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AI-generated Content and Subcultural Influence: Career Dynamics of Middle-aged Female Streamers—A Case Study of Nayina on Douyin

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Abstract. The widespread application of artificial intelligence technology in the Internet field has triggered many changes in the cultural industry. In China, the deep integration of artificial intelligence technology and the live broadcast industry has brought new opportunities and challenges to the career development of middle-aged female network influencers. This paper takes Nayina, a well-known middle-aged female influencer on the Douyin platform, as a case study to explore the impact of artificial intelligence-generated content, fan culture and LGBTQ+ subculture on her career. The motivation of the study is to reveal how artificial intelligence-generated content reshapes the career trajectory of middle-aged female influencers and analyses its interactive relationship with network subcultures to fill the gap in the current research on middle-aged female influencers. The research method mainly adopts qualitative analysis, conducts a detailed case analysis of Nayina's career development trajectory, and combines literature review and data analysis. The results show that although AI-generated content can bring new career opportunities to middle-aged female influencers, it will also make them face more moral identity crises, especially under the instigation of spoof culture, leading to further deterioration of gender and age discrimination. This article argues that while AI technology gives creators new ways of expression, it also exacerbates the moral dilemma in online culture. In particular, middle-aged female influencers face the dilemma of traffic and professional dignity. The impact of AI-generated content is particularly significant. Therefore, in the future, the live broadcast industry should strengthen supervision of AI-generated content to safeguard creators' professional dignity and physical and mental health.

Keywords: AI-Generated Content, Middle-Aged Female Streamers, LGBTQ+ Subculture, Live Streaming Industry, Cyberbullying and Trolling, Career Development of Influencers

1. Introduction

In the contemporary era, society is gradually transitioning towards Web 3.0, with artificial intelligence (AI) playing a critical role in the iterative evolution of Internet technologies [1]. AI's influence has permeated various aspects of daily life. The arts and creative industries have grown more and more entwined with AI developments as the internet continues to flourish; one notable example of this convergence between internet technology and contemporary creative sectors is the live-streaming industry. In China, around 2018, platforms such as Douyin experienced explosive growth in the live-streaming industry, which continues to thrive and generate substantial economic benefits [2]. This growth has facilitated the emergence of numerous internet celebrities, establishing a large group of online influencers. With the rapid development of the live-streaming industry, AI technology has evolved in tandem, and the integration of these two sectors is becoming more apparent. This paper examines the relationship between AI-generated content and the career trajectories of internet influencers, utilising a case study approach to provide a focused analysis of this subject. The research primarily investigates the impact of AI-generated content and LGBTQ+ subcultures on the careers of middle-aged female internet celebrities in China and how these influences may be optimised for positive outcomes. The case study centres on Nayina, a middle-aged female streamer who enjoys significant popularity within the LGBTQ+ and youth communities on the Douyin platform. Nayina was selected due to her substantial research value and representativeness. Her early career success was primarily attributed to the use of AI face-swapping technology, which enabled her to attract a considerable following on platforms such as Douyin and Kuaishou. However, her notoriety expanded further as she became the target of fan-driven malicious attacks, defamatory edits, and vulgar AI-generated songs, ultimately cementing her reputation as a notorious middle-aged female streamer in China. Nayina's career trajectory highlights the challenges faced by

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middle-aged female streamers and raises important ethical and legal questions surrounding AI-generated content. Furthermore, it prompts a deeper exploration of the subcultures within China's LGBTQ+ community and abstract youth culture. This study investigates the connections between middle-aged female streamers' experiences, trolling culture, and AI-generated content through the case of Nayina.

2. Literature Review

2.1. The Predicament of Middle-Aged Female Streamers

In this study, the term middle-aged female streamer refers to women aged 40 and above, typically in their 50s, who are active on online streaming platforms. Middle-aged female streamers may be subject to more social pressures than younger ones in entertainment or social live streaming contexts. These pressures may include stereotypes, age discrimination, and concerns about attractiveness [3]. With the rapid development of China's live-streaming industry, middle-aged female streamers have increasingly found themselves trapped in moral and economic dilemmas. Gan described in previous research how a female streamer, to cater to her audience and financial interests, faces the risk of selling her soul and body [4]. Returning to traditional occupations becomes extremely difficult when these women choose to exit the live-streaming industry. The high income and freedom of live streaming make it challenging for them to adapt to a typical nine-to-five job. This phenomenon is not merely a result of individual choices; there are deep-rooted cultural and gender barriers at play. Heidi Wiig Aslesen et al. pointed out that gender roles and family expectations in patriarchal societies hinder women in the workplace and entrepreneurship, especially when a woman earns more than her male partner, often leading to deteriorating family relationships. These cultural barriers are also evident in the live-streaming industry [5].

Additionally, the influence of hegemonic masculinity in the live-streaming industry exacerbates the difficulties faced by women. Dy et al. highlighted that the online environment is unequal, as women face inequalities in social status and access to resources in digital entrepreneurship [6]. In addition to technical and financial assistance, successful digital business also needs a favourable social foundation, which frequently disadvantages women. Tan et al. discussed the phenomenon of *digital housewives*, in which female streamers commodify emotional labour, reflecting the neoliberal exploitation of labourers [7]. Even economically successful female streamers must confront the dilemma of emotional labour and personal identity. Ye and Tonny Krijnen further noted that while the live-streaming industry offers young women a path to economic advancement, their work is often gendered and stigmatized [8].

2.2. AI-Generated Content and Fan Culture

The rapid development of AI technology has sparked significant changes in fan culture. Lamerichs discussed the widespread application of generative AI within fan communities, where fans use AI to create new images, memes, and fan art, expanding their creative space. However, AI-generated content has also triggered debates over ethics and copyright [9]. Grossman et al. pointed out that AI-generated fake texts, audio, and videos can be used to spread misinformation or defamation, even leading to legal disputes, especially concerning copyright infringement [10]. In China, AI-generated *deepfake* technology has garnered widespread societal attention. De Seta mentioned that since 2018, deepfake content has evolved from experimental use by hobbyists to mainstream technology [11]. The rapid proliferation of this technology has led to a crisis of trust, particularly in fan culture. At the same time, AI technology has combined with traditional cultural forms, with parody culture being a typical example. Chen and Gong noted that parody, as a popular form of satire in China, uses AI-generated content to humorously reconstruct traditional cultural symbols, challenging and reshaping them within fan culture. Although AI-generated content has brought creative freedom, it also comes with ethical challenges. For instance, Zhang et al. discussed the ethical challenges in live streaming, particularly involving issues such as pornography, verbal abuse, and misleading advertising. These problems affect the healthy development of fan culture and could lead to more disputes and ethical issues due to AI-generated content [12].

2.3. Vulgar Culture and LGBTQ Subculture

The rise of AI-generated content and fan culture is not limited to mainstream culture; it has also had a profound impact on LGBTQ subcultures. In recent years, media regulation of LGBTQ-related content in China has intensified. The contraction of official policies and the decline in friendliness towards sexual minority groups have prevented sexual minority culture from growing in a more inclusive and open environment, which can lead to its unhealthy development. Ai et al. mentioned that queer influencers in China gain more social media exposure through vulgar performances while also using these performances to redefine gender and sexual orientation [13]. Choi and Luo pointed out that in China, heterosexual marriage is regarded as the foundation of social harmony, marginalising homosexual identities. Under immense social and moral pressure, sexual minorities often resort to vulgar culture as a means of self-expression [14]. Zhou studied how Chinese queer influencers gain online exposure by performing vulgar culture. The expression space for sexual minorities in China is limited, and they often challenge mainstream culture through vulgar performances [15]. Ai et al. noted that sexual minorities, through selective exposure to social

media, attempt to construct, deconstruct, and reconstruct public perceptions of their identities. In this process, vulgar culture has become an essential tool for them to fight for identity recognition and social acceptance. However, Hu et al. pointed out that the popularity of LGBTQ culture has not broken stereotypes about sexual minorities. Instead, it has formed new labels, linking LGBTQ groups with being "fun" and "fashionable" [16]. This cultural phenomenon has not only affected the self-expression of sexual minorities but has also further vulgarised their cultural symbols.

The spread of vulgar culture is not limited to sexual minorities but is also reflected across online culture. Zou discussed the rise of grassroots and parody culture, noting that young people express their resistance to mainstream culture through anti-establishment means, with parody culture becoming a symbol of counterculture [17]. Xu explored the gender image construction of female streamers in live streaming, where they use self-deprecation and image reshaping to cope with gender expectations from viewers. AI-generated content has also played an essential role in the LGBTQ subculture [18]. Hu et al. noted that LGBTQ youth seek support and role models on social media, using online activities to enhance their identity confidence. Social media has developed into a vital tool for people to understand who they are, with a special place for vulgar culture. Furthermore, the use of AI in fan culture has aided in the propagation of vulgar and parody culture. De Seta pointed out that the widespread use of AI deepfake technology has promoted the development of online humour and parody works, with the misuse of this technology raising moral and legal challenges [11].

2.4. Research Gap

Current research has significant gaps in several key areas. First, research on middle-aged female influencers is limited. Existing literature mainly focuses on the gendered presentation and labour dilemma of young female influencers on live broadcast platforms while ignoring the unique situation of middle-aged female influencers in the live broadcast industry. Second, there hasn't been a thorough investigation of the connection between middle-aged female influencers' professional advancement and AI-generated material. While the effects of AI technology on young influencers and virtual influencers have received a lot of attention, it is still unknown how these technologies will specifically affect middle-aged female influencers. Especially in China, there is a lack of targeted research into the effects of AI-generated content on the shaping of influencers' personal images, audience perceptions, and the ethical and legal disputes caused by it, such as privacy infringement, spoofs, and the spread of false information. In addition, there is still a lack of empirical research on the identity construction of middle-aged female influencers in the LGBTQ+ subculture, how they interact with fans, and how they gain social support through platforms. Finally, the impact of fan culture and vulgar culture on middle-aged female influencers has not been fully discussed. Although the interaction between fan culture and vulgar culture has triggered some academic discussions, most of these studies focus on young influencers. How middle-aged female influencers deal with malicious attacks and slander from fans in this vulgar culture, primarily when AI technology generates content that exacerbates the spread of vulgar culture, the relevant coping strategies and mechanisms have not been analysed in detail.

This study closes a gap in the literature by addressing middle-aged female anchors and their experiences in the context of AI-generated material, fan culture, the LGBTQ+ subculture, and parody culture. It explores the career development and social situation of this group. By analysing the application of AI technology on the platform and how it interacts with gender, age, and culture, this paper provides a new perspective for understanding the living status of middle-aged female influencers.

3. Permanent Ban: Face-Swapping and Moral Crisis

Nayina, born in 1967 in China, is a well-known online celebrity and singer in mainland China. Her multiple online personas, controversial career, and diverse musical works have attracted public attention. Nayina initially became popular on short video platforms Douyin and Kuaishou under the virtual identity *Russian Nana*. She used AI face-swapping technology to pretend to be a Russian woman and adopted an exaggerated foreign accent and a fictitious image to attract a large number of fans, mainly composed of middle-aged and elderly users. The content she posted often praised China and criticised Russia, while sharing so-called Russian folk stories. Over time, she monetised her fame by performing music and selling Russian-themed products, achieving considerable sales. However, as her number of fans grew, users began to question the authenticity of her identity, primarily because of her inconsistent accent and obvious use of face-swapping effects. This ultimately led to Douyin permanently banning her account.

Nayina's success with AI face-swapping technology embodies the power of technology in modern online entertainment. She attracted a large audience by pretending to be a Russian woman and successfully monetised. But this false identity and the use of national sentiment to hype topics gradually exposed problems. The audience's doubts about her authenticity, especially her obvious technical fraud and inconsistent performance style, made her quickly lose the public's trust. However, false identities can bring short-term traffic, and they will eventually cause a moral and identity crisis. To avoid similar career crises, content creators should maintain the transparency and authenticity of their identities when using AI technology. While attracting traffic, avoid using sensitive topics for hype, as this method can easily arouse public disgust and doubts, leading to the failure of careers. In addition, platforms should also strengthen supervision of false content, ensure that the use of AI technology complies with ethical standards, and maintain public trust in online content.

4. Unexpected Popularity: Relying on Subculture and Vulgar Culture to Gain Traffic

After her account was banned, Nayina quickly renamed herself Greater China Nana and turned her focus to interacting with the gay community in mainland China. She continued to use beauty filters but gave up her foreign accent. In November 2022, she released the song Love Like Fire [19]. Although initially ignored, the song gained attention after Nayina had a dispute with other online celebrities, which helped it gain popularity among the gay community. The song's simple melody, strong rhythm and catchy lyrics quickly made it a hit in gay bars, establishing Nayina as a queer idol in mainland China. Love Like Fire was popular on major short video platforms, sparking discussions about "rough production but catchy". Riding the wave of success, Nayina released more music and made public appearances, consolidating her position as a famous online celebrity in China.

Nayina's second rise relied on the popular trends of gay subculture and vulgar culture. Nayina's current Douyin username is Love Like Fire Nayina with more than 291,000 followers and 2.08 million likes, maintaining a high level of attention and traffic [20]. She quickly became popular among the gay community, relying mainly on catchy but simply producing songs and finding new traffic growth points in these specific groups. Although her works have been criticised as "rough" in the eyes of some viewers, her simple style and touching melodies have successfully captured the attention of her target group. Nayina has once again achieved fame growth through clever self-positioning and connection with specific subcultures. However, this strategy of relying on vulgar culture, while it can bring short-term traffic, may limit her career development in the long run, gradually causing her content to lose diversity and depth.

While a reliance on vulgar culture and subcultural traffic can propel Internet celebrities to rapid stardom, content creators should aim to enhance the quality of their work and steer clear of becoming only dependent on one type of entertainment for the purpose of their long-term career development. Nayina can consolidate her position in the LGBTQ+ subculture community by exploring more diverse content and a more varied creative style and avoid falling into the over-binding and dependence on vulgar culture.

5. Traffic Backlash: AI-Generated Content, Anti-Fan Culture, and Cyberbullying

After the release of *Love Like Fire*, Nayina's gay fans, especially her male fans, humorously asked her to release a follow-up song called Hate Like Ice. Surprisingly, Nayina took the joke seriously and released the song, which was widely ridiculed, with many calling it the end of her career. These further triggered trolls, and by October 2023, her trolls began asking her to release a song called *Bei like Ta* - a crude reference to the female anatomy. In a live broadcast, Nayina angrily confronted these trolls, shouting: "If you want to hear Bei like Ta, then go home and sing it with your parents. It will definitely be a hit!" This sentence was edited and widely circulated by her critics [21].

Beginning in October 2023, Nayina's trolls used AI to generate a series of defamatory content, turning her into an abstract symbol in a growing subculture. These included false rumours of multiple pregnancies, allegations of an affair with her manager, photoshopped images of her head placed on a dog, a number of false death announcements generated by AI, and AI-generated videos of her kissing her manager [22-25]. AI was also used to create vulgar parody songs, such as *Big Beta* and even a remix of *Heya* by the Korean pop band IVE, renamed *He Like Ya* [26]. These AI-generated videos went viral among young internet users in the summer of 2024, especially among middle and high school students, who joined the troll frenzy, mocking Nayina and demanding that she release *Bei like Ta* immediately [27]. While these parodies brought Nayina a lot of attention and online traffic, they also led to a large number of insults, harassment, and frequent reports, forcing her to constantly switch between platforms.

Nayina's most popular video on the Bilibili platform (often referred to as China's version of YouTube) is titled: *Compilation of Iconic Moments from Nayina, the New Meme Queen: Check Out All 18 of Her Most Famous Moments in One Go.* This video, posted on July 26, 2024, features a summary of Nayina's most viral iconic moments. The series has garnered an impressive 497,000 views, with over 3,000 bullet comments (real-time comments) and more than 1,000 standard comments [28]. Table 1 is the English translation of the top 10 most liked comments and the emotional tendency of the comment:

 Table 1. The Current State of the Comment Section on Nayina Fan-Made Videos

1. Nana is just so entertaining. You won't find another 'gay queen' (referring to a middle-aged female streamer who's wildly popular among China's LGBTQ+ community) who can keep creating buzz and trends like her. Life	Positive
would be boring without Nana.	
2. Say what you want, but for someone her age, she's still got a lot of energy.	Positive
3. Washed up, nobody cares	Negative
4. The gays love watching Nayina lose her cool, but she's still raking in the cash.	Neutralised
5. Nayina's comeback was all thanks to that last pregnancy meme. She was starting to fade, and the whole 'Bei Like Ta' meme was getting old. Then someone photoshopped a series of pregnancy pics of her, and she blew up again. After that, people started writing songs about her—it's like she has some crazy luck!	Neutralised
6. Nayina's top three dramas: 'Fake Death,' 'Fake Pregnancy,' and 'Fake Singing.'	Negative

Table 1. (continued).

7. What makes her so annoying is that she's just a greedy fraudster, but she insists on pretending to be some noble celebrity.	Negative
8. Nayina's funny at first because she sounds so uneducated, but over time, her malicious and money-grabbing intentions become clear. She's fundamentally different from other heroes—don't confuse the two.	Negative
9. If I could live for 200 years, all of Europe would bow beneath my Beta! — Nayina	Negative
10. A man-woman of three nationalities: Russian, Chinese, and American.	Negative

Nayina became a significant target of AI-generated content and cyberbullying. Her image was not only repeatedly slandered by the parodies but also reshaped in various vulgar ways. This phenomenon reveals the seriousness of the abuse of AI technology, especially with the support of black fan culture, which further promotes parody and cyberbullying. Malicious content became increasingly challenging to manage due to the quick dissemination of AI-generated information and the involvement of younger demographics. In addition to having an impact on Nayina's employment, this also puts her mental health at risk, particularly in light of the regular cyberbullying and ongoing harassment she experiences and the dearth of appropriate corrective action. To deal with the spoofs and cyberbullying of AI-generated content, Nayina can pursue relevant responsibilities through legal channels and cooperate with the platform to increase the review and deletion of malicious content. At the same time, she can resist the attacks of black fan culture and reshape her professional image by publishing positive content and enhancing interaction with loyal fans. In addition, the platform should strengthen the supervision of AI-generated content to ensure that malicious defamation and vulgar content are no longer rampant and protect the rights and interests of creators and their professional safety.

6. AI Spoofs: New Challenges of Middle-Aged Female Influencers

Nayina's career reflects the unique challenges middle-aged female influencers face in the live broadcast industry. While AI technologies provide them with new ways to attract audiences, they also exacerbate their career development difficulties. Nayina became famous through AI face-changing technology, and many problems accompanied her popularity. Her popularity in the LGBTQ+ subculture community is not only due to her live broadcast style but also because she has become the object of spoof culture [29]. Many vulgar spoof works based on her have been born, and AI technology has made producing such spoof content faster and more widely spread. Middle-aged female influencers must re-examine their balance between traffic and professional dignity and avoid sacrificing dignity and image in pursuit of traffic. Gender and age issues have also further exacerbated the difficulties faced by middle-aged female influencers in the live broadcast industry [30]. The rise of AI-generated content is particularly targeted at gender and age groups, and Nayina is one of the typical victims. Her image has not only been spoofed as a vulgar symbol but also attacked with sexual innuendo and body shaming. The dual discrimination of age and gender makes middle-aged female influencers often face market aphasia and vulgar treatment. The spoof subculture in the LGBTQ+ subculture has exacerbated this phenomenon. Some viewers utilize them as amusement resources, harming their professional growth and further defaming their reputation. While AI technology has made it easier to create content on the internet, its moral quandary is coming into sharper focus. Artificial intelligence (AI)-generated content is being used widely, which has increased the frequency of online spoofs and defamation, particularly targeting middle-aged female Internet celebrities. In the case of imperfect platform supervision, spoof content can spread rapidly, and it is difficult for Internet celebrities to take adequate measures to deal with infringement. These phenomena reveal that the abuse of AI-generated content not only affects career development but also has a severe negative impact on the mental health of Internet celebrities.

7. Conclusion

This study explores the complex impact of AI-generated content on the career development of middle-aged female influencers in China by analysing the career of Douyin celebrity Nayina. The advancement of AI technology has provided middle-aged female influencers with unprecedented creative tools, helping them break through technical and creative barriers and quickly gain a lot of attention. However, spoof culture exposes the conflict between the pursuit of traffic and the preservation of middle-aged female influencers' dignity, since technology not only presents opportunity but also makes them the subject of hostile attacks and humiliation.

Taking Nayina as an example, she gained fame through AI face-changing technology and successfully attracted many fans, especially in the LGBTQ+ community. However, her career trajectory clearly reveals that when AI-generated content is abused, it not only brings more significant uncertainty to the career of middle-aged female influencers but also puts them in the dilemma of being spoofed and distorted. The popularisation of AI technology has exacerbated gender and age discrimination in the careers of middle-aged female influencers. Especially in the context of the prevalence of online spoof culture, their images are often simplified into gendered and age-based mocking symbols, which seriously affects their career development and personal dignity.

Through the case of Nayina, this study not only examines in-depth how AI-generated material affects middle-aged female influencers' careers, but it also highlights the serious ethical conundrum that inadequate platform oversight and technological misuse present for them. The article emphasises that AI technology is both a catalyst for career transformation and a promoter of spoof culture and false information dissemination, and this dual role has a particularly significant impact on middle-aged female influencers, this study not only explains the wide-ranging impact of AI technology on the live broadcast industry through the analysis of Nayina's case but also explores the career challenges of middle-aged female influencers in the Internet era from multiple perspectives of gender, age, sexual orientation and technology, and also reflects on the subculture of sexual minorities in China.

This study focused on the case of Douyin celebrity Nayina; however, a key limitation is that the study's narrow scope, focusing on Nayina alone, may not fully capture the different experiences of middle-aged female influencers across platforms and regions. In addition, this study did not quantitatively measure the extent to which AI-generated content impacted career trajectories; instead, it relied on qualitative analysis. Future research could include a broader sample of influencers and employ quantitative methods to examine the correlation between AI-generated content, audience acceptance, and careers.

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