

Factors Influencing Live Streaming Continuance Watching Intention

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Abstract

This study aims to explore the determinants of parasocial interaction (PSI) and the causal relationships between PSI and live streaming continuance watching intentions. Besides, we also examine the moderating effect of skepticism between PSI and live streaming continuance watching intentions. Out of 400 questionnaires distributed, 313 valid questionnaires were returned, yielding a valid response rate of 78.25 percent, and it tested the proposed hypotheses by using structural equation modeling (SEM).

The results found that likeability, expertise, physical attractiveness and self-disclosure had significant positive effects on PSI. PSI significantly affected live streaming continuance watching intentions. Finally, skepticism played a moderating role between PSI and willingness to continue watching the live streaming. This study focused on the live streaming industry on YouTube; thus, caution is required in generalizing the findings. The current study not only aims to expand the scope of research on PSI but also to prompt researchers and organizations to consider effective communication strategies for online audiences to increase viewing rates.

Keywords: likeability, expertise, physical attractiveness, self-disclosure, para-social interaction, skepticism

1. Introduction

Because of COVID -19, concerts were cancelled, and many events were postponed. People have turned to live streaming in droves as social restrictions force them to find new ways to connect. The COVID-19 pandemic has changed people's viewing and consumption habits, and online viewing and consumption has become a new trend. The isolation caused by the COVID-19 coronavirus urgency has further led to the expansion of live-streaming e-commerce because live streaming as a digital tool empowers vendors and customers around the world to be connected (Jiang, Zhang, Qi, Fang, & Xu, 2021; Chua, Yuen, Wang, & Wong, 2021). The social media era has introduced a wave of social networking sites, allowing anyone who wants to become popular to share their life, opinions, and live game images through the Internet to obtain fans and turn this business model into money (Burgess & Green, 2009). Chat rooms allow live streamers to interact with viewers while sharing content (Hamilton et al., 2014). Continuously attracting viewers to revisit their channels and increase their loyalty for additional endorsement opportunities is also an important issue for live streamers.

These celebrities share usage tips and opinions, demo products on their YouTube channels, interact with audiences, and post comments. Viewers can like, subscribe, and share the videos of live streamers, making viewers feel as close as the celebrities' friends. Horton and Wohl (1956) first proposed the concept of parasocial interaction (PSI) to describe the "illusion of face-to-face relationship with a media personality" of an individual. Viewers could develop virtual relationships with live streamers by watching live streaming, making them feel like they have friendship-like relationships with live streamers, thereby showing their loyalty to live streamers. Past research has shown that users will develop positive attitudes and demonstrate behavioral consistency upon the perception of high-interaction situations (Coyle & Thorson, 2001; Aburahmah et al., 2016). Therefore, exploring the potential factors that will enhance the PSI with live streamers is critical to improve the continued viewing willingness of the audience.

Xiang et al. (2016) indicated that similarity, likability, and expertise influence PSI. Live streamers appear friendlier and more approachable than TV stars. YouTube viewers can subscribe to the channels of live streamers

with whom they share similar worldviews, backgrounds, or interests. They can also watch the videos of live streamers and post comments. These interactions can enhance the audience's perception of live streamers' likability, similarity, and expertise.

In addition, the sharing of experience and life insights from the use of products by live streamers can be regarded as a form of self-disclosure. Altman and Taylor (1973) proposed the social penetration theory (SPT), arguing that self-disclosure contributes to the development of close interpersonal relationships. Therefore, in addition to the audience perceptions of live streamers' likability, similarity, and expertise, this study also investigates the influence of self-disclosure on PSI.

Live streamers only recommend the product after receiving sponsorship from the manufacturer. Consumers may have different opinions regarding the product; they can feel that the product is excessively frequent or "the context of sponsored post is fake." (Yang & Kuo, 2017). A sponsored post is a form of advertising; thus, such posts will inevitably elicit the audience's suspicion of advertising (Obermiller et al., 2005). Do consumers still accept the recommendation message? Particularly, the attitudes of consumers toward advertisements or sponsored posts may be affected when they have a highly skeptical personality (Spangenberg & MacLachlan, 2005), thereby affecting their willingness to continue watching live streaming. Therefore, this study intends to investigate whether skeptical personality can moderate the relationship between PSI and live streaming continuance watching intentions.

Overall, this study aims to investigate the effects of self-disclosure, likability, attractiveness, and expertise on PSI and further explore the impact of PSI on viewers' continued live viewing. The study results can help celebrities understand what factors drive their audience to continue watching live streaming. Moreover, the study results can be used as a reference for companies looking for live streamers to cooperate with endorsement products.

2. Literature Review and Hypothesis Development

2.1 Likability

Likeability is fondness towards a person due to his/her physical attractiveness, behavior, or credentials, which is an indicator of source attractiveness (Erdogan, 1999). The consumer's liking for the endorser is therefore influenced by the endorser's appearance, behavior and qualification. Individuals automatically form favorable and unfavorable first impressions of a likable and unlikable person, respectively, during an initial encounter (Fiske & Neuberg, 1990). An individual is likely to believe information from likable people and be willing to interact with them. The likability level of a user in a social commerce community inspires other users to engage in additional community activities and enhances social interaction among users (Li et al., 2016). Therefore, the following hypothesis is presented:

H1: Perceived likability of live streamers has a positive impact on perceived PSI.

2.2 Expertise

Expertise is another important factor in interpersonal interactions and attraction. This factor is defined as "authoritativeness," "competence" (Whitehead, 1968), or "qualification" (Berlo, Lemert, & Mertz, 1969), all of which indicate the amount of knowledge of an individual possesses in a specific domain. The source credibility theory emphasizes the importance of source expertise for the usefulness of information (Hovland & Weiss, 1953). In celebrity endorsement, expertise means the endorser's knowledge, experience and skills about the brand being promoted, which enhances the endorser's credibility and positively influence consumer behavior (Alsmadi, 2006). Wang et al. (2017) indicated that acceptance and response to an advertising message is based on viewers' assessment of the endorser's expertise. The existing literature has demonstrated that people prefer to interact with experts who are knowledgeable about brands and products, which helps to get the most up-to-date information. Further, people tend to agree with experts and change their attitudes and behavior towards a specific brand according to the opinion of experts (Amos et al., 2008; Bergkvist & Zhou, 2016). Cowles (2002) maintained that consumers preferred products that bloggers had approved, or they asked for professional opinions from bloggers. A high degree of expertise can achieve high credibility in social interactions and facilitates the development of PSI. Therefore, the following hypothesis is presented:

H2: Perceived expertise of live streamers has a positive impact on perceived PSI.

2.3 Attractiveness

Attractiveness refers to all the characteristics that make the endorser attractive to the audience. Sources of attractiveness may come from the endorser's appearance, personality traits, attractive lifestyle, etc.

Attractiveness is an attribute in the “TEARS” model (i.e., Trustworthiness, Expertise, Attractiveness, Respect, Similarity) proposed by Shimp (2003) that represents the desired attributes that an effective endorser is expected to possess. According to the source model theory, the source’s attractiveness contributes to effective endorsement (Sternthal & Craig, 1973). Thus, the attractiveness of live streamers may influence viewers' brand choice or purchasing decisions. Frederick et al. (2012) found that physical attractiveness was significantly correlated with PSI in the interaction of professional athletes with followers on Twitter. Lee (2016) found that physical and social attractiveness are crucial antecedents for bloggers who recommend luxury goods on YouTube. Oguchi and Kikuchi (1997) found that voice and appearance have a positive effect on interpersonal attractiveness. Previous studies show that the physical attractiveness of vloggers has a positive impact on PSI (Lee & Watkins, 2016; Liu et al., 2019). Viewers are likely to engage with physically attractive vloggers when they have positive attitudes and perceptions of these vloggers (Arviansyah et al., 2018; Choi and Lee, 2019; Liu et al., 2019). The physical attractiveness of live streamers could provide viewers a good impression to increase their level of engagement (Huan, 2020). Therefore, the following hypothesis is presented.

H3: Physical attractiveness of the Internet celebrity has a positive impact on PSI.

2.4 Self-Disclosure

Self-disclosure refers to sharing information regarding an individual and interacting with others, which is the process of making oneself known to others (Altman & Taylor, 1973). Jourard (1971) believes that self-disclosure is the process of revealing oneself to attract attention. As time passes by and people get to know each other, the information revealed by both parties will gradually strengthen and deepen from superficial, inconsequential content and then advance to intimate topics, which is similar to peeling an onion (Altman & Taylor, 1973). Self-disclosure plays an important role in helping both parties to build intimacy; therefore, self-disclosure is also defined as “disclosure of private information about oneself” (Derlega, Metts, Petronio & Margulis, 1993). Thus, any information disclosed by anyone to the other party, as long as it relates to one self, is self-disclosed information (Wheeless, 1978). Self-disclosure of a user is an act of maintaining and developing interpersonal relationships in social networking sites. Park, Jin, and Annie (2011) indicated that the frequency and amount of self-disclosure in social networking sites would improve the impression of friends and favorability of users, thereby increasing the intimacy of their friendships. Rime (2016) argued that self-disclosure can maintain and strengthen relationship intimacy as it develops. Auter (1992) revealed that self-disclosure of media figures is positively related to PSI. Therefore, the following hypothesis is presented.

H4: Self-disclosure of live streamers has a positive impact on viewer perception of PSI.

2.5 PSI

The interactivity of live streamings creates an efficient bridge of communication between fans and streamers. Fans can directly connect with their favorite streamers and make friends, thereby strengthening their identification with the streamers (Kim and Song, 2016). Streamers usually have rich life experiences; they also play the role of opinion leaders (Wang & Liu, 2017) and are very persuasive and credible. Over time, the audience gains a deeper understanding of live streamers and provides individual attention and emotional projection during the interaction, thus generating a sense of identification with live streamers. The interactive environment and support provided by the live streaming platform promote the exchange of information (Zou, 2013) and enhance mutual familiarity. Such familiarity creates a comfortable environment in the live streaming room where users can actively participate in discussions and share opinions of mutual interests, thereby building an emotional bond between both parties (Sanchez-Franco & Roidan, 2015). Interactions can also increase mutual understanding and help strengthen the relationship between individuals and live streamers. The sense of identity and belonging is based on the cognition and love for live streamers. A long-term good interactive experience will further encourage viewers to participate in live streaming activities. Therefore, this study proposes the following hypothesis:

H5: PSI has a significant positive impact on the willingness to continue watching the live streaming.

Highly skeptical consumers may be more likely to infer the advertiser’s ulterior motives and manipulative intentions (Boush et al., 1994; Obermiller & Spangenberg, 1998), which influences the persuasiveness of the advertisement and leads skeptical consumers to reject the advertising claim and maintain less favorable advertising and brand attitude, compared with less skeptical consumers. For example, Obermiller, Spangenberg, and MacLachlan (2005) found that skeptical consumers rated ads as less likable and believable. This study argued that consumers with low skepticism may view the live streamer’s suggestions or posts as practical, but those with high skeptical personalities may consider these posts as an advertising and marketing tactic. If consumers are skeptical, then they may be less persuaded, thus reducing their willingness to continue watching

live streaming. Therefore, the following hypothesis is presented.

H6: Skepticism moderates the relationship between PSI and willingness to continue watching the live streaming.

3. Methodology

3.1 Data Source

We explained the research motivation and ensured the confidentiality of respondents' information in the questionnaire. Two screening questions (e.g., I have watched the live streaming commerce websites, such as YouTube, in the past month, or I did not interact with other viewers), were adopted in the questionnaire to ensure the live streaming commerce experience of participants. An online survey was conducted in Taiwan to collect data through Google Form, and the questionnaire was distributed through Facebook, Line, and WhatsApp. The questionnaires were pretested on 30 subjects to ensure understanding of the initial instructions and measuring scales and estimate the required completion time. Online survey is suitable for this research as we investigate online live streaming, and online surveys have been widely adopted in recent research on online user behavior (Aye et al., 2013).

A filter question was included to identify respondents as YouTube users and followers of YouTube online celebrity live streaming after providing general questions regarding the use of YouTube. Qualified participants were directed to complete the rest of the survey. Respondents were asked regarding the most frequently watched live streamers and were requested to fill out the questionnaire based on their impressions of only the aforementioned live streamers to avoid answering questions based on impressions of multiple different live streamers. The rest of the questions focused on the measurement of the included variables in the empirical model. In addition, the cover letter explained that all responses would be kept anonymous and confidential and that participation was voluntary. The data were collected from October 1, 2021, to October 31, 2021. Out of 400 questionnaires distributed, 313 valid questionnaires were returned, yielding a valid response rate of 78.25 percent. Nonresponse bias was conducted through the comparison of early and late responses. No significant difference was found in the composition of the two groups of respondents. Therefore, nonresponse bias may not be a problem in this study.

3.2 Measures

Likeability: The three items used to measure likeability were adapted from Reinhard and Messner (2009) and Xiang et al. (2016). Sample items include, "I recognize the streamer who are nice." and "I identify the streamer who are popular". The respondents rated the frequency of each item using a 5-point scale ranging from 5 = strongly agree to 1 = strongly disagree. The internal consistency coefficient was .919 for this scale.

Expertise: The three items used to measure expertise were adapted from Shen et al. (2010) and Xiang et al. (2016). Sample items include, "I find the streamer who are very knowledgeable about brands and products." and "I identify the streamer who are highly experienced in picking brands and products." The respondents rated the frequency of each item using a 5-point scale ranging from 5 = strongly agree to 1 = strongly disagree. The internal consistency coefficient was .95 for this scale.

Physical attractiveness: The three items used to measure physical attractiveness were adapted from Loiacono et al. (2007) and Xu, et al. (2020). Sample items include, "I think the streamer has an appealing appearance." and "The streamer shows me a plenty of pictures, which are visually appealing". The respondents rated the frequency of each item using a 5-point scale ranging from 5 = strongly agree to 1 = strongly disagree. The internal consistency coefficient was .897 for this scale.

Self-disclosure: The six items used to measure self-disclosure were adapted from Sharif, et al. (2021). Sample items include, "The streamer shares his/her personal information (such as real name, current town, sexual orientation, education, employment, and so on) in the live stream." and "The streamer shares his/her ideas, opinions, and recommendations in the live stream." The respondents rated the frequency of each item using a 5-point scale ranging from 5 = strongly agree to 1 = strongly disagree. The internal consistency coefficient was 0.916 for this scale.

Parasocial Interaction: The four items used to measure parasocial interaction were adapted from Xu, et al. (2020). Sample items include, "In the live stream, I feel as though the streamer and I are friends." and "I feel as though the streamer cares about my responses during the live stream." The respondents rated the frequency of each item using a 5-point scale ranging from 5 = strongly agree to 1 = strongly disagree. The internal consistency coefficient was 0.95 for this scale.

Skepticism: The four items used to measure skepticism were adapted from Kim and Oh (2020) and Obermiller and Spangenberg (1998). Sample items include, “I do believe the streamer claims made in advertising of live stream.” and “I can depend on getting the truth in in advertising of live stream.”, “Most advertising the streamer provides consumers with essential information”. The respondents rated the frequency of each item using a 5-point scale ranging from 5 = strongly agree to 1 = strongly disagree. The internal consistency coefficient was 0.859 for this scale.

Continuance watching intentions: Live streaming continuance watching intentions was measured using three items adapted from Bhattacharjee’s (2001) and Ismail et al. (2012). Sample items include, “I intend to continue watching live streaming rather than discontinue its use.” and “I will strongly recommend others to watching live streaming.” The respondents rated the frequency of each item using a 5-point scale ranging from 5 = strongly agree to 1 = strongly disagree. The internal consistency coefficient was .899 for this scale.

3.3 Data Analysis

The application of structural equation modeling (SEM) not only can estimate the unknown coefficients of the causal relationship among latent variables but also can specify how the hypothetical constructs are indicated by observed variables (Jöreskog & Sörbom, 1998). We followed the two-stage procedure proposed by Anderson and Gerbing (1988) to conduct SEM data analysis and to test whether the collected data fit well with the proposed theoretical model by using the AMOS 7.0 and SPSS 12.0 software packages.

4. Results

Female accounts for 51.8%, and male accounts for 48.2%. Most of the subjects (33.9%) were below 25 years old. The data revealed that 221 subjects (70.6%) had a college background. Most respondents were office staff (n = 170, 54.3%), while the majority of respondents earned 20000–30000 NT a month (n = 110, 35.1%). The frequency distribution of these sample characteristics is shown in Table 1.

Table 1. Presents the demographic characteristics

Background variables	Items	Number of samples	Percentage
Gender	Male	151	48.2
	Female	162	51.8
Age	Below 25 years old	106	33.9
	26-35 years old	102	32.6
	36-45 years old	68	21.7
	Above 46 years old	37	11.8
Educational level	Below senior high school	4	1.2
	Senior high school	73	23.3
	College	221	70.6
	Graduate school or higher	15	4.9
Occupation	Student	118	37.7
	Office staff	170	54.3
	Self-employed	20	6.4
	Others	5	1.6
Income (NT/month)	Less than 20000	90	28.8
	20000-30000	110	35.1
	30001-50000	79	25.2
	50001-80000	28	8.9
	Over 80000	6	1.9

Table 2 reports means, standard deviations, AVE and correlations among study variables. Evidence about discriminant validity is that whether the square root of the AVE is greater than the correlations between it and all the other constructs (Fornell & Larcker, 1981).

Table 2. Descriptive statistics and correlations

	M	SD	1	2	3	4	5	6	7
1 Likeability	3.58	.87	.89						
2 Expertise	3.42	.82	.64**	.93					
3 Physical attractiveness	3.24	.70	.60**	.50**	.87				
4. Self-disclosure	3.45	.66	.53**	.44**	.56**	.81			
5. Para-social interaction	3.26	.96	.59**	.55**	.68**	.59**	.87		
6. Continue watching	3.55	.63	.49**	.45**	.55**	.64**	.53**	.87	
7. Skepticism	3.82	.69	.49**	.38**	.44**	.56**	.42**	.59**	.80

Note. The numbers in the diagonal row are square roots of the AVE. N = 313; *p < .05; ** p < .01.

4.1 Measurement Model

Confirmatory factor analysis (CFA) was conducted to assess the measurement properties of the constructs, the overall fit of the proposed model. The fit of the measurement model was satisfactory: $\chi^2/df = 588.902/278 = 2.118$; $P < 0.05$; CFI = .956; NFI = .919; TLI = .948; RMSEA = .06. In order to gauge the internal consistency within this study, a reliability assessment was carried out using Cronbach's α to ensure that the items for each factor were internally related. As shown in Table 3, the final Cronbach's α values all surpassed 0.7, thereby indicating good internal consistency.

Convergent validity was also assessed in this study by reviewing the t -tests for the item and factor loadings (Anderson & Gerbing, 1988), with the results in Table 3 showing that all of the t -values were found to be significant ($\alpha = 0.01$). The factor loadings were also found to be statistically significant, with the critical t -values ranging from 10.78 to 17.26 ($p < 0.001$) and the standardized factor loading values ranging from 0.742 to 0.965. These findings clearly provide strong support for the convergent validity in the present study.

We went on to examine the composite reliability and 'average variance extracted' (AVEs) for all of the observed variables (Table 2), and found that composite reliability was above 0.7 and all of the AVEs were above 0.6494. These findings again provide strong support for the convergent validity of the scale used in this study.

Table 3. Confirmatory factor analysis, reliability estimates

Construct Items	Cronbach's α	Indicator	Standardized loading	SMC	CR	AVE
Likeability	0.919	L1	.875	.766	.9199	.7929
		L2	.910	.828		
		L3	.886	.785		
Expertise	0.95	E1	.906	.821	.95	.865
		E2	.935	.875		
		E3	.948	.898		
Physical attractiveness	0.897	VA1	.922	.849	.8999	.7502
		VA2	.814	.663		
		VA3	.859	.738		
Self-disclosure	0.916	DIS1	.822	.675	.9173	.6494
		DIS2	.779	.606		
		DIS3	.823	.677		
		DIS4	.832	.692		
		DIS5	.833	.695		
		DIS6	.742	.550		
Para-social interaction	0.95	PSI1	.898	.806	0.9503	0.7612
		PSI2	.875	.765		
		PSI3	.873	.762		
		PSI4	.881	.777		
Continue watching	.899	SEE1	.881	.776	0.9045	0.7613
		SEE2	.965	.932		
		SEE3	.759	.575		
Skepticism	.859	Sk1	.766	.598	0.879	0.645
		Sk2	.818	.670		
		Sk3	.809	.654		
		Sk4	.819	.671		

We followed the recommendations of Hulland et al. (2018), varying scale format was implemented, a physical separation of dependent constructs from independent constructs was enforced, and item sets were randomized to minimize order effects (Qian, 2022) and ensure followers that their responses are kept anonymous and confidential (Yeh, 2015). Moreover, all of the subjects were informed that there were no correct or incorrect answers (Yeh, 2015). This helped to minimize potential problems related to social desirability. This study also assessed CMV by comparing fit indices between the basic measurement model and one in which all items loaded on a latent CMV factor. This method allows for partitioning of response variance to a specific measure into three components: trait, method, and random error. The model with the CMV factor had a poor fit ($\chi^2 = 3299.454$, $df = 299$, $\chi^2/df = 11.035$, $RMSEA=0.179$, $CFI=0.571$, $GFI=0.476$) and a significantly higher χ^2 value than the basic measurement model ($\Delta\chi^2 = 2710.554$, $\Delta df = 21$, $p < 0.001$). Therefore, common method variance does not seem to be a significant problem in this study. Moreover, the confidence interval test also demonstrated good discriminant validity among these variables. Overall, common method variance thus should not pose a serious problem in this study.

4.2 Hypotheses Testing

4.2.1 Structural Model

Amos version 7.0 was used to test our hypotheses. The SEM results show that the model provided an adequate fit to the data, $\chi^2 = 100.73$, $p = .00$, $\chi^2/df = 25.18$ ($CFI = .91$; $NFI = .91$; $AGFI = .92$; $RMSEA = .05$). The effect of likeability on PSI was significant ($\beta = 0.13$; $p < 0.05$). Properties of the causal paths (standardized path coefficients) are shown in Table 4. Thus, H1 was supported. Next, perceived expertise of live streamers had a positive impact on perceived PSI. ($\beta = 0.18$; $p < 0.001$). Thus, H2 was supported. The effect of physical attractiveness on PSI was significant ($\beta = 0.39$; $p < 0.001$), Thus, H3 was supported. The effect of self-disclosure on PSI was significant ($\beta = 0.23$; $p < 0.001$), Thus, H4 was supported. The effect of PSI on willingness to continue watching the live streaming was significant ($\beta = 0.53$; $p < 0.001$). Thus, H5 was supported.

Table 4. Path analysis by SEM

Path	Estimate	S.E.	C.R.
H1: Likeability → PSI	0.13*	0.06	2.30
H2: Expertise → PSI	0.18***	0.06	3.69
H3: Physical attractiveness → PSI	0.39***	0.07	7.65
H4: Self-disclosure → PSI	0.23***	0.07	4.89
H5: PSI → willingness to continue watching the live streaming.	0.53***	0.03	11.16

Note. *** $P < 0.001$.

Hypothesis 6 was that skepticism moderates the relationship between PSI and willingness to continue watching the live streaming. The sample was divided into high personality skepticism group (one standard deviation above the mean) and low personality skepticism group (one standard deviation below the mean). Multi-group structural equation model was used to test whether the influence of PSI on willingness to continue watching live streaming significantly differed between the high personality skepticism group and the low personality skepticism group. Two models were constructed: one in which the path between PSI and willingness to continue watching live streaming was constrained to be equal across the groups and one in which the path was allowed to be estimated freely. Support for Hypotheses 6 would be concluded if a chi-square difference test showed significant difference between the free and the constrained models. The chi-square difference test (see Table 5) indicated that the free model is superior to the constrained model ($\Delta\chi^2 = 5.87$, $\Delta d.f. = 1$, $p < 0.05$). Therefore, the results indicate support for Hypothesis 6, suggesting that the effect of PSI on willingness to continue watching live streaming does differ across high- and low- personality skepticism group, i.e., skepticism moderates the relationship between PSI and willingness to continue watching the live streaming.

Table 5. Chi-square difference analyses with personality skepticism as moderator

Models	χ^2	df	χ^2/df	$\Delta\chi^2$	Δdf	CFI	NFI	RMSEA
Free model	138.20	52	2.65	-	-	.96	.93	.08
Constrained model	144.07	53	2.72	5.87	1	.95	.92	.12

5. Discussion and Conclusions

The results show that likability, expertise, physical attractiveness, and self-disclosure of live streamers have a significant impact on PSI, thereby positively enhancing the intentions of viewers to continuously watch live streaming. This study revealed that viewer perception of the physical attractiveness of live streamers is the most crucial factor determining PSI, followed by self-disclosure and expertise. The following discussions are proposed based on the research findings.

This result is similar to that of Lee and Watkins (2016), who argued that physical attractiveness strongly influenced PSI. This finding also reflects the suggestion of Haidt (2000) that the attractiveness of streamers is an important content stimulus in the live streaming commerce and also a key element of an appealing stream, which can stimulate the audience's exhilaration and arouse their emotions. Consequently, the attractiveness of streamers' appearance could make a good impression on the viewers, thereby increasing their interaction with streamers. Self-disclosure of live streamers also plays a key role in determining the perceived PSI between viewers and these celebrities. The depth of self-disclosure of live streamers on fan pages can positively contribute to viewers' PSI, which is consistent with past literature. Uncertainty reduction theory indicates that the initial interaction between people is characterized by extremely high uncertainty, and such interaction drives communication (Berger & Bell, 1988). The theory also emphasizes that uncertainty can be mitigated through interactive strategies, such as "self-disclosure." Interaction ensues because Internet celebrity can disclose private information through social media and provoke feedback from viewers through this self-disclosure. Therefore, in addition to sharing their experiences and tips on using the products, this study suggests that live streamers may choose to reveal different aspects of their life experiences in their videos to enhance viewer perception of PSI.

Expertise is another important factor in interpersonal interaction and attraction. This result is similar to that of Xiang et al. (2016), who argued that users are likely to interact with other users who are knowledgeable about brands and products. This strategy can help shorten the distance between viewers and live streamers to build and maintain a close relationship with viewers. Therefore, this study suggests that live streamers must continuously learn new skills and knowledge, enrich their expertise, and maintain their professional image.

As suggested by Xiang et al. (2016) who contended that users on a social commerce platform may exchange information and interact with other likable or knowledgeable users, and even foster the formation of PSI relationships. Moreover, if the information source is perceived to possess desirable or positive traits, then the receiver is likely to be persuaded by information from the source (Mills & Aronson, 1965). Frequent exchanges may also facilitate the formation of PSI relationships of users. Therefore, this study suggests that live streamers should infer and learn the preferences of viewers by analyzing the materials most frequently viewed and identifying the types of comments that viewers leave.

This study revealed that PSI is an important factor in boosting the continuous watching live streaming intentions of viewers. When viewers are fully engaged in real-time interactions, their sense of immersion and belonging to the live streaming increases. This result is consistent with Choi and Kim (2004) that viewers can interact with others in the live chat rooms and develop deep relationships while engaging in real-time interactions. In the online context, PSI is viewed as an imaginary friendship-like relationship that an individual develops with others and is based on felt affective ties and emotional attachment to others (Horton and Wohl, 1956). Thus, live streamers can earn trust from viewers through the friendship-like relationships established and maintained between viewers and live streamers, which, in turn, enhances the willingness of viewers to watch live streaming.

Finally, highly skeptical and less skeptical consumers may distrust and trust advertising, respectively. Skeptics generally respond less positively to advertising; they lessen their liking and view advertising as having minimal impact (Obermiller, Spangenberg, & MacLachlan, 2005). Hwang and Jeong (2016) proposed that skepticism could play an important role in the responses of the audience to advertisements and marketing messages, such as sponsored posts. As mentioned above, the spokesperson is an important clue for consumers to judge the credibility of the message. Therefore, consumers will inevitably question whether live streamers have accepted the sponsorship of the manufacturer when they see the video shared by live streamers with embedded products. If the audience is highly skeptical, then the authenticity of live streamers' endorsement will be highly questioned, and they may rate sponsored posts negatively or be less likely to be persuaded.

5.1 Practical Implications

The results of the study indicate that appropriate self-disclosure by the streamer during live streaming can indeed have a positive impact on PSI. Therefore, the streamer can attempt to activate their communication through music, text, or images while conducting self-disclosure to allow the audience to communicate with each other. Effective live streaming marketing can be achieved when the audience has increased willingness to interact with

live streamers. The current study not only aims to expand the scope of research on PSI but also to prompt researchers and organizations to consider effective communication strategies for online audiences to consolidate viewing rates.

The number of viewers for live streaming is the source of income for live broadcasters. Therefore, every live streamer faces challenges in attracting users to continue watching their live streaming. The results show that PSI has a significant positive impact on the willingness to continue watching the live streaming. Therefore, the streamers should offer interactive features that enable users to feel that communication with other users is similar to communicating with friends. Live streamers can also enhance social interaction with viewers during live streaming to encourage cohesion among channel fans. For example, social interactions can increase the opportunities to communicate with fans, such as quickly responding to fan messages, holding meet-and-greet parties, and organizing fun celebrations, which can cultivate their relationship. The voting function is set up in the interface design of the live streaming. Therefore, users can demonstrate that they are supporters of a certain team through voting behavior or leaving a message in the chat room for other users to like, thus improving the interaction with users. Live streamers should also consider attracting skeptical users to watch the live streaming, such as providing testimonial advertisements or actual personal experience, to reduce their skepticism. Video creations of live streamers will directly affect the preferences of consumers for the product considering product introduction videos. Therefore, compatibility with the product should be considered whether a manufacturer chooses an Internet celebrity endorsement product, or an Internet celebrity chooses a product of the manufacturer. The video of the streamer must fit the target customers of the company. Otherwise, the advertising effect will be failing to maximize the effect and attract consumers.

5.2 Limitations and Future Suggestions

This study has four limitations. First, the study focused on the live streaming industry on YouTube; thus, caution is required in generalizing the findings. Second, this study adopts the method of convenience sampling due to the limitation of time and cost, and most of the respondents are under the age of 25, therefore, sample diversity is lacking. Future research may consider extending this study by sampling viewers from different platforms and cultural backgrounds. Third, the context of this research is a single specific live broadcaster (the most frequently watched live streamer by individuals). However, users usually watch more than one live streamer in the real world. Future research may continue to explore the interacting relationships among PSI and other important concepts in determining continuous live streaming watching. Fourth, this study is cross-sectional. The use of cross-sectional data is a limitation when testing the causality of relationships in research models, as no definitive conclusions can be drawn. (Xiang et al., 2016). Longitudinal studies and experiments can provide strong inference of causality and improve understanding of the directions of causality (Dillon & Goldstein, 1984).

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