The Role of AI Digital Anchors in Enhancing the News Broadcasting User Experience: An Analysis of the Interaction of AI Anchors with the Audience in Live News Programs

Xinli Lyu [1], Siva Shankar Ramasamy [2], Fangli Ying[3]

{ xinli_ly @cmu.ac.th[1], sivashankar.r @innova.or.th [2] and yingfangli2010@gmail.com[3]}

International College of Digital Innovation, Chiangmai University , Chiangmai , Thailand [1,2,3]

Abstract. The world is full of news now a days. But the newsrooms and channels have their style to have their followers. Since digital era is emerging anchors are aligned with AI and in future AI may align as Anchor. This work examines the role of AI digital anchors in enhancing the user experience of news broadcasting. The study analyzed the interaction of AI anchors with the audience in live news programs. The findings showed that the AI virtual anchors are preferred by the media houses because it reduces the cost of operations. The AI anchors can imitate behaviors and use them to project the audience's needs. The designers have also ensured that AI anchors can use the voices of human anchors, making them more connected to the viewers. However, AI is still limited in its applications may increase the cost of production.

Keywords: AI virtual anchors, human anchors, broadcast, and digital anchors, news broadcasting.

1 Introduction

In November 2018, China's state-run news agency Xinhua became the first media house in the country to introduce artificial intelligence (AI) news anchors at the fifth World Internet Conference in Wuzhen, China's Zhejiang Province (Wang, 2021). Since then, there has been a growing demand for AI-enabled digital news anchors not just in the media industry, but also in the electronic commerce business (Xue et al., 2022). The demand for virtual anchors is mainly driven by their ability to work without break at no cost. The business owner only needs to make an initial investment to purchase the technology and can multiply it as many times as possible at no cost (Yu & Huang, 2021). The virtual anchors have also brought a unique experience to television viewers, with many describing them as great technology (Yu & Huang, 2021). The virtual anchors can also provide real-time news updates, fulfilling the needs of those who seek regular updates (Xue et al., 2022). This study examines the role of AI Digital Anchors in enhancing the user experience of news broadcasting, analyzing the interaction of AI anchors with

IACIDS 2023, November 23-25, Lavasa, India

DOI 10.4108/eai.23-11-2023.2343240

the audience in live news programs.

The virtual news anchors have been developed through a collaboration between Xinhua News and a Beijing-based browser and search engine company known as Sogou. The design and development of virtual anchors have been part of the technological revolution of the media industry (BBC News, 2023). The technology aims to provide alternative anchors who can replace humans in circumstances such as weather reports, real-time news updates, and long working hours (Wang, 2021). The technology has also proven quite effective in reducing the cost of operations while enhancing efficiency in media houses (Yu & Huang, 2021). The virtual presenters only require an initial investment and limited recurrent expenditures, especially for software updates if needed (Xue et al., 2022). Xinhua has developed its virtual anchors in the image and voices of its human anchors (Sun et al., 2022). For instance, the presenter has both the appearance and voice of Zhang Zhao, one of the leading news anchors at Xinhua.

2 Literature Survey

2.1 Enhancing User Experience

The first approach used by virtual anchors to enhance user experience is introducing themselves so that users can know them (Sun et al., 2022). One of the virtual anchors owned by Xinhua television began broadcasting as follows, “Hello everyone, I’m an English artificial intelligence anchor. This is my very first day in Xinhua News Agency” (BBC News, 2023). The virtual anchor known as Qiu then proceeded to present the other parts of the news in ways that make it difficult for the viewers to differentiate between humans and artificial intelligence. Xue et al. (2022) argue that the first impression matters in the overall effects that news anchors have on television viewers. The audience is usually keen on the opening statements made by the news anchors because it tells whether they are confident or doubtful of their duties (Pashentsev, 2021). Just like musicians, it is also common for news anchors to develop some elements of stage fright in their first contact with the audience.

Xinhua News Agency also gave their virtual anchor the voice of Zhang Zhao to establish the human effect. Since the audience is already familiar with the voice of Zhang Zhao, it was easier for them to make the same human connection with the virtual anchor despite the initial introduction (Xue et al., 2022). According to Wang (2021), news agencies such as Xinhua do not want their virtual anchors to look like animations because they would lose contact with the audience. The viewers are more likely to make connections with human beings than the animations (Xue et al., 2022). While designing the virtual anchors, they take significant considerations to make them look like human beings. The virtual anchor is given not just the voice but also facial expressions and gestures usually made by their human version while presenting the news (Yu & Huang, 2021). Developers such as Sogou are also focused on making their virtual presenters look exactly like human beings in both appearance and behavior.

Xue et al. (2022) examined the key factors contributing to the effectiveness of AI news anchors in attracting the audience. The data examined three factors that are commonly checked in newsrooms to ensure the anchor is capable of holding the audience to the screen. The three factors include appearance, gender, and voice. The researchers recruited a total of 50 participants online through the Wen Juan Xing, used commonly as the nationwide questionnaire platform (Xue et al., 2022). Since the research was conducted during COVID-19, online questionnaires were perceived as the most effective in preventing the spread of the virus (Xue et al., 2022). It was also important to conduct research in an environment that does not expose

the participants to potential risks (Xue et al., 2022). The questionnaires focused on what the participants perceived as the most crucial factor that attracts them to watch a humanoid AI news anchor (Xue et al., 2022). The researchers also asked the participants to mention factors that would attract them to human anchors, rather than virtual AI news anchors. The following charts show the results found by Xue et al. (2022) after analyzing data.

3 Findings

As indicated in the table and the chart, the study found that "the appearance of the virtual AI news anchors significantly influences an audience's perception of the news anchor's attractiveness ($F = 786.283$, $p < 0.01$)" (Xue et al., 2022, p. 7). A more attractive virtual AI news anchor is likely to attract more audiences to the screens during prime-time news broadcasts (Xue et al., 2022). The study also found that female AI news anchors had a more significant impact on the audiences' perception of attractiveness than male virtual AI news anchors (Xue et al., 2022). While males are also attractive, the study found that most people prefer female anchors because they look more attractive and have better presentation mannerisms than their male colleagues (Xue et al., 2022). The study also found that the "anthropomorphic and non-anthropomorphic sounds also significantly influenced the audience's perception of the attractiveness of the AI news anchors ($F = 692.925$, $p < 0.01$)" (Xue et al., 2022, p. 7). The audience tends to prefer human voices over animated voices which provide limited information about the anchor's attractiveness.

Dean Roper, Editor-in-Chief of WAN-IFRA shared their research analysis in media makers meet website that the News industry is look forward to bring all the AI tools such as ChatGPT in the newsrooms. The reasons of the AI tools are interesting to the Anchors themselves after analyzing with approximately top 100 Anchors in the Newsrooms. Since there are no guidelines in Live news while using the AI Tools. Figures 1 illustrate the reasons for using AI tools by the Anchors and the newsrooms teams.

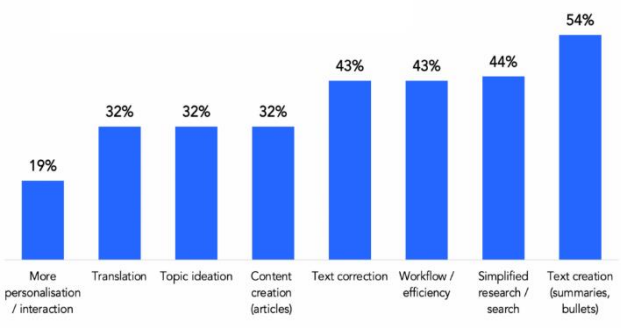

Fig 1. Reason to use AI Tools in Newsrooms. Source: Dean Roper-WAN-INFRA in marketmediamaker.com

Anchor community also think that someday AI will take their job in newsrooms, because accuracy, data protection plagiarism issues and so on. Global survey and Schickler consulting exhibit that the potential threats of AI tools in the newsrooms sections to replace the Newsrooms

Anchors in the future for the reasons such as Inaccuracy of information 85%, Plagiarism issue 67%, data protection 46%, Job issues within the office 38% and other reasons.

3.1 Strengthening Human Connection

Since the appearance of the virtual anchors also matters in making the first impression and enhancing the audience experience, the developers ensure that the anchors resemble real humans. The designers often ensure that the virtual anchors are modeled in the images and dressing styles of the existing news anchors working for a particular organization (Yu & Huang, 2021). For instance, if the human anchor wears a grey suit during a presentation, the virtual anchor is also presented to the audience wearing the grey suit, white shirt, and checked neckties (Oxford Analytica, 2018). There are also both female and male virtual anchors to reflect gender representation in the organization. According to Wiederhold (2019), the dress code is crucial because it determines the audience's perceptions of the news anchor. Besides, the dress code also projects the serious attitude that anchors give to their work and the services they offer to the audience (Sun et al., 2022). The designers rely on the official dress codes approved by the news agency to dress their virtual anchors.

The machine learning program enables the virtual anchors to extract and synthesize the voice, lip movements, and facial expressions of real anchors. According to Wang (2021), it takes about 10 minutes for the virtual anchors to learn the voice, lip movements, facial expressions, and even irregular intonations to make emphasis of specific points. During news presentations, facial expressions and voice often change based on the type of information being presented to the audience (Gao et al., 2022). Whenever the anchor is presenting sad news such as accidents, mass shootings, wars, hunger, or assassinations, they may project a sad face to reflect the impact of the news (Yu & Huang, 2021). The virtual anchors are quick learners and can even understand the impact of the news on the audience by reading the words. Although the virtual anchors are not involved in writing the news, they can interpret the impact of the words they read on the audience (Wiederhold, 2019). This enables virtual anchors to become more effective in presenting news in a way that the audience understands.

3.2 Quick, Tireless, and Effective

The virtual anchors are quick, tireless, and effective in presenting news to the audience. The virtual anchors can read quickly and interpret the meaning of news at the same time (Yu & Huang, 2021). The anchors are also accurate in their pronouns and contextual interpretation of the words. According to Venkatesh (2018), virtual anchors are still a work in progress, but the current technology has proven to be more effective in accuracy than human anchors. For instance, virtual anchors are 85% more accurate in pronunciations and contextual interpretations than real human anchors (Sun et al., 2022). The high level of accuracy minimizes potential errors that humans make during news presentations (Gal, 2019). It is common for human presenters to apologize for not reading words correctly or giving them accurate interpretations (Sun et al., 2022). Virtual presenters make news broadcasting free of errors and less disruptive (Wang & Zhu, 2022). Being fast and accurate also gives the audience a unique experience that they cannot get from conventional news presenters.

The virtual anchors are less susceptible to fatigue or emotional breakdown while presenting news. The conventional news anchors mostly work for an hour and take breaks in between to

drink water before returning to the audience (Yu & Huang, 2021). Moreover, human anchors make most mistakes when they feel fatigued after working for several hours. During live coverage of events, most anchors would feel tired after about five or six hours (Wang, 2021). If they are not replaced by other anchors, they are more likely to make mistakes. The AI virtual anchors work tirelessly for 24 hours and 7 days a week without a need to replace them (Venkatesh, 2018). Moreover, the anchors can be copied into several stations or regions to work at the same time (Sun et al., 2022). All that editors need to do is to write news and provide background videos. The virtual anchors then pick up and present the news tirelessly and accurately for as long as required.

The AI virtual anchors have enhanced the overall efficiency of the media houses. Rather than struggling with a large workforce and huge salaries every month, virtual anchors can work for longer duration and make fewer mistakes than their human counterparts. According to Wang (2021), there is a growing demand for virtual anchors in China and other countries around the world due to their overall efficiency. Russia became one of the first countries in Europe to use virtual anchors in their news presentations (Venkatesh, 2018). One of the leading Russian news agencies known as ITAR-TASS launched its first AI news anchor in January 2021 (Yu & Huang, 2021). Abu Dhabi also became the first region in the Gulf to adopt AI news anchors to enhance efficiency in their news presentation (Sun et al., 2022). In the United Kingdom, a company known as synthetic media is developing more advanced versions of AI news anchors that would transform news broadcasting across the country.

The AI news anchors have also improved the overall presentation of sign language. One of the challenges faced by conventional human anchors is sign language presentation (Wang & Zhu, 2022). The use of sign language requires news anchors to match their words with their gestures, body movements, and facial expressions (Yu & Huang, 2021). However, this may be difficult to achieve unless one is fully trained in sign language presentation. The virtual anchors make the presentation much easier because it takes them less than 10 minutes to learn sign language and contextual interpretation (Bendett & Kania, 2019). The virtual anchors have improved the overall experience of individuals with hearing impairments, making them part of the news broadcast through the use of sign language.

The innovation behind the AI news anchors also makes them appealing to the television audience. The AI virtual anchors are one of the most innovative ideas in the modern media industry. According to Wang & Zhu (2022), many people expressed concerns about the possibility of replacing human anchors in the television industry. The Garner press once predicted that the AI news anchoring business would create 2.3 million jobs and eliminate 1.8 million by 2020 (Handley, 2018). However, the industry is creating more job opportunities by encouraging developers around the world to create new ‘avatars’ or improve the existing models (Yu & Huang, 2021). However, AI news anchors are likely to replace several journalists around the world if implemented fully. The fact that the AI anchors can be copied endlessly provides a significant advantage to media companies operating in several regions around the country (Wang et al., 2019). The AI news anchors represent an innovative business idea that is more interesting to learn and potentially profitable if developed into a good business.

The AI news anchors also present an image of credibility and distinction. For instance, many people did not know about Xinhua News Agency or their services before they introduced the AI news anchors (Yu & Huang, 2021). The technology has given Xinhua a distinctive position

among the media companies in China and other parts of the world (Wang & Zhu, 2022). Xinhua made history as one of the first media companies to introduce AI news anchors in Asia. Other countries such as Russia and Abu Dhabi joined the artificial intelligence race, introducing their versions of AI news anchors between 2021 and 2022 (Sun et al., 2022). The innovative technology has also given Xinhua a special position in Chinese households (Venkatesh, 2018). Many people look at Xinhua as both an innovative and inspirational organization that is contributing to the country's advancement toward the use of artificial intelligence in communication, business, industrialization, and agriculture.

3.4 Potential Limitations

However, not everyone is impressed with the AI news anchors. According to Wiederhold (2019), some people have argued that AI news anchors will impact negatively the media industry which is largely built around personalities. In China, for instance, there are famous television anchors who attract viewers to the television (Yu & Huang, 2021). For instance, Liu Xin is one of the most famous television hosts in the country. She works for the Chinese government broadcaster China Global Television Network (CGTN), where she hosts a show known as The Point with Liu Xin on weekdays (Wang, 2021). Liu Xin is fluent in English, Mandarin, French, German, and Turkish languages (Sun et al., 2022). She has built a significant audience who tunes in to her show every weekday to understand various issues, including trade between China and the rest of the world. Another famous Chinese anchor who attracts an audience based on his personality is Rui Chenggang who works for China Central Television (CCTV).

Unlike human anchors, AI news anchors lack a strong personality that can attract audiences to watch their shows. The fact that AI news anchors are mere animations makes them least attractive to the audience (Sun et al., 2022). The AI news anchors can only present news but may not run popular shows like the human anchors. The developers of AI news anchors can generate potential programs that can attract varied audiences. According to Wiederhold (2019), media is a form of business that heavily relies on personalities. There are countries where media have personality cults that are followed by millions of audiences. Advertisers also rely on strong personalities to sell their products to a particular audience (Yu & Huang, 2021). For instance, anchors who focus on banking and finance may attract banks that provide loans, mortgages, and insurance services. AI news anchors may take longer to develop similar personalities seen in some of the modern media industries.

According to Qi (2021), some viewers described the Xinhua AI news anchors as subtly unrealistic and difficult to watch even for a few minutes. Although it may take a long before viewers discover that the anchor is not a human being, the AI news anchors lack the human approach to news anchoring, including errors in pronunciation, smiles, jokes, and any other statement that makes the audience happy as they watch the news. Wiederhold (2019) argues that news is not just about the plane presentations by the anchor but also the general packaging which includes the anchor's movements, facial expression, and even general appreciation of the reporters. AI news anchoring involves plane texts and videos to support what the anchor is reading (Guanah et al., 2020). However, there is minimal connection between the anchor and the presenter, including follow-up questions. The anchor needs to ask reporters more questions to obtain details about events being reported in the media. The follow-up questions enable the audience to understand the news and make more informed decisions.

Some viewers have also described the AI news anchors as very flat, single-paced, and without rhythm, pace, or emphasis. The AI news anchors may look like they are 2-dimensional when compared to human anchors (Oxford Analytica, 2018). One of the characteristics of human news reporters and anchors is the ability to break news down into smaller parts that the audience can easily understand. Although editors can also do the same for AI news anchors, they may lack the emphasis and rhythm associated with human anchors (Handley, 2018). One of the striking differences is that human anchors can sometimes lower their pace when reading technical terms that viewers may not understand. However, the AI news anchors are single-paced and less likely to slow down even when they are reading terms that are less familiar to the audience (Wang & Zhu, 2022). When reporting breaking news, the AI news anchors are less likely to provide background information which may assist the audience to quickly connect with the current events.

Wiederhold (2019) argues that viewers often place their trust in human anchors. However, the trust comes after many years of reporting facts to the audience. Human anchors build trust by conducting research and reporting accurate information (Biswal et al., 2020). Once the audience has developed trust, they are more likely to follow the anchor throughout his or her programs. Some people may even say that they watch prime-time news because of a particular anchor whom they associate with factual information (Kuo, 2018). Humans also have a general impact they make on the audience based on their looks, personalities, accent, and mannerisms. Some people trust anchors based on the tough questions they ask politicians who appear on their shows. Moreover, anchors also rely on the trust they have built over time to promote their services and their news agencies. Wang & Zhu (2022) argue that it may be difficult for individuals to survive for long in the media industry without sufficient trust.

The AI news anchors may also lose connection with the audience because they are perceived as animations, rather than real human beings. While many people may appreciate the innovation and efforts that have been made to bring virtual presenters to television, others may not find many differences from the regular animations they watch on television (Wang, 2021). One of the most crucial elements emerging from the various arguments seen so far is the element of humanism. The human character plays a significant role in attracting the audience and sustaining their interest throughout the presentation (Yu & Huang, 2021). The animation takes away the human aspect, regardless of how smart the technology may appear. The audients want to see real humans to whom they can relate, especially when taking the advice coming from the television. Kuo (2018) suggests the use of augmented reality to give AI news anchors more human characteristics. However, the technology may become too expensive for the audience or media owners to afford.

TABLE I. AUDIENCE DETAIL

Source	Type III Sum of Squares	df (Degrees of Freedom)	Mean Squared	F	Significance
Appearance	159.782	3	53.261	786.283	0.000
Gender	148.731	1	148.731	2195.696	0.000
Voice	140.811	3	46.937	692.925	0.000
Appearance × Voice	0.456	9	0.051	0.747	0.666
Voice × Gender	0.169	3	0.056	0.831	0.478
Appearance × Gender	0.102	3	0.034	0.504	0.679
Voice × Appearance × Gender	52.140	9	5.793	85.526	0.000
$R^2 = 0.956$ (Adjusted $R^2 = 0.952$)					

Table 1 showing the impact of gender, appearance, and voice on television viewers. Source: (Xue et al., 2022).

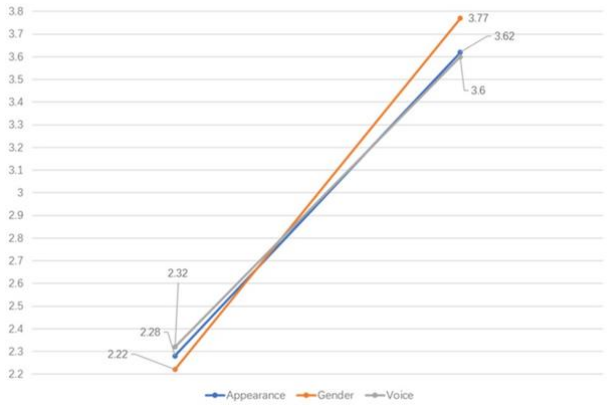

Figure 2. Chart showing the estimated mean of the variables. Source: (Xue et al., 2022).

5 Conclusion

The AI news anchors remain the most innovative transformations being made to the media industry in countries such as China, Russia, and Abu Dhabi. The growing demand for AI news anchors indicates that they are more cost-effective, efficient, and accurate in their presentations. This study examined the role of AI Digital Anchors in enhancing the user experience of news broadcasting, analyzing the interaction of AI anchors with the audience in live news programs. The study found that the appearance, voice, and gender of the AI news anchors play a significant role in enhancing the experience of the viewers during live news broadcasting. The study also found that AI news anchors are quick, tireless, and effective in presenting accurate news to the audience. The virtual anchors can read quickly and are less likely to make mistakes such as spelling and pronunciation errors. It also takes the AI news anchors about 10 minutes to learn the behaviors, lip movements, voice, and mannerisms of the real news anchors to mimic the same in their presentations during a live news broadcast.

Acknowledgement This article is submitted to this conference based on the MOU signed between International College of Digital Innovation (ICDI), Chiang Mai University, Chiang Mai, Thailand and Christ (Deemed to be University) Pune, Lavasa Campus, India.

References

[1[1] BBC News. (2023, November 8). China's Xinhua Agency unveils AI News presenter. BBC News. Retrieved from https://www.bbc.com/news/technology-46136504.

[2] Bendett, S., & Kania, E. (2019). A new Sino-Russian high-tech partnership. Australian Strategic Policy Institute, 29.

[3] Biswal, S. K., & Gouda, N. K. (2020). Artificial intelligence in journalism: A boon or bane? In Optimization in machine learning and applications (pp. 155-167). Springer, Singapore.

[4] Dean Roper, Editor-in-Chief of WAN-IFRA, mediamakersmeet.com, (June 2023)

[5] Gal, D. (2019). Perspectives and approaches in AI ethics: East Asia. Oxford Handbook of Ethics of Artificial Intelligence, Oxford University Press, Forthcoming.
[6] Gao, L., Zhou, T., Zhang, F., & Li, H. (2022, December). Application of New Media Technology in the Context of Artificial Intelligence-A Case Study of Guancha Two Sessions. In 2022 6th International Seminar on Education, Management and Social Sciences (ISEMSS 2022) (pp. 1294-1305). Atlantis Press.
[7] Guanah, J. S., Agbanu, V. N., & Obi, I. (2020). Artificial intelligence and journalism practice in Nigeria: Perception of journalists in Benin City, Edo State. International Review of Humanities Studies, 5(2).
[8] Handley, L. (2018). The world's first AI news anchor has gone live in China.
[9] Kuo, L. (2018). World's first AI news anchor unveiled in China. The Guardian, 8.
[10] Oxford Analytica. (2018). China's human-like AI news anchors underline risks. Emerald Expert Briefings, (oxan-es).
[11] Pashentsev, E. (2021, November). The Malicious Use of Artificial Intelligence through Agenda Setting: Challenges to Political Stability. In Proceedings of the 3rd European Conference on the Impact of Artificial Intelligence and Robotics ECIAIR (pp. 138-144).
[12] Qi, M. (2021, March). Influence of AI Synthetic Anchor on Broadcasting Major. In The International Conference on Cyber Security Intelligence and Analytics (pp. 391-398). Springer, Cham.
[13] Sun, M., Hu, W., & Wu, Y. (2022). Public Perceptions and Attitudes Towards the Application of Artificial Intelligence in Journalism: From a China-based Survey. Journalism Practice, 1-23.
[14] Venkatesh, D. A. N. (2018). Industry 4.0: Reimagining the future of workplace (five business case applications of artificial Intelligence, machine Learning, robots, virtual Reality in five different industries). International Journal of Engineering, Business and Enterprise Applications (IJEBEA), 26(1), 05-08.
[15] Wang, B., Mao, W., & Li, G. (2019). China's digital publishing moving towards in-depth integrated development. Publishing Research Quarterly, 35(4), 648-669.
[16] Wang, X. (2021). Research on the Training Model of Broadcasting and Hosting Talents under the Background of AI Anchors. Academic Journal of Humanities & Social Sciences, 4(5).
[17] Wang, X., & Zhu, F. (2022). The Application of Artificial Intelligence in AI News Anchor. In 2021 International Conference on Big Data Analytics for Cyber-Physical System in Smart City: Volume 1 (pp. 1093-1100). Springer Singapore.
[18] Wang, Y. (2021, May). Research on the Application of AI Anchors in TV Media under the Background of Artificial Intelligence. In 2021 2nd International Conference on Artificial Intelligence and Information Systems (pp. 1-4).
[19] Wang, Y. (2021, May). The Application of Artificial Intelligence in Chinese News Media. In 2021 2nd International Conference on Artificial Intelligence and Information Systems (pp. 1-4).
[20] Wiederhold, B. K. (2019). Animated News Anchors: Where to Next? Cyberpsychology, Behavior, and Social Networking, 22(11), 675-676.
[21] Xue, K., Li, Y., & Jin, H. (2022). What Do You Think of AI? Research on the Influence of AI News Anchor Image on Watching Intention. Behavioral Sciences, 12(11), 465.
[22] Yu, Y., & Huang, K. (2021). Friend or foe? Human journalists' perspectives on artificial intelligence in Chinese media outlets. Chinese Journal of Communication, 14(4), 409-429.