in the interviews.

The measurement model displayed excellent fit to the data. The normed chi-square was within the ideal range of 1 to 3 ($\chi^2/df=2.33$), indicating minimal discrepancy between the observed and model-implied covariance matrices. The absolute error indices were very favourable: the root-mean-square error of approximation was 0.022

(well below 0.05) and the standardised root-mean-square residual was 0.011 (close to zero), confirming that the residual error in the model was negligible. Among the comparative and goodness-of-fit indices, the GFI reached 0.96, and the NFI (0.99), NNFI (0.94), and IFI (0.91) all exceeded the 0.90 threshold. Collectively, these results demonstrate that the four-dimensional structure is statistically well supported and that the questionnaire items align closely with the theoretical constructs derived from the qualitative phase.

Table 6. Fit indices for the final measurement model

Index	Value	Recommended	Assessment
χ^2/df	2.33	1–3	Excellent
RMSEA	0.022	< 0.05	Excellent
SRMR	0.011	≈ 0 / < 0.08	Excellent
GFI	0.96	> 0.90	Good
NFI	0.99	> 0.90	Good
NNFI	0.94	> 0.90	Good
IFI	0.91	> 0.90	Good

3.2.6. Hypothesis testing: The significance of the four dimensions

Following confirmation of the measurement model, four hypotheses were tested, each proposing that one dimension of AI application is meaningfully used in electronic journalism: (H1) the optimisation of the news-production process; (H2) intelligent language and text processing; (H3) news personalisation; and (H4) the management of multimedia tools. A one-sample t-test was used to compare the mean of each dimension against the theoretical midpoint of the scale (test value= 3), with 299 degrees of freedom. The results, reported in Table 7, show that the mean of every dimension lay significantly above the midpoint ($P < 0.001$ in all cases), so that all four hypotheses were supported.

The optimisation of the news-production process recorded a mean of 3.62 (mean difference= 0.62; $t = 13.77$; 95% CI [0.53, 0.71]), indicating that, from the respondents' perspective, automation and data-analysis tools play an effective role in accelerating news production. Intelligent language and text processing yielded a mean of 3.61 (mean difference= 0.61; $t = 14.88$; 95% CI [0.54, 0.69]), confirming the considerable uptake of natural-language-processing tools; capabilities such as the correction of linguistic errors, keyword extraction, and intelligent summarisation enjoyed high acceptance in newsrooms. News personalisation, although closest to the cut-off, remained significantly above it with a mean of 3.40 (mean difference= 0.40; $t = 7.53$; 95% CI [0.30, 0.50]); this indicates that the personalisation of content and automated audience interaction, notwithstanding some reservations, constitute a growing area of application. Finally, the management of multimedia tools attained the highest mean, 3.75 (mean difference=

0.75; $t = 17.80$; 95% CI [0.67, 0.83]), and the strongest departure from the midpoint, showing that practitioners rely heavily on rapid translation, audio-to-text conversion, and multimedia-content production, and evaluate this domain as the most tangible and operational dimension of AI in electronic journalism.

Table 7. One-sample t-tests for the four AI-application dimensions (test value= 3; $df = 299$)

Dimension	Mean	SD	Mean diff.	t	P	95% CI
Optimising the news-production process	3.62	0.78	0.62	13.77	< 0.001	[0.53, 0.71]
Intelligent language and text processing	3.61	0.71	0.61	14.88	< 0.001	[0.54, 0.69]
News personalisation	3.40	0.92	0.40	7.53	< 0.001	[0.30, 0.50]
Management of multimedia tools	3.75	0.73	0.75	17.80	< 0.001	[0.67, 0.83]

The two phases converge on a consistent account. The qualitative analysis distilled 174 codes into 22 basic themes, four organising themes, and a single global theme, yielding a model in which AI supports electronic journalism through four broad functions: optimising news production, processing language and text, personalising news, and managing multimedia. The quantitative phase then corroborated this structure and established its salience. The instrument proved reliable (overall $\alpha = 0.92$) and the data satisfied the assumptions for factor analysis (KMO= 0.84; Bartlett's test significant), while confirmatory factor analysis reproduced the four-dimensional structure with excellent fit ($\chi^2/df = 2.33$; RMSEA= 0.022; SRMR= 0.011; GFI= 0.96; NFI= 0.99; NNFI= 0.94; IFI= 0.91). One-sample t-tests confirmed that all four dimensions are used significantly above the scale midpoint ($P < 0.001$), with the management of multimedia tools most pronounced and news personalisation least, though still significant. Across both phases, a coherent picture emerges of Iraqi electronic journalists who embrace AI as an intelligent assistant for technical and operational work— error correction, transcription, translation, summarisation, and data handling— yet remain more cautious about applications that would replace analytical and narrative judgement, and who identify the state of technical infrastructure as the chief constraint on further adoption.

4. Conclusion

Read analytically, the most telling feature of these results is not that Iraqi journalists are ambivalent about AI but the precise line along which their ambivalence falls. Endorsement is highest for the applications that sit furthest from the interpretive core of journalism—the management of multimedia tools and the processing of language

and text, where AI transcribes, translates, corrects, and summarises; and lowest for news personalisation, the dimension that comes closest to editorial selection and to the newsroom's relationship with its audience. The survey's own hierarchy of means thus encodes a working distinction between AI as instrument and AI as author. What appears at first as hesitancy is better understood as a form of jurisdictional boundary work: practitioners absorb automation precisely to the degree that it augments the technical substrate of newswork without encroaching on the evaluative judgement through which the profession stakes its authority (Carlson, 2015). On this reading the ambivalence is not psychological indecision but a coherent strategy for offloading labour while retaining epistemic control; a negotiated division of cognition in which the human reserves the interpretive and the machine is confined to the operational.

The second analytical lesson concerns where the brake on adoption actually lies. Across the sample, willingness ran well ahead of capacity: a clear majority already used AI extensively and expected its role to grow, yet the modal verdict on the enabling infrastructure was that it needs improvement, and explicit familiarity with named tools lagged conspicuously behind reported use. That the binding constraint is infrastructural rather than attitudinal inverts an assumption embedded in much of the field's evidence base, which, because it is drawn from well-resourced Northern newsrooms, treats the material substrate as given and theorises adoption largely in terms of attitudes, ethics, and skills. In the Iraqi case the substrate is itself in question, so identical enthusiasm yields a different trajectory. Adoption here is best understood as co-produced by two logics the literature usually treats separately: the professional values that govern what practitioners will permit AI to do, and the political-economic conditions that determine what the infrastructure will allow (Jamil, 2021; Moravec et al., 2024; Munoriyarwa et al., 2023). Iraq thus serves as a diagnostic case in which high aspiration and infrastructural underdevelopment coexist, suggesting that the diffusion of AI into journalism is not a single global curve but one refracted through local material conditions; a reminder that theorising the technology's advance means attending at once to the profession's cultural boundaries and to the uneven infrastructures on which they rest (Al-Rawi & Saad, 2025; Broussard et al., 2019).

Conflict of interest

The authors declared no conflicts of interest.

Ethical considerations

The authors have completely considered ethical issues, including informed consent, plagiarism, data fabrication, misconduct, and/or falsification, double publication and/or redundancy, submission, etc. This article was not authored by artificial intelligence.

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