

Audiences' Motives for Watching Live Video Streaming

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ABSTRACT

Due to the popularity and low cost of rapid mobile internet connection, live-streaming service is now booming. Some of these users who provide live video shows to the public are famous and known as vloggers or YouTube celebrities. The content of the live show is diverse. Some YouTubers broadcast video of their computer screen when playing an online game; others cook, work out, or put on makeup on camera. Nearly anything from one's daily life is fair game. The abundant live video streaming content attracts youngsters as well as adults. To understand the viewers' motivation for watching live video streaming, this study used a self-reporting online questionnaire survey. A total of 374 responses were received and analyzed to ascertain the motives of viewing live video streaming. Based on the empirical survey results, we propose a motivation of YouTuber model composed of four motive categories: leisure, celebrity worship, social connection, and voyeurism. These four categories can be divided into eight motives, including passing time, entertainment, relaxation, celebrity identification, vicarious participation, companionship, social interaction, and voyeurism.

Keywords: Live video stream, Web live show, YouTuber, Vlogger, Internet celebrity

INTRODUCTION

Live video is "one of the things I'm most excited about," address by Facebook CEO Mark Zuckerberg in 2016. Facebook has offered a live video feature since 2016 (Gynn, 2016). For social media, live video or live streaming is now an essential feature that allows people to broadcast live video to friends (and to the public at large). As Zuckerberg predicted, video will be the primary method for users to share content in

the future. The live streaming feature of social media has become more and more important since its inception. It is no longer limited to social media: there are also apps that focus on providing live streaming services for users. The live streaming industry market is now booming, and live streaming itself has become a new social media with a high impact (Liu, 2016). Hundreds of live video social apps have emerged during the past few years. According to search results in Google Android Market with a keyword of “live streaming video”, there are 237 apps with the function of “live streaming video” (searched on July 4, 2017). Live streaming video is now an emerging market opportunity that attracts industry practices.

Streaming media constantly delivers video (or audio) from a provider to receivers (https://en.wikipedia.org/wiki/Streaming_media). Unlike downloading, which is a process that allows audiences to obtain the entire video or audio before watching or listening, streaming refers to the delivery method, i.e., the process of constant delivery of video or audio. The delivered content can be “live” only when the delivery speed is fast enough to avoid significant lag.

Live video streaming service is booming with an increasing user base. With live video streaming services, users can broadcast their activities to others in real time. Live video streaming services are usually synchronous, and users broadcast their activities while the audience views the video and responds at the same time (Scheibe, Fietkiewicz, & Stock, 2016). It is feasible and available due to the advance in mobile devices, including high-resolution display screens, a high-speed process for visual content, high-quality cameras, and a high penetration rate of high-speed mobile communication. The technique requirement is easy to reach when a user wants to serve as a broadcaster (live video content provider) or just as an audience (live video content viewer).

Some broadcasters become famous, attracting millions of viewers. The content of the live video streaming is diverse. Some broadcasters circulate their computer screen when playing online games; others cook, work out, or put on makeup on camera. Nearly anything from one’s daily life is fair game. The abundant contents of live video streaming attract youngsters as well as adults. They spent much time on live video streaming.

With live video streaming, people now can broadcast their own lives to share their daily activities in real time, as predicted by the 1998 film *The Truman Show*. By viewing live video streaming, audiences are privy to broadcasters’ personal activities and private affairs. Live video streaming attracts audiences’ attention, and some audiences spend significant time on viewing the live streaming video.

However, little previous research focuses on exploring the participation behavior of live video streaming audiences (Hu, Zhang, & Wang, 2017). The current study focuses on understanding the motivations for audiences to view live video streaming.

Table 1. Estimated Social Network Sites Users in Taiwan

		(A.) Taiwan Population (age 13 and above)	(B.) Internet Usage Penetration (%)	(C.) SNS Penetration (% of Internet User)	(A) x (B) x (C) Estimated SNS population in Taiwan	Estimated Percentage of SNS users	Actual Respondent of the study (% of samples)
13-19	male	1,109,856	97.89%	80.12%	870,454	6.4%	8.3%
	female	1,017,152	97.89%	80.12%	797,747	5.9%	9.1%
20-29	male	1,664,421	98.08%	92.49%	1,509,866	11.2%	7.5%
	female	1,545,765	98.08%	92.49%	1,402,228	10.4%	17.6%
30-39	male	1,896,047	97.23%	86.51%	1,594,835	11.8%	12.8%
	female	1,914,692	97.23%	86.51%	1,610,518	11.9%	15.8%
40-49	male	1,804,613	92.66%	76.55%	1,280,034	9.5%	7.5%
	female	1,849,137	92.66%	76.55%	1,311,616	9.7%	8.0%
50-59	male	1,785,760	80.79%	63.35%	913,960	6.8%	3.7%
	female	1,842,545	80.79%	63.35%	943,023	7.0%	5.9%
60 and above	male	1,432,398	62.70%	53.10%	476,898	3.5%	1.9%
	female	2,475,136	62.70%	53.10%	824,064	6.1%	1.9%

METHOD

Participants

This study used a self-reporting online questionnaire survey to collect data. The participants were viewers of live video streaming. We posted advertisements for volunteers on Facebook to recruit Taiwanese participants, since Facebook is the largest social media site in Taiwan, with a more than ninety percent penetration rate. Because age may be an influential factor for viewing behavior of reality television programs (Ebersole & Woods, 2007), the study used stratified sampling to make sure the samples were representative of the whole population of Taiwanese internet users. The stratified sampling of the study was based on the research report of “2016 Summary Report: Wireless Internet Usage in Taiwan” (Taiwan Network Information Center [TWNIC], 2016), which presented the penetration of Taiwanese usage of Internet and social networking sites (SNS). The “Household registration statistics data” by Taiwan Ministry of the Interior was also used to determine the sample numbers for stratified sampling. This study calculated the age percentage distribution of social media users, shown in Table 1. We used this distribution to allocate budget for Facebook ads to recruit participants.

Procedure

We employed an online questionnaire for a period of 2 weeks. Participants in this study were voluntarily and the questionnaire took approximately 10 min to finish. The

questionnaire consisted of two parts. First, we asked participants to report their internet live show viewing behavior and their demographic data. Second, the participants answered questions about the motives of viewing an Internet live show. All volunteers through Facebook Ads to access the online questionnaire. We offered a lottery to participants who completed the online questionnaire. The prize was twenty NT100 (about USD 3.30) convenience store gift certificates.

Measurement

Based on the literature review for the potential motivations for viewing live streaming, nine motivations were included in this study, including passing time, entertainment, relaxation, celebrity identification, vicarious participation, companionship, social interaction, and voyeurism. We selected two items for each motivation. A five-point Likert-type scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), was used to measure these nine motivations.

The measurement scale for motivations of passing time, entertainment, relaxation, companionship, and social interaction was adopted from [6]. Vicarious participation was measured by asking participants how they felt about “Dreaming about live streaming myself” and “Pretending that I’m a contestant on a live stream”, which was developed by Papacharissi & Mendelson (2007). Two item measurement scales for identification to broadcasters were adopted from Um (2013). Three items modified from Baruh (2010) were used to measure voyeurism. We asked participants to answer three questions as below, “I enjoy watching live Internet shows that give me a glimpse into broadcasters’ private moments.” “I like live Internet shows that reveal a side of broadcasters that I would not normally see.” “I enjoy watching live Internet shows that provide access to things that broadcasters try to hide.”

Table 2. Demographic profile of participants

Measure	items	percentage
Gender	Male	41.7%
	Female	58.3%
Age	Below 20 years	17.4%
	21-30	25.1%
	31-40	28.6%
	41-50	15.5%
	Above 51	13.4%
Career	Student	26.1%
	Employed	50.4%
	Between jobs	15.1%
	Retirement	8.5%
Frequency for watching internet live video show	Always	10.7%
	Once a day	11.8%
	Once 2-3days	23.3%
	Once a week	17.4%
	Seldom	12.6%
	Never	24.3%

RESULTS

Demographic

This study recruited 374 participants to join. 58.3% of the participants were female (n=218), and the other 41.7% were male (n=156). 53.7% of the participants were between 20 and 40 years old. Most participants were employed (50.4%). Overall, 75.8% of participants had experience viewing live internet video shows. Table 2 shows the descriptive statistics of the respondents' demographic profiles, including gender, job career, age, and frequency of watching live internet video shows.

Scale Reliability and Validity

To verify the construct reliability, we computed Cronbach's alpha and composite reliabilities (CR) to evaluate the internal consistency among items to each construct of this study. The Cronbach's alpha value of all constructs in our model exceeds the usual .70 benchmark (Hair, Black, Babin, Anderson, & Tatham, 2016). The Cronbach's alpha value of each construct ranged from 0.674 to 0.901. This study calculated composite reliabilities for each construct. The value of composite reliabilities of each

construct ranged from 0.803 to 0.940. The results demonstrated each construct to be satisfactory, with all coefficients greater than the recommended threshold of 0.70, following the suggestion of (Nunnally, 1967). The coefficients of Cronbach's alpha and CR demonstrated that the constructs were within acceptable reliability.

Table 3. Scale reliabilities and Validity

Motivations	Items	Cronbach's α	Composite Reliability (CR)	Average Variance Extracted (AVE)
Pass Time	2	0.848	0.861	0.755
Entertainment	2	0.818	0.838	0.721
Relaxation	2	0.856	0.867	0.765
Celebrity Identification	2	0.788	0.803	0.671
Vicarious Participation	2	0.817	0.837	0.718
Companionship	2	0.875	0.873	0.775
Social interaction	2	0.817	0.827	0.705
Voyeurism	3	0.935	0.940	0.839

We accessed the convergent validity of scales by calculating the standardized factor loading and Average Variance Extracted (AVE) of each construct of Confirmatory Factor Analysis (CFA) model. The standardized factor loading for each item ranged from 0.78 to 0.96 and had a significant loading with the appropriate latent construct, thereby demonstrating adequate convergent validity. The AVE value of all constructs were the above criteria of 0.50 (ranging from 0.671 to 0.839) (Fornell & Larcker, 1981), which indicated adequate convergent validity. The results are listed in Table 3.

Table 4 demonstrates correlations among the latent constructs and the root of AVE in the diagonal of the matrix. On the suggestion of Fornell and Larcker (1981), we accessed the discriminant validity of the latent constructs in terms of the root of AVE. Comparing of the root of AVE with corresponding correlation estimate of any two constructs, if the root of the AVEs are greater than the correlation between the constructs, the requirements for discriminant validity are satisfied. However, the result indicated that all but two factors (entertainment and relaxation) had adequate discriminant validity. The root of the AVEs for entertainment motivation was 0.849, which was slightly lower than the correlation coefficient between relaxation and entertainment (0.892). The root of the AVEs for relaxation motivation was 0.875, which

was slightly lower than the correlation coefficient between relaxation and entertainment (0.892). The remaining six factors were with acceptable discriminant validity.

Exploratory Factor Analysis

This study proposes eight motivations to explain why audiences watch live video streams. However, according to Table 4, there is a significant correlation among these eight motivations. To check if these eight factors can be further classified into several categories, we employed the exploratory factor analysis (EFA) to extract second-order factors to confirm whether the eight factors could be concentrated into fewer dimensions. As Table 5 indicates, the eight factors could be condensed into four motivation categories. This study named these motivation categories of watching video live streaming as leisure, celebrity worship, social connection, and voyeurism.

Table 4. Correlation Coefficient and Discriminant Validity of the Measurement Model

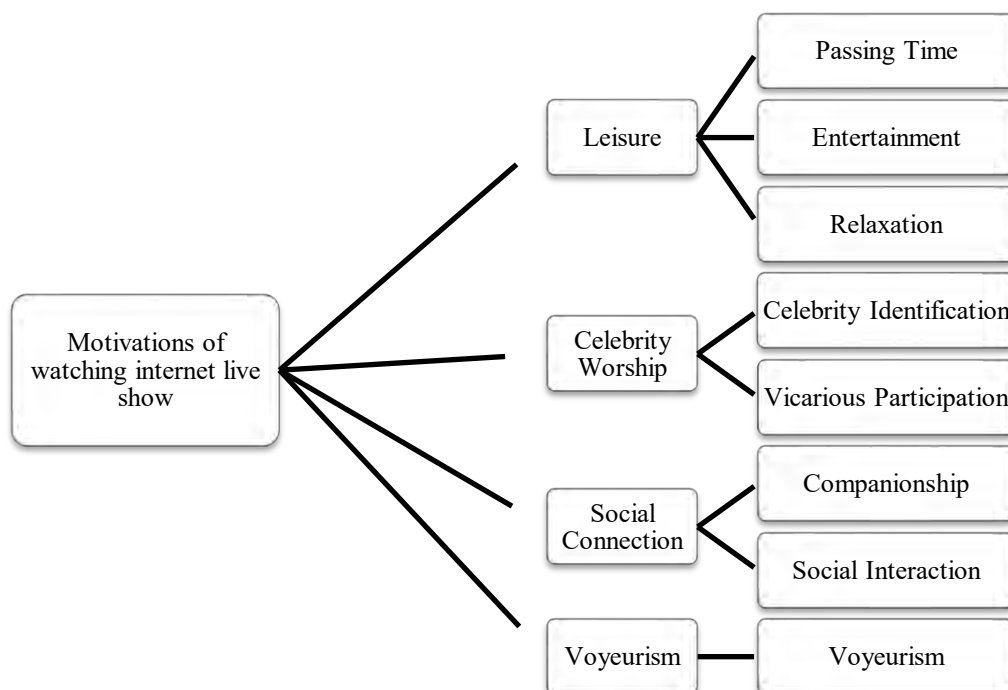
	CI	VP	VO	PT	EN	RE	CO	SI
CI	0.819							
VP	0.779***	0.847						
VO	0.571***	0.621***	0.916					
PT	0.605***	0.672***	0.700***	0.869				
EN	0.595***	0.622***	0.724***	0.816***	0.849			
RE	0.655***	0.706***	0.713***	0.866***	0.892***	0.875		
CO	0.660***	0.745***	0.697***	0.752***	0.732***	0.816***	0.880	
SI	0.680***	0.732***	0.680***	0.753***	0.713***	0.800***	0.788***	0.840

1. CI=Celebrity Identification, VP= Vicarious Participation, VO= Voyeurism, PT= Pass Time, EN= Entertainment, RE= Relaxation, CO= Companionship, SI= Social interaction
2. The diagonal reveals values of the root of the average variance extracted (AVE) for each variable

Table 5. The exploratory Factor Analysis Results of the Motivation of Watching a Live Video Stream

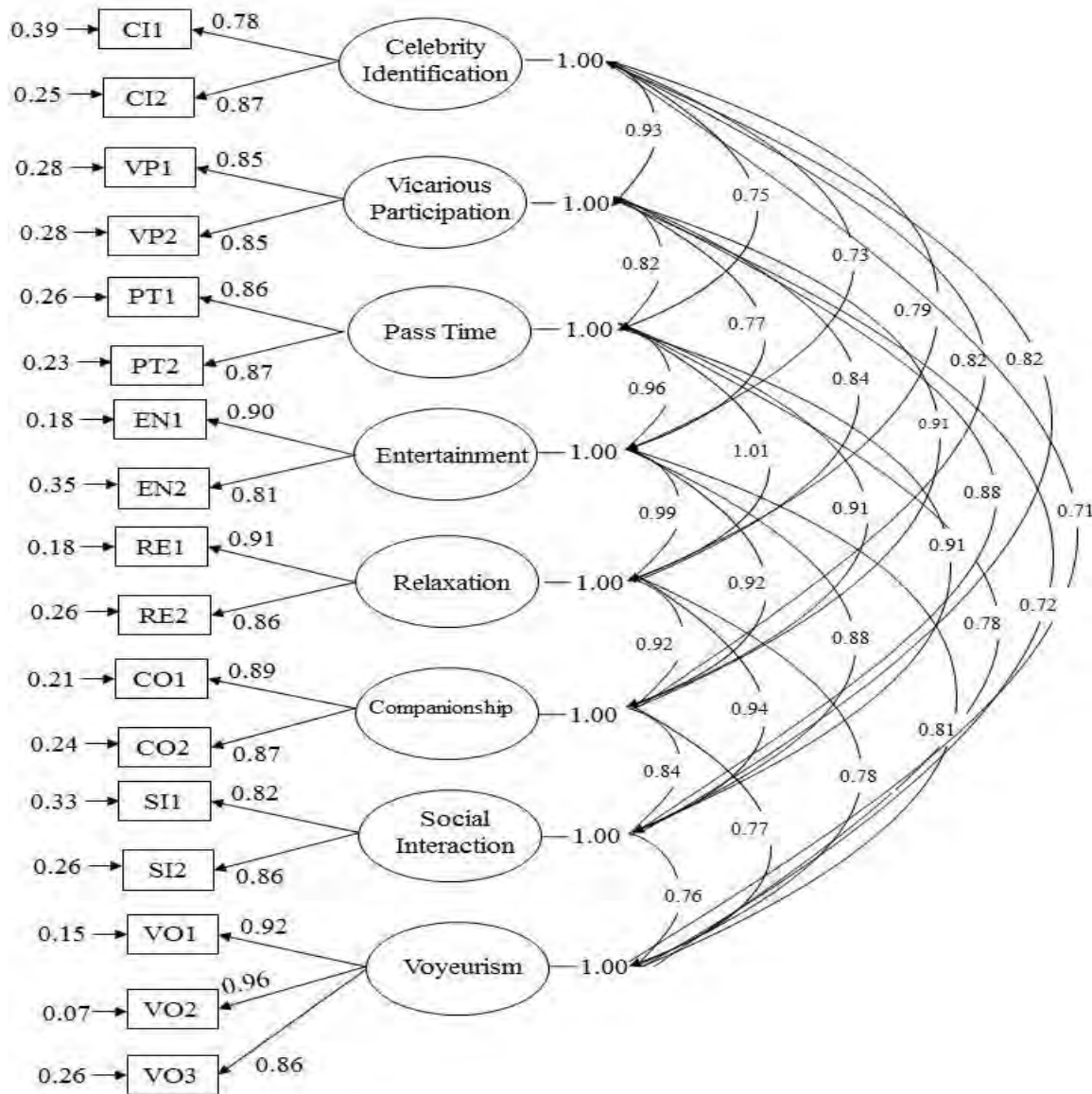
Dimensions	Sub-dimension	Leisure	Celebrity Worship	Social Connection	Voyeurism
Leisure	Pass Time	0.779	0.328	0.347	0.231
	Entertainment	0.813	0.254	0.254	0.363
	Relaxation	0.777	0.321	0.406	0.258
Celebrity Worship	Celebrity identification	0.320	0.870	0.228	0.223
	Vicarious participation	0.290	0.695	0.533	0.222
Social Connection	Companionship	0.427	0.341	0.704	0.333
	Social interaction	0.488	0.366	0.666	0.218
Voyeurism	Voyeurism	0.401	0.282	0.281	0.820

Leisure motivation included three factors: Passing time, entertainment, and relaxation. Celebrity worship motivation covered celebrity identification and vicarious participation. Social connection motivation contained companionship and social interaction factors. Voyeurism motivation included only voyeurism, as shown in Figure 1.

**Figure 1. The Motivation Dimensions of Watching a Live Video Stream**

The leisure motivation reveals that audiences take a break, have fun, and relieve stress by viewing live video streaming. Celebrity worship indicated that audience

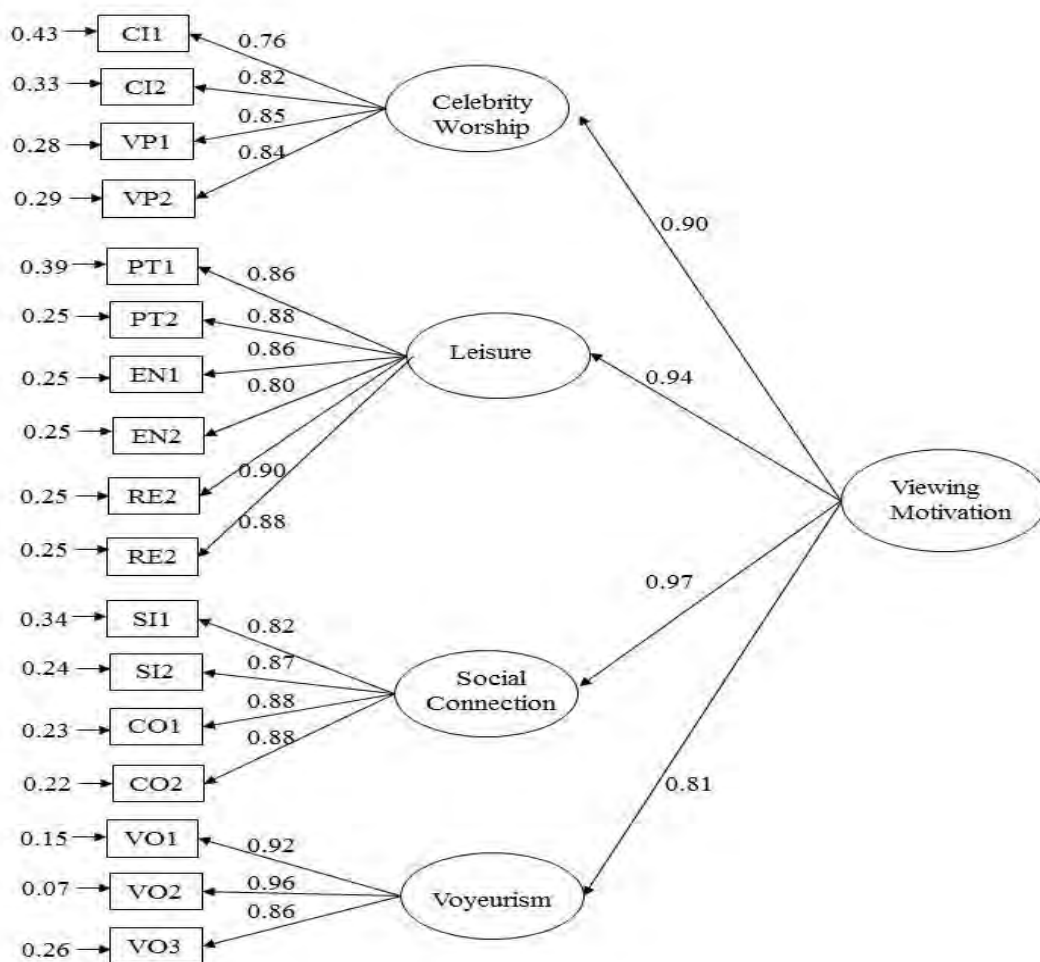
identifies with their favorite broadcaster and learns what is real and close to them by viewing their video stream. This parasocial interaction gives the audience satisfaction. The social connection motivation means the audience uses the contents of live video streaming to interact with their friends, family, and others, which will decrease the level of companionship. Finally, the subjects of video live streaming usually want to approach star's real life. The audience may be curious about everything of their favorite star(s), which drives them to view the video streaming to fulfill their desire.



Chi-Square=641.97, df=91, p<0.001, RMSEA=0.133, GFI=0.82, AGFI=0.70, SRMR=0.034, RMR=0.034, NFI=0.91, NNFI=0.89, CFI=0.92

Figure 2. The Results of CFA of the First-Order Model

To confirm whether the second-order dimension of the motivation model of watching live video stream is appropriate, we conducted two confirmatory factor analyses (CFA). The first CFA included eight one-order factors and the other included second-order factors CFA, shown as Figures 2 and 3. This study used the chi-square ratio to test the goodness-of-fit. On the suggestion of Hayduk (1987), we compare with the chi-square ratio of the first-order model and second-order model. The ratio of χ^2 and df (degree of freedom) of the first-order model was 7.05, and the ratio of χ^2 and df (degree of freedom) of the second-order model was 3.99, which nearly the threshold value of 3. Thus, the later one (the second-order model) has a better goodness-of-fit.



Chi-Square=438.93, df=110, $p < 0.001$, RMSEA=0.094, GFI=0.87, AGFI=0.82, SRMR=0.037, RMR=0.037, NFI=0.93, NNFI=0.93, CFI=0.95

Figure 3. The Results of CFA of Second-Order Model

In otherwise, the model fit indicators of first-order model is RMSEA=0.133, GFI=0.82, AGFI=0.70, SRMR=0.034, RMR=0.034, NFI=0.91, NNFI=0.89, CFI=0.92, and the model fit indicators of second-order model is RMSEA=0.094, GFI=0.87,

AGFI=0.82, SRMR=0.037, RMR=0.037, NFI=0.93, NNFI=0.93, CFI=0.95. The model fit indicators of second-order model is better than the first-order model; that is, the second-order model is able to explain the motivation for viewing live video stream.

DISCUSSION

Live video streaming is an emerging internet application that attracts sights from audiences, academics, and industry practices. Many audiences spend significant time viewing live streaming. However, few previous studies have focused on exploring the motivations why audiences keep viewing live video streaming. The current study reveals four motivations for view live streaming: leisure, celebrity worship, social connection, and voyeurism. The motivation of leisure can be further divided into three sub-motivations of passing time, entertainment, relaxation. The motivation of celebrity worship can be further divided into two sub-motivations of celebrity identification and vicarious participation. The motivation of social connection can be further divided into two sub-motivations of companionship and social interaction. Additionally, the study reveals that voyeurism is the fourth dimension for viewing live video streaming. Although most studies focus on the adoption issue of online behavior, the literature also discussed addiction issues (reference). This study discusses the motivation of live stream behavior. Nevertheless, addiction is also an important issue for live stream behavior. Future studies may discuss the factors influencing live stream addiction. Some motives of live stream behavior may also factor for live stream addiction (Islam, Karia, Khaleel, Khalid, Al Mamun, Bhuiyan, & Fouji, 2019). Furthermore, investigating audiences' motivations can help the industry understand their preferences. Understanding what live streamers have provided can help understand the current market status. The literature up to now has focused on analyzing social commerce content to understand post quantity and content types in customer engagement on Facebook pages (reference). Future studies may also investigate the content provided by live streamers. Comparing the motivations of live stream audience and content provided by live streamers can help to realize the gap between demand and supply of the live stream industry (Thongmak, 2019).

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