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AI and the Future of Journalism in Pakistan: Global Lessons, Local Challenges, and Strategic Pathways

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Abstract

The world is rapidly changing the media landscape with the artificial intelligence (AI) concept that is redefining the manner in which journalists collect, produce, and circulate information. There are new opportunities to pursue and complex challenges to solve, as media organisations move to the exploitation of machine learning, natural language processing, and generative technologies as an aspect of the newsroom processes. The paper also analyzed the trends in the world based on the data given in the Journalism AI Report by Polis at the London School of Economics and a comprehensive literature review of 2020-2025 and identify how it is applicable to the news industry in Pakistan. It determines the role of foreign experiences in informing the new Pakistan media system with references on the key limitations of financial factors, language diversities and institutional structural weaknesses. The case presented in this paper is that Pakistan requires moving past the case of isolated and experimental applications of AI towards more coordinated and collaborative and ethically upheld application. The development of localized tools of NLP, the inculcation of AI literacy in the education of journalism and the structures of policies to regulate the production of synthetic content are essential to this process. The results show that AI is a socio-technical phenomenon that will be used to influence the journalism, audience confidence, and democratic communication in Pakistan.

Keywords: Artificial Intelligence, Innovation, Journalism, Media, News Media, Pakistan

Introduction

In journalism, one of the significant forces in the world is artificial intelligence (AI). The recent developments of machine learning (ML), natural language processing (NLP), computer vision, and generative models altered the ways journalists gather, synthesize, and distribute information over the past 10 years. Such technologies enable media employees to automate repetitive duties, handle massive amounts of data, tailor content delivery, and fight fake news, which changes the media ecosystem (Diakopoulos, 2019; Marconi, 2019; Shi and Sun, 2024). News companies consider AI as the tool of strategic importance in the formation of editorial opinion, improving consumer readership, and securing the future sustainability (Gutiérrez-Caneda et al., 2024).

The Journalism AI Report, published by Polis at the London School of Economics, gives a complete world outlook of the ongoing transition (Beckett, 2019). The discussion is conducted using information on 71 news outlets in 32 countries, and it demonstrates that the technology of AI is already infiltrated into various spheres of journalism. About half of the respondents said they used AI in news gathering, virtually two-thirds in news production and marginally over fifty percent in delivery. It was discovered that the reason why some people adopted it was due to efficiency (68%), relevance to the audience (45%), and business results (18%), as stated by Beckett (2019). According to the survey, only about one-third of the organizations are having formal AI strategy, with most of them doing informal or experiment programs.

The impact of AI on journalism is more advanced, and it can be explored through academic study. According to Diakopoulos (2019) and Marconi (2019), AI is able to enhance editorial thought and storytelling, and not simply automate the processes. Repetitive reporting processes can be automated with the help of AI and have journalists concentrate on the in-depth investigation. These are the automated financial and sports reporting of The Associated Press and the Heliograp system used by The Washington Post. The current level of generative AI enables text generation, text summarization, text translation, and multimedia creation (Yi and Sun, 2024). It has also been criticized as biased, lacking transparency, and accountability in its algorithmic decision-making (Dierickx et al., 2024; Gutiérrez-Caneda et al., 2024).

The civic and democratic responsibility of the journalists is also influenced by AI. Reporting can be improved through automation, through which it is possible to analyze extensive amounts of data, detect new trends in social life, and to offer personalized news content (Marconi, 2019). Misinformation and deepfakes made by AI are a threat to the credibility of information and trust in the population (Westlund et al., 2021). To make AI advance journalistic integrity, researchers suggest human control, transparency in algorithms, as well as ethical principles (Diakopoulos, 2019; Dierickx et al., 2024).

The world has been divided into different areas depending on financial capacity, region, and the maturity of the media system when it comes to AI adoption. North America and Europe remain the most active in the field of innovation, and the Global South has issues of inadequate funding, lack of expertise, and ineffective infrastructure (Beckett, 2019; Gutiérrez-Caneda et al., 2024). News/university/ technological partnering have also demonstrated to be successful in filling the gaps and creating innovation (Marconi, 2019). The global experiences present lessons to other states such as Pakistan, some of the opportunities and warnings.

Pakistan's Media Landscape and AI Adoption Context

Over the past two decades, the media environment in Pakistan has been profoundly reshaped by speaking purely of restrictive state power into a more diverse ecosystem, which comprises of both independent media initiatives, digital networks, and a greater number of private broadcasters (Riaz and Pasha, 2020). Despite the growth, the industry continues to grapple with structural issues that are rooted in deep foundation such as financial turmoil, political interference, unequal regulation, and technological inequalities between big cities and small region stores (Khan and Nawaz, 2021). Artificial intelligence in the field of journalism has become limited, fragmented and experimental in nature.

The recent empirical findings shedding light on the current understanding and usage of AI in Pakistani newsrooms show the perception of journalists and applications of AI in newsroom settings. According to Noor and Zafar (2023), the possibility of AI is growing, but the lack of finances, technological skills, as well as worries about editorial freedom is holding it back. It is also mentioned by Shah et al. (2024) that the perceived utility, ease of use, and institutional support play a major role in influencing the propensity of journalists to adopt AI tools; however, the overall organizational preparedness is unsatisfactory.

The major impediment to AI adoption in Pakistan is language. Most of the existing AI solutions are programmed in English, yet Urdu, as well as some of the local languages are dominant in local communication. Automated transcription systems, content analysis systems and text production systems are often ineffective in local newsrooms (Tariq, 2024). Scientists note that until specific efforts are put into localized NLP models and annotated language records, the potential of AI would be largely untapped (Moroojo et al., 2025). Moreover, the lack of effective communication between media houses, academic establishments, and experts in technology continues to hinder progress (IRADA, 2025).

These are aggravated by ethical and policy-related issues. In 2023, a political group utilized the voice-cloning technique through AI to reproduce the speech of a jailed leader, which sparked a mass of discussions on the issue of authenticity and responsibility (Associated Press, 2023). These occurrences also highlight the dire need to have strong editing principles, fact checking systems and clearly outlined regulatory systems. Moreover, threats of algorithmic discrimination, manipulation of the audience, and digital surveillance also emphasize the need to introduce transparency and ethical measures into the way AI is deployed (Zia, 2025).

Despite these challenges, the future of AI-based innovation in the media industry in Pakistan is bright. Repetitive duties can be relieved by automated solutions and the emphasis of more profound reporting taken over by the journalists. Verification technologies can enhance the accuracy and effectiveness of the fact-checking process with the assistance of AI, whereas customized news distribution systems will encourage people to engage. Sharing networks, such as shared networks of Verification, and open-source Urdu NLP libraries may reduce the cost of operation and increase AI solution coverage (IRADA, 2025; Tariq, 2024). On the one hand, teaching AI in journalism courses and constant professional growth can improve necessary technological and moral competencies of journalists (Shah et al., 2024).

The paper presents a critical examination of how world experiences with AI in the journalism field, as presented in the Journalism AI Report (Beckett, 2019), and related academic studies, can be utilized to formulate a unified and strategic outlook to the media sector of Pakistan.

Literature Review

One of the key interests in media research has been the use of artificial intelligence (AI) in journalism. The existing studies of 2020-25 provide valuable insights into the way automation, machine learning, and generative technologies are transforming the journalistic practice. Some key agenda areas of recent scholarship including automation in production, personalised content distribution, responsibility to algorithms and ethics, misinformation management and skill development are reviewed and connected to the changing media environment in Pakistan in this section.

AI and News Production: From Automation to Augmentation

The first and the most evident manifestation of AI in journalism is the ability to automatize repetitive newsroom operations (generating articles, transcribing articles, tagging metadata, and interpreting data). According to Diakopoulos (2019) and Marconi (2019), robot journalism does not close human reporters but, on the contrary, makes them more productive and creative. Algorithms will free more time in journalists to focus on their investigative and narrative-based reporting by delegating routine work to them. To illustrate, once the Associated Press has adopted automated text generating tools, its quarterly earnings no longer included about 300 incomes but 3,700 (Marconi, 2019).

Shi and Sun (2024) report that over time, the application of the generative AI tools, which include GPT-4 and large language models (LLMs), have further erased the distinction between automation and human creativity. Such systems are able to help in drafting articles, suggesting headlines, summarizing the long reports, and translating documents of different languages, which previously demanded a lot of manual labour. Nonetheless, researchers, such as Gutiérrez-Caneda et al. (2024), caution that excessive dependence on AI in editorial can undermine transparency, cause bias and minimise human control. Studies carried out in

newsrooms reveal that news journalists will continue to play a vital role as extensive editorial filters who confirm, put into perspective, and refine AI-enhanced work (Westlund et al., 2021).

Automation in Pakistani media organisations has begun to be experimented with although the adoption is still at a tender stage. Noor and Zafar (2023) mention that some of the English-language digital publications have experimented with transcription and tagging applications to optimize the editorial procedures. Nevertheless, the wider application of automation will be limited due to the lack of funds, shortage of technical skills, and language barriers. Newsrooms of Urdu and regional languages are especially at the draw of 100 percent of AI tools are designed with English in mind and do not have local language support (Tariq, 2024).

Distribution, Personalization, and Audience Engagement

The development of artificial intelligence has changed how audiences receive and consume news. With the help of recommendation engines, predictive analytics, and audience profiling models, media organisations are now able to provide customised experiences with content (Yi & Sun, 2024). International sources like The New York Times and BBC News use these systems to analyse the behaviour of readers, optimise content delivery, and enhance the level of engagement (Marconi, 2019).

However, scientists warn that these technologies can be added to filter bubbles and ideological silos that can lead to the limitation of the variety of information and negatively affect the debate of the population (Westlund et al., 2021). Moreover, algorithmic functioning lack of transparency especially in ranking and prioritising stories has posed new accountability and editorial freedom issues (Dierickx et al., 2024).

The distribution systems based on AI are still new in Pakistan. Most media companies rely not on advanced machine learning-based analytics but rather on mere social media metrics. However, the understanding that AI has the potential to enhance the level of engagement with the audience among younger, digitally active users, in particular, is growing (Shah et al., 2024). Creating Urdu-language news applications and AI-based news aggregators may resolve the accessibility and relevance gaps especially in rural and regional regions.

Ethics, Bias, and Algorithmic Accountability

The problem of ethical concerns in relation to the application of AI in journalism has become one of the main focuses of modern research. Dierickx et al. (2024) emphasize that very rarely algorithmic processes are objective, since training sets may contain biases that lead to distorted coverage of a particular group or a lack of minority voices, or can create stereotypes. Similarly, Gutiérrez-Caneda et al. (2024) emphasise the fact that opaque AI systems usually termed as black boxes deny journalists and viewers the opportunity to critically evaluate the editorial results.

Consequently, algorithmic accountability has become a key factor in the creation of governance systems of AI in media institutions. Diakopoulos (2019) recommends proper documentation of algorithm development, implementation, and improvement. Westlund et al. (2021) also suggest that algorithmic systems should be provided with editorial supervision, and they should be viewed as active editorial actors that affect the news production. New programs like algorithmic auditing and explainable AI (XAI) are aimed at encouraging more openness and public trust.

These ethical issues are especially acute in Pakistan, where the lack of media literacy and political division increases the risks of an algorithm misuse. Zia (2025) argues that the recommendations systems based on bias can aggravate ethnic and sectarian conflicts, and non-transparent artificial intelligence devices used by political actors can undermine the process of debate. The recent situation in 2023 with the introduction of artificial voice cloning at a political rally, an AI-based project, shows that urgent measures are required in the form of extensive policies to regulate synthetic media and the authenticity of the content (Associated Press, 2023).

AI, Misinformation, and Verification

The accelerating proliferation of misinformation, disinformation, and deepfakes has become one of the challenges of the new digital age. AI is a menace and an answer, it can produce very believable fake content, and it can give ways to identify it. New machine learning capabilities can now be used to identify manipulated images, mark deepfake videos, and detect the source of content on the internet (Yi and Sun, 2024). Verification systems are gradually being replaced with AI on the side of fact-checking organizations to keep an eye on social sites in real-time (Dierickx et al., 2024).

In Pakistan, fake news particularly with regard to elections, societal health as well as religion has a far reaching political and social consequence. Moroojo et al. (2025) note that deepfakes and AI-based disinformation are becoming more and more dominant in domestic politics. Regardless of these developments, the country has a small capacity to do fact-checking based mainly on manual and reactive. Combining AI-supported verification software with education campaigns to the population would significantly enhance the resilience of the information system in Pakistan in general (IRADA, 2025).

Skills, Training, and Organisational Readiness

The technological capability is not the only factor that defines the success or failure of AI use in journalism as human expertise also affects success. The necessity to be AI-literate and continuously develop as a professional in the field of journalism is a constant topic of research (Westlund et al., 2021). Shi and Sun (2024) consider the inclusion of AI education in journalism programs as one of the best ways to prepare future professionals with their technical skills, ethical and analytical abilities. Braun and Clarke (2019) also suggest interdisciplinary

cooperation between journalism, data science, and computational linguistics to create more efficient newsroom AI systems.

Pakistan still plays second fiddle in this area. Current journalism courses are very little concerned with data-driven news stories, mathematical techniques, or the ethical aspects of artificial intelligence. There is a need for training in every aspect of the field, starting at the graduation level to the expert level (Noor and Zafar, 2023). There are limited professional training opportunities and most reporters express their uncertainty in how to effectively employ AI technologies (Shah et al., 2024). Institutional support is also less, since not many media houses have innovation units or partnering with universities and technological partners (IRADA, 2025). To allow journalists to apply AI with both ethical and professional responsibility to bridging these deficiencies is vital.

Methodology and Research Design

This study uses the form of analytical synthesis of qualitative research coupled with comparative thematic analysis to understand how the global trends in AI-driven journalism as described in the Journalism AI Report (Beckett, 2019) can be used to shape the future of journalism in Pakistan. Rather than gathering new primary data, the research incorporates results of the previous empirical research, policy documents, academic sources, and industry reports to critically assess the global AI journalism situation and the unique opportunities and threats of the media industry sector in Pakistan.

This study is based on the design with two main objectives:

- (1) to discover and summarize key discoveries of international studies about the uses, strategic schemes, and ethical aspects of AI in journalism, and
- (2) to put these findings in a Pakistani socio-cultural, technological and institutional context.

Data Sources

The primary source of the worldwide part of this assessment is the Journalism AI Report that has been released by Polis at the London School of Economics (Beckett, 2019). The other sources that are specific to Pakistan include peer-reviewed articles (Noor and Zafar, 2023; Shah et al., 2024), national policy reports (IRADA, 2025), and reliable news resources (Associated Press, 2023).

Analytical Approach

Thematic analysis can be used to analyze the research in a comparative manner. The three thematic areas on which the analysis is organized are:

- Artificial Intelligence in Journalism.
- Strategy Preparedness and organisational capacity.

- Ethics, Governance and Public Interest.

All the sources were carefully reviewed, coded, and grouped into a thematic matrix according to the following categories (Nowell et al., 2017). Patterns and variations were then realized in recurring patterns through a procedure of comparison and repetition.

Reliability and Validity

Reliability and validity are foundational concepts in research methodology. Reliability refers to the consistency of a measure, while validity concerns its accuracy (Heale & Twycross, 2015). For instance, a study assessing a depression scale would need to demonstrate high test-retest reliability, showing similar results when administered twice, and construct validity, proving it truly measures depression and not a similar construct (Boateng et al., 2018). Another study might establish inter-rater reliability for a behavioral coding system, ensuring different observers achieve consistent scores, and criterion validity by comparing it to an established "gold standard" measure (Kimberlin & Winterstein, 2008). These studies underscore that a measure must be consistent (reliable) to be accurate (valid), but reliability alone does not guarantee validity.

In order to reduce possible bias, the research applies triangulation of various types of data. The selection of sources was based on priority on peer-reviewed scholarly articles and recognised institutional publications, which were backed by reliable journalistic accounts to check the context.

Limitations

As the research is based entirely on secondary data, the scope and the quality of existing literature become a limitation of this research. The academic literature about AIs in terms of journalism in Pakistan is still scant, largely qualitative, and exploratory. Extensive empirical research in this area is being established.

Analysis and Results

Artificial Intelligence in Journalism: Pakistani and Global Viewpoints.

The Journalism AI Report (Beckett, 2019) identifies three main functional areas in which artificial intelligence is used in journalism newsgathering, news production, and distribution. Some of the major trends in the world and the existing progress and constraints of Pakistan are highlighted in Table 1 below.

Table 1. Global vs. Pakistan - AI Adoption Overview

Application Area	Global Trends	Pakistan: Status & Challenges
Newsgathering	Automated data scraping, AI alerts, social media monitoring and NLP based investigative mining.	The use is mostly manual, and language and technical barriers restrict the effectiveness of global tools.
News Production	Automated text generation, summarisation, translating, speech-to-text and captioning.	Only transcription tools have been adopted in some English newsrooms; there is little local language support.
Distribution	Recommendation systems based on AI, predictive analytics and custom content based on audience segmentation.	Simple analytics applied; absence of technical infrastructure does not allow sophisticated targeting of the audience.

The international experience indicates that AI is becoming integrated into the operations within a newsroom, making them more efficient and allowing the emergence of novel ways of narrative presentation (Diakopoulos, 2019; Yi and Sun, 2024). By comparison, the adoption of PII is still not a unified process within Pakistan and is usually restricted to pilot projects or small-scale newsroom experiments (Noor and Zafar, 2023).

Strategic Readiness and Capacity Gaps

An organisation is highly impacted by its organisational readiness. Most newsroom teams around the world have created extensive AI plans and have innovation teams and collaborations with technology companies (Marconi, 2019). Conversely, Pakistani media organisations do not have clear strategies, financial resources, and talent (Shah et al., 2024). Few giant outlets have embarked on joint efforts, and the majority of small and regional organisations are not involved in innovation.

Table 2. Barriers to AI Adoption in Pakistan

Barrier Type	Examples and Implications
Technical	Lack of Urdu NLP models and lack of annotated data.
Financial	Poor investment in research and development as well as infrastructure.
Institutional	Lack of strong cooperation between techs, academia and newsrooms.
Educational	Journalism without AI, data, and computational skills.
Regulatory	No system of synthetic media or algorithm regulation.

Ethics, Governance, and Public Trust

The use of AI brings about controversial ethical and governance issues. The major organisations all over the world apply algorithmic audits, explainable AI tools, and editorial oversight systems (Diakopoulos, 2019; Dierickx et al., 2024). The regulatory climate of Pakistan is not well developed yet, and it does not have specific legal mechanisms concerning AI in the media. The importance of creating governance frameworks to overcome misinformation, algorithmic bias, and the authenticity of content is demonstrated by such an incident as the AI-generated political speech in 2023 (Associated Press, 2023).

Discussion

The evidence provided worldwide and data-specific to Pakistan show that there are serious opportunities, as well as serious challenges in the implementation of AI in journalism. One of the key conclusions is the idea that AI is not only a technological improvement but a significant change in the practice of journalism, which affects the creation, distribution, and authority of information.

To begin with, the world experience reveals that AI should be an intentional and systematic adoption rather than an experiment. The news organisations benefiting most of the AI are clearly strategic, committed innovation, and strong partnerships (Beckett, 2019; Marconi, 2019). In the case of Pakistan, the implication of this would be a transition to fragmented and ad-hoc project into organisation-level integration plans that would be in line with the editorial objectives. Government, academic and private institutional backing will be necessary.

Second, localisation of language is very essential. The NLP models of Urdu and regional languages will make the newsrooms in Pakistan self-reliant, not relying on foreign applications that cannot serve the local need (Tariq, 2024). This can be filled in by investments in the data annotation, localised model development, and open-source collaborations. Another possible solution is the public-private partnerships that may assist in constructing the required infrastructure and will lower the costs of individual organisations.

Third, the skills gap needs to be resolved as soon as possible. The education of journalism in Pakistan still focuses on traditional reporting rather than digital and computational skills. It is essential to incorporate AI literacy, data journalism, and algorithmic ethics into university education and professional training programmes (Noor and Zafar, 2023; Shah et al., 2024). This will enable journalists to be effective collaborators of AI devices and to evaluate their outputs critically.

Fourth, there should be changes in ethical and regulatory frameworks. Misinformation that was created by AI, deepfakes, and algorithmic bias are existential threats to general trust (Zia, 2025). Pakistan should work out the transparent, algorithmic responsibility, and content provenance policies. The EU AI Act and new journalistic codes of conduct on synthetic media can be used to draw lessons. Artificial intelligence (AI) generated content and human control over automated decisions must be disclosed over the editorial policies.

Fifth, there is a need to work together and strengthen. A large number of organisations around the world are forced to work around resource constraints by collaborating with universities, startups, and other media sources (Gutiérrez-Caneda et al., 2024). In Pakistan, these partnerships would help to develop NLP tools, like verification systems together and training resources that are shared. Cross-sector alliances The cross-sector alliances also have the potential to boost research and innovation, which structural weaknesses that individual organisations are unable to address individually.

Lastly, AI provides a huge potential of transforming journalism in Pakistan as long as it is applied responsibly. Automation will ease the monotonous working load of journalists, which can be devoted to investigative and analytical reporting. Verification systems powered by AI can assist in fighting misinformation, whereas personalised content systems will help to increase engagement and trust. However, this will not be realised until structural, linguistic and ethical obstacles are solved successfully.

Conclusion

Artificial intelligence (AI) is changing the field of journalism all over the world as it turns the work of collecting news, producing and distributing news upside down. This paper examined the adoption of AI in journalism on a global scale, grounding its discussion on the Journalism AI Report (Beckett, 2019) and academic literature about AI in journalism, and putting the findings into context by considering the situation of the Pakistani media industry. To analyze it, it should be stated that despite the limited scope of the journalism industry of Pakistan through technical, financial, linguistic, and institutional factors, it still has a significant potential of the responsible AI-driven innovation.

The results demonstrate that the media industry in Pakistan should advance beyond the experimental implementation of AI to more organized, ethical, and collaborative implementation. This can be done through extensive strategic planning, intensive investment in technologies that are of local concern and a long-term partnership between universities,

governmental bodies and non-governmental entities. No less important is the re-education of journalism to embrace AI literacy as this will allow journalists to use new technologies to their advantage without neglecting the concept of professional integrity and responsibility.

After all, AI cannot be seen as a substitute to human journalists but rather as a tool, which makes the work of journalists more creative, efficient, and focused on serving people. Pakistan can use AI to support the democratic role of journalism and restore the trust of the people in an era that is being increasingly characterized by Uppsala, through capacity building, ethical governance and continued innovation.

Implication of Research

The integration of Artificial Intelligence (AI) into Pakistan's media landscape presents a complex set of implications that demand strategic and multi-faceted responses. For Pakistani news organizations, the primary implication is the urgent need for strategic investment. This involves not only procuring AI tools for tasks like automated reporting on financial or sports results and data-driven investigative journalism but also developing clear ethical guidelines. The risk of delegating editorial judgment to algorithms necessitates robust frameworks to ensure AI augments, rather than undermines, journalistic integrity and accountability.

For media professionals, the implication is a fundamental shift in required skill sets. The threat of automation for routine tasks is real, creating an imperative for journalists to upskill. The future will favour those who can leverage AI for deeper investigation, creative storytelling, and analytical commentary—uniquely human skills that algorithms cannot replicate. This technological transition could exacerbate existing tensions in newsrooms, demanding management strategies that focus on augmentation, not just replacement, to foster a collaborative environment between human and artificial intelligence.

At the regulatory level, the study implies that Pakistani policymakers must proactively develop a national framework for AI in media. This is crucial to combat the proliferation of AI-generated disinformation and deepfakes, which pose a severe threat to the country's already fragile information ecosystem. Furthermore, policy must address the digital divide; without intervention, AI could deepen inequality, creating a two-tier media system where only elite, urban audiences have access to advanced, AI-powered news services, leaving others further behind. The overarching implication is that a proactive, ethical, and inclusive approach is essential to harness AI for a more sustainable and credible future for Pakistani journalism.

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