

Opportunities and Challenges in the Transformation and Development of Traditional Newspaper Groups in the Context of Media Convergence: A Systematic Literature Review

DEVELOPMENT OF ETHNOMATEMATICS-BASED INTERACTIVE TEACHING MEDIA TO IMPROVE STUDENTS' CONCEPT UNDERSTANDING

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Abstract: In the era of media convergence, traditional newspaper groups are undergoing profound transformations driven by digitalization and changes in audience behavior. This systematic literature review examines the opportunities and challenges faced by traditional newspaper groups during their transition under the influence of media convergence. Key dimensions of analysis include content innovation, technological integration, organizational restructuring, and policy support. The findings indicate that while advancements such as content innovation, artificial intelligence, and big data provide significant opportunities to enhance audience engagement and operational efficiency, challenges persist in the form of resource constraints, organizational resistance to change, and the need for sustainable revenue streams. Moreover, government policies play a critical role in encouraging media organizations to adopt innovative strategies and develop multi-platform ecosystems. This review highlights gaps in cross-regional and quantitative studies, emphasizing the necessity of further research to assess the long-term impacts of digital transformation. By synthesizing existing literature, the study offers valuable insights and practical recommendations for traditional newspaper groups to navigate the complexities of the digital era and achieve sustainable growth. However, further research is needed to address the limitations identified in this review.

Keywords: Media convergence, Traditional newspaper groups, Digital transformation, Content innovation, Technological integration, Policy support

1. Introduction

1.1 Background of Study

Media convergence refers to the integration and interoperability of traditional media and emerging media across technology, content, organisation, and business models. Its core objective is to drive profound changes in content production and dissemination methods (Negroponte, 1995; Jenkins, 2011). In recent years, media convergence has become a vital pathway for the digital transformation of traditional newspaper groups, encompassing various

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dimensions such as technological integration, content innovation, organisational restructuring, and changes in audience behaviour (Deuze, 2007; Küng, 2017).

The widespread adoption of digital technology has posed significant challenges to traditional newspaper groups. The proliferation of smart devices and the internet has made news dissemination more efficient and cost-effective, while traditional print media, constrained by high costs and inefficiency, has experienced significant declines in circulation and advertising revenue (Rios-Rodríguez et al., 2022). Furthermore, modern audiences increasingly demand fragmented, highly interactive, and multimedia-rich content, compelling traditional newspapers to adjust their content production and dissemination models (Wang et al., 2022; Ridwanullah & Bala, 2022). Although some newspaper groups have achieved economic resilience through digital subscriptions and diversified revenue models, they still face challenges in maintaining profitability compared to emerging media platforms (Faustino & Martins, 2024).

In response to these challenges, media convergence offers opportunities for traditional newspaper groups to transform. By leveraging technology, implementing cross-platform dissemination, and constructing comprehensive media matrices, newspaper groups can improve dissemination efficiency, adapt to audience needs, and explore new revenue sources (Grant & Wilkinson, 2009). However, the high costs of technological implementation and the complexities of organisational restructuring remain significant barriers in this transformation process (Cahanar & Hamsal, 2021).

This study, through a systematic literature review, aims to identify the opportunities and challenges faced by traditional newspaper groups in their digital transformation efforts and to provide practical recommendations for their future development.

1.2 Problem statement

With the deepening development of media convergence, traditional newspaper groups are facing dual pressures of survival and growth. The widespread adoption of digital technologies and the rise of new media have not only transformed the modes of information dissemination but also profoundly impacted the operational models, audience behaviour, and revenue structures of traditional newspapers (Grant & Wilkinson, 2009). Traditional newspaper groups have gradually lost their dominance in content production, distribution, and monetisation models, struggling to compete effectively with digital media (Ridwanullah & Bala, 2022).

Firstly, technological advancements and changes in user habits have led to a continuous decline in the audience size of traditional newspaper groups. The widespread use of smartphones and social media platforms has driven audiences to prefer content that is immediate, personalised, and highly interactive, while traditional newspapers, constrained by long publishing cycles and single-format offerings, are unable to meet the demands of modern users (Rios-Rodríguez et al., 2022).

Secondly, the revenue model of traditional newspaper groups has suffered unprecedented disruption. Advertising, once the core source of revenue, has been overshadowed by the precision and efficiency of digital advertising. Simultaneously, the high production and distribution costs of traditional print media have further compressed profit margins (Sangil, 2019). Although some newspaper groups have attempted to explore new revenue streams through digital subscriptions and membership models, these measures still fall short in terms of profitability and sustainability compared to emerging digital media (Faustino & Martins, 2024).

Moreover, traditional newspaper groups face a series of internal challenges in their digital transformation, including rigid organisational structures, insufficient technological resources, and talent attrition (Cahanar & Hamsal, 2021). These internal issues hinder their ability to adapt to media convergence, making it difficult for them to efficiently leverage technological and content resources to rebuild market competitiveness (Wang et al., 2022).

Therefore, effectively addressing the impact of digitalisation and redefining their core value under the context of media convergence has become a critical issue for traditional newspaper groups. By conducting a systematic literature review, existing studies can be organised and analysed to provide an in-depth understanding of the opportunities and challenges faced by traditional newspaper groups during their transformation process. This approach offers valuable insights for industry practices and academic research.

1.3 Research Objective

This study aims to explore the transformation and development pathways of traditional newspaper groups in the context of media convergence through a systematic literature review, while identifying the primary opportunities and challenges they face in the digitalisation process. This study seeks to systematically organise and analyse existing literature to clarify the key focus areas and research findings in this domain, thereby providing a solid theoretical foundation for future research. Specifically, the objectives of this study include the following:

- a. To review recent research findings on the digital transformation of traditional newspaper groups, highlighting core issues in technology adoption, organisational reform, and content innovation.
- b. To conduct an in-depth analysis of the key challenges faced by traditional newspaper groups during the

transformation process, including insufficient technological resources, audience attrition, and difficulties in transitioning revenue models.

c. To explore the innovative opportunities presented by media convergence for traditional newspaper groups, such as content innovation, technological integration, organisational restructuring, and enhanced cross-platform dissemination capabilities.

d. To identify gaps in existing research and propose practical recommendations for the digital transformation of traditional newspaper groups, providing guidance for industry practices and academic studies.

1.4 Significance of the Study

This study provides a comprehensive analysis of the transformation of traditional media under media convergence, deepening understanding of changes in technology, organization, and audience behavior. It introduces a multidimensional framework that includes technology, content innovation, and market adaptability, enhancing existing media convergence theories and laying a foundation for future research on traditional media's digital transformation.

Practically, the study addresses challenges faced by traditional newspaper groups, offering actionable strategies for media managers and policymakers. It suggests solutions based on cross-platform integration, multimedia content, and audience interaction, and highlights how emerging technologies like AI and big data can boost the competitiveness of traditional media.

2. Methodology

This study follows the PRISMA 2020 guidelines for systematic reviews and meta-analyses to ensure a transparent and reproducible review process. The aim is to identify the opportunities and challenges faced by traditional newspaper groups in their transformation under media convergence. The process involves several key steps, including study identification, screening, eligibility assessment, and final inclusion.

2.1 Search Strategy

The literature search was conducted in two major academic databases, Scopus and CNKI, between January 2020 and December 2024. The search strings were designed to capture studies focused on the transformation of newspaper groups, emphasizing terms like "media convergence," "newspaper groups," and "transformation." Therefore, the initial task involved reviewing these keywords and exploring similar or closely related terms that appeared in early studies. Once all relevant phrases were identified, search strings were systematically developed for Scopus and CNKI databases (Table 1). Through this systematic process, the study effectively accessed published articles in these databases.

Table 1: Keyword search

Database	Search String	Filters
Scopus	TITLE-ABS-KEY ("media convergence" OR "digital media integration") AND ("traditional newspaper" OR "traditional media group" OR "newspaper industry") AND ("transformation" OR "transition" OR "adaptation" OR "evolution")	PUBYEAR > 2020 AND PUBYEAR < 2024 AND (LIMIT-TO (DOCTYPE,"ar")) AND (LIMIT-TO (LANGUAGE, "English"))
CNKI	(Media Convergence + Financial Media) AND (Theme: Newspaper Group + Paper Media) AND (Theme: Transformation + Challenges + Opportunities)	Chinese Core Journals, SCI, EI, CSSCI, AMI, Published 2020–2024

2.2 Inclusion and Exclusion Criteria

To maintain the relevance and rigor of the review, a set of inclusion and exclusion criteria was established. Only articles published in peer-reviewed journals reporting empirical research were included, while non-research articles, theoretical papers, and government policy documents were excluded. The search focused on articles published between 2020 and 2024. Details are provided in Table 2.

Table 2: The selection criterion is searching

Criteria	Inclusion	Exclusion
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Publication Date	2020–2024	Pre-2020
Language	English or Chinese	Non-English, Non-Chinese
Document Type	Empirical studies with quantitative, qualitative, or mixed methods	Theoretical articles, editorials, government documents
Source	Peer-reviewed journal articles	Conference papers, policy documents

By applying these criteria, this study aims to focus on research that directly investigates the transformation and development of traditional newspaper groups, particularly studies that provide empirical evidence. Articles published before 2020 were excluded to ensure that the review captures the latest developments in the transformation of traditional newspaper groups.

2.3 Data Collection

The PRISMA flowchart (Figure 1) outlines the detailed process of study selection, following the key steps of identification, screening, eligibility assessment, and final inclusion. From the initial database search, CNKI retrieved 30 records, and Scopus retrieved 31 records, yielding a total of 61 records. After removing 1 record due to language issues, 59 records proceeded to the screening phase. During screening, 2 non-English/Chinese articles were excluded, and 2 articles without retrievable reports were removed, leaving 55 articles for eligibility assessment. Of these, 25 were deemed eligible, while 32 were excluded: 21 did not focus on newspaper groups, 1 was a review study, and 12 were not directly relevant to the research objectives. Ultimately, 21 studies were included in the final systematic review, providing empirical evidence for the transformation and development of traditional newspaper groups.

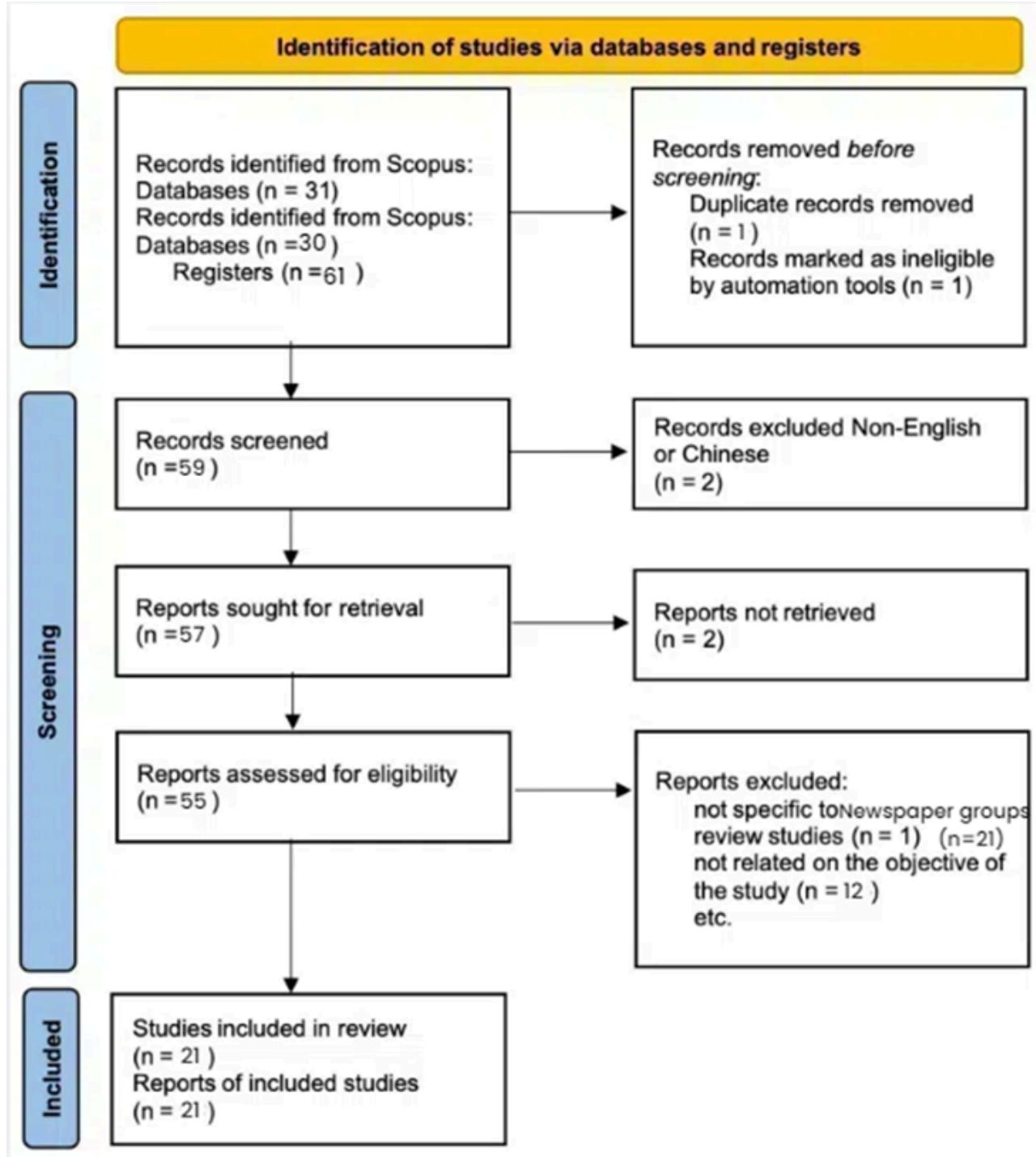


Fig 1: Flow diagram of the proposed searching study

2.4 Data Analysis

The reviewed literature presents a multifaceted analysis of the transformation of traditional newspaper groups in the context of media convergence. A thematic approach was used to identify recurring patterns and insights, which were categorized into four main dimensions: content innovation, technological integration, organizational restructuring, and policy support.

First, content innovation has emerged as a key factor in ensuring audience engagement and relevance in the digital age. Second, the integration of advanced technologies such as artificial intelligence, big data, and cloud computing is a recurring theme. These technologies are used to optimize content production, enable precise audience targeting, and improve content distribution efficiency. Third, organizational restructuring is highlighted as a major challenge and a

critical component of successful transformation. Resistance to change, lack of technical expertise, and rigid hierarchical structures were identified as significant barriers to innovation. Finally, policy support has played a pivotal role in facilitating the transformation of traditional newspaper groups. Government subsidies, regulatory frameworks, and infrastructure support have been instrumental in promoting the adoption of new technologies and the establishment of multi-platform ecosystems within media groups.

3. Results

Table 3 presents the findings from 21 studies, categorized into key areas: content innovation, technological integration, organizational restructuring, and policy support. Each study emphasizes the profound impact of media convergence on traditional newspaper groups, capturing both the potential opportunities and limitations.

In terms of content innovation (n=10), the studies highlight how traditional newspaper groups strengthen content innovation, enrich content formats, and enhance their communication and influence, while optimizing content production and user experience. Regarding technological integration (n=9), the studies explore how technological convergence is a key strategy for the transformation of traditional newspaper groups, using advanced technologies to achieve cross-media content integration and efficient distribution, thereby improving communication effectiveness. For organizational restructuring (n=5), the studies demonstrate how traditional newspaper groups optimize their communication capabilities by integrating resources and establishing a cross-media matrix. However, all development strategies depend on policy support, which is closely tied to government regulation of public media in China. Policy support (n=6) is crucial, with these studies revealing that the establishment of new media matrices by traditional newspaper groups, leveraging the advantages of new media, relies on strong national policies and government funding, providing critical support for the transformation of newspaper groups.

Table 3: Key focus areas from studies on TikTok's educational potential

Category	Authors and Year	Key Focus
Content Innovation	Hu (2022)	The exploration of traditional print media enhancing news appeal through multimedia content (e.g., H5, short videos) to attract young audiences is emphasized.
	Chen (2024)	<i>The New Beijing News</i> strengthens its communication power through thematic reporting and a cross-media matrix, optimizing content production and user experience.
	Ge (2021)	The <i>Chengdu Business Daily</i> boosts news content and attractiveness by building a "1+N" media matrix, original reporting, and technological empowerment.
	Bai et al. (2021)	The <i>Beijing Morning Post</i> failed to adapt to the new media environment due to insufficient content innovation, leading to the failure of its print media transformation.
	Li, Z., & Chen, Y. (2024)	The "Content is King" news production theory framework is proposed, highlighting the importance of news product innovation and a user-centered approach.
	Kaibin Xu & Yuying He (2021)	The study emphasizes the need to enhance authority and localized information, and adjust language styles to meet the needs of young audiences.
	Wu, S. (2024)	Four strategies—"Content is King," "Technology Empowerment," "Brand Leadership," and "Ecosystem Optimization"—are highlighted to promote the deep integration of traditional media and new media.

	Wang (2020)	The relationship between content formats and communication effectiveness is highlighted, providing practical guidance for the design and operation of media products.
	Jiang (2020)	The study emphasizes enhancing reader experience through innovations such as color printing, data visualization, and original content.
	Liu (2021)	It underscores the importance of diversifying content formats, evolving from single-text reporting to multimedia forms, including short videos, live streaming, and data visualization, to improve user experience.
Technological Integration,	Gao (2023)	<i>Henan Daily</i> leverages AI, big data, and cloud computing to enable precise content delivery and optimize platform operations.
	Ren (2021)	<i>Gansu Daily</i> utilizes the "New Gansu Cloud," powered by big data, to achieve integrated multimedia content distribution and efficient dissemination.
	Peng, T., & Cao, P. (2024)	The establishment of a "2+N" media matrix, encompassing newspapers, websites, and mobile applications, faces challenges due to a lack of technical support and personnel allocation.
	Ridwanullah & Bala (2022)	An analysis of Nigerian media highlights the use of social media technologies to optimize content distribution and enhance news dissemination efficiency.
	Kaibin Xu & Yuying He (2021)	A "mobile-first" strategy is proposed, emphasizing short videos, live streaming, and H5 pages to improve communication impact, though disparities in technical resources and execution capabilities persist.
	Hou, Wang (2021)	The importance of live streaming technology and diversified industry layouts in strengthening the communication power of party-affiliated media is emphasized.
	Fang & Lian (2021)	Technological empowerment is highlighted, with <i>Wenzhou Daily</i> leveraging 5G, AI, and big data to achieve intelligent content production and distribution.
	Jiang (2020)	The integration of modern layout technologies and multimedia matrices is emphasized to facilitate the deep convergence of traditional newspapers with new media.
	Liu (2021)	The adoption of AI and big data technologies is proposed to optimize news production efficiency and enhance content distribution accuracy.

Organizational Restructuring	Liu (2021)	Traditional print media faces cultural and organizational resistance during its transformation, with talent development and resource optimization proposed as key solutions.
	Ren (2021)	<i>Gansu Daily</i> addresses the shortage of multimedia talent through university-industry collaboration and restructures news production processes to enhance efficiency.
	Zhu (2021)	<i>Anhui Daily</i> achieves efficient operation of its multimedia matrix through departmental optimization and process reengineering.
Zheng (2020)		<i>Shanxi Daily</i> enhances organizational resources and improves collaboration and market competitiveness through its "two microblogs and one app" multimedia matrix.
Jiang (2020)		Emphasis is placed on newspaper groups optimizing communication capabilities through resource integration and multimedia platform development.
Policy Support	Ren (2021)	<i>Gansu Daily</i> , supported by policies and funding, successfully built a new media matrix, providing crucial support for its transformation.
Zhang (2020)		Policies promote the development of efficient multimedia communication systems for national-level media, while local media face resource limitations.
Zheng (2020)		National policies have driven <i>Shanxi Daily</i> to enhance its influence and guiding role as a party-affiliated media through the construction of a new media matrix.
Gao (2023)		Government support has enabled <i>Henan Daily</i> to achieve integrated development and strengthen regional media competitiveness through the "Top News" technology platform.
Liu (2021)		An investigation into the transformation practices of national, provincial, and local newspaper groups highlights systemic challenges and strategic breakthroughs.
Fang & Lian (2021)		Policy incentives and government subsidies have facilitated the development of smart media and multimedia matrices.

4. Discussion and Implications

Under the backdrop of media convergence, the transformation of traditional newspaper groups is driven by multiple factors, including technological advancements, the demand for content innovation, organizational restructuring, and policy support. Analysis reveals that the rapid development of digital technology, shifts in audience behavior, and the sharp decline in advertising revenue compel traditional print media to undergo profound transformation.

4.1 Content Innovation

The analysis of these studies highlights that content innovation is a core strategy for media convergence, with the principle of "content is king" remaining unchanged. News production has evolved from a linear model dominated by text and images to a non-linear approach centred on video, audio, and interactive content (Li & Chen, 2024). Liu (2021) also notes that expanding from single-text reporting to multimedia formats, including short videos, live streaming, and data visualisation content, enhances the user experience. Through multimedia formats such as short videos, live streaming, and H5 interactive pages, traditional newspapers can better attract younger audiences (Hu, 2022; Chen, 2024). Case studies reveal that local media outlets like *Chengdu Business Daily* and *The Beijing News* have adopted a content production model combining "original reporting, in-depth investigation, and commentary," significantly enhancing the professionalism and appeal of their journalism (Ge, 2021; Chen, 2024).

4.2 Technological Integration

Technology serves as the key driver for media transformation. Studies indicate that leveraging technologies such as Artificial Intelligence (AI), big data, and cloud computing enables media organizations to achieve precise content delivery and optimized production. By adopting a "mobile-first" strategy and utilizing multimedia formats such as short videos, live streaming, and H5 pages, significant improvements in dissemination effectiveness have been observed (Kaibin Xu & Yuying He, 2021). For example, Henan Daily successfully established an integrated media operation model through its "Top News" platform (Gao Shunjie, 2023). On the international front, media organizations in developing countries like Nigeria have efficiently utilized social media platforms for content production and distribution, showcasing the potential of technology in resource-constrained environments (Ridwanullah & Bala, 2022). Furthermore, research highlights that the deep integration of 5G, big data, and AI can advance intelligent content generation, smart dissemination, automated editing, and performance evaluation (Fang & Lian, 2021).

4.3 Organizational Restructuring

Numerous studies highlight the importance of organizational culture and structural adjustments in the transformation process. For example, Gansu Daily addressed talent shortages through university-industry collaboration and successfully established a comprehensive media matrix (Ren, 2021). However, organizational restructuring faces significant resistance. Challenges include resource allocation conflicts, shifts in power dynamics, the need for updated expertise, structural inertia, limitations of incremental change, and the constraints of group norms (Liu, 2021). Liu (2021) further suggests that deep institutional reforms, optimizing channels for all-media talent, implementing modern enterprise management systems, establishing integrated media production workflows, and enhancing policy support are crucial steps to reshape the all-media industry chain of newspaper groups.

4.4 Policy Support

In China, government policies play a critical role in media transformation. National-level support provides media with technological and financial backing. For instance, Anhui Daily established the "Party Media Cloud Project" with policy support, significantly enhancing its communication capabilities (Zhu, 2021). Local newspapers, such as Shanxi Daily, have collaborated with social enterprises to leverage big data to optimize content production and distribution channels (Zheng, 2020).

4.5 Challenges and Opportunities

The literature reveals the challenges traditional media face, including technical shortages, organizational inertia, and a lack of content innovation. For example, Beijing Morning Post failed to successfully transform due to a lack of diversified funding sources and technological support (Bai et al., 2021). Under the management of party media, local media often face the dilemma of balancing commercialization with political tasks (Peng & Cao, 2024).

With the rapid development of technology and continued policy support, traditional media have found new growth opportunities within the digital ecosystem. By developing media matrices and diversifying revenue models (such as e-commerce and online education), and through commercial integration, traditional media can explore market-oriented pathways to enhance profitability and competitiveness (Gao, 2023; Ren, 2021). Collaborating with social enterprises to

co-build big data centers and new media platforms helps optimize news production efficiency and expand revenue sources (Zheng, 2020). The development of diverse industries, such as news live streaming, cultural tourism, and exhibition services, creates a closed-loop integrated media ecosystem (Hou & Wang, 2021).

5. Conclusion

In the era of media convergence, traditional newspaper groups face unprecedented challenges and opportunities. This paper systematically reviews 21 relevant studies and highlights the four key dimensions—content innovation, technology integration, organizational restructuring, and policy support—that play a crucial role in shaping the transformation strategies of traditional newspaper groups.

The findings emphasize that in the highly competitive digital environment, content innovation is critical for maintaining audience engagement. By adopting multimedia formats such as videos, live streaming, and interactive content, traditional newspapers can attract younger, digitally native audiences and enhance the overall value of their content. Furthermore, technology integration has become a key driving force in optimizing content production and distribution processes. The adoption of artificial intelligence, big data analytics, and cloud computing enables media organizations to personalize user experiences and improve operational efficiency.

Despite these advancements, the review results indicate that organizational restructuring still faces significant challenges, including resistance to change, talent shortages, and rigid hierarchical structures. Addressing these issues requires media organizations to foster an innovative culture and invest in workforce development. Additionally, policy support has proven to be instrumental in driving media transformation, especially for party newspapers. Government funding and regulatory frameworks provide crucial resources for technological upgrades and the establishment of multi-platform ecosystems.

Looking ahead, traditional newspaper groups have the opportunity to further leverage emerging technologies such as AI, VR, blockchain, and virtual worlds to create new revenue streams and enhance audience engagement. However, achieving sustainable transformation requires addressing existing limitations, such as the lack of cross-regional comparative studies and the absence of longitudinal data to assess long-term impacts.

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