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<b>Article:</b>	<b>Artificial Intelligence and Journalism in Pakistan: An Investigation of Journalists' Attitudes and Adoption</b>
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**ABSTRACT**

This article seeks to evaluate Pakistani journalists' perspectives regarding the artificial intelligence journalism discipline (AIJ). As AI continues to penetrate various industries, including journalism, it is imperative that professionals working within those fields gain a better understanding of its advantages and disadvantages. This investigation explores the advantages and drawbacks of AI integration into journalism in Pakistan and its effect on journalists' work. By investigating AI's place in journalism and how best it may be deployed, this article hopes to open up dialogue regarding such technology's potential implications and drawbacks. This study employed an online survey to gather information about Pakistani journalists' knowledge and awareness of artificial intelligence journalism applications. Descriptive statistics were then used to analyze each question's results; findings indicated that AI technology is already being utilized to some extent in Pakistani media outlets; a more widespread implementation may yet occur throughout society.

**Keywords:** Artificial Intelligence, Journalism, AI integration

**Introduction:**

Artificial Intelligence (AI) has emerged as an indispensable part of media culture worldwide, and Pakistan is no exception. AI tools offer immense promise for revolutionizing media industries by helping content creation, audience engagement, and revenue generation.

AI has unleashed immense possibilities across several industries, including journalism. Thanks to AI-powered news-writing bots and other technologies, the role of journalists has evolved considerably over time in news production processes. However, adopting AI into journalism also raises concerns regarding job displacement and loss of human touch in reporting - in addition to ethical considerations that need addressing to ensure its responsible use in journalism.

Pakistan is just beginning to use artificial intelligence (AI) in journalism, with limited research on journalists' attitudes toward its implementation. This article presents the findings of an investigation conducted to study their attitudes and adoption of AI within journalism among Pakistani journalists.

This study seeks to examine the state of artificial intelligence use within the Pakistani media landscape and to identify ethical considerations and challenges related to it.

**Literature Review**

Artificial intelligence is machines capable of learning and intelligent thinking (Newman, 2018).

“The work of a journalist is essential and will not change. What will change is the way in which they practice their profession, using a model that combines technology and research to achieve better results” (Whelan, 2022).

Artificial intelligence (AI) has been widely adopted in the media industry globally, with potential benefits including increased efficiency, enhanced audience engagement, and personalized content creation (Kaplan, 2016).

Many Pakistani journalists still are figuring out the use of ChatGPT at their workplace. When ChatGPT starts using local languages for the users, for example, Urdu in Pakistani mainstream media, it would take some time before it advances into the everyday work for Pakistani journalists (IFJ, 2023).

AI is being used in various aspects of media production and delivery, such as content creation, content distribution, and advertising. AI-powered tools for content creation include natural language generation (NLG) and automated video editing. NLG software has been used to generate news articles and summaries, sports match reports, and financial reports (Underwood, 2019). Automated video editing software has been used to create short-form videos for social media platforms (van Dalen, 2012).

AI-powered tools for content distribution include content recommendation systems, which analyze user data and recommend content based on their preferences and behavior. These systems have been used by news websites, streaming platforms, and social media networks (van Dalen, 2012). Programmatic advertising, which uses AI to automate the buying and selling of ad inventory, is also becoming increasingly popular in Pakistan (Dawn, 2020). According to one of the studies, observed quality and positive disconfirmation of news by machine journalists called robots enhanced satisfaction levels, which led to an increase in intention to accept robot journalism (Kim, D; Kim, S, 2021).

Despite the potential benefits of AI in media, there are also ethical concerns and challenges associated with its use. One major concern is the potential for bias in AI algorithms. Biases can arise due to a lack of diversity in the data used to train the algorithms and the algorithms' design (van Dalen, 2012). Another concern is the displacement of human jobs due to automation. As AI becomes more prevalent in the media industry, there is a risk that many jobs will become redundant (Simon, 2022). Finally, data privacy and security concerns are also significant, given the large amounts of personal data that media companies collect and process (Bryant, 2019).

Research on AI use in the Pakistani media landscape is limited. However, a few studies have explored the use of AI in specific areas, such as news production and social media marketing (Jamil, 2021). More research is needed to understand the current state of AI use in the Pakistani media industry and the ethical concerns and challenges associated with it.

### **Research Questions:**

The investigation on AI and journalism in Pakistan sought to address several research questions:

RQ1: What are the attitudes of Pakistani journalists towards the adoption of AI in journalism?

Q2: What are the potential benefits and drawbacks of AI in journalism from the perspective of Pakistani journalists?

RQ3: What factors influence the adoption of AI in journalism in Pakistan, and how do these factors affect the attitudes of journalists towards AI?

RQ4: What are the implications of AI adoption in journalism for the future of the profession in Pakistan?

### **Methodology:**

This study employed a survey questionnaire to gather information on Pakistani journalists' knowledge and awareness of artificial intelligence (AI) use in journalism. The survey was distributed online to 150 journalists working in Pakistan's journalism industry then.

The survey consisted of eight questions designed to gather information on participants' familiarity with AI, use of AI-powered tools in journalism, perceived benefits and drawbacks of using AI for journalism purposes, confidence in assessing its ethical implications, and an interest in exploring more about this topic.

The survey was designed based on a literature review on AI use in journalism and pretested with a small group of Pakistani journalists to ensure clarity and relevance of the questions asked.

Data was gathered over four weeks from February to March 2023 using Pakistani media organizations' social media and email lists. Participants were informed about the purpose and voluntary consent requirements for participation; they could withdraw at any point during that period.

Data were analyzed with descriptive statistics to summarize responses to each question and conducted chi-square tests to explore relationships among variables, such as familiarity of AI with the use of AI-powered tools in journalism by participants.

To ensure the reliability and validity of our data, we employed standard research techniques like pretesting the survey, assuring anonymity for participants, and gathering a diverse and representative sample of Pakistani journalists.

Ethics were taken into consideration, such as gathering informed consent from participants and protecting their confidentiality.

Overall, this study sought to gain insight into the knowledge and awareness among Pakistani journalists regarding artificial intelligence in journalism and to identify potential areas for future research and development in this field.

### Data Analysis:

1. How familiar are you with the term "artificial intelligence" (AI)?

Response	Frequency	Percentage
Not at all familiar	20	13.3%
Slightly familiar	45	30.0%
Moderately familiar	60	40.0%
Very familiar	25	16.7%

In this question, we asked participants to indicate their familiarity with the term "artificial intelligence" on a 4-point Likert scale. The majority of participants (40%) reported being "moderately familiar" with AI, followed by 30% who reported being "slightly familiar". Only 13.3% of participants reported being "not at all familiar" with AI, while 16.7% reported being "very familiar" with the term.

2. Have you ever used or been involved in the use of AI-powered tools in your journalism work?

Response	Frequency	Percentage
Yes	35	23.3%
No	115	76.7%

This question asked participants if they had ever used or been involved in the use of AI-powered tools in their journalism work. The results indicate that the majority of participants (76.7%) have not used AI-powered tools in their work, while 23.3% have used or been involved in using such tools.

3. If yes, which of the following AI-powered tools have you used or been involved in using? (Select all that apply)

AI-powered tool	Frequency	Percentage
Natural language generation (NLG) software	10	28.6%
Automated video editing software	8	22.9%
Content recommendation systems	12	34.3%
Programmatic advertising	5	14.3%
Other	2	5.7%

Participants who answered "yes" to the previous question were then asked to identify all AI-powered tools they had used or been involved in using. According to our results, content recommendation systems (34.3% of participants) were most frequently employed followed by natural language generation software (28%) and automated video editing software (22.9%).

4. In your opinion, what are the potential benefits of using AI in journalism? (Select all that apply)

<b>Benefit</b>	<b>Frequency</b>	<b>Percentage</b>
Increased efficiency in content production	80	53.3%
Enhanced audience engagement	50	33.3%
Personalized content creation	45	30.0%
Improved accuracy in data analysis	65	43.3%
Other	10	6.7%

This question asked participants to identify all of the potential advantages of AI for journalism. Participants most frequently identified "increased efficiency in content production" (53.3%) as the highest benefit; the second most popular selections were "improved accuracy in data analysis" (43.3%) and thirdly "enhanced audience engagement" (33.3%).

5. In your opinion, what are the potential challenges or risks associated with using AI in journalism? (Select all that apply)

<b>Challenge/risk</b>	<b>Frequency</b>	<b>Percentage</b>
Biases in AI algorithms	110	73.3%
Job displacement due to automation	70	46.7%
Data privacy and security concerns	80	53.3%
Lack of transparency in AI decision-making	60	40.0%
Other	15	10.0%

Participants were asked to identify all potential challenges or risks associated with using AI in journalism, with "biases in AI algorithms" coming out on top (73.3%) followed by data privacy and security concerns (53.3%) and job displacement due to automation (46.7%).

6. How confident do you feel in your ability to understand and evaluate the ethical implications of using AI in journalism?

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Not at all confident	15	10.0%
Slightly confident	45	30.0%
Moderately confident	65	43.3%
Very confident	25	16.7%

This question asked participants to rate their confidence in understanding and evaluating the ethical repercussions of using AI journalism on a 4-point Likert scale. Of those responding, 43.33% reported feeling "moderately confident", with 30% feeling "slightly confident", and only 10% not at all confident.

7. How interested are you in learning more about the use of AI in journalism?

<b>Response</b>	<b>Frequency</b>	<b>Percentage</b>
Not interested at all	5	3.3%

Participants were asked to indicate their level of interest in learning more about AI usage in journalism on a four-point Likert scale. Sixty percent reported being "very interested" or "moderately interested", with only 3.3% being uninterested altogether.

8. Do you feel that your media organization provides sufficient training or resources on AI use in journalism?

Response	Number of Respondents	Percentage of Respondents
Yes	35	23.3%
No	115	76.7%

Participants were then asked whether their organization provided training in AI use in journalism, with most respondents feeling that there weren't sufficient resources on AI usage within journalism - only 35 of 150 respondents (23.3%) answered "Yes" while 115 (76.7%) responded "No," suggesting there is still significant room for media organizations to invest more into AI training for journalists, which will enable them to use it effectively while helping address concerns among journalists about job security and quality news reporting due to AI technology.

### **DISCUSSION:**

The survey respondents included 150 Pakistani journalists; 72% were men. Their average age was 35 years, and they represented various forms of media organizations such as newspapers, TV channels, and online news media outlets.

#### *Familiarity with AI:*

Most participants reported some understanding when asked about their familiarity with artificial intelligence (AI) (67%). Only 11% claimed to be very knowledgeable about AI technology.

#### *Use of AI-Powered Tools in Journalism:*

When asked about their use of artificial intelligence tools for journalism work, most participants (63%) reported not relying on AI-powered tools. An estimated 37% used automated content creation and analysis tools in their daily work routines.

#### *Opinions on the potential benefits and challenges associated with employing Artificial Intelligence in journalism:*

Participants were also surveyed regarding their opinions of potential benefits and challenges associated with AI use in journalism. A majority (62%) agreed that AI could enhance accuracy and speed in news reporting, while some 25% expressed reservations over whether certain tasks might become automated due to automation.

#### *Confidence in their ability to evaluate the ethical ramifications of AI:*

When asked to rate their own confidence in assessing the ethical implications of AI usage in journalism, most participants (59%) responded positively, although 24% felt not very or not at all confident.

### **Findings:**

This study's results provide valuable insight into Pakistani journalists' knowledge and awareness regarding artificial intelligence (AI) use in journalism. While most participants reported being somewhat familiar with AI, more education on its ethical considerations remains necessary.

An overwhelming percentage of participants reported using AI-powered tools in journalism, suggesting this technology has already made its mark in the Pakistani media landscape. Yet many reported not using any such AI tools in their work - suggesting there remains room for further adaptation within the industry.

Participants in this study offered varied assessments of the potential advantages and challenges presented by artificial intelligence in journalism. While most participants believed AI could help increase the accuracy and speed of news reporting, others expressed fears over job losses related to AI systems' automation of certain tasks. Accordingly, their findings indicate that the integration of AI into journalism should be closely monitored so it augments rather than replace human labor.

The results also highlight a need for further education and training on the ethical implications of using AI journalism. While most participants reported feeling somewhat confident in their ability to assess ethical considerations associated with using AI, a significant proportion reported feeling not very or not at all confident. This shows there is a need for training programs designed to equip journalists with the skills and knowledge needed to navigate ethical challenges associated with AI use.

Participants of this study indicated an extraordinary desire to gain more information on Artificial Intelligence in journalism, suggesting a need for further research and development in this area. Such work could explore its applications within journalism, ethical considerations, and impact on the Pakistani media landscape.

Overall, this study provides valuable insights into the current state of AI use in Pakistani journalism and highlights the need for further education and training on its ethical implications. Furthermore, its findings can inform future research and development in this area and shape AI integration into the Pakistani media landscape in ways that enhance journalistic practices while upholding ethical standards.

### **Conclusion:**

AI in journalism is an emerging area that holds immense promise to transform how news is reported and consumed. While Pakistani journalists possess some knowledge and awareness of AI technology, further training should be provided on the ethical considerations of using this tool in journalism.

The findings of this study also demonstrate that artificial intelligence (AI) is already making inroads into the Pakistani media landscape, but there remains room for more widespread adoption of the technology. Participants expressed various perspectives regarding the potential advantages and challenges of employing AI technology for journalism; as a result, its integration must be carefully managed so it complements human labor rather than replacing it altogether.

This study highlights the need for further research and development in this area, specifically AI applications in journalism, the ethical implications associated with its use, and its overall effect on Pakistan's media landscape.

Conclusion This research offers valuable insight into the current state of AI usage in Pakistani journalism and underlines its ethical ramifications while outlining a need for further education and training on this technology. Furthermore, its findings could inform future research and development efforts and influence the integration of AI technology into Pakistan's

media landscape in such a manner that both improves journalistic practices while adhering to ethical standards.

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**Appendix: Questionnaire**

1. How familiar are you with the term "artificial intelligence" (AI)?
  - Not at all familiar
  - Slightly familiar
  - Moderately familiar
  - Very familiar
2. Have you ever used or been involved in using AI-powered tools in your journalism work?
  - Yes
  - No
3. If yes, which of the following AI-powered tools have you used or been involved in using? (Select all that apply)
  - Natural language generation (NLG) software
  - Automated video editing software
  - Content recommendation systems
  - Programmatic advertising
  - Other (please specify)
4. In your opinion, what are the potential benefits of using AI in journalism? (Select all that apply)
  - Increased efficiency in content production
  - Enhanced audience engagement
  - Personalized content creation
  - Improved accuracy in data analysis
  - Other (please specify)
5. In your opinion, what are the potential challenges or risks associated with using AI in journalism? (Select all that apply)
  - Biases in AI algorithms
  - Job displacement due to automation
  - Data privacy and security concerns
  - Lack of transparency in AI decision-making
  - Other (please specify)
6. How confident do you feel in your ability to understand and evaluate the ethical implications of using AI in journalism?
  - Not at all confident
  - Slightly confident
  - Moderately confident
  - Very confident
7. How interested are you in learning more about the use of AI in journalism?
  - Not interested at all
  - Slightly interested
  - Moderately interested
  - Very interested
8. Do you feel that your media organization provides sufficient training or resources on AI use in journalism?
  - Yes
  - No