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Voice Reconstruction: Integration and Value Chain Upgrading of Radio Advertising in the New Media Context

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ABSTRACT

With the rapid evolution of digital communication and the diversification of media ecosystems, traditional radio advertising is undergoing a profound transformation. The rise of mobile internet, smart devices, and personalized media has fragmented audiences and challenged radio's long-standing dominance. At the same time, new audio platforms-such as podcasts, online radio, smart speakers, and in-car media-have redefined the cultural and commercial value of sound. Audio advertising is shifting from a single "voice dissemination" model to a more complex process of "voice reconstruction," involving innovation across content, technology, and business models. This paper explores how radio advertising achieves integration and value chain upgrading in the new media environment. Through literature synthesis, theoretical reasoning, and representative case studies, it proposes a "media convergence–value chain upgrading" model that explains how intelligent technologies, immersive storytelling, and cross-platform collaboration transform radio advertising into an intelligent, interactive, and multi-scenario ecosystem.

KEYWORDS

Audio Advertising; Media Convergence; AI-generated Content (AIGC); Value Chain Upgrading; Sound Economy.

1. INTRODUCTION

The media landscape has entered a phase of continuous technological and cultural reconfiguration. Radio, one of the oldest forms of mass communication, now faces both unprecedented challenges and opportunities. The proliferation of mobile terminals, ubiquitous connectivity, and on-demand streaming has fragmented listening habits and eroded traditional advertising revenues. Yet the rebirth of the "sound economy" has repositioned audio as a privileged medium for intimacy, mobility, and emotional resonance. In this context, the logic of value creation is shifting from voice transmission-a unidirectional flow of information-to voice reconstruction-a dynamic, iterative, and co-creative process that refashions how sound is produced, distributed, personalized, and monetized.

In China, the convergence of broadcast radio, internet audio, short video, social platforms, and in-car infotainment has stimulated new advertising formats that integrate narrative, branding, and interactivity. Globally, advances in algorithmic recommendation and contextual targeting enable brands to deliver precisely tailored messages in moments that matter-during commutes, exercise, household chores, or nighttime relaxation. These transformations are not merely technological; they are institutional and cultural, reshaping professional roles, audience expectations, and the governance of data and creativity.

Against this background, this paper develops a cross-disciplinary perspective to understand how "voice reconstruction" interacts with media convergence and industrial upgrading. We ask: (RQ1) How does media convergence reshape the production, distribution, and consumption logic of radio advertising? (RQ2) Through what mechanisms can voice reconstruction drive value-chain upgrading across creative, technological, and organizational layers? (RQ3) What lessons can be drawn from representative domestic and international cases for the future of the audio advertising industry? We address these questions by synthesizing literature in communication studies and media economics, constructing a conceptual model, and analyzing cases that exemplify technological empowerment and ecological collaboration.

2. LITERATURE REVIEW

International scholarship has long probed the adaptive capacity of radio in the face of technological disruption. Sterling and Kittross (2010) foregrounded radio's "intimacy" and "immediacy," qualities that persist in digital contexts where headphones and smart speakers create quasi-private listening spheresc1]. Madsen and Potts (2010) conceptualized podcasting as a hybrid storytelling medium, blending episodic narrative with embedded sponsorship and native advertising. Turow (2017) and Napoli (2016) demonstrated how datafication and platformization are re-configuring media industries, generating ecosystems in which content production, distribution infrastructures, and audience analytics are mutually constitutive. Recent work on "algorithmic listening" (Gillespie, 2020) and "audio branding" (Lindstrom, 2021)[2] shows how brands craft sonic identities to cue emotion, memory, and trust in context-aware environments. Meanwhile, research on AI-generated content (AIGC) highlights the scalability and personalization afforded by neural speech synthesis (Floridi & Chiriatti, 2020)[3], though it also raises ethical questions concerning authenticity, consent, and labor displacement.

Chinese scholarship has evolved from diagnosing the "crisis" of legacy radio-declining ratings and ad revenue-to exploring integration and innovation pathways. Industry yearbooks from the China Advertising Association (2020) documented a persistent revenue slide for FM advertising after 2015, attributing it to audience migration toward digital and mobile platforms. Yet, a parallel line of practice-oriented research and reportage points to emergent opportunities: Ximalaya's "Future Voice" initiative harnesses AIGC and emotion-aware speech synthesis to produce personalized spots; the Shanxi Traffic Radio's "Sound of Shanxi" integrates FM, short video, and tourism events to create immersive regional branding; smart-vehicle ecosystems embed "Listen to Radio" apps into in-car systems, expanding scenario-based listening. Podcasting in China further illustrates a shift toward narrative integration, where hosts become trusted mediators and brand messages are woven into stories (Zhang, 2022)[4].

Three gaps remain. First, the literature lacks a systematic account of how value chains in audio advertising evolve from linear pipelines to multi-actor, feedback-rich ecosystems. Second, the concept of "voice reconstruction" has not been fully theorized in relation to convergence culture and global value chains. Third, empirical work remains dominated by single-case descriptions, under-specifying mechanisms that generalize across contexts. This paper addresses these gaps by articulating a media-convergence–value-upgrading model and applying it to cases that map distinct innovation logics-technological empowerment and industrial collaboration.

3. THEORETICAL FRAMEWORK AND CONCEPTUAL MODEL

Media convergence is often framed as the flow of content across platforms, supported by participatory culture and collective intelligence (Jenkins, 2006)[5]. In audio advertising, convergence appears in three mutually reinforcing layers. First, technological convergence integrates AI, IoT, and data analytics, enabling personalization, dynamic insertion, and automated optimization. Second, content

convergence blends programming, storytelling, and branded entertainment, making ads less interruptive and more experiential. Third, channel convergence synchronizes FM, mobile apps, social media, and in-car systems, creating multi-scenario reach and persistent brand presence.

Value chain upgrading, derived from Porter (1985) and extended by global value chain theory (Gereffi, 2018), explains how firms and sectors move toward higher value activities. In the audio domain, upgrading manifests as: (1) functional upgrading-from single-channel spots to integrated, data-driven campaigns; (2) process upgrading-automation and agile production cycles powered by feedback; and (3) inter-sectoral upgrading-collaboration with tourism, education, e-commerce, and cultural industries to build new revenue logics. Crucially, upgrading in cultural industries is not only about efficiency; it concerns symbolic value, emotional alignment, and trust.

We therefore propose the Media Convergence–Value Chain Upgrading Model. Vertically, innovation flows from technology to content to channels; horizontally, cooperation links platforms, advertisers, agencies, creators, and audiences. At the core is "voice reconstruction": the re-articulation of sound as intelligent artifact (synthetic yet expressive), as contextual narrative (embedded yet distinct), and as interactive interface (responsive yet privacy-aware). The model predicts that ecosystems with stronger data interoperability, creative labor governance, and cross-sector partnerships will exhibit faster learning loops and higher advertising effectiveness.

4. CURRENT SITUATION AND CHALLENGES

Industry reports indicate robust momentum for digital audio advertising. The Baidu Marketing Research Institute & Ximalaya (2024) report estimates double-digit growth for intelligent audio ads in China, with connected-car listening, smart speakers, and long-form podcasts as key drivers. Nevertheless, structural frictions persist. First, ecosystem fragmentation yields duplicated effort and uneven measurement standards. Second, data silos impede cross-platform frequency capping and attribution, while privacy regulation tightens permissible data flows. Third, metrics remain exposure-centric; engagement, attention, and emotional resonance are unevenly captured. Fourth, globalized sound design can neglect local linguistic nuance, dialectal richness, and cultural tempo, reducing effectiveness in diverse regions.

Despite these constraints, radio retains durable advantages: trusted hosts function as opinion leaders; live formats enable temporal relevance; and mobility aligns with daily routines. The strategic task is to translate these affordances into convergent value-developing creative formats and data practices that respect user agency while unlocking personalization at scale.

5. METHODOLOGY

This study adopts a qualitative case-study design. Case selection followed theoretical sampling logic to illuminate complementary innovation pathways: a platform-centric, AI-intensive model (Ximalaya's "Future Voice") and a broadcaster-led, culture-integrated model (Shanxi Traffic Radio's "Sound of Shanxi"). We triangulated secondary sources-industry white papers, news coverage, platform announcements-with academic literature on convergence, audio branding, and global value chains. Analytical procedures entailed: (a) coding textual materials for mechanisms of technological empowerment, content integration, and organizational collaboration; (b) mapping value-chain stages and identifying sites of upgrading; and (c) deriving cross-case propositions about ecosystem design, measurement, and policy enablers.

Given the exploratory scope, we do not claim statistical generalizability. Rather, we aim for analytic generalization, articulating a framework and propositions that subsequent research can test with audience data, controlled experiments, or longitudinal industry datasets.

6. CASE STUDIES

We analyze two representative Chinese cases and briefly contrast them with an international benchmark. The cases exemplify distinct yet complementary mechanisms-AI-powered production and scheduling on the one hand, and cross-media cultural storytelling on the other-both culminating in value-chain upgrading.

6.1. Ximalaya "Future Voice"

Ximalaya, China's leading audio platform, launched "Future Voice" in 2024 as an AIGC-driven advertising suite. The system leverages neural text-to-speech with controllable prosody and affect, enabling advertisers to generate multiple voice variants optimized for different scenarios (e.g., morning commute vs. late-night study). Creative parameters-timbre, pacing, pitch range, and emotional contour-are set against audience segments derived from behavioral signals. Dynamic Ad Insertion (DAI) selects the variant most likely to resonate in context, while real-time analytics feed back into creative optimization.

Value-chain implications are multi-stage. At the production stage, generative pipelines reduce turnaround times from days to hours, shifting labor from manual recording to creative direction, prompt engineering, and brand-safety oversight. At distribution, contextual triggers (time, device, playlist genre) align messages with listening intent, improving relevance without heavy reliance on invasive identifiers. At evaluation, outcome metrics expand beyond impressions to attention proxies (completion rate, replays), brand-lift surveys embedded in-app, and downstream behaviors (e.g., coupon redemption). The cumulative effect is both functional upgrading (from spot-buying to ongoing creative operations) and process upgrading (from batch to continuous improvement).

Importantly, Ximalaya's approach reveals governance challenges. Synthetic voices require consent and provenance tracking to avoid "voice cloning" harms; creative supply chains need contracts that recognize writers, voice actors, and engineers; and model training must address bias in linguistic and dialectal representation. The company's public materials emphasize audit trails and approved voice banks, suggesting an emergent standard for responsible AIGC in audio advertising.

6.2. Shanxi Traffic Radio "Sound of Shanxi"

Shanxi Traffic Radio's "Sound of Shanxi" positions radio as a cultural gateway. Rather than treating the ad break as an interruption, the broadcaster co-developed storylines with local tourism bureaus, museums, and small businesses. The programming weaves dialectal expressions, folk music, and site-specific narratives into travel arcs-listeners are invited to "travel with the sound," receiving tips, routes, and discount codes. Short videos on Douyin and WeChat extend the experience visually; offline events (e.g., weekend road-trips) create tangible touchpoints that convert attention into foot traffic.

In value-chain terms, the broadcaster upgrades inter-sectorally by linking media exposure to regional economic development. Co-investment models spread risk; data sharing agreements allow aggregate reporting on campaign outcomes; and user-generated content serves as both feedback and co-creation. Internal processes upgrade as well: editorial teams collaborate with account managers and cultural experts, while community managers moderate listener groups that surface insights for future programming. Audience surveys and social metrics-shares, comments, itinerary check-ins-suggest increased brand recall and destination intent, aligning cultural storytelling with measurable outcomes.

6.3. International Comparison: Spotify's Dynamic Audio Ads

As a global benchmark, Spotify's dynamic ad insertion and contextual playlists showcase the frontier of data-rich personalization. The company reports higher ad recall and favorability for campaigns that

adapt to mood, activity, and time-of-day contexts. Its "Sonic Science" materials highlight how tempo, timbre, and message cadence interact with listener states. Crucially, Spotify has invested in privacy-preserving infrastructure and advertiser education, pairing creative experimentation with transparent measurement. For Chinese platforms seeking internationalization, two lessons stand out: invest in creative tooling that links sonic parameters to outcomes, and build trust through clear data policies and third-party verification.

7. DISCUSSION

The shift from dissemination to reconstruction alters assumptions about creativity, value, and governance. Creativity becomes iterative and data-informed; value stems from alignment between sonic form and lived context; governance must reconcile innovation with rights and accountability. Our analysis yields three propositions.

Proposition 1 (Technological Empowerment): Ecosystems that pair AIGC with transparent governance-consent management, provenance metadata, dialect-inclusive voice banks-achieve faster creative iteration and higher effectiveness without sacrificing trust. This balance converts AI from a cost-reduction tool into a value-creation engine.

Proposition 2 (Content Ecologicalization): As advertising blurs with programming, narrative coherence and cultural specificity drive engagement. Campaigns that embed brand cues within place-based or community narratives outperform generic spots, because they invite listeners to identify, participate, and share.

Proposition 3 (Industrial Collaboration): Cross-sector ties-tourism, retail, education-extend the value chain beyond media KPIs to economic outcomes. Shared dashboards, outcome-linked contracts, and co-branded events convert attention into transactions while generating public-interest benefits (e.g., local heritage revitalization).

These propositions suggest that "voice reconstruction" is not a monolithic tactic but a systemic orientation. It binds together AI tooling, narrative design, and partnership strategy, requiring new skills (promptcraft, sonic UX), new metrics (attention, lift, footfall), and new policies (synthetic media standards). The comparative lens indicates that Chinese platforms excel in rapid deployment and scenario innovation, while international leaders emphasize measurement standardization and privacy engineering; the frontier will likely combine both.

8. CONCLUSION AND IMPLICATIONS

This paper introduced "voice reconstruction" as a lens for understanding the integration and upgrading of radio advertising in a convergent media ecology. The proposed media-convergence–value-upgrading model links vertical innovation (technology, content, channels) with horizontal collaboration (platforms, brands, audiences). Case analyses illustrated two viable pathways: AI-powered creative operations and culture-led industrial collaboration. Together, they point to an audio future that is intelligent, immersive, participatory, and locally resonant.

Theoretical contributions include: (a) integrating convergence culture with global value chain thinking to analyze sound-based industries; (b) framing AIGC not merely as efficiency technology but as a driver of symbolic and relational value; and (c) specifying propositions about ecosystem design that future work can test quantitatively. Practical implications urge organizations to invest in creative tooling and data interoperability, cultivate cross-sector partnerships, and adopt feedback-driven management that prioritizes engagement, ethics, and cultural fit.

Limitations arise from the qualitative scope and concentration on Chinese cases. Future research should triangulate behavioral telemetry, controlled experiments on sonic parameters, and longitudinal

field data on regional economic outcomes. Emerging topics merit attention: emotional-AI ethics (consent, disclosure, bias), metaverse-scale spatial audio (presence, fatigue), and sustainable sound culture (hearing health, quiet design). Advancing these fronts will help ensure that voice reconstruction augments human creativity, respects listener agency, and contributes to equitable cultural economies.

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