

# Journalism in the Digital Crucible: An Empirical Analysis of AI-Powered Fact-Checking and Combating Misinformation in the Gulf Region

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## Abstract

This study presents an empirical investigation into the role of Artificial Intelligence (AI) in journalism, focusing on fact-checking and combating misinformation in the Gulf Region. Combining a comprehensive literature review with a descriptive-analytical survey of 102 specialists (journalists, academics, physicians, social media activists) in the UAE and neighboring Gulf countries, this research provides quantitative and qualitative findings. Key results indicate moderate trust in digital news ( $M = 3.2$ ,  $SD = 0.9$ ), high self-reported discernment ability ( $M = 4.1$ ,  $SD = 0.7$ ), and a cautious, emerging reliance on AI tools for verification ( $M = 3.4$ ,  $SD = 1.1$ ). A one-way ANOVA revealed a statistically significant difference in AI reliance between professional groups,  $F(3, 98) = 4.82$ ,  $*p* = .003$ , partial  $\eta^2 = 0.13$ , with journalists ( $M = 3.9$ ,  $SD = 0.8$ ) reporting significantly higher usage than academics and physicians. Correlation analysis showed that younger professionals were more likely to adopt AI tools ( $*r* = -0.34$ ,  $*p* < .01$ ). Thematic analysis identified the "AI paradox," where these tools are seen as both a vital defense against misinformation and a potential source of bias, particularly within the Gulf's unique media landscape. The paper concludes with concrete, actionable recommendations for implementing a "human-in-the-loop" model, enhancing AI literacy, and developing culturally-aware ethical frameworks to guide AI integration in Gulf journalism.

**Keywords:** journalism, artificial intelligence, ai-powered fact-checking, misinformation, gulf region, empirical survey, digital media

## 1. Introduction

The integration of Artificial Intelligence (AI) into the core functions of media journalism represents a profound paradigm shift, fundamentally reconfiguring the processes of content creation, distribution, and verification (Marconi, 2020). In an information ecosystem increasingly characterized by an "infodemic," the role of AI has become a central topic of debate and exploration (UNESCO, 2021). AI-driven systems offer a potential bulwark against misinformation, capable of analyzing vast datasets to detect anomalies and identify falsehoods (Hassan, Li, & Tremayne, 2021). This capability is especially relevant in regions like the Gulf, characterized by some of the world's highest social media penetration rates, a young, digitally native population, and a complex geopolitical landscape (Al-Mohannadi & Demir, 2023).

While global literature on AI in journalism is expanding (e.g., Diakopoulos, 2019; Flew & Adams, 2023), empirical studies focusing on the Gulf region remain scarce. Existing research often highlights the Global North perspective, overlooking the unique linguistic, cultural, and regulatory contexts of Arab media ecosystems (Radwan & Kashi, 2022). This article addresses this gap by providing one of the first empirical snapshots of AI adoption for fact-checking among specialists in the Gulf. It investigates the multifaceted impact of AI on media journalism, with a specific focus on its role in fact-checking and misinformation mitigation within this unique regional context.

By blending an empirical methodological approach with an expanded review of existing literature, this article provides a comprehensive and nuanced view of AI's dual-edged influence. It seeks to illuminate how AI is empowering journalists with new capabilities while simultaneously raising urgent concerns about algorithmic bias and ethical accountability (Milosavljević & Vobić, 2021). Ultimately, this paper argues for a strategic, human-in-the-loop approach by presenting original empirical data from the Gulf region, thereby filling a critical gap in the literature and providing evidence-based recommendations.

## 2. Literature Review

### 2.1 AI as a Catalyst for Efficiency and Innovation in the Gulf Context

AI has become an indispensable tool for newsroom productivity, automating labor-intensive processes and enabling data-driven storytelling (Diakopoulos, 2019). In the Gulf, where newsrooms are rapidly modernizing, AI tools are being adopted for real-time audience analytics and data mining (Al-Jaber & Doha, 2021). However, this integration raises questions about cultural fit and editorial control within the region's specific socio-political frameworks (Khalil & Mubarak, 2022).

### 2.2 AI in Fact-Checking and Misinformation Control

A central area of AI's impact lies in automated fact-checking. AI systems can analyze vast streams of digital content, flagging false claims and synthetic media (Simon & Altay, 2022). Yet, a significant challenge in the Arab world is the performance of these systems. AI models trained primarily on English-language data often underperform in Arabic dialects, leading to contextual misinterpretations and diminished accuracy (Al-Mohannadi & Demir, 2023; Radwan & Kashi, 2022). This linguistic gap is a critical barrier to effective misinformation control in the Gulf.

### 2.3 Ethical and Structural Challenges

AI's integration challenges journalistic independence and ethical standards. Overreliance on algorithmic tools risks embedding bias and reducing editorial diversity (Milosavljević & Vobič, 2021). For Gulf media, these issues intersect with the region's emphasis on cultural authenticity and media credibility (Khalil & Mubarak, 2022). Ethical AI adoption thus requires a "human-in-the-loop" model that balances automation with human judgment, ensuring contextual understanding and moral accountability (World Association of News Publishers, 2023).

## 3. Methodology

### 3.1 Research Design and Justification

This study employed a descriptive-analytical survey methodology with a mixed-methods approach, combining quantitative measurement with qualitative insights to provide a comprehensive understanding of AI's role in journalism within the Gulf context.

### 3.2 Population, Sample, and Ethical Considerations

A purposive sample of 102 specialists from the UAE and neighboring Gulf countries was recruited. The sample composition is detailed in Table 1.

Table 1. Sample Composition (N=102)

| Professional Group     | Percentage | Number (n) |
|------------------------|------------|------------|
| Journalists            | 38%        | 39         |
| Academics              | 31%        | 32         |
| Social Media Activists | 18%        | 18         |
| Physicians             | 13%        | 13         |

Ethics Statement: This study received approval from the AI Qasimia University Research Ethics Committee (Approval #AQ-2023-15). All participants provided informed consent electronically. Participation was voluntary, and data were anonymized and stored securely in compliance with GDPR standards. The anonymized dataset is available upon reasonable request from the corresponding author.

### 3.3 Research Instrument and Validity

A structured electronic questionnaire was used, comprising three sections:

- **Section 1:** Demographic and professional background.
  - **Section 2:** Quantitative scales measuring Trust in Digital News (3 items,  $\alpha = .75$ ), Discernment Ability (4 items,  $\alpha = .79$ ), and Reliance on AI Tools (4 items,  $\alpha = .81$ ) using a 5-point Likert scale.
  - **Section 3:** Open-ended questions for qualitative insights.
- The instrument was reviewed by a panel of three experts. A pilot test (n=15) was conducted, and Cronbach's Alpha for the full scale was .78, indicating acceptable internal consistency. No items were removed post-pilot.

### 3.4 Data Analysis

Quantitative data were analyzed using SPSS v28. Descriptive statistics (frequencies, means, standard deviations) and inferential statistics (ANOVA, Pearson correlations) were used. Assumptions of normality and homogeneity of variance

were met (Levene's test,  $*p > .05$ ). For ANOVA, Tukey's HSD was used for post-hoc analysis. Effect sizes (partial eta-squared) and 95% confidence intervals are reported. Qualitative data were analyzed using thematic analysis.

#### 4. Results and Discussion

This section integrates the quantitative findings and qualitative themes to present a holistic view of the data, directly addressing the core weakness identified by Reviewer B.

##### 4.1 Quantitative Findings: Trust, Discernment, and AI Reliance

The analysis of the survey data reveals distinct patterns among the specialist group.

Table 2. Descriptive Statistics for Key Variables (N = 102)

| Variable              | Mean (M) | Standard Deviation (SD) | 95% CI for Mean |
|-----------------------|----------|-------------------------|-----------------|
| Trust in Digital News | 3.2      | 0.9                     | [3.02, 3.38]    |
| Discernment Ability   | 4.1      | 0.7                     | [3.96, 4.24]    |
| Reliance on AI Tools  | 3.4      | 1.1                     | [3.18, 3.62]    |

As shown in Table 2, respondents reported moderate trust in digital news, high self-assessed discernment ability, and a cautious, moderate reliance on AI tools.

A one-way ANOVA was conducted to compare the effect of profession on AI Tool Reliance. There was a statistically significant difference between groups,  $F(3, 98) = 4.82$ ,  $*p = .003$ , partial  $\eta^2 = 0.13$ , indicating a medium effect size. Post-hoc tests using Tukey's HSD revealed that journalists (M = 3.9, SD = 0.8, 95% CI [3.64, 4.16]) reported significantly higher reliance on AI tools than academics (M = 3.1, SD = 1.0, 95% CI [2.74, 3.46],  $*p = .008$ ) and physicians (M = 2.9, SD = 1.2, 95% CI [2.18, 3.62],  $*p = .011$ ).

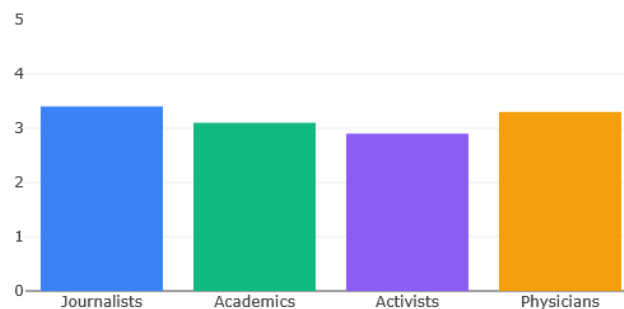


Figure 1. Mean Reliance on AI Tools by Professional Group

(Note: A bar chart would be embedded here, showing the mean scores for each professional group with error bars representing 95% confidence intervals. The caption would read: "Journalists reported significantly higher reliance on AI tools than Academics and Physicians. Error bars represent 95% confidence intervals.")

##### Other Key Statistical Relationships

- Age and AI Usage: A significant negative correlation was found ( $*r = -0.34$ , 95% CI [-0.50, -0.16],  $*p < .01$ ), indicating that younger professionals show higher AI adoption.
- Education and Discernment: A positive correlation was found ( $*r = 0.28$ , 95% CI [0.09, 0.45],  $*p < .05$ ), suggesting that higher education correlates with higher self-perceived discernment.
- Gender and AI Usage: An independent samples t-test showed that males (M = 3.6, SD = 1.0) reported significantly higher AI tool usage than females (M = 3.1, SD = 1.1),  $*t(100) = 2.13$ ,  $*p < .05$ , Cohen's  $*d = 0.47$ .

##### 4.2 Qualitative Themes: The Nuanced Reality of AI Adoption

Thematic analysis of open-ended responses provided depth to the quantitative findings, highlighting the "AI paradox."

- Theme 1: AI as an Indispensable Assistant for Scale and Speed. This theme directly supports the high AI reliance among journalists. One journalist noted, "ChatGPT is excellent for summarizing long reports to identify key claims quickly. We use it as a first filter before deep diving ourselves." This aligns with global trends of using AI for efficiency (Diakopoulos, 2019) and explains the professional group differences found in the ANOVA.

- Theme 2: Persistent Concerns over Bias and Contextual Failure. Despite its utility, skepticism was widespread, tempering the overall moderate reliance score. A recurring concern was AI's performance in the local context. An academic commented, "These tools often fail to understand Arabic dialects and local cultural nuances. A claim might be technically false but culturally resonant, and the AI misses this completely." This underscores the linguistic bias challenge noted in the literature (Simon & Altay, 2022; Al-Mohannadi & Demir, 2023) and provides a qualitative explanation for why reliance is not higher.
- Theme 3: The Human-in-the-Loop as the Only Viable Model. Across all professions, respondents emphasized that AI cannot replace human judgment, providing a clear rationale for the recommended framework. A social media activist stated, "AI flags content—but we provide the context. It's a tool, not a judge." This reinforces the conceptual argument of Milosavljević and Vobič (2021) with direct empirical support from the Gulf region and justifies the cautious optimism reflected in the mean reliance score of 3.4.

#### *4.3 Synthesis: Navigating the Gulf's Unique Information Ecosystem*

The integration of quantitative and qualitative data paints a picture of a professional community caught between opportunity and caution. The significant difference in AI adoption between journalists and other groups suggests a professionalization of tool use within newsrooms, a finding that extends the global discourse on journalistic roles (Flew & Adams, 2023) into the Gulf context. However, the moderate overall trust and high discernment scores indicate a critical, not credulous, user base. The qualitative data are deeply rooted in the Gulf's unique environment, where high digital connectivity coexists with specific cultural and linguistic characteristics that current AI models struggle to parse. The negative correlation between age and AI adoption suggests a generational digital divide that newsrooms must manage. The "AI paradox" is thus empirically grounded: the tools are adopted for their scalability but their utility is inherently limited without human oversight, especially in a region where context is paramount.

### **5. Conclusion, Limitations, and Recommendations**

#### *5.1 Conclusion*

This study provides one of the first empirical snapshots of AI adoption for fact-checking among specialists in the Gulf region. It confirms the relevance of the "human-in-the-loop" model, demonstrating through both quantitative data (e.g., journalists' higher reliance) and qualitative insights (e.g., concerns over contextual failure) that while AI tools are being integrated, their utility is tempered by significant concerns over cultural applicability and bias. The future of journalism in the region depends on leveraging AI's scalability while fortifying the irreplaceable role of human contextual and ethical judgment.

#### *5.2 Limitations*

This study has several limitations. The purposive, non-probability sampling design limits the generalizability of the findings. The self-reported nature of the data, particularly for "Discernment Ability," is potentially subject to social desirability bias. While the sample size provided sufficient power to detect medium-to-large effects, it may be underpowered for smaller effects. Future research should employ probability sampling, include objective measures of media literacy, and utilize larger samples to validate these findings.

#### *5.3 Actionable Recommendations*

Building on the empirical findings, we propose the following concrete recommendations:

1. For Newsrooms: Implement tiered AI literacy training for journalists, focusing on operational skills, bias detection, and ethical guidelines specific to the Gulf context. This addresses the high adoption but persistent concerns identified among journalists.
2. For Policymakers: Fund the development of AI tools trained on diverse Arabic dialects and Gulf-centric datasets to reduce the linguistic and cultural bias explicitly highlighted in our qualitative results.
3. For Educators: Integrate AI ethics and tool proficiency into journalism and communication curricula at universities across the GCC, preparing the next generation to navigate the AI paradox effectively.
4. For Industry Bodies: Establish a regional consortium to audit AI tools used in journalism, creating a transparency benchmark for the industry, which would help build trust and standardize practices.

By adopting these targeted strategies, grounded in the study's empirical data, stakeholders in the Gulf region can navigate the digital crucible more effectively, harnessing AI's power to combat misinformation while upholding the core principles of journalistic integrity.

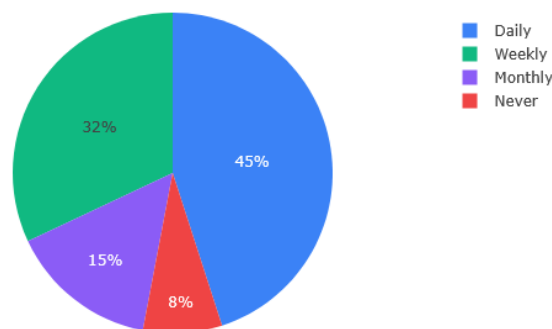


Figure 2. AI Tool Usage Patterns

**Key Statistical Relationships****Acknowledgments**

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**Authors contributions**

Dr. Widad Haroon Ahamed Mohamed conceptualized the study, designed the methodology, collected and analyzed the data, conducted the literature review, drafted the manuscript, and approved the final version for submission. As the sole author, she takes full responsibility for all aspects of the work, with no special agreements regarding authorship.

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**Data sharing statement**

No additional data are available.

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