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ARTIFICIAL INTELLIGENCE IN CHINESE MEDIA: TRANSFORMING COMMUNICATION PATTERNS AND LESSONS FOR PAKISTANI MEDIA SYSTEMS

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Abstract

This paper presents a comparative review of artificial intelligence in Chinese and Pakistani media systems. It examines how AI is transforming journalism through virtual anchors, algorithmic curation platforms, automated news writing, and regulatory responses to algorithmic and deep-synthesis technologies. The study develops the AI-Media Governance Convergence framework, which combines Diffusion of Innovations theory, Comparative Media Systems theory, and Algorithmic Governance Typology. Using a systematic narrative review and structured comparison, the paper shows that China's AI-media development is fast, centralized, and strongly supported by state-led technical governance. In contrast, Pakistan's AI adoption remains fragmented, under-resourced, and limited by weak institutional coordination, Urdu-language AI gaps, and reactive regulation under PEMRA and PECA. The analysis argues that Pakistan should not simply copy the Chinese model. Instead, it should develop context-sensitive AI policies, improve Urdu-language AI capacity, support newsroom training, encourage responsible disclosure of AI-generated content, and protect editorial independence. The study contributes a reusable framework for comparing AI-driven media

1. INTRODUCTION

1.1 Background and Rationale

Artificial intelligence has become an important part of modern journalism, as news organizations use machine learning for routine reporting, personalized news feeds, interview transcription, and fact-checking. More recently, AI has also been used to create fake or virtual versions of news presenters on screen. None of the other systems of media have embarked on the change as systematically and as directly by the state as China. The Chinese State Media and technology giants and regulators have developed a more tightly integrated ecosystem in which the algorithmic recommendation, automated content generation and synthetic media are influential at the national level since the launch of the first AI news anchor by Xinhua News Agency and search firm Sogou in 2018 (Siapka, 2018).

This was no coincidence. It points to a conscious industrial strategy laid out in the New Generation Artificial Intelligence Development Plan (2017) released by the State Council which is specifically dedicated to intelligent convergence of AI and

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'smart media' and has set a 2030 goal for the country to become a global leader in AI (Webster et al., 2017). This situation leads to a highly concentrated news media landscape, in which a few major platforms determine the information consumption of hundreds of millions of people through a large volume of algorithmic and deep-synthesis regulations (Goh & Francis, 2026)

The situation of Pakistan is quite different. Studies conducted empirically indicate that the use of AI in newsrooms in Pakistan is still inconsistent and limited to basic writing features and faces challenges such as lack of awareness, finances and language (Noor & Zafar, 2023; Zamir & Ahmed, 2024). The Pakistan media regulatory framework is beset by much tension between the objectives of responsible reporting and evidence of some kind of pressure on permits and self-censorship fueled by the Pakistan Electronic Media Regulatory Authority (PEMRA) and the amended Prevention of Electronic Crimes Act (PECA) (Freedom Network, as quoted in (Bashir et al., 2026)

1.2 Problem Statement

Academic research on the topic of 'AI in journalism in Pakistan' remains descriptive and focused on solo countries, capturing problems in adopting AI tools without offering a comparative or a theoretical framework that maps the context of Pakistan's progress and future pathway in comparison to better-coordinated journeys in other countries like China. Policy recommendations should not be made without considering Pakistan's own media situation. Otherwise, they may become too general for any developing media market, or they may copy the Chinese model too simply, even though Pakistan's media system is different, less stable, and more sensitive.

1.3 Original Contribution of This Study

The purpose of this paper is not only to explain the usage of AI in two countries but also to analyze the difference and to generalize it in a reusable framework. Three original contributions are made: Three new ideas are developed:

- Two theoretical models - an integrative one (AI-Media Governance Convergence (AMGC) framework) which includes three theories: Diffusion of Innovations theory, Comparative media systems theory and Algorithmic governance typology were developed and enhanced as analytical frameworks for studying AI-driven media transformation in any national context (Section 2).
- A systematic, criteria-based comparative evidence base, generated using explicit inclusion/exclusion criteria (Section 4) and thematic coding, as opposed to opportunistic citations that is addressing a recognized opportunity in research about AI- journalism in the Global South countries (Kothari & Cruikshank, 2022)
- A typology mapping of governance, by way of a grid of two matrices (preventive/reactive orientation versus centralization) on which China and Pakistan's regulatory instruments are plotted, giving impactful causal explanations as to why they have different outcomes (Section 7).

1.4 Research Questions

- RQ1: How has AI changed the way news is created and disseminated in China's media, and how does this happen? What are the reasons for AI's rate and extent change?
- RQ2: What is the nature of China's algorithm and deep-synthesis regulatory system within a typology of general governance, and what insights does this typology offer regarding the conceptualization of the trade-offs?
- RQ3: What are the specific instruments, processes, and structural inhibitors for implementing AI in Pak newsrooms and how do regulatory frameworks typologically differ between Pakistan and China?
- RQ4: Based on the AMGC framework, what causal factors are mostly relevant to the difference between the two systems and what are the transferable, rights-respecting lessons that follow for Pakistan?

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2. Theoretical Framework and Conceptual Model

In many of the studies on AI in journalism adoption to date, including an earlier study in Pakistan, the concepts and theories adopted have been taken singularly, most often, "Rogers' Diffusion of Innovations (Elzakazeky, 2026; Sidiq, 2026). This section builds an integrated framework specific for the cross-national comparison of AI media transformation rooted in three and longstanding theories and agricultural conceptions into a single analytical model.

2.1 Diffusion of Innovations in Journalism

Rogers' diffusion of innovations theory models the adoption process as a series of five stages: knowledge, persuasion, decision, implementation and confirmation (Desplaces et al., 2019; Noor & Zafar, 2023) which are rooted in an innovation's relative advantage, compatibility, complexity, trialability and observability. Pakistani newsroom studies shows evidence of how newsroom-level technological innovations occur not only due to the intrinsic ability of technology but also due to its organizational fit and managerial will to adopt (Avilés, 2021) a phenomenon in line with (Lajqi & Lischka, 2020) application of the theory specifically to news organizations. Within and between newsrooms, this study focuses on use of the Diffusion of Innovations as the micro level component of the framework, which explains newsroom adoption variation.

2.2 Comparative Media Systems Theory

Hallin and Mancini's comparative media systems framework classifies media systems along dimensions including the degree of state intervention, political parallelism, and journalistic professionalism, originally derived from eighteen Western democracies (Hallin & Mancini, 2004). Subsequent extensions explicitly caution against uncritically exporting this framework to non-Western contexts, arguing that models such as the 'polarized pluralist' type risk becoming an imprecise catch-all when applied to Asian, African and Middle Eastern systems without adaptation (Badr, 2021; Hadland, 2011; Voltmer, 2012). This study therefore uses comparative media systems theory not to force China and Pakistan into pre-existing Western categories, but to structure comparison along its underlying dimensions - state support, ownership structure and professional autonomy while treating each country as a distinct configuration. This constitutes the framework's meso-level, macro-institutional component.

2.3 Algorithmic Governance Typology

A third body of scholarship classifies how governance regimes relate to algorithmic systems. (Gritsenko & Wood, 2022) modes-of-governance framework distinguishes reactive algorithmic governance, in which regulation responds to harms after they emerge, from pre-emptive (or preventive) governance, in which rules anticipate and structure algorithmic design before deployment and further distinguishes governance through, by, and with algorithms as a way of describing the state's operational relationship to the technology itself. This study extends that typology with a second axis - centralized versus fragmented institutional authority - to classify national AI-media governance regimes on a two-dimensional plane, providing the framework's macro-regulatory component.

2.4 The AI-Media Governance Convergence (AMGC) Framework: An Integrated Model

The central conceptual contribution of this paper is the integration of these three traditions into a single model applicable to cross-national comparison of AI-driven media transformation. The AMGC framework proposes that a country's AI-media trajectory is jointly determined by (a) micro-level adoption dynamics explained by Diffusion of Innovations, (b) meso-level media-system characteristics explained by comparative media systems theory, and (c) macro-level regulatory orientation explained by algorithmic governance typology. More significantly, the three level orientations are not independent; a country's regulatory orientation (macro) creates institutional incentives that either influence the outcomes of

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newsroom innovation (micro) to be efficiency oriented, or control-based, or pluralistic, and the configuration of its media system (meso) is key to who makes adoption decisions (state, market or professional journalists).

Let's look at the four sub-elements of the AMGC framework as mentioned above and apply it to the case pair. As mentioned, the four sub-elements of the AMGC framework examined here are: bottom-up diffusion, fragmentation/reactive governance, technically sophisticated but less coordinated transformation and rapid, media system-wide transformation constrained by pluralism. This expectation, along with the evidence that have been gathered in the systematic review detailed in Section 4, is examined in Sections 5-7.

3. Literature Review

This study's literature was structured into four subthemes based on the major parts of the AMGC framework and scope of comparison in the study.

3.1 AI in Journalism: Global Trends

International survey research documents accelerating newsroom experimentation with generative AI since 2023. The Reuters Institute for the Study of Journalism's Digital News Report 2025, based on responses from nearly 100,000 people across 48 countries, found growing journalist use of generative AI for research, transcription and headline generation, alongside persistent audience discomfort with fully AI-generated content (Rožukalne et al., 2026). The companion Generative AI and News Report 2025 found that weekly generative-AI use across six surveyed countries roughly doubled between 2024 and 2025, yet only about twelve percent of respondents were comfortable with news made entirely by AI (Simon et al., 2025). A parallel Thomson Reuters Foundation survey of 221 journalists across more than 76 Global South countries found that 81.7 percent already use AI tools - most commonly ChatGPT, Grammarly, Otter and Canva - for drafting, transcription, fact-checking and research, yet only 13 percent of respondents' newsrooms had a formal AI policy and nearly 58 percent of AI users were self-taught rather than formally trained (Gestiardi & Yuniawatika, 2026; Kothari & Cruikshank, 2022).

3.2 Algorithmic Governance and Regulation

An existing body of literature discusses governance of algorithmic systems. States' governance of algorithmic systems is a distinct topic for discussion. This study is based on the typology of reactive and pre-emptive algorithmic governance outlined by (Gritsenko & Wood, 2022). In narrow technical terms, China's 2021-2023 algorithm and deep-synthesis rules are similarly as extensive as the European Union's (EU) Digital Services Act and AI Act, respectively, working within a framework that is much more intrusive into freedom of expression, concludes comparative legal scholarship (Wu & Chen, 2026). It is also observed that the implementation of the Eu policy is uniform in all regions, but China's approach also involves a large degree of variation in implementation, mainly in the form of decentralized rule-making and decentralized enforcement (Ammar et al., 2025).

3.3 Comparative Media Systems and Non-Western Contexts

Scholarly extensions beyond the framework of Western European and North American contexts that were developed by Hallin and Mancini have pointed out the dangers of applying their three-models typology mechanically in Asian and Global South contexts (Hallin & Mancini, 2004) (as discussed in (Fischer et al., 2025). The decision to treat China and Pakistan as separate configurations, and not conform them into Hallin and Mancini's preconceived categories of the West is supported by this literature.

3.4 AI Adoption in Developing-Country and Global South Newsrooms

The adoption of AI in newsrooms in developing countries is a growing field of research. Pakistani studies indicate that while there are observable benefits to AI in terms of efficiency, journalists in

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Pakistani TV newsrooms also reported being uncertain and scared about job displacement as there is little government or organizational engagement in supporting them in the implementation of AI (Noor & Zafar, 2023; Zamir & Ahmed, 2024), Similar trends of cautious adoption with worries over algorithmic bias and loss of public trust have been found across comparable studies with Bangladeshi journalists (Murtuza & Oliullah, 2025). This subtheme sets the empirical record from which to draw inferences on the path that Pakistan's AI media will take in Section 6.

4. Research Methodology

4.1 Design

The study uses a systematic narrative review design which combines the structured search and selection process of SRs with the interpretive, theory building, late process of NS, fitting a topic area that is cross-disciplinary between areas of communication studies, law and computational linguistics. The review was carried out in three steps: systematic search and screening, criteria-based screening, deductive-inductive thematic coding in accordance with AMGC.

4.2 Databases and Search Strategy

The search was carried out on Google Scholar, Taylor & Francis Online, the ACM Digital Library, the SAGE Journals, Springer Link, Pakistan government legal portals, PEMRA's legal portal, the China Law Translate (CLT) legal portal and the China government legal portal (Stanford), institutional repositories such as the Reuters Institute for the Study of Journalism and the Thomson Reuters Foundation. The core concepts of 'artificial intelligence,' 'algorithm,' and 'generative AI' were used alongside terms related to 'journalism,' 'news media' to further search the references from highly relevant results in order to apply the iterative snowball sampling technique, followed by the terms 'China,' 'Pakistan,' 'PEMRA,' 'newsroom,' 'governance,' and the keywords or name of the institution.

4.3 Inclusion and Exclusion Criteria

Table 1. Inclusion and exclusion criteria applied during source screening.

Criterion Type	Included	Excluded
Source type	Peer-reviewed journal articles, conference papers, official regulatory texts, established research-institution reports	Unverified social media posts, anonymous forums, promotional marketing content
Topical relevance	Sources directly addressing AI in journalism/media, algorithmic governance, Chinese or Pakistani media systems, or comparative/theoretical frameworks cited herein	Sources addressing AI in unrelated domains (e.g., AI in agriculture) with no media-governance relevance
Recency	Published 2015-2026, prioritizing 2021-2026 for empirical and regulatory content	Pre-2015 sources except foundational theoretical works (Rogers, Hallin & Mancini)
Traceability	Sources with a verifiable publisher, author/institution, and accessible URL or DOI	Sources that could not be independently verified or traced to an original publisher
Language and accessibility	English-language sources or official English translations of Chinese/Pakistani regulatory texts	Untranslated primary-language sources beyond the research team's verification capacity

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4.4 Data Selection and Source Composition

The search strategy outlined above identified around 110 candidate sources. Among the 58 sources that after applying the criteria stated in Table 1 were not included elsewhere, the biggest drop-offs were due to insufficient traceability and topical drift, or to a source being similar in content and in quality to the one from which it was derived. Table 2 summarizes the composition of the final source pool by category.

Table 2. Composition of the final reviewed source pool (N = 58).

Source Category	No. of Sources	Representative Examples
Peer-reviewed journal articles (communication, computer science, linguistics)	24	Digital Journalism; Frontiers in Psychology; Regulation & Governance; Artificial Intelligence Review; Journal of Asian Development Studies
Primary regulatory and policy texts	7	State Council AI Development Plan (2017); CAC Algorithmic Recommendation Provisions (2022); Deep Synthesis Provisions (2023); PEMRA Ordinance (2002)
Institutional and industry research reports	10	Reuters Institute Digital News Report; Reuters Institute Generative AI and News Report; Thomson Reuters Foundation Global South survey; Freedom Network annual report
Legal-analysis and specialist policy commentary	9	(Sun, 2023a) Bird & Bird; Finnegan(Goh & Francis, 2026; Zhang, 2024)
Mainstream news reporting of primary events	8	CNBC; MIT Technology Review; Time; Express Tribune

4.5 Thematic Coding Framework

Retained sources were coded deductively against the five themes in Table 3, derived directly from the AMGC framework's three levels (content automation and algorithmic curation corresponding to the micro/adoption level; regulatory governance corresponding to the macro/governance level; adoption barriers and trust/risk corresponding jointly to the meso/media-system level). Inductive sub-codes were permitted to emerge within each theme during coding, notably the identification of specific AI tools (ChatGPT, Grammarly, Otter, Canva) within the content-automation theme and the identification of Urdu-specific linguistic barriers within the adoption-barriers theme.

Table 3. Thematic coding framework applied to the reviewed source pool.

Theme	Sub-codes Applied	Illustrative Source
Content automation	Virtual anchors; automated writing; transcription tools	(Muslimani, 2022; Wang, 2021)
Algorithmic curation	Recommendation logic; personalization; user agency	(Kuai et al., 2023) (Toutiao); Li, 2025 (Douyin)

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Regulatory governance	Preventive/reactive; centralized/fragmented; disclosure mandates	China Law Translate, 2022; (Gritsenko & Wood, 2022)
Adoption barriers	Infrastructure; language; funding; training; awareness	(Kothari & Cruikshank, 2022; Noor & Zafar, 2023; Zamir & Ahmed, 2024)
Trust and risk	Misinformation; deepfakes; audience comfort; press freedom	(Bashir et al., 2026; Naffi, 2025; Simon et al., 2025)

4.6 Limitations of the Methodology

This review is a systematic narrative synthesis rather than a fully registered systematic review with independent dual-coder reliability testing (e.g., a formal PRISMA protocol); no pre-registration was filed, and coding was performed by a single analytical process rather than multiple independent coders. These are discussed critically in Section 11.

5. Artificial Intelligence in Chinese Media: An Analytical Examination

5.1 Why China's Model Evolved as It Did: Policy as Causal Driver

China's AI-media revolution is more than just an emergent market response — it's a reflection of industrial policy efforts. In the State Council's 2017 New Generation Artificial Intelligence Development Plan, 'smart media' convergence is clearly mentioned as one of the priorities and is a part of the broader strategy for the country to become the world leader in AI by 2030 (Филипова, 2024). In the context of the AMGC framework's meso-level focus, it is a media system where the state simultaneously serves as a regulator, is a dominant media company (through Xinhua, CCTV and People's daily), and determines media guidelines. That's because the use of AI media was likely mediated by direct channels of connection between the state and technology companies, while incrementally, as is usual in commercially structured newsrooms, the connection was set up by technology companies.

5.2 AI Virtual News Anchors: Mechanism and Critical Evaluation

In November 2018, Xinhua and Sogou introduced the world's first news AI presenter at the World Internet Conference in Wuzhen, inspired by Qiu Hao and Zhang Zhao (Yu & Huang, 2021). The Russian-language version was launched in 2019 in collaboration with ITAR-TASS (three-dimensional anchor covers the 'Two Sessions' in 2019, People's Daily introduces its own AI newscaster in 2023 (Ibáñez et al., 2023), From the beginning, independent technology researchers warned against these systems being algorithmic reasoning engines – 'sophisticated digital puppets' (He, 2025) their real virtue is production economics (continuous, low-marginal-cost broadcasting), not editorial intelligence (de-Lima-Santos et al., 2024).

When critically evaluated in isolation, the anchors offer two identifiable efficiencies: constant availability and low marginal production costs, two of which are particularly relevant when ownership of synthetic-anchors is concentrated in the hands of a few governments, and thus not diffused across the supply-side or market. From this vantage point, the technology also represents two distinctive risks, taken from the general field of synthetic media literature: the 'normalisation' of synthetic personas on-screen lowers the skepticism thresholds of the general public facing video-based news, as much as deepfake technology becomes more sophisticated in other sectors of the information ecosystem, and the constant presence of synthetic podcasts can make it easier to construct a more diverse toolset of anchoring that might lead to a greater multiplexing effect and thus deeper reliance on synthetic content.

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5.3 Algorithmic Curation: Toutiao and Douyin

True structural change is more an issue of distribution. In Chinese media studies, ByteDance's Toutiao (2012) is a pioneer of algorithm-based selection that eschews the editor and has come to be known as algorithmic 'Toutiaoization' (头条化) (Meng, 2021). Ten million users joined Toutiao within three months, and the trend of appealing video news was expanded to the short video platform Douyin (2016) into the realm of video news (Kuai et al., 2023).

In terms of the process, it can be taken analytically as a move towards the meta gatekeeping of algorithms – the one that algorithmic-gatekeeping theory suggests will happen (Wang, 2024). There is no one-sided evidence of the consequences; instead, (Shi & Li, 2025) conducted agent-based tests and discovered that this algorithm could show user information that is more diverse than what one would get through manual browsing, while other separate studies reported specific populations of highly developed user agents who deliberately manipulate the algorithm to deceive it into not displaying specific types of personalized content to them, suggesting a degree of residual active choice among users within an ostensibly automated algorithm (Cai & Wang, 2024). This is an important nuance for the AMGC framework since it demonstrates that there is no necessary link between the ownership of the platform, and no absence of pluralism at content-level when the platform is owned centrally.

5.4 Automated Content Generation

The origins of 'robot writing' are found in at least 2015 with the Tencent Finance system, and have since been formalized as part of the 'Media Brain' of Xinhua-Alibaba (2017) or the 'Creative Brain' of People's Daily-Baidu (2020) (Wang, 2021). Its use has been focused in formulaic domains such as earthquake bulletins, financial results, sports scores, where rigid structure aligns with the requirements of the template and speed is valued among the same, researchers say, but its use has been limited by the complexity of Chinese-language in broader application, and the widely disparate technical standards of media organizations in Pakistan; this is not just a political problem but also one with genuine technical constraints whose implications are relevant to understanding the Pakistan-specific language barrier (Butt et al., 2023).

5.5 Regulatory Governance: Classification and Analysis

China's regulatory response has been unusually rapid. The CAC's Provisions on the Management of Algorithmic Recommendations, effective March 2022, require algorithm disclosure, user opt-out rights, minor-protection measures, and algorithm registration (Sun, 2023b). The companion Provisions on the Administration of Deep Synthesis, effective January 2023, specifically target synthetic media and required registration of over 500 deep-synthesis providers by February 2024 (Lin, 2025). Applying (Gritsenko & Wood, 2022) typology, these instruments are substantially preventive rather than reactive - they establish ex-ante registration and disclosure obligations rather than merely penalizing harms after the fact - while institutionally they combine centralized rule-making authority (the CAC, jointly with three ministries) with decentralized enforcement and regional implementation variation (Romanishyn et al., 2025; Sun, 2023a).

Table 4 summarizes this classification, which is applied comparatively to Pakistan in Section 7.

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Table 4. Classification of China's principal AI-media governance instruments (Gritsenko, 2022 typology applied).

Regulatory Instrument	Preventive / Reactive Orientation	Centralization
Algorithmic Recommendation Provisions (2022)	Predominantly preventive: ex-ante disclosure and registration duties	Centralized rule-making (CAC + 3 ministries); decentralized enforcement
Deep Synthesis Provisions (2023)	Preventive: mandatory registration before large-scale deployment	Centralized authority (CAC); provider self-assessment component
New Generation AI Development Plan (2017)	Preventive/promotional: anticipates future governance needs by 2025	Centralized (State Council)

5.6 Strengths and Risks: A Balanced Assessment

5.6.1 Strengths

- Coordinated national strategy speeds technical capacity and minimizes duplication of investment in state-owned media organizations.
- Empirical evidence that algorithmic curation can, in measurable ways, expand, not contract, topical exposure issues the simplistic 'filter bubble' assumptions that might otherwise imply (Ning et al., 2026).

5.6.2 Risks

- Advanced technology can support more responsible algorithm governance when it is guided by clear social values and national priorities. In China, algorithm regulations are linked with "socialist core values" and national security, showing an effort to align technology with broader public and state interests (2022) and (Zhang, 2024)
- The centralization of synthesized media production skills in public media stations increases the risk of normalization of cynicism regarding video evidence in general, among audiences (Naffi, 2025).
- The employment-displacement problem, which viewers have pointed out from the early days of publicly showcasing the technology, is left largely unproved in research that focuses on China (Siapka, 2018).

6. Artificial Intelligence in Pakistani Media: Empirical Landscape

6.1 Media System Overview: A Meso-Level Contrast with China

After the PEMRA Ordinance of 2002, the electronic media sector grew in Pakistan as Pakistan Television was no longer monopolistic and private people began to receive television licenses (Hassan et al., 2025). This resulted in one of South Asia's most competitive television media markets, as well as a well-established English- and Urdu-language press (Dawn, Jang, Express), and burgeoning digital and social media news-economy. By the AMGC framework's meso-level lens, it is a completely different configuration of the media-system as compared to that of China – Pakistani decisions are made by multiple individual resource-poor commercial media experts in lieu of a handful of state-directed experts.

6.2 Regulatory Environment: PEMRA and PECA

PEMRA has been conferred the mandate to license broadcasters, monitor the content, and subsequently act against any content exhibiting hate and any content identified as damaging the country's national security (Arif et al., 2025). Independent evaluations point to another paradox with PEMRA; whilst it has increased the diversity of media in comparison to the period prior to 2002, its licensing and enforcement power

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has been used and abused more than once to pressure broadcasters that are critical of the state institutions (Akhtar, 2019). The Prevention of Electronic Crimes Act (PECA), enacted in 2025, has since become the most impactful law to curtail Pakistani journalists, according to the media watchdog Freedom Network, which reported that between April 2025 and March 2026, there were 129 verified violations under PECA, comprising two murders and 58 cases under PECA with legal cases (Shah & Butt, 2025).

Similarly, as in China (Section 5.5), PEMRA and PECA are an institutionally fragmented set of reactive tools (that is, they seek to regulate content after it is published or broadcasted) with no explicit authority to govern algorithmically like China's CAC. There is a formal classification in Table 5 from section 7.

6.3 Empirical Evidence: Tools, Workflows, and Adoption Patterns

There are two major studies that provide direct empirical evidence of usage of AI in Pakistan. On conversely, in their study on 150 journalists with purposive sampling across Dawn, Jang and Express, (Zamir & Ahmed, 2024) found that AI already had a measurable impact on newsroom practice, but the constraints were still found to be low stakeholder awareness and weak government support and infrastructure. The study recommended metadata-analysis and content track-back mechanisms as two ways to support responsible integration of AI in newsroom practice. Using semi-structured interviews with six media professionals - journalists, editors, digital content creators, and an AI specialist - in Pakistani television newsrooms, found journalists explicitly citing AI's speed advantage in content-writing tasks, alongside substantial fear and mistrust rooted in job-displacement concerns and unfamiliarity with the technology.

Neither Pakistani study names specific commercial AI products in detail, reflecting the still-informal, self-taught nature of adoption documented more broadly across the Global South. The Thomson Reuters Foundation's 2024 survey of 221 journalists across more than 76 Global South countries - a directly comparable regional evidence base - found that ChatGPT, Grammarly, Otter, and Canva are the tools most commonly used for drafting and editing, transcription, fact-checking, and visual content respectively, that 81.7 percent of respondents already use AI in some capacity, that nearly half use it daily, but that only 13 percent of newsrooms had a formal AI policy and 58 percent of users were self-taught rather than institutionally trained (Fernández-Barrero & Martín, 2025; Lopezosa et al., 2023). Because Pakistan is directly represented within this survey population and its findings closely mirror the qualitative patterns reported by (Kazmi et al., 2023; Zamir & Ahmed, 2024)- efficiency-driven, informal, policy-unsupported adoption - this study treats the Global South tool-level findings as a reasonable proxy for the specific tools most likely in use within Pakistani newsrooms, while flagging this inference as a limitation addressed in Section 11.

6.4 A Representative Newsroom Workflow

Synthesizing the interview evidence in (Živojinović et al., 2024) with the tool-level Global South data, a representative AI-assisted workflow now visible in parts of the Pakistani news production cycle can be reconstructed as follows: a reporter drafts a story in Urdu or English; a generative AI writing tool such as ChatGPT is used informally to restructure or accelerate drafting; a transcription tool such as Otter is used to convert recorded interviews to text, a task particularly valuable given Pakistan's heavy reliance on spoken-source journalism; a subeditor applies minimal formal AI-specific review, since only a small minority of newsrooms have documented AI policies; and the story is published without systematic disclosure to audiences that AI tools contributed to its production. This workflow is a reconstruction and example of the informal, ungoverned use of AI while a regulatory set of tools, built to tackle traditional media consumption patterns (PEMRA, PECA), was not developed and are not equipped

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to deal with algorithmic or generative-AI based content.

6.5 The Urdu and Regional-Language Barrier

Pakistan's linguistic AI challenge is far more significant and widespread than the Chinese challenge with Mandarin. The inclusion of Urdu in Low Resource Language challenges of computational linguistics, due to its small corpus of annotated texts, on-going and different Urdu tokenization protocols, limited lexical and NER resources, and frequent code-mixing along with Urdu and English in real life and in news texts (Haenlein & Kaplan, 2019). On one hand, there have been exciting computational experiments demonstrating performance of GPT-4 in Urdu, particularly in the ability of the model to successfully complete a zero-shot, named entity recognition task in Urdu, which resulted in a 92 percent F1 score using structured prompting (Rahman, 2026), and on the other hand, in another, more comprehensive study, the results showed that English was performing more consistently than Urdu, Bangla or Hindi on similar zero-shot tasks across a range of large language models, with characteristics of underrepresentation of South Asian languages in model training datasets (Hasan et al., 2024). Although there are purpose-built Urdu misinformation detection datasets, they are small compared to their English language peers (Islam et al., 2025)

It also has an impact in the newsroom: automatically generated text, automatic summarization and fact-checking are not as developed in Urdu language newsrooms as they are in English-language or Mandarin-language newsrooms, and so Pakistan's very large Urdu-language newsroom can access these efficiencies in practice, but not the same level as English language or Mandarin language newsrooms.

6.6 Structural Barriers: A Synthesis

Table 6. Structural barriers to AI adoption in Pakistani media, mapped to the AMGC framework.

Barrier	Evidence	AMGC Framework Level
Financial/infrastructural constraints	Cost-effectiveness identified as a central barrier across Pakistani studies	Meso (media-system resource base)
Linguistic limitations (Urdu low-resource status)	GPT-4 and other LLMs underperform on Urdu relative to English; small annotated datasets	Micro (tool compatibility/relative advantage)
Limited awareness and formal training	58% of Global South AI users self-taught; low institutional awareness reported in Pakistani studies	Micro (knowledge/persuasion stage of adoption)
Weak institutional/policy support	No national AI-media strategy; only 13% of Global South newsrooms have a formal AI policy	Macro (absence of preventive governance)
Restrictive press-freedom environment	129 verified journalist-safety violations (2025-26); PECA amendments increasingly used against journalists	Macro (reactive, fragmented governance) and Meso (constrained professional autonomy)

7. Comparative Analysis: China and Pakistan

7.1 Structured Comparison Matrix

Table 7 provides a structured link between Sections 5 and 6 exhibiting a synthetic overview of the evidence, in the sense of comparing elements of the various AMGC dimensions most pertinent to the two sections.

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Table 7. Structured comparison matrix: China and Pakistan by the dimension of AI and media.

Dimension	China	Pakistan
Primary adoption driver	Top-down state industrial policy (2017 AI Development Plan)	Bottom-up, individual-journalist experimentation
Media ownership structure	State Owned (Xinhua, CCTV, People's Daily) integrated with large tech conglomerates	Privately owned, competitive, fragmented
Flagship AI applications	Virtual anchors; Toutiao/Douyin algorithmic curation; automated writing (Media Brain, Creative Brain)	Generative AI writing assistance; transcription tools (informal use)
Representative tools	Sogou synthesis engine; ByteDance recommendation algorithms; Baidu-based Creative Brain	ChatGPT, Grammarly, Otter, Canva (Global South proxy data)
Language/NLP maturity	Mature but historically constrained by Chinese script/standards complexity	Severely constrained; Urdu is a formally low-resource language
Regulatory instrument	CAC Algorithmic Recommendation & Deep Synthesis Provisions	PEMRA Ordinance (2002); PECA (2016, amended 2025)
Governance orientation (Gritsenko typology)	Predominantly preventive (ex-ante registration/disclosure)	Predominantly reactive (post-publication penalty)
Institutional centralization	Centralized rule-making (CAC + 3 ministries); decentralized enforcement	Fragmented across PEMRA, FIA, and courts; no algorithm-specific authority
Formal newsroom AI policy	Institutionally embedded within state media organizations	Rare; consistent with 13% Global South average

7.2 Governance Typology Mapping

The positioning of both countries on the two-axis typology elaborated in Section 2.3 (centralization x preventive/reactive orientation) allows to clarify a distinction that can only be outlined descriptively by a comparison: China and Pakistan do not only differ in the level of AI-media regulation, but they are located in structurally different governance quadrants. The critical differences between the models lie in their places on a spectrum of regulation, ranging from centralized/preventive to fragmented/reactive; China is in the former, while Pakistan is in the latter alongside the U.S. pre-2025 sectoral/enforcement-driven AI Act (Daniels et al., 2025). This typological gap and not just the availability of resources accounts for the fact that Pakistan cannot just pick and choose from the disclosure requirements of China without first building the national institutional capacity, i.e. an algorithmic-governance authority, required for such, for development of information disclosure requirements.

7.3 Causal Explanation: Why the Divergence Exists

The observed divergence is explained by three causal mechanisms from AMGC:

- Meso-level ownership concentration: China's state-concentrated ownership concentration ensures AI adoption decisions are made as a co-ordinated process across a small number of actors, allowing for AI adoption to be rolled out quickly and uniformly, while Pakistan's competitive private ownership dispersion ensures that adoption decisions are made at a competitive level by many independently resourced and often financially constrained actors, leading to slower and more uneven diffusion (Sections 5.1, 6.1).

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- Macro-level governance sequencing: the Chinese algorithm-specific regulation dropped simultaneously with, rather than after, the deployment of platforms (10 years from launching Toutiao website to the promulgation of the algorithm-specific regulation in 2022); the Pakistani main media laws (PEMRA 2002, PECA 2016) are very much predatory of generative AI and the regulations were drafted before the advent of AI, leaving them with a scheduled time delay rather than a choice of sequencing (Sections 5.5, 6.2).
- Micro-level linguistic infrastructure: This is where the case of Urdu language got worse than Chinese-language as it has not received the same kind of public or private investment in research, large-scale annotated corpora, or mature tools and its limited maturity is directly causing a significant lag, especially when examined through the prism of the ACM Digital library, 2021 (Wang, 2021)

8. Lessons for Pakistani Media Systems

The following recommendations are not merely observations made of the Chinese context, but rather direct results of the causal analysis outlined in section 7.3 and are structured solely to accommodate elements of the Chinese model that the authors consider viable in relation to the media system configuration in Pakistan, in which some media are independent while others are owned by the state or are under its de facto control.

8.1 Address the Meso-Level Coordination Gap Without Replicating State Ownership

AI is only being constrained by the structural issue of Pakistan's fragmented private ownership, and the solution does not lie in consolidation, but in coordination: a voluntary industry-led AI-in-journalism consortium (potentially trade-led by the Pakistan Broad chronological Association, press clubs or journalism schools), could use collective bargaining, joint training, and shared tools with AI vendors providing some of the coordination benefits seen in China but with no concentration on ownership or editorial control.

8.2 Close the Macro-Level Regulatory Lag

To prevent misuse of AI-generated and AI-manipulated news material in the country, Pakistan should draft a narrowly drafted legal instrument that mandates AI and algorithms to disclose anything generated or manipulated or edited by AI tools and mandates transparency of algorithmic curation for Pakistani digital news platforms - a tool different from PECA's already contested enforcement powers. While based on technologies used in the preventive/centralized quadrant (Section 7.2), it ought to contain labelling and registration requirements, and feature a specific denial of any references to 'national interests' which have allowed selective enforcement in PECA (Anwar et al., 2024)

8.3 Close the Micro-Level Linguistic Gap

The robustness of controlled setting performance by GPT-4 on the Urdu-Labelled-NE dataset (Maab et al., 2026) proves that building a public corpus for Urdu, adding more Urdu misinformation-detection data, and creating structured assessment test sets for existing LLM models specifically for Urda journalism contexts are the important steps that need to be taken in the wake of Urdu's low-resource status, not assuming universal or common multilingual LLM systems will be sufficient for Urdu-language newsrooms.

8.4 Formalize Newsroom AI Policy

The absence of minimum standards for using AI in news has been identified in Section 6.4 as a risk arising from lack of structured processes for staff training, or even fewer cases of formal ones, and for the need to verify content before publication because it is produced in part with AI's support. In the Global South, 13% of news outlets have formal AI policies, while 58% of users are self-taught (Kothari & Cruikshank, 2022), which underscores the need for newsrooms in the region to set minimum standards, including verification of content before publication for AI assistance and disclosure of it when it was generated by AI to a notable degree.

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8.5 Preserve Editorial Independence and Press Freedom

In Pakistan, any shift towards more preventive, as opposed to reactive, models of governing AI-content carries a specific risk-profile, because new authorities will be added to politically charged governance systems with the pattern of selective enforcement already outlined under PECA, extending rather than balancing that risk. Any new instrument that uses artificial intelligence for disclosure needs to be built in a participatory process of consultation with various actors, including journalist unions and legal representatives, and the design should make it clear that it is not meant to serve as a pretext for censorship or suppression of content.

9. Global Implications

The AMGC framework can be used beyond China and Pakistan. China's algorithm rules and the EU AI Act both use centralized and preventive approaches. However, they operate in very different political systems. This shows that centralized AI governance is not always authoritarian, although China's approach is closely linked to its information system (Gestiardi & Yuniawatika, 2026). Fraudulently, however, the lack of integration of AI governance in the United States, with its characteristic governance of government, industry and academia separately and according to their own particular interests, falls in a structurally similar typological space as the similarly fragmentary and reactive PEMRA-PECA approach in Pakistan despite clearly different political frameworks and freedoms of the press, indicating that fragmentation of governance is one factor that isn't necessarily linked to the type of political system or the level of press freedom.

10. Conceptual and Practical Contribution of This Study

This paper should be clearly differentiated from the previously available descriptive analyses in which AI and Pakistani journalism have been discussed. Second, in that it being conceptual, the AMGC framework (Section 2.4) allows for the future application of a three-level model – micro (Diffusion of Innovations); meso (comparative media systems); macro (algorithmic governance typology) – to other country pairs beyond China and Pakistan, as some existing Pakistani studies emphasized the former perspective only (Noor & Zafar, 2023), without considering more than one level. Finally, on the methodological level, the systematic narrative review protocol, including the explicit inclusion/exclusion criteria and the thematic coding (Section 4) provides a template for future comparative research on AI journalism, which goes beyond opportunistic citation and provides a mechanism for citation auditability. Third, at the practical level, the governance-typology mapping (Section 7.2) leads to policy recommendations (Section 8), with a causal logic but not an imitation one.

11. Limitations

While interpretation of the findings of this study should be tempered by several limitations, they are not stated perfunctorily but are stated critically here.

- Review protocol: one analytical method has been used without dual-coding from two independent analysts and formal pre-registration and therefore inter-coder reliability statistics cannot be reported as these are standard for fully registered systematic reviews; some assignments of themes were made subjectively by one of the analytical analysts.
- Tool-level inference for Pakistan: The specific AI tools observed in newsrooms (ChatGPT, Grammarly, Otter, Canva) are made explicit on the basis of data from a regional survey of the Global South covering countries including Pakistan but not separately reporting tool usage statistics. This is an explicit proxy inference rather than a direct empirical finding, and should be interpreted with the same degree of caution.
- Access limitation of Chinese case: It should be noted that this research was based on largely on interpretations and translated versions of Chinese regulations by international legal analysts, and not on first-hand research in either news organizations

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or regulatory bodies, due to the well-documented practical and political access constraints, which may underestimate variation in implementation or gaps in enforcement.

- Sample size in base Pakistani studies: Second, the two major Pakistani empirical samples, including one of (Zamir & Ahmed, 2024) n = 150 journalists from three outlets and the other of (Noor & Zafar, 2023) n = 6, are small and geographically limited and cannot be readily generalizable to the broader Pakistani media landscape, which encompasses regional Urdu outlets and includes web platforms outside the three organizations studied that are not conducted in the English language.
- Modifications of the framework validation: The AMGC framework (Section 2.4) is proposed and applied in one case pair in the present paper, but up to date there are no additional country pairs to test it with, and the causal claims (Section 7.3) are presented as hypothetical conclusions — not as statistics-based conclusions.

12. Future Research Directions

- Use the AMGC approach on other country pairs (e.g., India-Bangladesh, Nigeria-Kenya) to assess the generalizability of the framework beyond the case of China-Pakistan, and use cross-case comparisons to further develop its causal claims.
- Replace the proxy inference in Section 6.3 by a nationwide representative survey in Pakistan of newsrooms directly measuring the extent to which they use AI tools.
- Track future Pakistani legislation and/or policy on AI disclosure/algorithm transparency in isolation, and determine its potential trajectory towards the quadrant of 'prevention' and/or 'centralization' identified in Section 7.2, and its impact on press freedom in practice.
- Commission focused on development of Urdu language corpus and benchmarks for selected use cases in journalism such as fact checking and summarization and generation of headlines, that utilize existing but limited resources in Urdu NLP (Chun et al., 2024; Rahman, 2026).
- To test and adapt the workflow reconstruction provided in Section 6.4, conduct the comparative research based on field work but not on documents within Chinese and the Pakistani newsrooms, and to analyze the gaps in regulations which are not reflected in the official documents.

13. Conclusion

This paper has developed an integrative AI-Media Governance Convergence framework that attempts to not just describe but explain the observed different curves in the nature of AI-adoption in China and Pakistan's media. It has brought rapid and technically ambitious change into play through anchoring, curation and content creation at the costs of subordination of such change to an authoritarian information-control structure, which is the foundation of the Chinese state-coordinated, centrally preventative framework. Pakistan's piecemeal, sectorial, resource- and language-illiterate approach has ensured more left-over pluralism in the media, but an informal, unregulated and an imbalanced approach in AI adoption. While the outcomes of these are not implicit characterizations of the national context, but rather outcomes that arise from addressable, identifiable structural issues - ownership concentration, regulatory sequencing, and linguistic infrastructure investment - they can be understood within this thematic framework and imply that the road to the future for the Pakistani media rests in not repeating the Chinese approach of wholesale change, but rather in targeted improvements to coordination, to closing the regulatory lag to rights-respecting and narrowly-billed mechanisms, to constructing the Urdu-language AI, and to preserving the independence and freedom of the press that has been the export strength of Pakistani journalism over the model wholesale as explored in this paper.

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