A Study on the Influential Factors of One-person Game Broadcasting Platforms' Attributes

Myeong Seob SHIN, Hyung Ro OH, Yeong-Ju LEE

Department of Media & Contents Policy, Seoul National University of Science and Technology, 232 Gongneung-ro, Nowon-Gu, Seoul 01811, Korea
(received December 2, 2021; revised December 10, 2021; accepted December 22, 2021; published December 30, 2021)

ABSTRACT

The viewing of game broadcasting, a content that is drawing attention in the one-person media market, which is showing rapid growth in the aftermath of COVID-19, will be related to the nature of the Internet broadcasting platform on which it is transmitted. Multiple regression analysis was conducted to determine the motivation of one-person game broadcasting and to verify the impact of the motivation and the user's characteristics on the characteristics of the platform and the user's attributes. The result shows that the interaction between participants, the convenience of the platform and the speed of information delivery are important for users whose game contents are viewed through the Internet broadcasting platform. These attributes are expected to be applied in the area of Metaverse, where the importance of greater data transmission and communication is emphasized, and this paper will provide practical implications for the development of game broadcasting platforms that will expand further with Metaverse in the future.

Key words: Game Broadcasting, One-person media market, Online Platform, Metaverse

1. Introduction

As the one-person media market grows rapidly due to the development of ICT and the universalization of smart terminals, competition between Internet broadcasting and platforms that transmit it is intensifying. Internet broadcasting platforms are showing growth in the aftermath of COVID-19 that occurred in 2020. Afreeca TV, a domestic Internet broadcasting platform, increased 43.5% and 85.29% year-on-year to 65 billion won in sales and 18.9 billion won in net profit in the second quarter of 2021, respectively[1]. The YouTube utilization rate also increased from 47.8% in 2019 to 62.3% in 2020[2], and the viewing time of Twitch TV, a specialized game broadcast, also increased by more than 27% compared to the previous year[3].

The rapid growth of the one-person media market is because it is easy to enter the market

---

* Correspondence to: Yeong-Ju LEE, roselee@seoultech.ac.kr

and has the advantage of being able to communicate with users in a free creative environment. There are also various genres such as games, eating shows, beauty, kids, and daily life. Among them, the game allows the host to focus on the fun of watching the game play video while relaying or playing the game [4].

With the popularization of "watching" games, teenagers are watching games the most on the online video platform [5]. The online video platform has a bidirectional characteristic of production and consumption[6] at the same time, and game broadcasting, which actively interacts between creators and viewers, is also expanding into the metaverse area [7]. In other words, as it evolves from a "watching" game to a "participating and playing" game, interaction with users becomes more active and immersion in the game is growing.

Until now, research related to Internet game broadcasting has been conducted on factors that influence the motivation or viewing of one-person game broadcasting[8][9][10], and viewer attitudes such as viewing behavior and viewing satisfaction by paying attention to the characteristics of game creators[11][12]. In addition, research was conducted to analyze content within the platform[13], and consideration was also made on the viewing environment such as comparing personal broadcasting platform technology with application user experience research[14][15].

Until now, research on one-person game broadcasting has been mainly conducted on the characteristics of viewers and creators or the relationship between them, but studies focusing on the attributes of the platform are insufficient. Therefore, this study aims to analyze the motivation to watch one-person game broadcasting, examine the influence of viewing motivation and user characteristics on the platform's own attributes and platform user attributes, and present

implications for the development of game broadcasting platforms.

2. Existing literature research

2.1 Internet game broadcasting platform and characteristics of game broadcasting

Based on the global market, Twitch TV has the highest share of Internet game broadcasting. Based on viewing time in the first quarter of 2021, it showed a 72.3% market share. On the other hand, YouTube gaming is 15.6% and Facebook gaming is 12.1%, which is a big difference [16]. On the other hand, when limited to the domestic market, Afreeca TV is about 120,000 and Twitch is about 130,000 [17].

First, Twitch TV was created as a game-only platform when it was divided into "Twitch.tv," and began to expand its scope to various categories [18]. Meanwhile, game broadcasting accounts for 64% of the total on Afreeca TV [19], founded a professional game team (20), and hosts a game competition where only Afreeca TV BJs can participate [20]. YouTube has the largest platform itself, but has a low market share in the real-time game broadcasting market [22].

Internet broadcasting is popular when real-time communication is possible and the number of concurrent users is high [23]. Viewers have fun participating in the broadcast as well as when real-time interaction is possible [24]. In addition, viewers interact with the communicator through sponsorship, which sponsors for reasons such as self-satisfaction, quasi-social relationships, and pure altruistic motives [25].

2.2 Motivation for viewing a one-person broadcasting

one-person game broadcasting refers to the

provision of video services by an individual creator in real-time transmission or upload after recording. There are types of communicating and sharing the game process through chatting with viewers while playing games, types of unboxing reviews to introduce and review new games, sponsors, and types of relaying game plays in e-sports games [8].

It appears that the motivation for viewing one-person media includes factors such as providing rest, information, convenience of use, social relations, resolving boredom, and pursuing information, which are the motivation for viewing existing media [26]. Factors such as information, entertainment/rest, habit/time skipping, BJ interactivity, and differentiation were identified [27].

The motivation to watch one-person game broadcasts turned out to be longing for identification, pursuit of entertainment, spending time, and pursuit of information, and the motivation to pursue entertainment that values experience motivation such as identification desire, enjoyment, and fun through interaction with communicators [10]. It also watches game broadcasts to provide information about the game, pursue fragmentary fun, and relieve stress of playing directly, and the higher the motivation for viewers to participate, the greater the loyalty and willingness of viewers to sponsor [28]. Kim Yu-mi and Kim Sun-kyun (2020) largely divided the viewing factors of one-person game broadcasts into content factors, communicator factors, and interaction factors [8][29], and Sung Min-je et al. (2018) divided them into interaction, viewing empathy, opinion exchange, Information-seeking, and entertainment [30].

2.3 Characteristics of viewers of a one-person game broadcasting

In the following, we will examine the relationship between viewer characteristics such as viewer age, Internet usage time, and the number of simultaneous viewers and the use of one-person game broadcasting.

2.3.1 Viewers' age

The percentage of people who use game broadcasting platforms more than once a week is 83.3% in their teens, 85.3% in their 20s, and 83.9% in their 30s, and the rate of use of game broadcasting platforms in their teens to 30s is high[31]. It can be seen that the lower the age, the higher the degree of use of personal broadcasting [10].

2.3.2 Average viewing time of game broadcasting

Personal broadcasting has a higher degree of immersion than other contents, so the usage time is longer [32]. 50.8% of users watch for 1 to 2 hours, and 43.9% watch for more than 2 hours [11]. In particular, heavy users with a lot of viewing time showed higher motivation to use personal broadcasting [33], and the more they watched game broadcasts, the higher their immersion in the broadcast.

2.3.3 Number of concurrent viewers

Social viewing refers to the activity of exchanging information and sharing opinions among viewers who watch the same broadcast on the Internet while watching TV [34]. On a one-person game broadcasting platform, viewers form a virtual community by interacting with an unspecified number of other viewers watching the same broadcast [35]. Even if it is not an individual's preferred content, if there are many people who watch it at the same time, the possibility of viewing increases [36] and the more social viewing increases, the more immersion in the conversation increases [34].

2.4 Internet broadcasting platform attributes

Game broadcasting platforms are investing

enormous capital to secure exclusive broadcasting rights for e-sports leagues of popular games and attract popular game streamers [37]. Park Joo-yeon and Park Soo-cheol (2018) derived platform selection factors such as ease of use, expression/sympathy, time-sending, new enjoyment, and information/utility by combining user satisfaction factors and appropriate theories [38]. Choi Hwa-young and Ha Seung-tae (2021) also derived factors such as technical convenience, ad avoidance possibility, user bond, content usefulness, service reliability, and information delivery speed [39].

In this study, the platform itself is divided into attributes of one-person game broadcasting platform selection factors and attributes of viewers using the platform, and convenience, information delivery speed, Possibility to avoid advertising, and satisfaction with recommended broadcasting are the platform's attributes.

2.4.1 Platform's own attributes - Convenience

Convenience is the degree of convenience that viewers feel in the process of using the platform. The perceived ease of use has a positive effect on the satisfaction of use when using OTT services [40]. Recognized ease of use means "the degree to which much effort is not required to use the information technology system" [41]. It was found that the perceived ease of use in IPTV, smartphone, etc. is a highly correlated factor with the attitude and intention to use [42][43].

2.4.2 Platform's own attributes - speed of information delivery

The speed of information delivery means whether the platform provides the desired information quickly and smoothly [39], real-time streaming speed or broadcast delivery speed, and how fast viewers' responses are delivered in real time. The more immediate the communicator in the broadcast responds to the needs of viewers, the smoother the interaction is [44] and the

immediate response improves the efficiency and effectiveness of communication [45].

2.4.3 Platform's own attributes - Possibility to avoid advertising

The possibility of avoiding advertisements refers to factors that can be avoided or viewed without restrictions on advertisements when watching videos[39]. As the congestion of advertisements increases, it makes them avoid advertisements [46]. Some platforms employ compulsory techniques that allow users to view content only by watching advertisements [47], but many viewers not only try to avoid sending advertisements they do not want, but are often reluctant to send advertisements.

2.4.4 Platform's own attributes - Satisfaction with recommended broadcasts

The curation service is a service that provides content that users want based on the platform user's consumption and viewing experience [48]. Since the recommendation combination is derived based on the consumer's historical data, the greater the size of the entire consumer, the better the accuracy of curation [49]. Netflix users recognize content curation services as a major attractive element of Netflix [49].

2.4.5 Platform User Attributes - User Bonds

As users participate in community activities, a sense of belonging to the community naturally occurs [50], which is a major reason for Internet personal broadcasting users to continue to use the platform [39]. The sense of belonging of the community is the feeling of sharing a sense of solidarity with other users in the community [51], which is the basis for distinguishing it from other groups and creating identity.

2.4.6 Platform User Attributes - Expressionability

Viewers use Internet broadcasting to freely express and share their minds or thoughts [38]. In particular, express the opinions of a small number of people who have deviated from the

conventional wisdom or prejudice of the majority of society [52]. It is difficult to use in traditional broadcasts, is not polite, and informal expressions also give a friendly feeling [53].

2.4.7 Platform User Attributes - chatting pleasure

In Internet broadcasting, viewers can communicate with other viewers as well as communicators. By forming a virtual community, a network of people who communicate with bonds on the Internet [54] viewers experience more real than real [35].

Watch it through chatting on a one-person game broadcast.

They have the feeling of participating in the game by expressing emotions or thoughts [9]. For example, when a communicator plays exciting music, viewers enjoy typing "one", "two" in a chat, or entering the shape of twitching their hips in the form of '))()()(..)...' [55].

3. Research questions and research methods

3.1 Research question

This study aims to examine the factors that users who watch Internet game broadcasts consider when using the platform. In addition, it is estimated that the factors considered will vary depending on the users' motivation to watch game broadcasts. To this end, first, I would like to examine the motivation to watch one-person game broadcasts.

Research Question 1. What is the motivation for watching a one-person game broadcast?

Next, we would like to find out how viewing motivation and user characteristics affect the game broadcasting platform's own attributes and platform user attributes. User characteristics were examined

by the viewer's age, average viewing time per day, and the number of simultaneous viewers. Based on existing studies, the platform's own attributes were classified into four categories: convenience, information delivery speed, Possibility to avoid advertising, and satisfaction with recommended broadcasting, and platform user attributes were classified into three categories: user bond, expressiveness, and chatting pleasure.

Research Question 2. How does the motivation and user characteristics of one-person game broadcasts affect the platform's own attributes (convenience, speed of information delivery, possibility of avoiding advertisements, satisfaction with recommended broadcasts)?

Research Question 3. How does the motivation and user characteristics of one-person game broadcasts affect the platform user attributes (user bonds, expressiveness, and joy of chatting)?

3.2. Research method

3.2.1 The operational definition of the main variable

The questionnaire items used in this study to find out the motivation to watch game broadcasts are shown in Table 1.

Next, in order to measure convenience, which is a sub-factor of the platform's own attribute factors, it consisted of three questions: 'Easy to use', 'Easy to use', and 'Easy to access' (Cronbach α =.789). The speed of information delivery were investigated through questions such as 'real-time streaming speed is fast', 'receiving broadcasts in real-time is fast', and 'viewer reactions are fast in real-time' (Cronbach α =.758). The possibility of avoiding advertisements was measured by items such as 'Can avoid advertisements' and 'Can watch advertisements without restrictions' (Cronbach α =.857). Satisfaction with the recommended broadcast consisted of items such as 'I am interested in the recommended broadcast' and 'I

feel satisfied after watching the recommended broadcast'. (Cronbach α =.756).

Table 1. Questionnaire about the motivation for watching game broadcasting

questionnaire	Reference
To get information about the game that you play	
To get information about new games that you don't play	
To get new knowledge about games	
To get useful information about the game	
Game broadcasting is fun	
Can enjoy the game broadcasting without any pressure	
Communicator's game broadcast is fun	[9][10]
To relieve stress	[27]
The communicator responded quickly to my request	[28][29]
To communicate with the communicator	
I wanted to be like a communicator	
To sponsor the communicator (star balloons, donations, etc.)	
If you watch the same broadcasting with other viewers, you become more immersed.	
I wanted to talk with other viewers on the same broadcasting.	
Time flies when you watch game broadcasting	
habitually	

In order to measure user bonds, which are sub-factors of platform user attributes, two questions were investigated: "I feel the same sense of identity as platform users" and "I feel the same sense of belonging as platform users" (Cronbach α =.801). It was measured with two questions: "I can express my mind to other users" and "I can share my thoughts with other users" (Cronbach α =.799). Chatting was measured in three categories, including "It's fun to watch the chat of broadcast viewers," "It's fun to participate in the chat," and "It's fun to communicate with broadcast viewers" (Cronbach α =.758). All questions used a 5-point

Likard scale.

3.2.2 How to investigate

A survey was conducted to solve the research problems presented above. Teenage viewers are the main viewers of game broadcasting, but they were excluded due to difficulties in online surveys. A survey was conducted with 800 one-person game broadcast viewers in their 20s and 30s. Respondents were restricted to watching at least one of the three platforms: Afreeca TV, Twitch TV, and YouTube live streaming. The survey was conducted for a week from August 20 to August 27, 2021. The final number of respondents included in this survey was 513, excluding 287 who were not aware of whether communicators broadcast on other platforms besides the platform they mainly watch. This is because if the respondent perceives that the corresponding communicator broadcasts only on the main viewing platform, the factors influencing the platform selection may be different.

The demographic characteristics of the respondents included in the final analysis were 267 (52.0%) in their 20s and 246 (48.0%) in their 30s, while 295(57.5%) were male and 218(42.5%) were female. In addition, in terms of education, college graduates accounted for the largest portion with 361 (70.4%), followed by college students with 83 (16.2%).

Table 2. Demographic Characteristics of Respondents

	Category	Frequency	%
Age	1992 ~ 2001 (20's)	267	52.0
	1982 ~ 1991 (30's)	246	48.0
	Total	513	100.0
Gender	Male	295	57.5
	Female	218	42.5
	Total	513	100.0
Education	Middle/High School Graduation	40	7.8
	attending college	83	16.2
	college graduation	361	70.4
	Master's course or higher	29	5.7
	Total	513	100.0

The game broadcasting platform mainly watched by respondents was 137 Afreeca TV (26.7%), 109 Twitch TV (21.2%), and 267 YouTube real-time streaming (52.0%), exceeding the majority of YouTube real-time streaming users. The number of days to watch weekly broadcasts was the largest with one to three times a week (35.5%), The average daily viewing time of game broadcasting was found to be between 30 minutes and 1 hour the most(40.0%). <Table 3> showed the largest number of simultaneous viewers of game broadcasts, with 151 (29.4%) with more <Table 3>.

Table 3. Characteristics of Respondents Viewing Game Broadcasting

	Category	Frequency	%
viewing platform	Afreeca TV	137	26.7
	Twitch TV	109	21.2
	Youtube live streaming	267	52.0
Number of days viewed weekly	Everyday	152	29.6
	4-6 times a week	179	34.9
	1-3 times a week	182	35.5
Average view time per day	less than 30 minutes	149	29.0
	30 minutes to 1 hour	205	40.0
	1 hour or more	159	31.0
Number of concurrent viewers of the main watched game broadcasting	500 or less	54	10.5
	501 to 1000 people	137	26.7
	1001 to 1500 people	117	22.8
	1501 to 2000 people	54	10.5
	2001 or more	151	29.4

Exploratory factor analysis was conducted using the Verimax rotation extraction method to analyze the motivation to watch one-person game broadcasts, and multiple regression analysis was conducted to analyze the effect of viewing motivation and user characteristics on platform attributes. For statistical analysis and processing of data, SPSS version 25.0 was used.

4. Research results

4.1 Motivation for watching a one-person game broadcast

As a result of analyzing the respondents' motivation factors for watching one-person game broadcasts, a total of three factors were extracted based on the eigenvalue of 1.0, and the total explanatory variance was 61.75%. The factor load, which means the correlation between each factor and variable, was appropriate at. 4 or higher, and

Table 4. Result of analysis of factors of viewing motivation

Metrics	Interaction	fun pursuit	information seeking	Cronbach's α
I wanted to be like a communicator	**.803**	-.069	.213	
I wanted to talk with other viewers on the same broadcasting.	**.797**	.084	.125	
To sponsor the communicator (star balloons, donations, etc.)	**.796**	-.163	.123	
To communicate with the communicator	**.758**	.133	.224	.873
If you watch the same broadcasting with other viewers, you become more immersed.	**.685**	.290	.144	
The communicator responded quickly to my request	**.680**	.174	.271	
Can enjoy the game broadcasting without any pressure	-.088	**.829**	.164	
Game broadcasting is fun	-.074	**.828**	.097	
Communicator's game broadcast is fun	-.003	**.782**	.127	.805
To relieve stress	.194	**.690**	.033	
Time flies when you watch game broadcasting	.298	**.567**	.159	
habitually	.404	**.452**	.054	
To get new knowledge about games	.171	.127	**.828**	
To get information about the game that you play	.218	.122	**.814**	.823
To get useful information about the game	.177	.106	**.808**	
To get information about new games that you don't play	.219	.148	**.690**	
Eigenvalue	3.878	3.220	2.781	
Variance (%)	24.239	20.125	17.381	
Cumulative (%)	24.239	44.365	61.746	
KMO=.881, Bartlett's χ^2=3736.462 (p<.001)				

most of them were high, indicating that the validity between questions was appropriate. As a result of conducting reliability analysis of the measured factors, all of them showed high values of. 75 or more. Considering the characteristics of the questions belonging to each factor, they were named Interaction, Fun Pursuit, and Information-seeking, respectively, and "Habitually" items were classified as Fun Pursuit factors based on existing media use studies classified as recreational, habitual, and time-consuming custom types.

4.2 Effects of viewing motivation and user characteristics of one-person game broadcasts on the platform's own attributes (convenience, information delivery speed, possibility of avoiding advertisements, satisfaction with recommended broadcasts)

Before conducting multiple regression analysis to examine the effects of one-person game broadcast viewers' viewing motivation (interaction, fun pursuit, Information-seeking) and user characteristics (viewer age, average viewing time

per day, and number of simultaneous viewers) on the platform's own attributes, correlation was analyzed. The correlation coefficient was. 20 to. 40, and it was confirmed that there was no multicollinear problem, and other variables used the scales and factors used in previous studies.

As a result of regression analysis, it was confirmed that the number of simultaneous viewers among the factors of interaction, fun pursuit, Information-seeking, and user characteristics among the factors of viewing motivation had a statistically significant effect on platform convenience. Among them, the fun-seeking factor was found to have the greatest influence (β=).600, it was found that the interaction factor had a negative (-) effect. It was confirmed that the speed of information delivery on the platform had an effect on the fun-seeking factor and the number of simultaneous viewers. It was confirmed that only interaction factors had a significant influence on the possibility of advertising avoidance, and all of the viewing motivation factors had a significant effect on the satisfaction with the recommended broadcast.

Table 5. Multiple regression analysis results of viewing motivation and user characteristic factors for the platform's own attributes.

dependent variable	independent variable		Standardized Coefficients (β)	t	significance probability (*p<.05 **p<.01 ***p<.001)	F	adjusted R2
Convenience	Viewing motivation	Interaction	-.173	-4.355	.000***	55.779	.391
		fun pursuit	.600	15.330	.000***		
		information seeking	.108	2.707	.007**		
	User characteristic	Age	.007	.192	.848		
		Average view time per day	-.107	-.465	.642		
		Number of concurrent viewers	.084	2.294	.022*		
Speed of information delivery	Viewing motivation	Interaction	.030	.679	.497	31.271	.262
		fun pursuit	.471	10.928	.000***		
		information seeking	.044	1.002	.317		
	User characteristic	Age	-.047	-1.228	.220		
		Average view time per day	-.005	-.112	.911		
		Number of concurrent viewers	.104	2.568	.011*		
Possibility to avoid advertising	Viewing motivation	Interaction	.392	8.529	.000***	19.842	.181
		fun pursuit	.003	.076	.940		
		information seeking	.061	1.314	.189		
	User characteristic	Age	-.037	-.919	.359		
		Average view time per day	-.043	-1.005	.315		
		Number of concurrent viewers	-.052	-1.217	.224		
Satisfaction with recommended broadcasts	Viewing motivation	Interaction	.303	7.035	.000***	34.521	.282
		fun pursuit	.268	6.296	.000***		
		information seeking	.148	3.396	.001**		
	User characteristic	Age	.037	.974	.331		
		Average view time per day	-.065	-1.609	.108		
		Number of concurrent viewers	-.020	-.490	.624		

Table 6. Multiple regression analysis results of viewing motivation and user characteristic factors for platform user attributes.

dependent variable	independent variable		Standardized Coefficients (β)	t	significance probability (*p<.05 **p<.01 ***p<.001)	F	adjusted R2
User bond	Viewing motivation	Interaction	.467	11.026	.000***	38.305	.304
		fun pursuit	.085	2.020	.044*		
		information seeking	.107	2.506	.013*		
	User characteristic	Age	.036	.952	.342		
		Average view time per day	-.018	-.464	.643		
		Number of concurrent viewers	-.023	-.592	.554		
Expressionability	Viewing motivation	Interaction	.513	12.898	.000***	54.658	.386
		fun pursuit	.097	2.479	.014*		
		information seeking	.088	2.196	0.29*		
	User characteristic	Age	.036	1.102	.271		
		Average view time per day	.112	3.010	.003**		
		Number of concurrent viewers	-.077	-2.091	.037*		
chatting pleasure	Viewing motivation	Interaction	.516	12.688	.000***	48.799	.359
		fun pursuit	.153	3.817	.000***		
		information seeking	.031	.744	.457		
	User characteristic	Age	-.010	-.288	.773		
		Average view time per day	.067	1.774	.077		
		Number of concurrent viewers	-.027	-.709	.479		

4.3 Effects of viewing motivation and user characteristics of one-person game broadcasts on platform user attributes (user bond, expressiveness, joy of chatting)

The influence of one-person game broadcast viewers' viewing motivation and user characteristics on platform user attributes is as follows. It was found that all of the factors of viewing motivation had a statistically significant effect on user bond.

Among them, interaction factor was found to have the greatest influence(β=.467). All of the viewing motivation factors had a significant effect on expressiveness, and it was confirmed that the average viewing time per day and the number of simultaneous viewers among user characteristics had an effect. Among the factors, interaction was found to have the greatest influence (β=.513). It was found that interaction and fun-seeking factors had a significant influence on the enjoyment of chatting, and information-seeking factors and user characteristic factors did not affect <Table 6>.

On the other hand, it was found that the viewer's age did not affect both the platform's own attributes and the platform user attributes, which is presumed to be because this study was conducted in their 20s and 30s.

5. Conclusion

In order to find out what factors users who watch one-person game broadcasts consider when using the platform, this study investigated the motivation to watch one-person game broadcasts and the user's perception of the platform's own attributes and platform user attributes.

First, as a result of checking the motivation to watch one-person game broadcasts, three factors were derived: 'interaction', 'fun pursuit', and 'Information-seeking'. The interaction factor was derived as an item that included not only the interaction between users and communicators, but also the interaction between users.

Next, as a result of analyzing the user's perception of the platform's own attributes according to viewing motivation and user characteristics, it was confirmed that the viewing motivation factor and the number of simultaneous viewers had a statistically significant effect on convenience. It was found that the motivation to watch and the number of viewers at the same time had a positive (+) effect on the speed of information delivery. It was confirmed that only the motivation for interaction had a significant positive (+) effect on the possibility of advertising avoidance, and the rest of the factors did not. Finally, it was confirmed that only the viewing motivation of interaction, fun pursuit, and Information-seeking had a significant positive (+) effect on the satisfaction with the recommended broadcast.

Next, as a result of examining the effect of viewing motivation and user characteristics on the perception of platform user attributes, it was confirmed that only viewing motivation factors had a significant positive (+) effect on user bond. In the case of expressiveness, it was found that three viewing motives, game viewing time, and the number of simultaneous viewers had an effect. Finally, it was found that interaction factors and fun-seeking factors had a significant positive (+) effect on the enjoyment of chatting, but information-seeking factors and user characteristic factors did not.

As described above, It was found that the interaction factor had the greatest influence on all three of the platform user attributes, and with great motivation to interact with co mmunicators or other viewers on the game broadcasting platform can be interpreted as actively expressing

their opinions and bonding with other viewers.

Next, among the attributes of the platform, the fact that the number of simultaneous viewers is affected by convenience and information delivery speed seems to be the result of the increase in transmission data and slowing information delivery speed. As the number of users increases, it can be seen that the platform needs to improve the user experience through network advancement. Users perceive that the convenience of the YouTube platform is high because of its smooth information delivery speed. It is estimated that as the real-time game broadcasting ratio increases, smooth access and fast information delivery speed will become more important.

As metaverse games such as Roblox and Minecraft are broadcast through Internet broadcasting platforms, game broadcasting is naturally expanding to metaverse. The importance of convenience and information delivery speed will increase as the Metaverse game platform requires more data transmission than conventional game broadcasts. In addition, it can be estimated that the platform's user attributes will become more important because users engage in economic activities and talk more with people through avatars.

This study has the following limitations. First, due to the difficulty of online surveys, the survey was conducted on people in their 20s and 30s except for teenagers, so it did not contain the perception of teenage users. Next, it was not considered that the platform selection factors may vary depending on the game genre or the type of game broadcast that respondents mainly watch. In future studies, it is expected that richer and more meaningful results will be obtained if the relationship with the platform is analyzed by defining the game genre and broadcast type in detail.

Acknowledgement

Reference

Journal Articles

6. Sun-Ju Lee, Je-Sung Han, "The Characteristics and Future Trends of Short-Form Animation", *Cartoon and Animation Studies, 38*, pp.29-51, 2015.

8. Yu-Mi Kim, Sun-Kyun Kim, "AHP Analysis on the Relative Significance of the Viewing Factor of a One-man GameBroadcasting on the Internet" „*Journal of Media Economics & Culture,* Vol. 18, No. 1, pp.7-30, 2020.

9. Seo-Hyun Jung, Joo-Yeun Park, "A Study on the motivation and characteristics of watching internet game broadcasting: Based on in-depth interviews withusers of Internet game broadcasting", *Information Society & Media,* Vol. 20, No. 3, pp.1-29, 2019.

10. Min-Ji Choe, et al, "A Study of Factors Influencing on Watching Personal Game Webcasting", *Journal of Korea Game Society,* Vol. 16, No. 6, pp.39-48, 2016.

11. Jong-Moo Kim, "Influence of Internet One-person Game Broadcasting BJ Property on the Viewers' Satisfaction – Flow experience as a Mediator -", *Journal of Digital Convergence,* Vol. 16, No. 7, pp.357-367, 2018.

12. Jeong-Yeop Lim, Jong-Moo Kim, "Analysis of audience attitude according to AfreecaTV Strategy Simulation Game BJ attributes - Focusing on Viewer Satisfaction, Loyalty, Viewing Purpose, Viewing Attitude -", *Journal of Communication Design, 62,* pp.106-117, 2018.

13. Jae-Jin Lee, Sang-Joon Bae, "Content analysis and development direction of AfreecaTV", *Visu*

al Culture, 36, pp.223-260, 2020.

14. Yeong-Seok, Hyeon-U Lee, "Personal broadcasting platform technology: Focusing on Afreeca TV and YouTube", *Information and Communications Magazine,* Vol. 33, No. 4, pp.56-63, 2016.

15. Jin-Hyuk Kwon, Seung-In Kim, "Study on the UX of Internet Broadcasting -Focused on the A freeca TV, the Twitch TV-", *Journal of Digital Convergence,* Vol. 16, No. 3, pp.407-413, 2018.

19. Seong-Ju Kim, "A Study on the Characteristics of Viewers by the Type of Personal Game Broadcasting - Focusing on viewer motivation, loyalty, patronage -", *Dissertation, Graduate School of Chugye University for the Arts,* 2019.

23. Hye-Young Kim, Bo-Seob An, "A Study on the Effects of the attractiveness and credibility of Online 1 Personal Media Broadcasting B.J. on theViewing Engagement perceived on Media Channel, Interactivity, Perceived Enjoyment, and the Users Responses", *Advertising Research, 118,* pp.78-126, 2018.

24. Soo-In Yoon, "The Future of Game Broadcasting with Changes in Multimedia", J*ournal of the moving image technology associon of korea, 16,* pp.45-67, 2012.

25. Jae-Heung Yu, "Personal broadcasting. The source of the profit", *Information and Communications Magazine,* Vol. 33, No. 4, pp.71-78, 2016.

26. Jong-Moo Kim, "Analysis of the Influence that the Motive to View Internet Live Broadcast has on the Degree of Satisfaction in Viewingand the Intention to Continue Viewing", *JOURNAL OF THE KOREAN SOCIETY DESIGN CULTURE,* Vol. 23, No. 2, pp.141-152, 2017.

27. Seol-Ye Kim, et al, "The Impact of Viewing Motivation and Social Viewing on Continued Use and Willingness to Pay in the Personal Broadcasting Service: Focused on AfreecaTV", *Review of Culture and Economy,* Vol. 19, No. 3, pp.57-84, 2016.

28. Seong-Ju Kim, Sung-Ah Ahn, "A Study on the Impact of Personal Game Broadcasting Type and Viewer Motivation on Willingness to pay", *Review of Culture and Economy,* Vol. 23, No. 2, pp.85-106, 2020.

29. Beverly A. Bondad-Brown, et al, "Influences on TV Viewing and Online User-shared Video Use: Demographics, Generations, Contextual Age, Media Use, Motivations, and Audience Activity", *Journal of Broadcasting & Electronic Media,* Vol. 56, No. 4, pp.471-493, 2012.

30. Min-Je Seong, et al, "The Influence of Motivation on Satisfaction and Flow in the Internet Game Broadcasting", *The Korean Entertainment Industry Association,* pp.139-144, 2018.

32. Ok-Sook Ban, Joo-Yeun Park, "A Study on Structural Relationships of Internet Personal Broadcasting Continuous Use : TAM 2", *Journal of Communication Science,* Vol. 16, No. 1, pp.59-95, 2016.

33. Hyuk Kim, Jong-Hyun Wi, "A Study on the Motivation of Live Video Streaming by Adopter Characteristics", *Journal of Korea Game Society,* Vol. 18, No. 1, pp.83-93, 2018.

34. Yun-Jung Choi, "Watching TV While Chatting Online : The Concept Explication of Social Viewing", *Korean Journal of Broadcasting and Telecommunication Studies,* Vol. 28, No. 4, pp.315-355, 2014.

35. Jin Ahn, Young Choi, "Characteristics of the Viewing Community in Personal Web-Casting", *Korean Journal of Broadcasting and Telecommunication Studies,* Vol. 30, No. 2, pp.5-53, 2016.

36. Hilde A. M. Voorveld, Vijay Viswanathan, "An observational study on how situational factors influence media multitasking with TV:, *The role of genres, dayparts, and social viewing"* *Media Psychology,* Vol. 18, No. 4, pp.499-526, 2015.

38. Joo-Yeun Park, Su-Cheol Park, "An Analysis o

f Media Competition on Internet video service - Focusing on the GratificationNiches -", *Journal of Cybercommunication Academic Society,* Vol. 35, No. 2, pp.141-180, 2018.

39. Joo-Yeun Park, Su-Cheol Park, "An Analysis of Media Competition on Internet video service - Focusing on the GratificationNiches -", *Journal of Cybercommunication Academic Society,* Vol. 35, No. 2, pp.141-180, 2018.

40. Dae-Han Kim, Nam-kee Park, "Effects of OTT Service Users Use Motivations on Satisfaction and Intention of Continued Use", *Journal of Broadcasting and Telecommunications Research, 93,* pp.77-110, 2016.

41. Fred D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly,* Vol. 13, No. 3, pp.319-340, 1989.

42. Mi-Sun Kim, "A Study on the IPTV Use Perception and Factors Influencing IPTV Adoption", *Korean Journal of Communication & Information, 52,* pp.177-202, 2010.

43. Seung-Hye Sohn, et al, "Understanding Acceptance of Smartphone among Early Adopters Using Extended Technology Acceptance Model", *Korean Journal of Journalism & Communication Studies,* Vol. 55, No. 2, pp.227-251, 2011.

44. Yun-Hee Cho, So-Hye Lim, "Psychological Effects of Interactivity for Internet Live Broadcasting Viewers : Moderating Role of User Motivationson Parasocial Interaction, Social Presence, and Flow", *Journal of Broadcasting and Telecommunications Research, 105,* pp.82-117, 2019.

45. Jie Yin, Detmar Straub, "The Interactivity of Internet-Based Communications: Impacts on E-Business Consumer Decisions", *Ph. D. Dissertation, Georgia State University,* 2002.

46. Yoon-Jik Yang, Chang-Hoan Cho, "A Study of Advertising Avoidance Level and Its Predictors in Various Media", *Advertising Research, 92,* pp.355-381, 2012.

47. Yeong-Ju Lee, Gin Song, "An Exploratory Study on Acceptance of Personal Webcasting Contents : Focusing on Use Characteristics andAttitudes toward Advertising", *Journal of Broadcasting and Telecommunications Research, 96,* pp.68-103, 2016.

48. Yong-Jun Lee, Won-Je Kim, "A Study on Factors affecting OTT Users' Intention to continue using Curation Services", *Journal of Digital Convergence,* Vol. 19, No. 4, pp.217-225, 2021.

49. Byung-Jun Min, et al, "Netflix's Competitive Strategy: Strategic Combination of Network Effects, Contents Reselling and Original Contents", *Journal of Strategic Management* Vol. 23, No. 2, pp.25-45, 2020.

50. Hae-Young Shon, et al, "The Reduction of Adolescents Stress by Social Support of Online Community", *Korean Journal of Broadcasting and Telecommunication Studies,* Vol. 25, No. 1, pp.116-158, 2011.

51. Kook-Yong Lee, "Factors Affecting Members Sense of Belonging in Virtual Community", *Journal of the Korean Operations Research and Management Science Society,* Vol. 35, No. 1, pp.19-45, 2010.

52. Gi-Du Oh, "Protection and Regulation of Free Speech via Internet Webcasts", *Journal of Media and Defamation Law,* Vol. 2, No. 1, pp.159-214, 2016.

53. Se-Jin Lee, "The Effect of Content Characteristics on Viewer Responses in Personal Webcasting : Focusing on Beauty Genre Personal Webcasting", Kookmin *Social Science Reviews,* Vol. 31, no. 1, pp.79-111, 2018.

54. Jung-Joo Jahng, Hae-Jung Kim, "A Study on the Conceptual Framework of Cyber Community Types", *Journal of information and operations management,* Vol. 15, No. 1, pp.103-116, 2005.

55. Soo-Jin Kim, "The Monsters Born in AfreecaTV' - The Research of Concurrent Dualities in Internet Live-streaming -", *Cross-Cultural Studie*

s, Vol. 23, No. 1, pp.79-124, 2017.

Books

2. Korea Communications Commission. *Survey on how you use broadcasting media in 2020,* pp.2 6, 2020.

4. Korea Labor Institute. *Future job: Freelancer,* 2 018.

5. Korea Press Foundation. T*weens' and Teens' M edia Use in Korea 2019,* 2019.

31. Korea Creative Content Agency. *Study of gam e culture based game platforms,* 2019.

Websites

1. https://www.bloter.net/newsView/blt202107260026

3. https://streamlabs.com/content-hub/post/streamlabs -and-stream-hatchet-q2-live-streaming-industry-re p ort

7. https://www.chosun.com/national/weekend/2020/12 /12/6EAUWAVHRRDODJO2A5GCOBS5CE/

16. https://blog.streamlabs.com/streamlabs-stream-hat het-q1-2021-live-streaming-industry-report-eaba2 143f492

17. 11square, "afreehp", http://rank.afreehp.kr/view, 2021.

18. http://www.kocca.kr/trend/vol18/sub/s31.html

20. Afreeca Freecs, "TEAMS", http://freecs.gg/team, 2021.

21. AfreecaTV, http://bjmatch.afreecatv.com/

22. https://www.chosun.com/site/data/html_dir/2019/1 0/25/2019102501815.html

37. https://www.sedaily.com/NewsVIew/1YYT13HD E6

<국문초록>

1인 게임방송 플랫폼 속성에 영향을 미치는 요인에 관한 연구

신명섭, 오형로, 이영주

본 연구는 최근 코로나19 여파로 가파른 성장세를 보이고 있는 1인 게임 방송의 시청이 이를 송출하는 인터넷 방송 플랫폼의 속성과 연관성이 있을 것으로 보았다. 본 연구에서는 설문조사를 통해 1인 게임 방송의 시청 동기를 도출한 후, 시청 동기와 이용자 특성이 플랫폼 자체 속성과 이용자 속성에 미치는 영향을 검증하기 위해 다중 회귀분석을 실시하였다. 연구결과, 인터넷 방송 플랫폼을 통해 게임 콘텐츠를 시청하는 이용자들은 참여자들 간의 상호작용과 플랫폼 자체의 편리성과 정보 전달 속도를 중요시 하는 것으로 확인되었다. 이러한 속성들은 더 큰 데이터의 전송과 소통의 중요성이 강조되는 메타버스 영역에서도 적용될 수 있을 것으로 보이며, 메타버스와 함께 더욱 확장되어 나갈 게임 방송 플랫폼의 발전을 위한 실무적 함의를 제공하고자 한다.

<결론 및 향후 연구>

본 연구에서는 1인 게임 방송의 시청 동기를 살펴보고, 시청 동기 요인과 이용자 특성 요인이 플랫폼 자체 속성과 이용자 속성에 미치는 영향을 설문조사를 통해 측정하고 검증하고자 하였다. 주요 결과로 플랫폼 이용자 속성 '이용자 유대감', '표출성', '채팅의 즐거움' 모두 시청 동기 중 상호작용 요인이 가장 큰 영향을 미치는 것으로 나타났는데, 이는 시청자들이 게임 방송 플랫폼을 통해서 다른 이용자들과 소통하는 데 큰 가치를 두고 있는 것으로 해석된다. 그리고 플랫폼 자체 속성 중 '편리성'과 '정보 전달 속도'에 동시 시청자수 요인이 유의미한 영향을 미치는 것으로 확인된 것은 플랫폼에 실시간으로 접속하는 이용자 수가 많아질수록 안정된 네트워크를 통해 원활한 접속이 가능한 환경을 제공해야 하며, 이를 충족시키지 못할 경우 편리함이 감소하게 되는 것으로 볼 수 있다. 최근 10대 청소년들의 게임 시청 빈도가 가장 높은 것으로 나타나고 있는 가운데, 향후 연구에서는 조사 연령대의 폭을 10대 청소년까지 확대하고, 게임 장르나 게임 방송 유형 요인을 추가하여 분석한다면 더욱 풍부하고 의미 있는 후속 연구가 될 수 있을 것이라 본다.

<Author Biography>

Myeong Seob SHIN(신명섭)
2013-2015; Master's graduation Department of Broadcast & Communication
Policy, Seoul National University of Science and Technology
2016-2018; Ph.D. Candidate, Department of Media & Contents Policy,
Seoul National University of Science and Technology
Research interest; Digital platform, IT Policy, ICT industry

Hyung Ro OH(오형로)
2019-2020; Greaduated, Information and Communication Engineering,
System National Institute for Lifelong Education
2020-present; Master's course, Department of Media & Contents Policy,
Seoul National University of Science and Technology
Research interest; Computer Game, Virtual Reality, Game Broadcasting,

Yeong-Ju LEE(이영주)
2000-2005; Ph.D., Department of Journalism & Mass Communication,
Ewha Womans University
2009-present; Professor, Seoul National University of Science and Technology
Research interest; Digital platform, AI content, IT policy