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Research on the Application of Generative AI-Based Virtual Anchors in News Reporting

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Abstract. With the rapid advancement of artificial intelligence technology, generative AI-driven virtual anchors are increasingly entering the field of news communication. This study examines virtual anchors from mainstream media outlets, including Xinhua News Agency's digital reporter "Xin Xiao Hao" and CCTV's AI anchor "Xiao C." Through the collection of 260 survey questionnaires and the application of content analysis, it systematically explores the current status of virtual anchors in news reporting, audience acceptance levels, and their impact on the news communication ecosystem. Findings reveal that virtual anchors enjoy significantly higher acceptance in lifestyle service and entertainment news compared to political and breaking news. Audiences generally maintain reservations about their judgment and interpretation capabilities, with notable differences across generational groups. The study further reveals that virtual anchors with content generation and narrative capabilities are no longer merely passive information conduits but increasingly demonstrate agency in news production. However, when generative AI autonomously constructs news narratives, audience trust mechanisms exhibit dialectical characteristics of "concurrent certainty and skepticism."

Keywords: generative artificial intelligence, virtual anchor, news reporting, intelligent communication, media ecology

1. Introduction

The rapid advancement of generative AI technology is reshaping the journalism ecosystem. Marked by the November 2022 launch of ChatGPT, generative AI entered a new phase, with its key application—virtual anchors—evolving from text-based delivery toward emotional, interactive, and personalized development. Xinhua News Agency's "Xin Xiao Hao" enables real-time interaction across multiple scenarios; CCTV's "Xiao C" represents media convergence; Shanghai TV's "Shen Yingya," as the first AI digital anchor, has participated in multiple major international event reports; Beijing TV's "Time Xiaoni" provides 24/7 online services, enhancing release efficiency and service capabilities. These practices indicate that virtual anchors have entered a substantive application phase. However, current research remains largely focused on technology and scenarios, lacking systematic empirical analysis of communication effects and ethical risks.

This study centers on the core question: Can virtual anchors fulfill social roles in news communication under technological empowerment? It addresses three sub-questions: differences in

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acceptance among audiences with varying demographic characteristics; the associative mechanism between news content types and virtual anchor credibility; and the structural impact of virtual anchor proliferation on the news communication ecosystem.

2. Literature review

2.1. Research on generative AI applications in journalism

Existing research generally agrees that generative AI is propelling news production into an intelligent phase. Liu Zhi and He Lingling point out that leveraging natural language processing and advanced machine learning technologies, AIGC can significantly enhance the efficiency and quality of news creation. However, these technological advances also carry potential risks such as loss of agency, diminished originality, and technological bias [1]. Niu Fan and Liu Haomin summarize the current applications of AI-generated news videos, analyze the demand for AI technology in the news video sector, and clarify specific implementation methods of AI in news video production [2]. Qin Yu and Zhang Pengfei conduct an in-depth analysis of the news industry's transformation process and its profound impact on the entire news ecosystem. They detail the emergence of large-scale AI models and their applications in relevant fields, They also elucidate the definition, potential development roadmap, and challenges of Artificial General Intelligence (AGI), dissecting how AI disrupts news production workflows, reshapes content presentation, and transforms journalists' roles, audience demands, and engagement models [3]. While these studies provide theoretical foundations for understanding AI's integration into journalism, they predominantly focus on efficiency and process optimization, with insufficient exploration of its societal impacts and audience trust mechanisms.

2.2. Research on virtual anchors in news communication

Virtual anchors represent a significant form of AIGC in news visualization. Domestic research primarily traces their developmental trajectory, from 2D compositing to 3D real-time rendering, revealing a trend toward increasing anthropomorphism. The emergence of virtual news anchors has driven innovation and breakthroughs in AI synthesis technology. Research in this field traces its early history and applications across multiple industries [4]. Wu Feng and Liu Zhaoxi categorize its evolution into three stages and track the latest technological advancements. In-depth analysis examines the impacts of virtual news anchors on real-world human anchors, media industry structures, and public perception [5]. Meng Yuyao focuses more on the audience level, proposing AI-synthesized anchors as an emerging trend in the virtual news anchor field. Its core purpose is to expand content provision to service delivery from the audience's perspective, aiming to build a higher-level ecosystem. This novel anchor model employs autonomous information platform gateways and precision content production strategies to create valuable informational experiences for users [6]. However, most audience-level studies rely on small samples or specific scenarios, lacking large-scale empirical data to systematically reveal cognitive and attitudinal differences across diverse groups.

2.3. Second section

In summary, while existing research has explored the technological advancements and application potential of AIGC and virtual anchors, three key gaps remain: First, there is a lack of systematic research on the long-term communication effects of virtual anchors in news contexts. Second,

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empirical analysis of the ethical risks and social responsibility issues they raise is insufficient. Third, theoretical models predominantly adopt single-perspective approaches, lacking cross-theoretical integration frameworks. Therefore, this study will employ content analysis and questionnaire surveys, integrating theories such as the medium-as-message, media ecology, uses and gratifications, and mimetic environment, to systematically explore the application mechanisms of virtual anchors in news reporting and their impact on the communication ecosystem.

2.4. Research questions and hypotheses

Based on the literature review and identified gaps, this study proposes the following research questions:

RQ1: Does news content type influence the credibility of virtual anchors?

RQ2: Do differences in audience acceptance of virtual anchors exist across demographic characteristics?

RQ3: Do the anthropomorphic characteristics of virtual anchors significantly enhance audience trust and usage intent?

Based on this, the following hypotheses are proposed, and the "Research Model Diagram for Generative AI Virtual Anchors in News Reporting" is constructed as follows:

H1: News content type significantly influences the credibility of virtual anchors.

H1a: Acceptance of virtual anchors is significantly higher for lifestyle/service news than for political news and breaking events.

H1b: In technology news scenarios, younger audiences exhibit significantly higher trust than older audiences.

H2: Acceptance of virtual anchors varies significantly across different demographic characteristics.

H2a: Younger groups exhibit significantly higher acceptance of virtual anchors than older groups.

H2b: Individuals with higher education levels exhibit significantly greater acceptance of virtual anchors than those with lower education levels.

H2c: Audiences with high media usage frequency exhibit greater acceptance of virtual anchors than those with low frequency.

H3: Audience trust in virtual anchors increases with higher levels of anthropomorphism.

H3a: Visual realism is significantly positively correlated with audience trust.

H3b: Emotional expression ability is significantly positively correlated with audience trust.

H3c: Interactive affinity exhibits a significant positive correlation with audience trust.

3. Research methodology

3.1. Research design overview

This study employs a mixed-methods research framework combining content analysis and questionnaire surveys. First, systematic content analysis was conducted to multidimensionally code samples of mainstream media virtual anchor reports. The coding encompassed five dimensions: broadcast type, information completeness, anthropomorphism realization, interactive feedback, and human-machine collaboration models. This provided structured evidence to validate audience acceptance hypotheses. Second, 260 valid questionnaires were collected through stratified sampling to obtain audience feedback data.

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3.2. Case analysis

The study selected virtual anchor broadcasts from platforms including Xinhua News Agency, CCTV News, Bilibili, and Douyin as samples, covering five news categories: politics, finance, society, lifestyle, and entertainment. Analysis dimensions included metrics such as the virtual anchors' broadcasting characteristics, information completeness, and interactive feedback.

Xinhua's "AI-synthesized anchor" primarily delivers political news and major event coverage with a formal, serious style. Virtual anchors on social media platforms are more commonly used for lifestyle services and entertainment news, featuring richer interactive designs. Overall, virtual anchors demonstrate greater maturity and higher audience acceptance in lifestyle news applications. However, live human anchors remain predominant for breaking news and in-depth reporting.

3.3. Questionnaire survey

The questionnaire, titled "Public Perception and Acceptance Survey on Virtual Anchors in News Reporting," was distributed online via the WeChat "QuestionStar" mini-program platform from April 28 to May 12, 2025. It comprised two sections: The second part measured attitudes, designed based on the Technology Acceptance Model (TAM) and Anthropomorphism Perception Theory (AN), using a five-point Likert scale. The TAM section covered five dimensions: perceived usefulness, perceived ease of use, attitude toward use, behavioral intention, and perceived innovativeness. The AN section included five indicators, focusing on measuring audience perceptions of virtual anchors' visual realism, emotional expression, and interactive affinity.

A total of 260 valid questionnaires were collected, including 162 female respondents (62.3%) and 96 male respondents (36.9%). The age distribution was relatively balanced: 69 respondents (26.5%) were aged 18–24, 56 respondents (21.5%) were aged 25–34, 56 respondents (21.5%) were aged 35–44, and 75 respondents (28.8%) were aged 45 and above. Educational attainment was predominantly bachelor's degree, accounting for 40.4%.

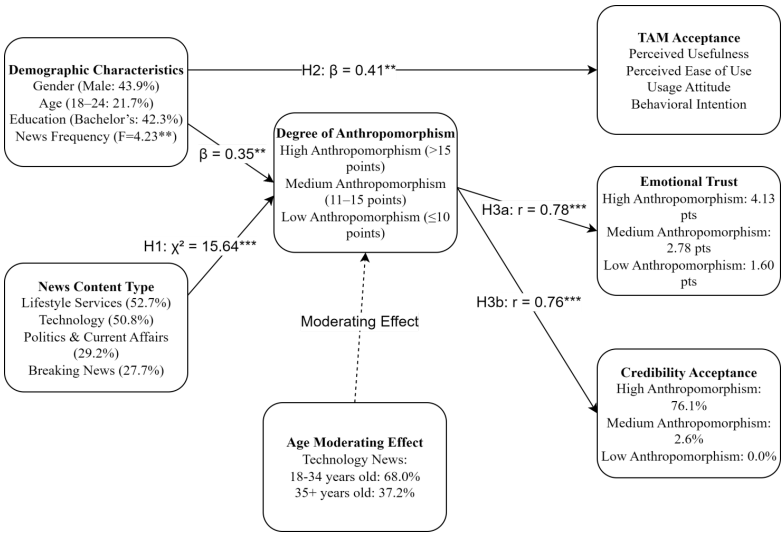

Figure 1. Research model diagram for generative AI virtual anchors in news reporting

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4. Analysis and findings

4.1. Differences in acceptance of virtual anchors across news genres

Table 1. Distribution of acceptance rates for virtual anchors across different news genres

News Type	Number of Selections	Percentage (%)	Acceptance Ranking
Lifestyle & Services (Weather/Transportation)	137	52.7	1
Technology	132	50.8	2
Social News	118	45.4	3
Financial News	95	36.5	4
Entertainment Gossip	87	33.5	5
Politics & Current Affairs	76	29.2	6
Breaking News	72	27.7	7

Survey data indicates significant variations in acceptance of virtual anchors across different news genres. In the survey on "news scenarios deemed unsuitable for virtual anchors," politically sensitive events ranked first with 125 respondents (48.1%), followed by disaster accident coverage (117 respondents, 45.0%) and in-depth commentary news (101 respondents, 38.8%). The results indicate that audiences rationally assess the boundaries of virtual anchors' application, recognizing their limitations in handling complex and sensitive news events.

Statistical tests further confirmed significant differences in acceptance across news genres. Chi-square tests revealed a highly significant difference ($\chi^2=15.64$, $p<0.001$) in the frequency of virtual anchors being chosen for lifestyle versus political news. This indicates distinct applicability across news domains: audiences are more receptive to virtual anchors in routine, service-oriented news while maintaining caution in serious, complex reporting. Age also significantly influenced news genre preferences. The 18–34 age group generally showed higher acceptance of virtual anchors than those aged 35 and above, with particularly pronounced differences in technology news (68.0% vs. 37.2%, $p < 0.01$) and entertainment news (45.6% vs. 24.4%, $p < 0.01$). However, no significant difference was observed in lifestyle service news between the two groups (54.4% vs. 51.1%, $p > 0.05$), indicating that practically oriented news types can transcend age differences to gain broad recognition.

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4.2. Analysis of significant differences in audience demographic characteristics regarding virtual anchor acceptance

Table 2. Significance test for differences in virtual anchor acceptance across demographic groups

Variable	Group	Sample Size	TAM Mean Score	Standard Deviation	Test Statistic	Significance
Age	18–34 years	125	3.72	0.68	t=3.45	p<0.01**
	35 years and older	131	3.31	0.71		
Gender	Female	162	3.58	0.69	t=2.18	p<0.05*
	Male	96	3.41	0.74		
Education	Bachelor's degree or higher	147	3.61	0.67	t=2.89	p<0.01**
	College degree or below	110	3.38	0.73		
News frequency	Multiple times daily	88	3.69	0.65	F=4.23	p<0.01**
	Once daily	58	3.52	0.71		
	Several times per week	89	3.41	0.74		
	Rarely accessed	23	3.18	0.82		

*Note: *p<0.05, **p<0.01; Independent samples t-test and one-way ANOVA employed

The influence of demographic characteristics on acceptance of virtual hosts exhibits distinct group patterns. Age demonstrated the most pronounced differentiation effect: the TAM acceptance score (3.72) among the 18–34 age group was significantly higher than that of the 35+ group (3.31), with the difference reaching extreme significance ($t=3.45$, $p<0.01$). Gender differences, though relatively moderate, remained statistically significant. Female respondents' acceptance scores (3.58) exceeded those of males (3.41) by 0.17 points ($t=2.18$, $p<0.05$). This aligns with prior research indicating women's generally more positive attitudes toward AI applications.

The influence of educational background exhibited a hierarchical pattern. Individuals with bachelor's degrees or higher scored significantly higher (3.61) than those with associate degrees or lower (3.38), $t=2.89$ ($p<0.01$). This indicates a positive correlation between educational attainment and technology acceptance, with higher-educated groups demonstrating greater openness toward innovative technologies.

A clear gradient relationship exists between news consumption frequency and acceptance of virtual anchors. Univariate ANOVA revealed extremely significant differences in acceptance across news consumption frequency groups ($F=4.23$, $p<0.01$). High-frequency users who access news multiple times daily showed the highest acceptance (3.69), while low-frequency users who rarely access news scored the lowest (3.18 points), with a 0.51-point difference between the two groups. This indicates a positive relationship between news consumption activity and acceptance of technological innovations. Post-hoc comparisons revealed the most significant difference between the multiple-daily news consumers and the infrequent news consumers ($p<0.001$), further validating the moderating effect of news consumption habits on acceptance of virtual anchors. Occupational factors also exhibited significant grouping effects, with students (3.78) and corporate employees (3.54) showing notably higher acceptance than civil servants/public institution employees (3.32) and freelancers (3.41).

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4.3. Relationship between anthropomorphization level and trust in virtual anchors

Table 3. Comparative analysis of trust levels across different anthropomorphization groups

Anthropomorphism Level Group	Sample Size	Average Emotional Trust	Emotional Trust Rate (%)	Average Credibility	Credibility Recognition Rate (%)
Low Anthropomorphism Group (≤10 points)	53	1.60	0.0	1.36	0.0
Moderately Anthropomorphized Group (11–15 points)	77	2.78	2.6	2.60	2.6
High Anthropomorphism Group (>15 points)	113	4.13	79.6	4.02	76.1

The results of the grouped comparative analysis reveal a highly significant positive correlation between anthropomorphism levels and trust, exhibiting a distinct stepwise increase. The low anthropomorphism group comprised 53 participants, accounting for 21.8% of the total sample. This group demonstrated extremely weak performance across both core metrics: emotional trust and credibility. The mean emotional trust score was only 1.60, far below the neutral evaluation threshold of 3 points, with an emotional trust recognition rate of 0.0%. This indicates that low-personification virtual anchors completely fail to gain emotional recognition from audiences. On the credibility dimension, this group's mean score was 1.36, with a credibility recognition rate also at 0.0%, revealing that audiences have no foundational trust in the news content delivered by low-personification virtual anchors.

The moderately anthropomorphized group comprised 77 participants, accounting for 31.7% of the total sample. While showing improvement over the low-anthropomorphization group, its overall performance remained relatively low. This group's average emotional trust score rose to 2.78 points, and its average credibility score reached 2.60 points. Though still below neutral evaluation standards, these figures indicate some progress. However, both emotional trust and credibility recognition rates remained at only 2.6%, indicating that most audiences still maintain a cautious attitude toward moderately anthropomorphized virtual anchors. This phenomenon may be related to the "uncanny valley effect," where insufficiently anthropomorphized images can trigger discomfort and rejection.

The most significant changes occurred in the high-anthropomorphism group, comprising 113 participants (46.5% of the sample). This group achieved an emotional trust average of 4.13 points—exceeding the 4-point threshold for high recognition—with an emotional trust rate of 79.6%. Credibility averaged 4.02 points, yielding a credibility recognition rate of 76.1%. These data indicate that highly anthropomorphized virtual anchors effectively garner audience emotional resonance and content trust. The trust gap between the high-anthropomorphism and low-anthropomorphism groups is substantial: emotional trust rates differ by 79.6 percentage points, while credibility endorsement rates diverge by 76.1 percentage points. This outcome conclusively demonstrates that anthropomorphism level is the decisive factor in establishing trust toward virtual anchors. When anthropomorphism reaches a high level, audiences more readily form emotional connections and trust, thereby enhancing credibility in news content. Conversely, insufficient anthropomorphism renders trust formation nearly impossible, revealing a critical threshold effect in the development of virtual anchors.

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5. Discussion

As non-human communicators, the legitimacy of virtual anchors fundamentally stems from the dialectical unity of institutional empowerment and technological enablement. Take Xinhua News Agency's "Xin Xiao Hao" as an example: by participating in coverage of the National People's Congress and gaining official certification, it gradually established professional credibility. CCTV's "Xiao C," meanwhile, leveraged brand endorsement and technological capabilities to achieve authority transfer in international communication. This legitimacy remains in a dynamic adjustment process, validating Hypothesis H1: News content type significantly influences virtual anchors' credibility. For instance, Hunan TV's "Xiao Yang" demonstrates higher credibility when adopting a rigorous tone for serious livelihood issues compared to entertainment-focused broadcasts, indicating audience trust dynamically shifts with content type.

Regarding functional boundaries, virtual anchors excel at efficiently conveying standardized information—such as SMG's "Shin Yeon-ah" delivering multilingual broadcasts and CCTV's "Xiao C" providing real-time sports updates. However, their cognitive limitations necessitate human-machine collaboration mechanisms: algorithms verify facts, editors guide direction, and systems ensure traceability. This leads to Hypothesis H2: Acceptance of virtual anchors varies significantly across demographic segments. For instance, "Shin Yeon-ah" garners greater recognition among highly educated groups, while Beijing TV's "Time Xiaoni" resonates more with local middle-aged and elderly audiences due to its Beijing-style flair.

The widespread adoption of virtual anchors is reshaping the boundaries between news and entertainment, reflecting the tension between technological logic and journalistic professionalism. Governance must address three fronts: developing ethical algorithms, establishing scenario-specific regulations, and strengthening media literacy education. This also reveals the complexity of Hypothesis H3: the degree of anthropomorphism does not necessarily correlate positively with trust. Moderate anthropomorphism can enhance relatability, but excessive anthropomorphism in serious news coverage may instead provoke skepticism, necessitating alignment with the news genre.

The development of virtual anchors must adhere to the principle that "technology serves journalistic value," balancing efficiency and depth through institutional innovation to safeguard public interest. Its legitimacy ultimately hinges on the dynamic equilibrium of technological empowerment, institutional authorization, and audience media literacy.

6. Conclusion and outlook

The core value of journalism remains safeguarded by humans. This study confirms that AI anchors like "Xin Xiao Hao" and "Xiao C" are competent for standardized reporting but face limitations in domains requiring deep value judgments. Future multimodal technologies may enhance expressiveness, yet ethical guidelines, fact-checking mechanisms, and accountability frameworks must be urgently established to mitigate risks of trivializing news and foster virtual anchors as trusted communicators.

This study has three limitations: rapid technological iteration may affect the timeliness of conclusions; the sample is skewed toward urban populations; and analysis of news power structures is insufficient. Future research should focus on adapting AI anchors to metaverse news scenarios, exploring VR/AR communication paradigms, and building a symbiotic virtual-reality news ecosystem.

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