

Interactions in Game Live Streaming

-- A Literature Review and Research Agenda

Yunjun Guo

School of Economics and Management, Chongqing University of Posts and
Telecommunications, Chongqing 400065, China

1129369470@qq.com

Abstract

As a new form of social interaction, live game streaming has received much academic attention. It is summarized from three aspects of the game live streaming, virtual gifting, and Danmaku. The game live streaming focuses on the development of the game industry and the issues of user behavior motivation. Virtual gifting focuses on behavioral reasons and the development of business models. Danmaku focuses on economic value and practical value. This article summarizes the current research status and future research agenda.

Keywords

Game Live Streaming; Virtual Gifting; Danmaku.

1. Introduction

Game live streaming refers to live streaming based on game-related content [1]. It is a new type of social media that has become established with the development of the game industry [2]. The game players share their real-time video content in the live streaming, accompanied by real images of them [1,3]. Viewers can watch in real-time through the live streaming channels and simultaneously communicate with sharers or other viewers [4]. According to the 44th "Statistical Report on China's Internet Development Status" released by the China Internet Information Center (CNNIC) in August 2019, as of June 2019, the number of live streaming users reached 433 million, accounting for 50.7% of the total Chinese Internet users [5].

The huge user scale can bring a lot of traffic and realizable opportunities for the game live streaming platforms. In the game live streaming, functions such as comments, subscriptions, collections, likes, virtual gifting, and games have been added to facilitate the real-time interaction between viewers and streamers. At present, the user communication methods on the Chinese game live streaming platform are mainly virtual gifting and Danmaku. Virtual gifting refers to the behavior of viewers giving virtual gifts to the streamer or other viewers, including free and paid gifts [2]. Virtual gifting revenue is the main source of revenue for game live streaming platforms. Danmaku is a special form of online comments, consisting of instant comments from viewers, which can be quickly swiped across the live screen like bullets [6]. Virtual gifting and Danmaku are the main user interaction methods in current game live streaming. They can help the platform understand, identify and locate user groups, and help the platform portray the user's image, so as to innovate and formulate operational plans to achieve greater profits.

2. Game Live Streaming

Game live streaming refers to the web live based on game content. The connection between game live streaming and the game industry is the first to receive attention. Johnson and

Woodcock proposed that live streaming is a major new force in the gaming industry. It establishes new connections between developers and influencers and changes people's expectations of games and game design [2]. Sjöblom et al. explored how game live streaming has successfully shifted media consumption behavior from large commercial organizations to content created by individuals [7].

The behavior and motivation of game live viewers are also the focus of scholars. Oh and Choi analyzed the interaction between the viewers and the streamer from the aspects of authorization, social interaction, interest changes, prop use, and live streaming management [3]. Matsui et al. (2020) found that the process of live-streaming the game seriously affected the streamer's game performance, but also increased the time spent playing the game [8]. Sjöblom et al. proposed five live streaming users' viewing motivations, including cognition, emotion, personal integration, social integration, and tension release [9]. Lim et al. verified that both audience psychology, personal identity, and emotional engagement, increase viewers loyalty through super-social relationships [10].

3. Virtual Gifting

Virtual gifting means that users purchase virtual gifts and give them to others online. It has become a network business model and has attracted attention. Chen and Xiong pointed out that the development of the virtual gifting model can be based on the construction of the relationship between the viewer and the streamer, the streamer and the guild, and the streamer and the streamer [11]. Zhang et al. pointed out that virtual gifting is the commercialization of virtual relationships, and there is a hegemonic structure of personal perception and virtual gifts. Scholars are concerned about why people give virtual gifts [12]. Lee et al. found that live-streaming viewers are motivated by reciprocal behavior to engage in various positive interactions with the streamer and other viewers [13]. Wohn and Freeman (2020) proposed that the audience's emotional attachment to the live streaming content and the appreciation of live streamers promote their virtual gifting behavior [14].

4. Danmaku

Danmaku refers to comments made by users of social media networks, which can fly quickly across the screen. The economic value and practical value related to Danmaku have received much attention. Cao found that live streaming Danmaku transforms social inequality into money flow, which has both symbolic value and economic value [15]. Wu et al. found that there are more language patterns and a higher knowledge-sharing atmosphere in Danmaku comments [16]. Zhang et al. proposed that Danmaku related to video content can improve students' social presence, learning satisfaction, and academic performance, but they can increase students' cognitive load [17]. Wei et al. found that when the Danmaku is inconsistent with the type of advertisement, it can improve the consumer's favorable attitude towards the advertisement by improving social presence [18].

5. Conclusion

This research reviews the research related to game live streaming, virtual gifting, and Danmaku. The results show that, the research on the viewers' behavior of the game live streaming needs to be strengthened, and the interactive behavior characteristics and motivation need to be specifically explored. Scholars pay less attention to the social meaning of virtual gifting as an interactive behavior and ignore the influence of psychological connections between users on behavior. The research on Danmaku currently focuses on the exploration of group culture and application fields and lacks attention to the real-time interaction motivation of live streaming

users. In addition, a comparative study of the two main user interaction behaviors in the game live streaming needs to be supplemented. Virtual gifting and Danmaku are both highly influential interaction behaviors in the game live streaming, and the correlations or differences between them should be worth discussing.

References

- [1] Hamilton W A, Garretson O, Kerne A. Streaming on twitch: fostering participatory communities of play within live mixed media[A]. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems[C]. New York: ACM, 2014:1315-1324.
- [2] Johnson M R, Woodcock J. The impacts of live streaming and Twitch. tv on the video game industry[J]. Media, Culture & Society, 2019, 41(5): 670-688.
- [3] Oh S K, Choi H J. Broadcasting upon a shooting star: investigating the success of Afreeca TV's livestream personal broadcast model[J]. International Journal of Web Based Communities, 2017, 13(2): 193-212.
- [4] Yu E, Jung C Y, Kim H J, et al. Impact of viewer engagement on gift-giving in live video streaming [J]. Telematics and Informatics, 2018, 35: 1450-1460.
- [5] CNNIC. The 44th China Internet Development State. Beijing: China Internet Information Center, 2019.
- [6] Zhou J L, Zhou J, Ding Y, Wang H S. The magic of Danmaku: A social interaction perspective of gift sending on live streaming platforms[J]. Electronic Commerce Research and Applications. 2019, 34:100815-100823.
- [7] Sjöblom M, Törhönen M, Hamari J, et al. The ingredients of Twitch streaming: Affordances of game streams[J]. Computers in Human Behavior, 2019, 92: 20-28.
- [8] Matsui A, Sapienza A, Ferrara E. Does Streaming Esports Affect Players' Behavior and Performance? [J]. Games and Culture, 2020, 15(1): 9-31.
- [9] Sjöblom M, Hamari J. Why do people watch others play video games? An empirical study on the motivations of Twitch users[J]. Computers in Human Behavior, 2017, 75: 985-996.
- [10] Lim J S, Choe M, Zhang J, et al. The role of wishful identification, emotional engagement, and parasocial relationships in repeated viewing of live-streaming games: A social cognitive theory perspective[J]. Computers in Human Behavior, 2020: 106327.
- [11] Chen Y S, Xiong F. The Business Model of Live Streaming Entertainment Services in China and Associated Challenges for Key Stakeholders[J]. IEEE Access. 2019,7: 116321-116327.
- [12] Zhang X X, Xiang Y, Hao L. Virtual gifting on China's live streaming platforms: hijacking the online gift economy[J]. Chinese Journal of Communication. 2019,12(03):340-355.
- [13] Lee Y C, Yen C H, Wang D, et al. Understanding How Digital Gifting Influences Social Interaction on Live Streams [C]// Proceedings of the 21st International Conference on Human-Computer Interaction with Mobile Devices and Services. 2019: 1-10.
- [14] Wohn D Y, Freeman G. Live Streaming, Playing, and Money Spending Behaviors in eSports[J]. Games and Culture, 2020, 15(1): 73-88.
- [15] Cao Xuenan, Bullet Screens (Danmu): Texting, Online Streaming, and the Spectacle of Social Inequality on Chinese Social Networks [J]. Theory, Culture & Society. 2019, 0(0):1-12.
- [16] Wu Q, Sang Y, Huang Y. Danmaku: A New Paradigm of Social Interaction via Online Videos[J]. ACM Transactions on Social Computing, 2019, 2(2): 1-24.
- [17] Zhang Y, Qian A, Pi Z, et al. Danmaku Related to Video Content Facilitates Learning[J]. Journal of Educational Technology Systems, 2019, 47(3): 359-372.
- [18] Wei L, Sun T, Liu B. Exploring the Effect of Incorporating Danmaku into Advertising[J]. Journal of Interactive Advertising, 2019: 1-16.