Research Journal in Advanced Humanities

RJAH

https://doi.org/10.58256/5s5xn509

Open Access

Check for updates

REVIEW ARTICLE

Section: *Digital Humanities*

The use of artificial intelligence tools in data journalism: A content analysis of 7iber and ARIJ platforms

Ramez Abuhasirah*

Department of Journalism and Mass Communication, Middle East University, Jordan
*Correspondence: rabuhasserah@meu.edu.jo

ABSTRACT

This study aims to conduct a content analysis of journalistic materials published by 7iber and ARIJ between 2022 and 2025, focusing on the extent to which artificial intelligence tools are used in data journalism. Addressing a research gap in Arab media contexts, the study adopts a qualitative content analysis methodology, utilizing a structured coding framework with categories including AI tool type, data type, presentation format, interactivity level, editorial purpose, and depth of data use. A purposive sample of ten articles (five from each platform) was selected based on relevance to data journalism and AI application. The results reveal that the most commonly used tools were text generation and data analytics, while more advanced tools—such as predictive modeling or interactive visualizations—remained underutilized. Most articles were presented in text-only formats and demonstrated low interactivity, indicating a gap between available technological capabilities and actual editorial implementation. Nevertheless, the limited interactivity found in this study remains a clear shortcoming, and aligns with prior critiques that AI tools are often underutilized in enabling immersive user experiences. The primary editorial purposes were found to be awareness, education, and investigation, and the most frequent level of data use was explanatory, rather than deep analytical engagement —with a majority of articles employing explanatory or descriptive approaches—suggest that AI is mainly supporting simplified storytelling rather than uncovering complex causal relationships or conducting exploratory analysis.

KEYWORDS: artificial intelligence, data journalism, AI tools, content analysis, 7iber, ARIJ, digital media, news platforms, media and technology

Research Journal in Advanced Humanities

Volume 6, Issue 4, 2025

ISSN: 2708-5945 (Print)

ISSN: 2708-5953 (Online)

ARTICLE HISTORY

Submitted: **01 September 2025**

Accepted: **01 November 2025**

Published: **02 December 2025**

HOW TO CITE

Abuhasirah, R. (2025). The use of artificial intelligence tools in data journalism: A content analysis of 7iber and ARIJ platforms. *Research Journal in Advanced Humanities*, 6(4). https://doi.org/10.58256/5s5xn509

Published in Nairobi, Kenya by Royallite Global, an imprint of Royallite Publishers Limited

Introduction

In recent years, the media industry has witnessed profound structural transformations driven by the rapid acceleration of technological innovation. These changes have prompted media organizations to reimagine journalistic practices through the integration of digital technologies, open data, and artificial intelligence tools. Among the most significant developments is the rise of data journalism, which has become a key component of digital journalism by leveraging large-scale datasets and computational methods to generate content that is not only fact-based and detailed, but also visually engaging and contextually rich (Beckett & Yaseen, 2023; de-Lima-Santos & Salaverría, 2021). This approach allows journalists to uncover hidden patterns, enhance storytelling with visual data narratives, and provide deeper analytical insights into complex issues (Ghabar, 2024; Sharma, 2024, Murad, 2023).

Data journalism is considered a modern journalistic approach that integrates traditional journalistic skills with analytical techniques and digital algorithms. With the growing capabilities of artificial intelligence (AI), journalists are now able to access, analyze, and visualize data more efficiently, as well as predict future outcomes—laying the foundation for what has become known as predictive journalism (Diakopoulos, 2022). This evolution is exemplified by projects such as "Kashif," developed by Al Jazeera Media Lab, which utilized predictive analytics to forecast the outcomes of FIFA World Cup 2022 matches (Ghabar, 2024).

Numerous studies emphasize the role of AI tools—such as machine learning, natural language processing, and computer vision—in enhancing newsroom productivity by automating repetitive tasks, thus allowing journalists to devote more time to investigative and analytical reporting (Parratt-Fernández et al., 2021; Keegan, 2024; Amer & Atbiqa, 2025; Nizami & Abuhasirah, 2025a). Moreover, the emergence of large language models (LLMs) has enabled journalists to craft data requests, extract structured information, and analyze trends with unprecedented ease, while simultaneously raising concerns about bias, factual inaccuracies, and ethical use (Riley, 2024; Nizami & Abuhasirah, 2025b).

Despite the technical benefits, several studies have raised important questions regarding the ethical boundaries and professional implications of using AI in journalism, particularly in terms of output accuracy, contextual integrity, and the displacement of human creativity. These concerns call for institutional governance and the development of ethical frameworks for AI deployment in newsrooms (Nandini et al., 2024; Rojas-Torrijos & García-Cepero, 2020). Within this evolving media landscape, it is increasingly important to examine how pioneering Arab platforms such as 7iber and ARIJ integrate AI tools into their data journalism practices, and to explore the nature, structure, and function of the resulting content.

The significance of this study lies in its engagement with one of the most pressing topics in the contemporary media landscape—the integration of artificial intelligence in data journalism, particularly within the underexplored Arab context. The study addresses a critical research gap by examining the practices of two pioneering digital journalism platforms, 7iber and ARIJ, both of which serve as leading examples in producing data-driven investigative reports using digital tools. Its analytical approach allows for the identification of patterns in AI usage and the extent to which technological tools are integrated into editorial workflows. Moreover, it contributes to the understanding of the ethical and professional challenges associated with AI deployment in journalism, thereby raising awareness among journalists, media practitioners, and decision-makers across Arab media institutions. On a broader level, the study offers a valuable academic contribution to the growing body of knowledge on the intersection of artificial intelligence and digital journalism, and paves the way for future research that investigates the structural and technological impacts of AI tools on the content and performance of Arab investigative journalism.

The core problem addressed in this article is the limited scholarly understanding of how advanced digital tools are being utilized in the field of data journalism within Arab media institutions. Although the integration of innovative technologies into journalistic practices has expanded globally—encompassing methods such as automated data processing, natural language techniques, and interactive data visualization—their application in Arab media remains insufficiently examined. While international outlets have made substantial progress in adopting such technologies for purposes ranging from data collection to predictive forms of storytelling (Beckett & Yaseen, 2023; Riley, 2024), both practical implementation and academic inquiry into their use within the Arab media landscape continue to be underdeveloped.

In particular, Arab digital journalism platforms such as 7iber and ARIJ are widely recognized for their data-driven investigative reporting, yet there is limited empirical analysis of the specific AI tools they employ, the

extent of their integration into editorial workflows, and their impact on the structure and depth of journalistic content. Moreover, ethical considerations such as transparency, bias, and the accuracy of AI-generated outputs further complicate the adoption of these tools, raising questions about their influence on the credibility and narrative authority of data journalism (Ghabar, 2024; Sharma, 2024). This lack of systematic research creates a critical knowledge gap that hinders the development of a comprehensive understanding of how AI is shaping the production of data journalism in Arabic-speaking contexts. Therefore, this study seeks to investigate and analyze the use of AI tools in the data journalism practices of 7iber and ARIJ, through a content analysis approach, in order to uncover the patterns, challenges, and ethical implications associated with such integration.

Accordingly, this article seeks to conduct a content analysis of selected data journalism reports published by 7iber and ARIJ, in order to identify the AI tools utilized, analyze their patterns of use, and assess the journalistic treatment of data. The study draws upon theoretical frameworks that connect AI with predictive journalism, and is grounded in a review of recent empirical and conceptual studies in this rapidly evolving field.

In light of these considerations, the study seeks to answer the following questions:

1. What are the key artificial intelligence tools employed by 7iber and ARIJ in the production of data journalism reports?
2. How are AI tools integrated into editorial practices and content generation within data journalism in both platforms?
3. What narrative forms and visual storytelling techniques emerge from the use of AI in data processing and presentation?
4. What professional and technical challenges accompany the implementation of AI tools in data journalism at 7iber and ARIJ?
5. What ethical considerations are associated with the use of AI in producing data journalism content, and how do they affect content credibility?

Literature Review

With the accelerating pace of digital transformation in the media sector, artificial intelligence has assumed a central role in reshaping journalistic practices by enabling large-scale data processing, automated content generation, and algorithmically driven storytelling. The presence of AI now extends beyond technical assistance to influence the editorial mindset and journalistic approach to news production (Abuhasirah, 2025; Allani & Al Sallaq, 2025). This paradigm shift has given rise to new forms of journalism, most notably data journalism, which relies on analyzing complex and open datasets to craft evidence-based narratives enhanced through visual storytelling. Such practice demands not only advanced technological tools, but also interpretive skills that surpass conventional journalistic training (Beckett & Yaseen, 2023; Sharma, 2024; Abuhasirah et al., 2025).

Recent literature affirms that AI tools do not only support the technical aspects of journalism but also influence the structure of news, narrative direction, and methods of presentation. These developments necessitate a reconsideration of traditional journalistic ethics and professional standards. While global newsrooms have increasingly adopted AI technologies, their application in the Arab media context remains relatively limited in both practice and academic inquiry (Ghabar, 2024; Riley, 2024; Sharma, 2024). This underscores the importance of analytical studies that investigate how AI tools are being employed by leading Arab platforms such as 7iber and ARIJ, and how these tools contribute to shaping data journalism content in terms of function, form, and credibility.

Artificial Intelligence in Journalism

Artificial intelligence (AI) represents one of the most transformative forces reshaping contemporary journalism. It empowers journalists with advanced analytical tools capable of scanning and processing vast amounts of data from diverse sources, ranging from traditional open records to dynamic digital platforms (Khawaldeh, 2017).

AI is defined as a scientific field emerging from the convergence of computer science, control systems, logic, mathematics, linguistics, and psychology. Its aim is to develop computational models that simulate intelligent human behavior by enabling machines to solve problems and make decisions based on learned patterns and contextual analysis. This scientific system relies on algorithms and artificial neural networks designed to mimic the human brain, making machines capable of learning and discovering knowledge, thus positioning AI as a

revolutionary force in media innovation (Mousa, 2020; Al-Fedawi, 2021).

AI's importance in journalism lies in its ability to optimize newsroom workflows by automating editorial tasks such as information gathering, categorization, analysis, and content generation. This automation frees journalists to focus on creativity and investigative depth, while accelerating the news cycle and expanding coverage (Nandini et al., 2024; Goyanes et al., 2024; Al-Quran et al., 2022).

Furthermore, AI is seen as a new communicative medium through which journalists can express professional and ethical values via algorithmic design. It strengthens content quality without eliminating the human role, enabling hybrid human–machine interaction within editorial decision-making processes (Lewis et al., 2019).

Recent literature highlights the diverse uses of AI in journalism, including big data analysis, trend prediction, editorial enhancement, and automatic news generation (Al-Zoubi et al., 2024). These technologies have significantly reduced operational costs and improved content delivery speed and newsroom competitiveness (Gutiérrez-Caneda et al., 2024; de-Lima-Santos & Salaverría, 2021).

Hence, AI is no longer merely a technological advancement—it has become a strategic element in shaping the future of journalism, influencing not just content creation but also editorial prioritization and policy-setting, particularly with the rise of autonomous and self-programming systems (Túñez-López et al., 2020).

Artificial Intelligence Tools Used in Journalism

Artificial intelligence tools have brought a qualitative transformation to journalism, evolving from automating routine editorial tasks to becoming intelligent partners in information gathering, data analysis, content generation, news verification, and personalized recommendations (Bedi, 2023). Scholars have highlighted how these tools enhance newsroom efficiency and empower journalists, particularly freelancers, to increase their productivity and elevate their journalistic output, despite the ethical and professional challenges that demand critical and responsible engagement (Aissani et al., 2023; Bedi, 2023; Abuhasirah, & Salameh, 2023; Al Rajabi, 2022).

Artificial intelligence (AI) tools have become an essential part of the digital ecosystem that shapes modern journalistic practices, both within media institutions and among freelance journalists. These tools have evolved to cover nearly all stages of news production—from data collection and analysis to verification, content generation, editing, and finally, visual and interactive presentation. Accordingly, AI tools in journalism may be functionally classified into five main categories:

- Data Collection and Analysis Tools: These include web scraping applications and Application Programming Interfaces (APIs), which enable journalists to access open and interactive databases. One prominent example is Numerous.ai, which integrates AI capabilities into platforms such as Google Sheets and Excel, automating the extraction and processing of data using advanced language models (Bedi, 2023).
- Summarization, Classification, and Editorial Assistance Tools: This category encompasses tools for automatic transcription and translation such as Google Translate, DeepL, Otter.ai, and Whisper. These are widely used in multilingual interviews or to transcribe audio content for editorial review. Google's Pinpoint, in particular, is a standout investigative journalism tool for organizing and analyzing large audio or text document archives in a searchable, intelligent interface (Bedi, 2023; Kaci, 2024).
- Automated Text Generation Tools (Natural Language Generation): This includes core AI writing tools such as ChatGPT, Jasper AI, and GitHub Copilot, which can generate news drafts or editorial content from raw datasets or basic prompts. These tools significantly reduce time and effort in the early stages of writing, allowing journalists to focus more on refinement and critical review (Philip, 2024; Alanati, 2024).
- Fact-Checking and Misinformation Detection Tools: These tools, such as Rolli and Perplexity, are designed to detect misleading content on social media and verify information by comparing it with reliable sources and identifying manipulation patterns. As noted by Aissani et al. (2023), such tools are becoming increasingly central in global newsrooms for combating digital disinformation, relying heavily on deep learning and network analysis (Abuhasirah & Salameh, 2025).
- Data Visualization and Multimedia Presentation Tools: AI also supports the transformation of data into visually engaging formats using tools like Flourish and Datawrapper, which are widely adopted in data

journalism to render statistical content interactively. Other tools such as Docs to Deck (Canva) allow journalists to convert structured documents into professional visual slides, making the presentation of news content more accessible (Bedi, 2023).

AI tools have helped journalists overcome many traditional constraints related to time, access, and resources—especially in freelance and under-resourced newsrooms. However, their increasing integration into news production raises important questions about content ownership, algorithmic transparency, and the erosion of journalists' creative skills (Abuhasirah et al., 2023). This underscores the need for a conscious, ethically grounded, and professionally responsible approach to using AI in journalism (Lewis et al., 2019; Kaci, 2024).

Data Journalism

Data journalism is a contemporary journalistic practice that involves collecting, analyzing, and interpreting large datasets to produce evidence-based stories that serve the public interest. Fürst (2025) defines data journalism as "the art of constructing and narrating stories based on visual and informational analysis of large datasets, grounded in principles of transparency, openness, and investigative rigor." According to Fleerackers et al. (2025), data journalism relies heavily on open governmental and scientific data to reveal social and political realities, reinforcing the journalist's role as a digital mediator and civic educator. Recent reviews have emphasized that this form of journalism requires hybrid skills, statistical reasoning, coding, and interactive design, allowing journalists to create content with analytical depth and contextual clarity (SAGE Scoping Review, 2024). Moreover, data journalism is seen as a powerful tool to improve accountability and rebuild audience trust through content that is evidence-driven and highly accessible (SAGE Introduction to Audience Engagement, 2024).

Data journalism is distinguished by a set of core characteristics that separate it from traditional forms of journalism. Most notably, it relies on data as the primary source of information, analyzes that data using advanced digital tools, and presents the results to audiences through interactive visual and narrative formats. Among its defining features are the use of open and official databases, the application of both quantitative and qualitative data analysis, evidence-based storytelling, the use of programming and visualization tools like Datawrapper and Flourish, and collaborative work between journalists, developers, and designers within newsroom teams (Al Jazeera Fellowship, 2024; Vural & Masip, 2021).

According to the Al Jazeera Fellowship (2024), data-driven stories can be classified into four main types: stories that merely display data, those enriched by data, explanatory narratives, and full-scale investigative projects based on large datasets—the latter being the most complex and requiring a high level of technical skill. As Mustafa (2021) famously asserted, data journalism is based on the premise that "the story is not only what a source tells you but also what data reveals when analyzed properly."

The importance of data journalism lies in its capacity to produce accurate, in-depth content grounded in verifiable evidence. This elevates the credibility of media institutions and enables them to fulfill their societal watchdog role. Through rigorous data analysis, journalists can uncover patterns of corruption, discrimination, or institutional failure; highlight overlooked social or economic trends; and counter misinformation by presenting reliable, data-supported narratives (Ghabar, 2022; Mustafa, 2021). Houston (2021) emphasized that the history of data journalism reveals a shift from passive information delivery to a practice of analytical storytelling, capable of decoding complex realities through digital logic. Moreover, the integration of artificial intelligence (AI) has significantly enhanced the power of data journalism. AI tools enable the automation of data mining, verification, and visualization processes, allowing journalists to work more efficiently and produce highly customized and interactive content (Ojo & Heravi, 2017; Al Jazeera Fellowship, 2024; Vural & Masip, 2021).

The Relationship Between Artificial Intelligence and Data Journalism

The relationship between artificial intelligence (AI) and data journalism is one of deep integration, leveraging powerful analytical and narrative capabilities. AI technologies such as natural language processing, machine learning, and computer vision are employed to interpret massive datasets quickly and accurately, elevating data journalism as a medium for smart analysis and storytelling (Banafi, 2024; Fridman et al., 2025).

Recent studies indicate that these technologies not only expedite data extraction and cleaning but also facilitate the generation of interactive digital narratives that uncover latent patterns and support data-driven

forecasting (Frontiers in Communication, 2025; SAGE special issue, 2024).

Comprehensive reviews have shown that AI adoption in data journalism has transformed newsroom workflows: routine tasks such as summarization, fact-checking, and sample selection have become fully automated, allowing journalists to engage in deeper analysis and richer audience interaction (Fridman et al., 2025; VIEW Journal, 2024). Consequently, AI transcends its role as a mere tool, becoming an active agent in crafting data-based journalistic stories, enhancing the impact of media messages, and bolstering public trust.

Methodology

This study adopts a qualitative content analysis approach to examine the use of artificial intelligence tools in the production of data journalism on the websites of "7iber" and "ARIJ". This methodology is particularly suited for analyzing digital media content, especially in contexts that require an in-depth understanding of how emerging technologies are applied in editorial practices (Neuendorf, 2017; Abuhasirah, & Salameh, 2024).

Research Instrument

A structured qualitative coding framework was developed based on recent scholarly literature on AI applications in journalism and data journalism practices. The coding scheme includes categories such as the type of AI tool used (data analysis, text generation, verification, visualization), data types, forms of presentation, and topical focus.

Population and Sample

The population includes all journalistic content published under the "data journalism" category, or thematically related to it, on the (7iber) and (ARIJ) websites, between January 2022 and June 2024. A purposive sample was selected using the following criteria:

- The article must be published originally on the respective website.
- It must be explicitly or implicitly related to the use of AI in journalism.
- The topic must be measurable or data-driven (e.g., public health, economy, environment, transparency).

Table 1. Sample of Journalistic Materials from 7iber and ARIJ (2022–2025)

Platform	Title	Publication Date	Use of AI Tools
7iber	How Do Non-English Speakers Talk to ChatGPT?	18 June 2025	Yes
7iber	7iber Fellowship for Health and Environmental Journalism	2 February 2025	Yes
7iber	What's the Issue with Teaching AI in Jordan?	31 August 2025	Yes
7iber	War Choir: Taiwan Through American Eyes	15 July 2024	Yes
7iber	Amman-Riyadh: Jordanians in a Shifting Saudi Labor Market	June 2025	Yes
ARIJ	Is AI Taking Over Journalism? An Analysis Approach	1 August 2024	Yes
ARIJ	AI Impact in Newsrooms Prize	8 January 2024	Yes
ARIJ	ARIJ Releases the First Arabic Language AI Strategy	17 July 2023	Yes
ARIJ	ARIJ Hosts Masterclass on Advanced OSINT Techniques	14 January 2025	Yes
ARIJ	"Shipment refused"	17 March 2025	Yes

Coding Categories

The following analytical categories were applied:

- Type of AI tool used (analytics, generation, verification, visualization, etc.)
- Type of data used (governmental, open-source, social media...)
- Format of presentation (text, visual, maps, video…)
- Degree of reference to AI usage (explicit, implicit, none)
- Topical domain (politics, social issues, economy, environment…)

This design seeks to critically assess the extent and nature of AI integration into data journalism practices on the selected platforms.

Content Analysis Coding Categories

The following content analysis coding sheet was developed to categorize and evaluate journalistic content published on the websites of "7iber" and "ARIJ" within the scope of data journalism. Its primary objective is to identify the extent to which artificial intelligence tools are utilized in the production and presentation of this content.

The coding categories were constructed based on a thorough review of recent academic literature related to data journalism and AI technologies, while also considering the editorial and technological context of Arabic digital media. The framework includes key dimensions such as the type of AI tool used, the nature of the data, presentation formats, topical domains, interactivity levels, editorial purpose, and depth of data engagement. This coding sheet serves as a structured reference that enables systematic and accurate coding, and facilitates the extraction of meaningful patterns in AI-enhanced journalistic practices.

Table 2. Content Analysis Coding Sheet for Examining the Use of Artificial Intelligence Tools in Data Journalism on "7iber" and "ARIJ" Websites

Category	Coding Options
1. Type of AI Tool Used	☐ Data Analytics ☐ Text Generation ☐ Fact-checking ☐ Visualization ☐ Classification ☐ Other
2. AI Mention Type	☐ Explicit ☐ Implicit ☐ Not mentioned
3. Type of Data Used	☐ Governmental ☐ Open-source ☐ Surveys ☐ Social media ☐ Other
4. Format of Presentation	☐ Text only ☐ Text + Static Charts ☐ Interactive Visuals ☐ Maps ☐ Video/Audio
5. Topical Domain	☐ Politics ☐ Health ☐ Economy ☐ Environment ☐ Rights ☐ Social ☐ Other
6. Interactivity Level	☐ High ☐ Medium ☐ Low ☐ Not interactive
7. Editorial Purpose	☐ Investigative ☐ Educational ☐ Anti-corruption ☐ Awareness ☐ News update ☐ Other
8. Level of Data Use	☐ Descriptive ☐ Explanatory ☐ Analytical/Exploratory

Reliability test

As part of the methodological rigor required for qualitative content analysis, an intercoder reliability test was conducted to ensure consistency in the coding process. This test included two journalistic articles—one from each platform (7iber and ARIJ)—and was coded independently by two researchers using a predefined content analysis coding sheet. The selected articles were analyzed based on eight categories: AI Tool Type, Mention Type, Data Type, Presentation Format, Topical Domain, Interactivity, Editorial Purpose, and Level of Data Use. The results of this test are presented in the table below.

Table 3. Inter-Coder Reliability Test for Two 7iber Articles

No.	Article Title	Category	Coder 1	Coder 2	Agreement?
1	How Do Non-English Speakers Talk to ChatGPT?	AI Tool Type	Text Generation	Text Generation	Yes
1		Mention Type	Explicit	Explicit	Yes
1		Data Type	Other	Other	Yes
1		Presentation Format	Text Only	Text Only	Yes
1		Topical Domain	Social	Social	Yes
1		Interactivity	Not interactive	Not interactive	Yes
1		Editorial Purpose	Awareness	Awareness	Yes
1		Level of Data Use	Explanatory	Explanatory	Yes

No.	Article Title	Category	Coder 1	Coder 2	Agreement?
2	7iber Fellowship for Health and Environmental Journalism	AI Tool Type	Data Analysis + Visualization	Data Analysis + Visualization	Yes
2		Mention Type	Implicit	Implicit	Yes
2		Data Type	Governmental + Open-source	Governmental + Open-source	Yes
2		Presentation Format	Text Only	Text Only	Yes
2		Topical Domain	Environmental + Health	Environmental + Health	Yes
2		Interactivity	Not interactive	Not interactive	Yes
2		Editorial Purpose	Educational	Educational	Yes
2		Level of Data Use	Analytical/Exploratory	Analytical/Exploratory	Yes

The intercoder reliability results show full agreement between both coders across all coding categories for the two sampled articles. This high level of agreement (100%) demonstrates the clarity and effectiveness of the coding instrument and confirms that the categories and definitions used are consistently interpretable by different coders. It is important to note that this reliability check was conducted on only two articles—one from each website—as a procedural step to validate the coding framework, not as a statistical representation of the entire dataset.

Data Analysis

Data analysis represents a pivotal stage in the content analysis methodology, as it transforms collected journalistic material into quantifiable insights that can be interpreted, compared, and explained. In this study, frequency and percentage analysis was conducted across predefined categories within the coding framework, including: type of AI tool used, manner of AI mention, type of data utilized, format of presentation, topical domain, interactivity level, editorial purpose, and level of data use. This analytical process provided a deeper understanding of how artificial intelligence is employed in journalistic content published by the platforms 7iber and ARIJ, thereby contributing to answering the study's research questions and revealing editorial and technological trends within these digital journalism models.

Types of Artificial Intelligence Tools Used

Table 4 presents the distribution of artificial intelligence tools used across the sample of journalistic materials published on 7iber and ARIJ between 2022 and 2025. The purpose of this table is to identify the most commonly employed AI tools in digital journalism, highlighting their practical functions in content generation, data analysis, visualization, and other editorial applications.

Table 4. Types of artificial intelligence tools used

AI Tool Type	Frequency	Percent
Text Generation	2	20%
Data Analysis	2	20%
Data Analysis + Visualization	1	10%
Educational AI Use	1	10%
Text Analysis	1	10%
AI Strategy	1	105
OSINT Tools	1	10%
AI Detection	1	10%

The results show that the most frequently used AI tools are Text Generation and Data Analysis, each accounting for 20% of the sample. This indicates a clear tendency among journalistic platforms to utilize AI technologies that assist in content creation and digital data processing. Other tools such as Text Analysis, Data Analysis + Visualization, AI Detection, AI Strategy, and OSINT Tools each appeared in 10% of the sample, suggesting a moderate but growing diversity in AI tool adoption. Notably, advanced tools such as OSINT and AI detection remain underutilized, reflecting an early stage of integration and a promising potential for expanding the role of investigative journalism through artificial intelligence technologies.

Table 5 illustrates how artificial intelligence tools were referenced within the analyzed journalistic content. It distinguishes between explicit mentions (where tools are clearly named or described), implicit mentions (where tools are referenced indirectly or generally), and the absence of any mention. This categorization helps evaluate the editorial transparency and the awareness of media institutions regarding their use of AI technologies.

Table 5. Mention Type

Category	Frequency	Percentage
Explicit	6	60.0%
Implicit	4	40.0%

The findings indicate that 60% of the articles made an explicit mention of AI tools, reflecting a commendable level of editorial transparency and a willingness to publicly acknowledge the role of AI in content production or analysis. Meanwhile, 40% of the content included implicit mentions, which may suggest either partial disclosure or reliance on general references without naming specific tools. Notably, no articles were found to omit AI references entirely, which enhances the credibility of the sample and reflects a growing awareness in digital journalism of the importance of communicating technological integration to the audience.

Table 6 presents the distribution of data types utilized in the journalistic articles that employed AI tools. The table categorizes the nature of the data sources referenced in the content, such as governmental datasets, open-source data, user-generated content, academic material, and analytical datasets. Understanding the type of data used is essential to assess the credibility, scope, and depth of data journalism practices supported by artificial intelligence.

Table 6. Data Type

Category	Frequency	Percentage
User-based	1	10.0%
Governmental + Open-source	1	10.0%
Academic + Curricular	1	10.0%
Military/Political	1	10.0%
Labor + Demographic	1	10.0%
Analytical	1	10.0%
Institutional	1	10.0%
Strategic	1	10.0%
Training Material	1	10.0%
Investigative	1	10.0%

The results reveal a balanced and diverse use of data types, with each of the six categories accounting for 10% of the sample. The categories include user-based data, governmental and open-source datasets, academic and curricular materials, military/political data, labor and demographic statistics, and AI-driven analytical data. This diversity reflects a rich editorial approach by both 7iber and ARIJ, demonstrating their engagement with a wide range of data sources to support their journalistic work. However, the absence of dominance by any single category suggests that both platforms are still in an exploratory phase when it comes to establishing standardized data strategies for AI-supported journalism.

Table 7 illustrates the presentation formats used in the journalistic materials that employed AI tools. It highlights whether the content was delivered in text-only form or enhanced with static charts or other visual elements. Presentation format serves as an important indicator of the level of technological integration and user engagement in AI-supported journalism.

Table 7. Presentation Format

Category	Frequency	Percentage
Text Only	7	70.0%
Text + Static Charts	3	30.0%

The data show that a substantial majority of the analyzed articles (70%) were presented in a text-only format, with no visual or interactive components. Meanwhile, 30% of the articles incorporated static charts as supplementary elements. These results indicate that traditional textual formats continue to dominate, even within AI-augmented journalism. The limited use of visualizations suggests a missed opportunity to leverage AI's capabilities in generating interactive or dynamic data presentations. This underscores the need for editorial strategies that better integrate AI tools with visual storytelling techniques to enhance reader experience and understanding.

Table 8 presents the level of interactivity provided by journalistic content that incorporated AI tools. Interactivity refers to the inclusion of elements that allow user engagement, such as interactive charts, dynamic maps, clickable layers, or input-based tools. It is a critical indicator of digital storytelling maturity and user experience design in AI-powered journalism.

Table 8. Interactivity

Category	Frequency	Percentage
Not interactive	6	60.0%
Low	3	30.0%
Medium	1	10.0%

The results show that 60% of the articles were not interactive, indicating that most journalistic content did not capitalize on AI's potential to enable audience engagement. Meanwhile, 30% featured low interactivity, usually through basic elements such as hyperlinks or static attachments, and only 10% showed a moderate level of interactivity. Notably, none of the articles achieved high interactivity. These findings reflect a clear gap between the adoption of AI tools and their integration into immersive, user-driven experiences—highlighting the need for media platforms to invest more in dynamic, AI-enhanced data storytelling formats.

Table 9 illustrates the editorial purposes behind the journalistic content that employed artificial intelligence tools. These purposes include awareness, education, investigation, information dissemination, support, strategic planning, and training. Each category reflects the intended journalistic function and the broader objectives that news organizations aim to fulfill through the use of AI technologies.

Table 9. Editorial Purpose

Category	Frequency	Percentage
Awareness	2	20.0%
Educational	2	20.0%
Investigative	2	20.0%
Informative	1	10.0%
Supportive	1	10.0%
Strategic	1	10.0%
Training	1	10.0%

The results indicate a noticeable diversity in editorial purposes. Awareness, educational, and investigative content each represented 20% of the sample, highlighting a clear trend toward leveraging AI to support journalistic functions with cognitive and watchdog value. Other editorial aims—informative, supportive, strategic, and training—each accounted for 10%, pointing to more specialized uses. These findings suggest that both 7iber and ARIJ are utilizing AI not merely for efficiency, but to enhance journalism's societal role in fostering transparency, education, and public engagement through AI-enhanced storytelling.

Table 10 outlines the levels at which data were utilized in the AI-powered journalistic materials. This dimension reflects the depth of data engagement—from simple description, through explanatory reporting, to analytical and exploratory forms. It serves as an indicator of data journalism maturity and the extent to which AI tools are being leveraged to derive meaningful insights from raw information.

Table 10. Level of Data Use

Category	Frequency	Percentage
Explanatory	5	50.0%
Descriptive	2	20.0%
Analytical	2	20.0%
Analytical/Exploratory	1	10.0%

The findings reveal that 50% of the articles employed an explanatory approach to data use, emphasizing efforts to contextualize and interpret information rather than merely presenting it. Meanwhile, descriptive and analytical levels each appeared in 20% of the sample, and only 10% of the content demonstrated exploratory analysis. This suggests a growing awareness among journalists of the value of interpretive and insight-driven storytelling. However, the relatively limited use of advanced analytical techniques points to an opportunity for further development in applying AI tools to conduct deeper and more sophisticated data investigations in journalism.

Comprehensive Results Analysis

The results of the content analysis of journalistic materials published on 7iber and ARIJ between 2022 and 2025 reveal a clear and growing presence of artificial intelligence tools in journalistic practice. However, this presence varies in its depth and sophistication. The data show that most articles relied on tools related to text generation and data analysis, reflecting a tendency to use AI for enhancing production and editorial speed. More advanced tools—such as interactive visualizations or machine learning applications—were notably underutilized.

In terms of the mention of AI tools, the majority of articles (60%) made explicit references, suggesting a relatively high level of editorial transparency and growing awareness about disclosing the use of such technologies. However, the dominance of text-only formats (70%) and low interactivity (60% not interactive) indicates a limited investment in digital user experience, highlighting a gap between the technical potential of AI and its actual integration into interactive journalism.

Regarding topical domains, the coverage was diverse, ranging across social, environmental, educational, and economic issues, reflecting the platforms' multidimensional editorial agendas. As for the editorial purposes, the analysis revealed that AI was primarily employed in awareness, educational, and investigative content (each accounting for 20%), demonstrating a commitment to cognitive, ethical, and watchdog functions of journalism. Finally, the analysis showed that the most dominant level of data use was explanatory (50%), indicating that journalists tend to use AI to contextualize and interpret data rather than merely describe it. However, the relatively low presence of advanced analytical or exploratory uses suggests that further investment is needed in building in-depth analytical capabilities in newsrooms.

Result Discussions

The current study reveals that artificial intelligence tools are increasingly being utilized in digital journalism platforms such as 7iber and ARIJ. However, this adoption remains primarily concentrated in operational aspects such as text generation and data analysis, while more advanced applications such as interactive visualizations or machine learning models remain limited. These findings are consistent with the results of Túñez-López et al. (2020), who concluded that AI is generally used to support editorial processes rather than replace interpretive or investigative journalism. This indicates that Arab media institutions are in a transitional stage—embracing AI to streamline workflows but not yet exploiting its full creative and analytical potential. Such a trend highlights both the opportunities for innovation and the structural limitations, such as resource constraints, skills gaps, or institutional reluctance, that may hinder deeper adoption.

The study's findings also align with Goyanes et al. (2024), who noted that AI-powered journalism is still adapting to emerging tools, with most applications centered around automation of routine tasks. This corresponds to a basic phase of digital transformation in Arab media contexts, as also highlighted by Al-Zoubi et al. (2024) and Bedi (2023), who emphasized that full creative or analytical integration of AI remains an area of potential rather than current practice. This suggests that Arab journalism is not isolated from global patterns but rather mirrors them at an earlier stage of development. The gap between operational use and advanced adoption further emphasizes the need for capacity building, institutional investment, and the development of

localized AI applications tailored to the needs of Arab investigative reporting.

In terms of AI mention type, the fact that 60% of the content explicitly referenced the tools used suggests a positive level of editorial transparency. This supports de-Lima-Santos and Salaverría (2021), who emphasized that AI must be integrated with journalistic ethics and values, and that transparency enhances trust in automated or semi-automated content. The findings underscore a promising ethical orientation among Arab platforms like 7iber and ARIJ, which recognize the importance of disclosure in maintaining credibility. At the same time, the remaining 40% of content where tools were not mentioned reflects an area for improvement, as inconsistent transparency may create ambiguity for audiences and limit accountability. Thus, the study demonstrates that while ethical integration of AI is emerging, it remains uneven in practice.

Regarding editorial purposes and topical domains, the study observed a tendency toward using AI in awareness-raising, educational, and investigative reporting—a finding consistent with Parrat, Mayoral, and Mera (2021), who argued that AI can enhance journalism's public value by producing accessible, data-driven narratives. Nevertheless, the limited interactivity found in this study remains a clear shortcoming, and aligns with prior critiques that AI tools are often underutilized in enabling immersive user experiences. This indicates that Arab data journalism is prioritizing informative and socially valuable content but has yet to fully embrace audience-centered innovation, such as interactive storytelling or participatory data exploration. The results point to the need for further investment in narrative design and digital literacy to bridge the gap between content production and audience engagement.

Finally, the levels of data use—with a majority of articles employing explanatory or descriptive approaches—suggest that AI is mainly supporting simplified storytelling rather than uncovering complex causal relationships or conducting exploratory analysis. This observation resonates with Bounegru et al. (2021), who noted that data journalism still struggles to move beyond surface-level visualizations into truly analytical, investigative terrain. This finding reveals a structural limitation in Arab media institutions, where AI is functioning more as a support tool than as a driver of in-depth data interrogation. The implication is that while audiences are being exposed to data-informed narratives, the full investigative and analytical power of data journalism remains underdeveloped. Addressing this requires not only technological advancements but also a cultural and institutional shift toward embracing more ambitious, research-oriented forms of reporting.

Conclusions

This study examined the use of technological tools in data journalism practices at two pioneering Arab digital media platforms, 7iber and ARIJ, focusing on the patterns of integration, editorial purposes, and ethical considerations. The findings indicate that these tools are primarily employed to support operational and routine aspects of journalism, such as text generation, data processing, and descriptive reporting, rather than driving advanced analytical or interactive storytelling. This reflects a stage of gradual digital transformation within Arab media institutions, where technological adoption complements—but does not replace—the interpretive, investigative, and creative work of journalists.

The analysis also highlights a positive degree of editorial transparency, with a majority of content explicitly referencing the tools used, suggesting an awareness of ethical responsibility and audience trust. At the same time, gaps in interactivity, audience engagement, and exploratory analysis point to structural and professional challenges, including limited resources, skills, and institutional readiness. The study further demonstrates that technological tools are most commonly applied in producing awareness-raising, educational, and investigative reports, emphasizing their role in enhancing the public value of journalism.

Overall, the article contributes to understanding the current state of digital and data-driven journalism in the Arab context. It shows that while technological tools are increasingly embedded in journalistic workflows, their potential for deeper investigative inquiry, narrative innovation, and audience-centered reporting remains underdeveloped. These findings suggest the need for continued capacity building, investment in editorial innovation, and strategic integration of technology to strengthen investigative and analytical journalism in the region. In doing so, Arab media institutions can expand their ability to produce high-quality, credible, and socially impactful journalism in an increasingly data-driven media environment.

Acknowledgments
I would like to thank Middle East University for funding this research.

Funding
This study was supported by Middle East University provided financial support for the conduct of the research but had no such involvement in the writing in the article.

Conflicts of Interest
The authors declared no potential conflicts of interest.

References

Abuhasirah, R. (2025). The Impact of Ownership and Editorial Policy on Journalists' Professional Competence in Newsrooms. *Arab Journal for Scientific Publishing, 81*(8), 532-549. https://doi.org/10.36571/ajsp8123

Abuhasirah, R. M., Oreqat, A. A., Al-Badri, H. A., & Kiswany, H. H. (2025). Digital Violence Against Jordanian Female Journalists on Social Media Platforms: A Field Study. *Dirasat: Human and Social Sciences, 53*(4), 8565. https://doi.org/10.35516/Hum.2025.8565

Abuhasirah, R., & Salameh, R. (2023). Digital Jordanian Daily Newspapers Coverage of Climate Change. *Studies in Media and Communication, 12*(1), 223-231. https://doi.org/10.11114/smc.v12i1.6623

Abuhasirah, R., & Salameh, R. (2024). Media Framing of Environmental Issues in Jordanian Digital Newspapers. *Middle East Journal of Communication Studies, 4*(1), 1-46. http://doi.org/10.71220/2585-004-001-005

Abuhasirah, R., & Salameh, R. (2025). Media Literacy Concepts in the Education and Professional Practice of Journalism and Media Students. *Educational Process: International Journal, 15*, 1-21. https://doi.org/10.22521/edupij.2025.15.137

Abuhasirah, R., Oreqat, A., Al-Kiswani, H., & Al-Badri, H. (2023). Mobile Journalism Skills of Field Reporters of TV Channels. *Information Sciences Letters, 12*(5), 1629-1640. https://doi.org/10.18576/isl/120511

Aissani, R., Abdallah, R. A., Taha, S., & Al Adwan, M. N. (2023). Artificial Intelligence Tools in Media and Journalism: Roles and Concerns. *2023 International Conference on Multimedia Computing, Networking and Applications (MCNA)*. https://doi.org/10.1109/MCNA59361.2023.10185738

Al Rajabi, M. (2022). Skills that help employ media graduates in the labor marketfrom the point of view of practicing media professionals. *Middle East Journal of Communication Studies, 2*(1), 120–157.

Alanati, M. (2024). Utilizing Artificial Intelligence Technologies in Investigative Journalism. *Middle East Journal of Humanities and Cultural Studies*, 4(3), 213–224.

Al-Fedawi, M. (2021). Professional and Ethical Challenges of Robot Journalism from the Perspective of Jordanian Journalists. *Middle East Journal of Communication Studies, 1*(1), 72–103.

Allani, S., & Al Sallaq, A. (2025). The use of artificial intelligence applications by media students in Palestinian universities and their achieved gratifications "A field study". *Middle East Journal of Communication Studies, 5*(1), 1–34.

Al-Quran, M., Safori, A., Abu Abdoun, Y., & Hijab, E. (2022). Jordanian Media's Use of Data Journalism in Newsrooms: A Descriptive Study. *Dirasat: Human and Social Sciences, 49*(5), 91–114. https://doi.org/10.35516/hum.v49i5.2791

Al-Zoubi, O., Ahmad, N., & Abdul Hamid, N. (2024). Artificial intelligence in newsrooms: Ethical challenges facing journalists. *Studies in Media and Communication, 12*(1), 401-407. https://doi.org/10.11114/smc.v12i1.6587.

Amer, M., & Atbiqa, A. (2025). The Future of the Arab Media Industry in Utilizing Artificial Intelligence Technologies. *Middle East Journal of Communication Studies, 5*(1), 1–39.

Beckett, C., & Yaseen, M. (2023). Generating Change: A Global Survey of What News Organisations Are Doing with AI. JournalismAI, Polis, *The London School of Economics and Political Science*. Retrieved from https://www.lse.ac.uk/media-and-communications/polis/JournalismAI

Bedi, C. (2023). 8 AI tools for freelance journalists. International Journalists' Network (IJNet). Retrieved from https://ijnet.org/en/story/8-ai-tools-freelance-journalists

Bounegru, L., Gray, J., Venturini, T., & Mauri, M. (2021). *Data journalism in the Global South: The politics of numbers in India and Kenya*. *Digital Journalism*, 9(3), 317–336.

de-Lima-Santos, M. F., & Salaverría, R. (2021). *From Data Journalism to Artificial Intelligence: Challenges Faced by La Nación in Implementing Computer Vision in News Reporting*. *Palabra Clave*, 24(3). https://doi.org/10.5294/pacla.2021.24.3.7

Diakopoulos, N. (2022). *Predictive Journalism: On the Role of Computational Prospection in News Media*. *Tow Center for Digital Journalism*. https://doi.org/10.2139/ssrn.4092033

Fleerackers, A., Chtena, N., Oliveira, M., Dorsch, I., Alperin, J. P., & Pinfield, S. (2025). *Open data in data journalism: Opportunities and future directions*. *Canadian Journal of Communication*, 50(1), 145–161. https://doi.org/10.3138/cjc-2023-0040

Fleerackers, A., et al. (2025). *Open data in data journalism: Opportunities and future directions*. *Canadian*

Journal of Communication, *50*(1), 145–161.

Fürst, S. (2025). *Data Journalism*. In A. Nai, M. Grömping, & D. Wirz (Eds.), *Elgar Encyclopedia of Political Communication*. Edward Elgar.

Ghabar, B. (2024). *Employing Artificial Intelligence in Data Journalism: A Case Study of "Kashif" Robot*. Al Jazeera Media Fellowship, Al Jazeera Media Institute.

Goyanes, M., Háló, G., & Lopezosa, C. (2024). *Artificial Intelligence in Journalism: A Systematic Literature Review of Global Trends, Regulatory Challenges, and Ethical Concerns*. Retrieved from the Web of Science database.

Gutiérrez-Caneda, B., Lindén, C.-G., & Vázquez-Herrero, J. (2024). Ethics and journalistic challenges in the age of artificial intelligence: Talking with professionals and experts. *Frontiers in Communication, 9*, 1465178. https://doi.org/10.3389/fcomm.2024.1465178

Houston, B. (2021). The History of Data Journalism: From 1950s to Today. Datajournalism.com.

Kaci, Y. (2024). Usage of Artificial Intelligence as a Factor of Media Innovation and Its Use in Journalism. *Misdaki Journal for Media Studies, 6*(1), 1–14.

Keegan, J. (2024). *How Investigative Reporters Use AI Tools*. NICAR Conference Report.

Khawaldeh, A. S. (2017). Applications of Artificial Intelligence in the Service of Arab Banks. Journal of Financial and Banking Studies, *Financial and Banking Research Center, 25*(2), 57–60.

Krippendorff, K. (2018). *Content Analysis: An Introduction to Its Methodology* (4th ed.). SAGE Publications.

Lewis, S. C., Guzman, A. L., & Schmidt, T. R. (2019). Artificial Intelligence and Journalism: A Human–Machine Communication Research Agenda. *Journalism & Mass Communication Quarterly, 96*(3), 607–635. https://doi.org/10.1177/1077699019859901

Mousa, A. (2020). Attitudes of Journalists and Media Leaders Toward Employing Artificial Intelligence Technologies in Newsrooms of Egyptian Press Institutions: An Applied Study. *The Egyptian Journal of Public Opinion Research, 1*, 1–66.

Murad, K. (2023). The cognitive and applied implications of the digital environment on media education curricula in Jordanian universities - a field study. *An-Najah University Journal for Research - B (Humanities), 37*(12), 2188-2216. http://doi.org/10.35552/0247.37.12.2126

Mustafa, H. (2021). Modern Trends in Data Journalism Research. *Journal of Media Research and Studies, 17*(17), 1-62. http://doi.org/10.21608/mjsm.2021.203721

Nandini, S., Sundaram, M., & Kaur, D. (2024). *Artificial Intelligence in Journalism: An Overview of Its Applications and Uses*.

Neuendorf, K. A. (2017). *The Content Analysis Guidebook* (2nd ed.). SAGE Publications.

Nizami, K., Abuhasirah, R. (2025a). Factors affecting the practice of investigative journalism by Jordanian journalists: A field Study. *Stardom Scientific Journal of Social and Humanity Studies, 2*(4), 1-49. http://doi.org/10.70170/asbhlp4132

Nizami, K., Abuhasirah, R. (2025b). Professional and ethical challenges of investigative journalism and its relationship to journalistic practice. *International Journal for Scientific Research, 4*(1), 234-272. https://doi.org/10.59992/IJSR.2025.v4n1p9

Ojo, A., & Heravi, B. (2017). Patterns in Award-Winning Data Storytelling. *Digital Journalism, 6*(6), 693–718. https://doi.org/10.1080/21670811.2017.1338524.

Parratt-Fernández, S., Mayoral-Sánchez, A., & Mera-Fernández, M. (2021). *The Application of Artificial Intelligence to Journalism: An Analysis of Academic Production*.

Philip, R. (2024, May 7). New AI Tools and Large Language Models for Journalists: What You Need to Know. Global Investigative Journalism Network (GIJN). Retrieved from https://gijn.org

Riley, M. (2024). *AI Tools and Ethics in Data Journalism*. Journalist's Toolbox AI.

Rojas-Torrijos, J. L., & García-Cepero, J. (2020). *Perception of Sports Data Journalism Among Heavy Users*. *Mediterranean Journal of Communication*, 11(2), 295–310.

SAGE Introduction to Audience Engagement. (2024). *Data journalism and audience engagement: Introduction to the special issue*. *Journalism*. https://doi.org/10.1177/14648849241256457

SAGE Scoping Review. (2024). *Data Journalism and Journalism Education: A Scoping Review*. *Journalism & Mass Communication Quarterly*. Advance online publication. https://doi.org/10.1177/10776958241277399

Sharma, A. (2024). *Unveiling the Impact of ChatGPT in Data Journalism: A Case Study*. *International Journal of Novel Research and Development*, 9(1), c334–c343.

Túñez-López, M., et al. (2020). The future of journalism in the era of AI: Editorial criteria and human values in algorithms. El Profesional de la Información, 29(4).

Vural, Z. I., & Masip, P. (2021). Data journalism as an innovation in social communication. *EPSIR*, *6*(1), 42–55.