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Customer engagement on live streaming: a socio-technical approach

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Abstract
Technological advancements impact the e-commerce business landscape and give rise to live streaming shopping. This study, using a socio-technical approach, aims to investigate the relationship between interaction, emotional attachment, synchronicity, platform attachment, visit duration, and customer engagement. The data was collected using an online survey of 111 users. The Structural Equation Model was employed to evaluate five hypotheses. The results indicate that interaction has a positive and significant relationship with emotional attachment. However, this study found that there was no significant relationship between synchronicity and platform attachment. Furthermore, the study proved a positive and significant relationship between emotional attachment and visit duration. The study also found a positive and significant relationship between platform attachments and visit duration. Finally, visit duration has a positive and significant effect on customer engagement. This study adds to the existing literature on customer engagement and marketing by utilising a socio-technical approach to identify the factors that influence customer engagement on TikTok Shop. In the practical context, a live streaming platform can enhance customer engagement among Indonesian consumers by extending their visit duration on the TikTok Shop platform. They can also maximise emotional attachment by focusing on optimising the interaction between streamers and viewers. In terms of social benefits, consumers have a variety of live shopping platforms to choose from. TikTok Shop serves as a bridge to overcome the need for physical interaction between consumers, products, and sellers.

Keywords: customer engagement; emotional attachment; interaction; platform attachment; synchronicity.

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Introduction

In the last four years, consumers have become interested in shopping through live streaming services such as Facebook Live, Tabao Live, and Amazon Live (Wongkitrungrueng & Assarut, 2020). With the continuous advancement of internet technology, a new social commerce has emerged, which is called live streaming shopping (Sun et al., 2019). As a special form of online shopping that allows streamers to live stream, it has a public scrolling text screen for communication at the same time (Lou & Yuan, 2019). Live streaming allows streamers to do real-time live events including product events, and shopping guides. Viewers can post comments via a scrolling text screen. Streamers can answer or ask questions based on live content, which can influence subscriber behaviour (Chen et al., 2017).

Compared to other forms of social media, live streaming services are synchronous in nature, meaning that all interactions and activities occur in real-time. These platforms are defined by four key characteristics: synchronization of content delivery and interaction; the ability for users to broadcast using mobile devices or webcams; real-time communication between viewers and hosts or among viewers themselves; and the option for viewers to provide streamers with virtual gifts or monetary rewards (Scheibe et al., 2016; Zimmer et al., 2018). Live streaming services can be divided into two categories: general live streaming services (without any subject restrictions), such as YouTube live services, and themed live streaming services, such as Twitch (about games) (Scheibe et al., 2016). Live streaming becomes an important channel for sellers to sell their products. Compared to traditional e-commerce, live streaming shopping has significant advantages in product presentation, time cost, shopping experience, and selling logic. Many platforms provide live shopping services such as Taobao Live (a live streaming shopping platform provided by Taobao) (Smith et al., 2013) and TikTok (a well-known short-form platform).

An increasingly popular social networking site among pre-teens and teens is TikTok, where users can produce, edit, and share 15-second videos (Bossen & Kottasz, 2020). Currently, TikTok has more than 500 million users, mostly among pre-teens and late teens (Leight, 2019). Furthermore, the presence of the shopping centre feature on TikTok Shop makes it easier for users to find a wider selection of products for sale and helps merchants manage orders from buyers better (Kompas.com, 2022). Therefore, it is important to

examine the antecedents of customer engagement in the context of live streaming shopping at the TikTok Shop for Indonesian consumers.

Previous studies have confirmed the positive impact of the perceived attributes of commercial group chats, e-commerce, and social commerce on customer engagement, such as e-word-of-mouth, purchase, and adoption (Van Dolen et al., 2007; Hussin et al., 2008; Goraya et al., 2021). However, customer engagement in the physical environment and traditional e-commerce emphasises simple dynamic interactions between customers and sellers (Kang et al., 2021). The type of live streaming commerce that invites sellers to streamers changes the object and mode of customer engagement. Customer engagement in live streaming commerce involves multiple actors including sellers, streamers, and customers and highlights the highly networked and socialised characteristic of interactions between customers and these various actors (Guo et al., 2022). Live streaming commerce attributes can change customers' psychological perceptions and behavioural intentions in this multi-actor-based interaction situation (Cai et al., 2018). Given that customer engagement is an effective way to retain customers (Kang et al., 2021), capitalise on the business value of social commerce (Zhang et al., 2014), and increase social expenditure (Guo et al., 2021; Sundström et al., 2021; Vivek et al., 2012; Zhang et al., 2019), Qin (2023) examines the category of live streaming commerce wherein online sellers engage broadcasters to showcase and sell products. This research further examines the effects of live streaming commerce qualities on consumer engagement by analysing various forms of online streaming commerce. The video streaming industry is evolving with a clear trend toward ad-supported models, driven by consumer demand for affordable and premium content. Technological advancements continue to play a crucial role in enhancing streaming quality and user experience. To maximise the marketing effectiveness of live streaming strategies, particularly in the vibrant ecosystem of TikTok Shop, it is essential to gain a deeper understanding of how the perceived attributes of live streaming commerce influence customer engagement. By exploring these dynamics, this study uncovers valuable insights that drive customer interaction and foster stronger connections between brands and their audiences.

Based on previous research, a socio-technical approach was used to explain whether technical factors influence customer engagement. Similar to social media, live streaming platforms are socio-technical platforms (Zhang et al., 2019). Investigating whether and how perceiving-streaming commerce attributes affect customer engagement can help sellers and platforms leverage the core advantages of live streaming commerce attributes. Hence, this study aims to investigate the influence of live streaming commerce attributes on customer engagement based on the identification of live streaming commerce attributes from the perspective of the TikTok Shop platform.

Literature review
Technology acceptance model

Developed by Davis (1989) over three decades ago and based on the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM) predicts that the key adoption drivers of technology are perceived ease of use and perceived usefulness. Originally based on the use of information systems in organisational contexts, the TAM been extended into other contexts including the consumer acceptance of artificial intelligence in services (Wirtz et al., 2018). Accordingly, to better understand the development of the theory and application, previous research has comprehensively reviewed the use of the TAM in the literature (Marangunić & Granić, 2015).

Socio-technical approach

A comprehensive understanding of successful organisations requires the adoption of a socio-technical approach (Krotov, 2015). Social systems emphasise human attributes (such as values, attitudes, and skills) and relationships, power structures, and reward systems (Bostrom & Heinen, 1977). In contrast, technology systems emphasise the tasks, technologies, and processes required to transform inputs into outputs (Bostrom & Heinen, 1977). Several previous studies have adopted a socio-technical approach to study online consumer behaviour. For example, Hu et al. (2016) explored consumer intentions to buy through a socio-technical approach and found that consumers are influenced by social and technological factors. Wan et al. (2017) found that a socio-technical approach can explain user donation behaviour. In addition, technical factors (including sociality and personalisation) and social factors (including user online interaction, information identification, and value) will influence user engagement with content creators, and increase their willingness to contribute.

Furthermore, Zhang et al. (2019) found that social factors (including social isolation and social interaction anxiety) and technical factors (including entertainment and personalisation) influence user addiction. Like some social media such as TikTok Shop, streaming shopping platforms is also recognised as social technology platforms. Therefore, a socio-technical approach is appropriated to explore the influence of user engagement and engagement on the live streaming shopping platform TikTok Shop. This interaction is a crucial social factor (Wan et al., 2017). In addition, the live shopping platform also provides users with a lot of technical support (for example: real-time comments, quick feedback from anchors, and real-time product views by streamers), which enables consumers to understand products quickly. Based on the unique technical characteristics of direct shopping platforms, synchronicity is used as a technical factor in this study.

Recent studies that used the socio-technical approach such as Li et al. (2021) found that technical factors (synchronicity and representational expression) and social factors (interaction and identification) positively affect emotional attachment to streamers and platform attachment, respectively. Liao et al. (2023) also found that streamer interaction orientation had a positive effect on viewer immersion and parasocial interaction, which in turn positively influenced viewers' intention to purchase. Furthermore, Qin et al. (2023) found that informational and emotional supports are positively influenced by real-time interactions, perceived closeness, and perceived authenticity.

Hypotheses development
Interaction and emotional attachment

Interaction refers to online interaction and communication between users and other streamers or viewers on the live shopping platform. Such interactions allow users to focus on content creators (Berger, 2014; Clark & Kashima, 2007). The interaction between users and brands can help users to develop brand attachment and predict their commitment and purchase behaviour such as repeat purchase behaviour (Thomson, 2006). In addition, interactions with others also promote interpersonal attractiveness: when users interact more frequently with others, they tend to like other people (Festinger et al., 1950; Thomson, 2006). Social interactions help users express themselves and build friendships with others, which increases their engagement (Fiedler & Sarstedt, 2014). Moreover, the direct dialogue and interaction with viewers on social media are conducive to promote intimacy between streamers and viewers (Corrêa et al., 2020; Phua & Ahn, 2016; Qin, 2020). Moreover, interaction-oriented salespeople can demonstrate that they are warm, friendly, and approachable through verbal and nonverbal behaviours that enhance physical and psychological intimacy (Darian et al., 2005; Mehrabian, 1966). Therefore, the more interaction between a user and other streamers or viewers, the more likely the user's emotional attachment development. Thus, this study proposed a hypothesis.

H1: Interaction has a positive and significant influence towards emotional attachment to streamers.

Synchronicity and platform attachment

Consumers need to communicate with sellers immediately to fulfil some other details and their personal needs (Lin et al., 2019). Online streamers usually provide limited information about products in the form of text, images, and live videos on live streaming shopping platforms. Therefore, synchronicity is the main technical characteristic of live streaming shopping platforms. According to Kirk et al. (2015), synchronicity refers to the extent to which users enter information and receive feedback simultaneously in

communication. Klimmt et al. (2007) found that if a system allows users to use without delay, it will provide users with a better experience. In computer games, the speed of computer response to user input will affect their experience. Furthermore, live streaming synchronisation can help viewers to enrich live streaming content through interaction (Tang et al., 2016). After a viewer submits a comment, other viewers can immediately see that comment appear on the screen, and that comment can influence their behaviour. Meanwhile, when streamers reply to comments, other users can also get synchronous feedback. For streamers, they can immediately see on-screen comments submitted by viewers and reply to their viewers via text and voice (Wang et al., 2019); they can even send stickers and gifts in the TikTok Shop. Therefore, the study proposed a hypothesis.

H2: Synchronicity has a positive and significant influence towards the platform attachment.

Emotional attachment and visit duration

Li et al. (2021) revealed that the psychological connection between users and services is called emotional attachment, which has a lasting and stable impact on user behaviour, and emotional attachment can positively influence user motivation and behaviour. In marketing research, behavioural commitment to consumer loyalty and behavioural intention will be influenced by brand emotional attachment. Bonding with a brand is a long-term result of a brand relationship, which can predict past and future buying behaviour (Fedorikhin et al., 2008; Grisaffe & Nguyen, 2011). Once a user has an emotional attachment to someone, he or she will be willing to interact with the streamer or buy the product recommended by the streamer. Emotional attachment can explain fan behaviour in the study of the relationship between fans and celebrities (Stever, 2011). In addition, consumers' attachment to celebrities can encourage them to provide strong responses (Ilicic & Webster, 2011). Fans may spend time searching for information and buying products from celebrities they like (Stever, 2011). Thus, this study proposed a hypothesis.

H3: Emotional attachment to streamers has a positive and significant influence towards visit duration.

Platform attachment and visit duration

Kim et al. (2016) defines platform attachment as the user's emotional bond with the platform. Platform linkage is a driving factor influencing user loyalty to tourism and shopping websites (Jiang & Dong, 2008). Platform linkage is an important factor in maintaining the connection between users and platforms. For example, a consumer's emotional connection to a platform can positively influence a consumer's attachment to a platform. Ren et al. (2012) found that

engagement with online communities can significantly increase the participation and retention rates of their users. The live streaming shopping platform provides many tools to assist consumers in making decisions, such as real-time interactions. Users gradually get used to rely on the TikTok Shop platform for browsing or shopping. As a result, attachment to TikTok Shop's live shopping platform can encourage users to frequently use and actively participate in the platform, which increases the duration of a user's visit. Therefore, this study proposed a hypothesis.

H4: Platform attachment has a positive and significant influence towards visit duration.

Visit duration and customer engagement

Brodie et al. (2011) were the first to provide a definition of customer engagement and noted that customer engagement reflects a psychological state that occurs through an individual's interactive experience with a focus object. Customer engagement in social commerce takes place in a multi-actor-based interaction environment. Customer engagement has been variously defined as states of mind, psychological processes, and behaviours that go beyond purchases and transactions (Brodie et al., 2019; Van Noort et al., 2012; Vivek et al., 2012). Sun et al. (2019) revealed that online sellers provide products and after-sales services, while streamers act as "communication bridges" and "shopping guides" to help online sellers introduce product information more efficiently and make personalised recommendations to customers. Subscribers receive information from merchants and streamers and share information as co-creators by sending text-based bullet screens in living rooms simultaneously. In this study, customer engagement refers to the level of customer participation and connection with various actors including online sellers, streamers, and other customers who watch the same live video on the TikTok Shop (Brodie et al., 2011; F. Breidbach et al., 2014; Li et al., 2018). Customer engagement includes both transactional (purchasing) and non-transactional (watching, chatting, and sharing) behaviours and is evaluated by measuring customer behavioural intentions (Vivek et al., 2012).

Several previous studies, such as Wongkitrungrueng and Assarut (2020), examined the positive effects of utilitarian, hedonic, and symbolic values on customer trust and engagement. Furthermore, O'Cass and Carlson (2010) confirmed that pleasure from the flow experience is associated with the user's intention to experience it again. Hu and Chaudhry (2020) also show that social and structural ties positively influence customer engagement through affective commitment to broadcasters and online marketplaces. Live streaming commerce embeds intelligent interaction and quality evaluation functions, such as like, comment, and follow buttons, which are important ways to provide informational and emotional support (Tajvidi et al., 2020) as well as effective

mechanisms that support communication and interaction between customers and various actors including online sellers, streamers, and other customers in real-time (Kang et al., 2021). Customers act as information sharers and influencers in live streaming commerce (Gómez et al., 2019) such as in the TikTok Shop. Customers can develop feelings of accomplishing work that is valuable and meaningful to others when they provide information and emotional support to others. Meanwhile, customers can develop feelings of being valued and cared for when they get informational and emotional support from others (Lin et al., 2021). Feelings in the form of receiving useful assistance or making useful contributions increase the intention to engage in live streaming commerce. Therefore, this study proposed a hypothesis.

H5. Visit duration has a positive and significant influence towards customer engagement.

Based on the Socio-Technical Approach (Bostrom & Heinen, 1977), the framework proposes that interaction influences emotional attachment and synchronicity influences platform attachment. Furthermore, the model suggests that emotional and platform attachment influence visit duration which in turn influence customer engagement, as shown in Figure 1.

Figure 1.
Conceptual framework
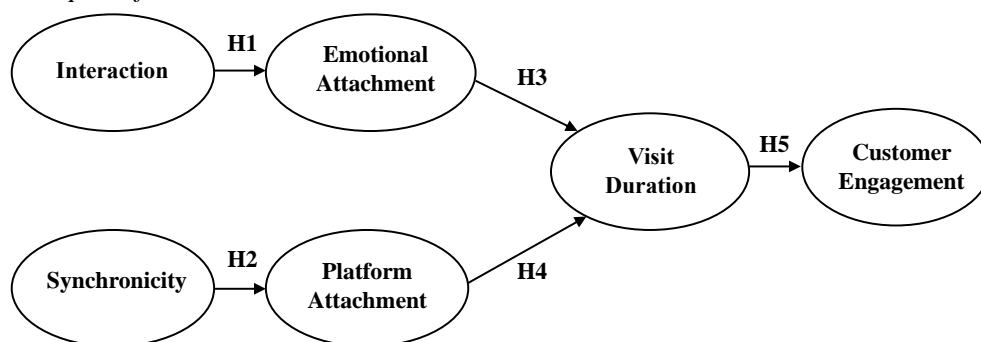
Source: Author's work (2024)

Research method
Scale design

This study has six variables in the questionnaire, namely interaction (ITR), synchronicity (SYN), emotional attachment to streamers (EMT), platform attachment (PTR), visit duration (VST), and customer engagement (CE). The construct interaction was measured using four items adapted from Chen and Lin (2018) and Li et al. (2021), synchronicity was measured using three items adapted from Li et al. (2021) and Liu (2003), emotional attachment to streamers was measured using three items adapted from Li et al. (2021) and Ren et al. (2012), platform attachment was measured using two items adapted from Li et al. (2021) and Zhang et al. (2019), visit duration was measured using three

items adapted from Li et al. (2021) and Lu and Lee (2010), and customer engagement was measured using two items adapted from Qin et al. (2023) and Wongkitrungrueng and Assarut (2020). This study employed a five-point Likert scale, which ranged from "1=strongly disagree" to "5=strongly agree". In order to increase the surface validity and disinfection of the questionnaire contents, two marketing lecturers were invited in marketing to evaluate the questionnaire and then modify it. Table 1 shows the final measurement items.

Table 1.

Construct measurement

Construct	Items
Interaction	When watching live streams on the TikTok Shop, I can exchange opinions with streamers or other viewers easily.
	When I watch a live stream in the TikTok Shop, the streamer knows I'm watching.
	When watching live streams on the TikTok Shop, I feel closer to the streamer.
	When I watch a live stream on the TikTok Shop, the streamer provides ample opportunities to respond and ask questions.
Synchronicity	When I watch live streams on the TikTok Shop, it's superfast to see comments posted by other viewers.
	When I watch live streams on the TikTok Shop, I can see other people's comments without delay.
	When I watch live streams on the TikTok Shop, the platform is very quick to respond to my comments.
Emotional attachment to streamers	I want to be friends with streamers.
	I would like to interact with streamers in the future.
	I am interested in learning more about streamers.
Platform attachment	I am bound to use live streaming on TikTok Shop.
	Using live streaming on the TikTok Shop is important to me.
Visit duration	I will be staying for a longer time while browsing the live streams on the TikTok Shop.
	I usually spend a lot of time watching live broadcasts in the TikTok Shop.
	I intend to spend a longer time at the TikTok Shop.
Customer engagement	I consider sellers using live streams in the TikTok Shop to be my first choice when I want to buy something.
	I tend to recommend sellers who use live streaming on the TikTok Shop to my friends.

Source: Author's work (2024)

Data collection

The population of this study is the audience of TikTok Shop live streaming videos in Java Island (East Java, Special Region of Yogyakarta, Central Java, West Java, DKI Jakarta, and Banten) because the highest penetration of internet users in Indonesia is in Banten with 89.10 per cent and followed by DKI Jakarta with 86.96 per cent, and the rest are mostly in the other part of Java Island (APJII, 2023). In addition, Ginee.com (2021) revealed that the top locations for TikTok users are Jakarta, East Java, and West Java. TikTok Shop is the most frequently used social media for online shopping in Indonesia (Bisnis.com, 2022). In 2022, TikTok reached 113 million users in Indonesia

(cnbcindonesia.com, 2023). The survey was conducted from May to June 2023 using Google Form and distributed via social media. 146 questionnaires were received but only 111 met the requirements.

Reliability and validity analysis

Reliability and validity were observed in the measurement model. Both Cronbach's alpha and composite reliability were used to assess reliability. The accepted values are 0.80 or higher (Chin, 1998). Three criteria assessed convergent validity: (1) item loading λ larger than 0.70 and statistical significance, (2) composite construct reliability for a construct should be more significant than 0.80 and can be interpreted like a Cronbach's λ coefficient, and (3) average variance extracted (AVE) larger than 0.50 (Hair et al., 2010). Discriminant validity between constructs was assessed using the criterion that the square root of AVE for a construct should be more significant than its correlations with all other constructs (Hair et al., 2010).

Respondents from Central Java dominated with 47.7%, West Java with 16.02%, and DKI Jakarta with 12.6%. Respondents aged 13-18 accounted for 48.6%, followed by 18-23 years old at 15.3%. Most respondents had completed high school education with 40.5%, while 36% had a bachelor's degree. Furthermore, the majority of respondents in this study were students, constituting 46.8%, followed by teachers at 10.93%, and college student at 15.3%. Respondent profile shows in Table 2.

Results

Measurement model

This study calculated Cronbach's α by adopting SPSS 24.0. All Cronbach's α values exceed 0.7, which means good reliability. This study used AMOS 24.0 to perform confirmatory factor analysis to test convergence validity. As shown in Appendix 1, all standard loading exceed 0.7, the composite reliability (CR) value exceeds 0.7, the average variance extract (AVE) value exceeds 0.5 which means good convergent validity (Fornell & Larcker, 1981). This study estimated discriminant validity by comparing the square roots of the AVE values of all constructs with correlation coefficients. As shown in Appendix 2, the square root of the AVE value (diagonal element in bold) of each construct is greater than the correlation coefficient of the other constructs, indicating good discriminant validity (Sitgreaves, 1979).

Structural model test result

Criteria of a good model-fit envelop chi-square/degrees of freedom ($\chi 2$/df) less than 5, Tucker-Lewis index (TLI) and comparative fit index (CFI) bigger than 0.9, and root mean square error approximation (RMSEA) less than 0.10 (Hair et al., 2010). Structural model test results prove the better model fit for index $\chi 2$/df (1.671), TLI (0.937), CFI (0.952), and RMSEA (0.078).

Table 2.

Respondent profile

Demography	Frequency	Percentage
Province		
Banten	10	9
Special Region of Yogyakarta	8	7.2
Jakarta Capital Special Region	14	12.6
West Java	20	18
Central Java	53	47.7
East Java	6	5.4
Age		
13-18	54	48.6
18-23	17	15.3
23-28	9	8.1
28-33	12	10.8
33-38	12	10.8
38-43	7	6.3
Education		
Junior high school	23	20.7
Senior high school	45	40.5
Bachelor degree	43	38.7
Occupation		
Civil servant	8	7.2
Lecturer	1	0.9
Teacher	28	25.2
Private sector employee	3	2.7
Student	52	46.8
College student	17	15.3
Housewife	1	0.9
Entrepreneur	1	0.9

Source: Author's work (2024)

Hypotheses test result

After doing the measurement model and structural model analysis, the next stage is path testing (Table 3). Interaction positively and significantly influences emotional attachment. Specifically, the result proves that the critical ratio is more than 2.58 (5.719), and the p-value is less than 0.01(0.000) on the significant phase 0.01. The estimated value is also positive (0.099), thus, H1 is supported. However, H2 is not supported. Synchronicity has no significant influence on platform attachment. Results proved that the critical ratio is less than 1.96 (1.446), and the p-value is more extensive than 0.01 (0.148) on significant phase 0.01.

Moreover, this research proves that emotional attachment indicates a necessary determinant for visit duration (C.R.=5.161 at p-value<0.01), so H3 is supported. This research also clarifies that platform attachment positively and significantly influences visit duration (C.R.=2.839, p-value<0.01 on the significant phase 0.01), thus H4 is supported. Furthermore, H5 that stated visit duration has a positive and significant influence on customer engagement is supported. Specifically, the result shows that the critical ratio is more than 2.58

(5.117), and the p-value is less than 0.01(0.000). The full model can be seen in Figure 2.

Table 3.

Path test result

Hypotheses	Path	Standardised Estimate	C.R.	p-value	Result
H1	Emotional attachment ←interaction	0.099	5.719	***	Supported
H2	Platform attachment ←synchronicity	0.119	1.446	0.148	Not supported
H3	Visit duration ←emotional attachment	0.084	5.161	***	Supported
H4	Visit duration← platform attachment	0.111	2.839	0.005	Supported
H5	Customer engagement ←visit duration	0.127	5.117	***	Supported

Source: Author's work (2024)

Figure 2.

Full model
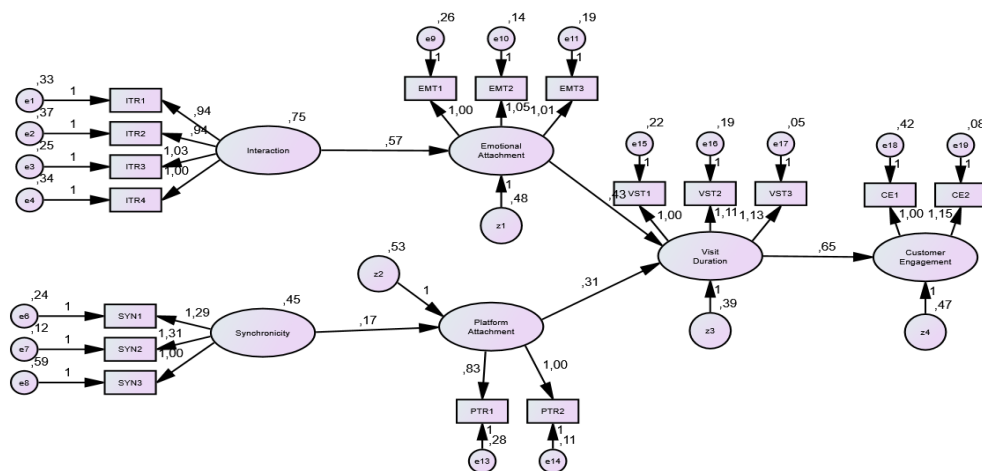
Source: Author's work (2024)

Discussion

The finding supports hypothesis 1 since it shows that interaction has a positive and significant influence on emotional attachment. In other words, interaction is critical to a customer's TikTok Shop experience as it can optimise content and information delivery, which increases control over online communications. TikTok Shop enables online sellers, streamers and subscribers to make real-time comments on video content and get immediate feedback. The perception of interaction is a good and rational reason for customers to believe that the service provider of the TikTok Shop cares about

and values them, and thus creates a sense of informational and emotional support among them (Etemad-Sajadi, 2016; Kang et al., 2021). This research supports earlier findings that interaction positively affect emotional attachment to streamers, which in turn increase the customer engagement (Li et al., 2021). In addition, interaction motivates customers to seek support from online sellers, streamers, and other customers and fulfil their emotional needs (Tang et al., 2016)

The result did not support that synchronicity positively and significantly influence platform attachment. This could happen for several reasons. First, the TikTok Shop is considered to have frequent delays because if a system allows users to use it without delay, it would give users a better experience (Klimmt et al., 2012) and interaction that help the viewers to enrich live streaming content become disturbed or diminished. This research suggests that while synchronicity theoretically offers advantages like immediate engagement and social presence, these benefits are undermined in practice by technical delays on TikTok Shop. The disruptions caused by such delays affect user experience, lower the quality of interactions, and ultimately reduce the potential for developing a strong attachment to the platform. Although, TikTok Shop facilitate the streamers to reply on the comment sent by viewers reply to their viewers. Moreover, other users or viewers can also get synchronous feedback and this could increase the platform attachment. This study did not support the previous findings (Li et al., 2021; Tang et al., 2016). In summary, synchronicity can enhance immediate user engagement by providing a sense of presence and connection, it is not sufficient on its own to drive long-term platform attachment. Achieving lasting engagement typically requires a multi-faceted approach that combines real-time interactions with personalised, high-quality, and value-driven experiences.

H3 that stated emotional attachment to streamers is positively and significantly influence visit duration is supported. This in line with previous findings (Li et al., 2021). Streamers and users on TikTok Shop have the bonds and it could increase the visit duration on the platform. Thus, when users already have attachments for streamers on TikTok Shop, they tend to feel at home watching live streaming at the TikTok Shop for quite a long duration. Specifically, when users develop an emotional attachment to streamers on TikTok Shop, they are not just passive consumers but active participants in a community where trust, familiarity, and positive emotional experiences abound. This deep connection makes the platform feel like a welcoming space—almost a second home—encouraging viewers to stay longer and engage more deeply with live streaming content.

H4 is supported in this study and in line with study of Li et al. (2021). Users are getting used to relying on the TikTok Shop platform for browsing or shopping. Consequently, attachment to the live shopping platform (TikTok

Shop) can encourage users to use frequently and actively participate in these platforms. TikTok Shop's ability to merge engaging live content with seamless shopping experiences, coupled with personalised recommendations and a vibrant community, makes it a platform user increasingly depend on. This dependency fosters strong attachment, leading to more frequent use and active participation, as users feel at home and confident in the value they derive from the platform.

The findings support the hypothesis that visit duration has a positive and significant influence on customer engagement. Users spending a lot of time on a website can drive them to revisit the site (Bhatnagar & Ghose, 2004) and customer engagement in social commerce occurs in the multi-actor-based interaction environment (Brodie et al., 2019). Customer engagement in LSC occurs within a dynamic, iterative process of service relationships based on real-time synchronous interactions among various actors including online sellers, streamers, and customers (Guo et al., 2021; Hu & Chaudhry, 2020). This result showed that the longer the duration of the user on the live streaming platform, the higher the user engagement. Furthermore, the longer the duration of consumers on the live streaming platform, then this indicates that they enjoy browsing on that platform. In addition, it is crucial for streamers to be able to increase consumer hedonic browsing because it was found to have a positive and significant effect on reminiscence of impulse purchase intention and designed impulse purchase intention (Nugraha et al., 2023). Extended user sessions on a live streaming platform typically indicate that the platform is successful in capturing and maintaining user interest through a combination of engaging content, an intuitive interface, and a vibrant community experience.

Conclusion, limitation and future research

This research found that interaction creates a sense of informational and emotional support among streamers and viewers on live streaming platform. This research also clears the relationship between synchronicity and platform attachment is not significant. TikTok Shop is considered to have frequent delays because if a system allows users to use it without delay, it would give users a better experience and interaction that help the viewers to enrich live streaming content become disturbed or diminished. Next, the relationship between emotional attachment to streamers and visit duration is significant and positive in this study. It shows that when users already have attachments for streamers on TikTok Shop, they tend to watch live streaming at the TikTok Shop for quite a long duration. Furthermore, this study clarifies that attachment to the live shopping platform, TikTok Shop, can encourage users to use frequently and actively participate. Thus, this study asserts that the relationship between visit duration and customer engagement was positive and significant. In other words, the longer the duration of the user on the live streaming platform, the higher the

user engagement. Several limitations of the present study call for future research. Future research should further examine the moderating effect of product type. In the future, the current results should be tested on other live shopping platforms in different countries.

Author contribution

Yudha Dwi Nugraha: Conceptualisation, Writing Original Draft, Data Curation, Formal Analysis, Investigation, Methodology, Writing, Review, and Editing, Supervision, Validation, Visualisation. **Annisa Nadiyah Rahmani**: Review and Editing, Writing, Review, and Editing, Supervision, Validation, Visualisation. **Khumairah**: Writing Original Draft, Validation, Visualisation, Supervision. **Hendy Mustiko Aji:** Writing, Review, and Editing.

Declaration of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

APJII. (2023). *Survei APJII Pengguna Internet di Indonesia Tembus 215 Juta Orang*. Apjii.or.id. https://apjii.or.id/berita/d/survei-apjii-pengguna-internet-di-indonesia-tembus-215-juta-orang

Berger, J. (2014). Word of mouth and interpersonal communication: A review and directions for future research. *Journal of Consumer Psychology*, *24*(4), 586–607. https://doi.org/10.1016/j.jcps.2014.05.002

Bhatnagar, A., & Ghose, S. (2004). An analysis of frequency and duration of search on the Internet. *The Journal of Business*, *77*(2), 311–330. https://doi.org/10.1086/381277

Bisnis.com. (2022). *Tiktok Shop Jadi Social Commerce Paling Populer di Indonesia*. https://teknologi.bisnis.com/read/20221003/266/1583477/tiktok-shop-jadi-social-commerce-paling-populer-di-indonesia

Bossen, C. B., & Kottasz, R. (2020). Uses and gratifications sought by pre-adolescent and adolescent TikTok consumers. *Young Consumers, 21*(4), 463–478. https://doi.org/10.1108/yc-07-2020-1186

Bostrom, R. P., & Heinen, J. S. (1977). MIS problems and failures: A socio-technical perspective. Part I: The causes. *MIS Quarterly*, *1*(3), 17–32. https://doi.org/10.2307/248710

Brodie, R. J., Fehrer, J. A., Jaakkola, E., & Conduit, J. (2019). Actor engagement in networks: Defining the conceptual domain. *Journal of Service Research*, *22*(2), 173–188. https://doi.org/10.1177/1094670519827385

Brodie, R. J., Hollebeek, L. D., Jurić, B., & Ilić, A. (2011). Customer engagement: Conceptual domain, fundamental propositions, and implications for research. *Journal of Service Research*, *14*(3), 252–271. https://doi.org/10.1177/1094670511411703

Cai, J., Wohn, D. Y., Mittal, A., & Sureshbabu, D. (2018). Utilitarian and hedonic motivations for live streaming shopping. *Proceedings of the 2018 ACM International Conference on Interactive Experiences for TV and Online Video*, 81–88. https://doi.org/10.1145/3210825.3210837

Chen, A., Lu, Y., & Wang, B. (2017). Customers' purchase decision-making process in social commerce: A social learning perspective. *International Journal of Information Management*, *37*(6), 627–638. https://doi.org/10.1016/j.ijinfomgt.2017.05.001

Chen, C.-C., & Lin, Y.-C. (2018). What drives live-stream usage intention? The perspectives of flow, entertainment, social interaction, and endorsement. *Telematics and Informatics*, *35*(1), 293–303. https://doi.org/10.1016/j.tele.2017.12.003

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*, *295*(2), 295–336. https://doi.org/10.4324/9781410604385-10

Clark, A. E., & Kashima, Y. (2007). Stereotypes help people connect with others in the community: A situated functional analysis of the stereotype consistency bias in communication. *Journal of Personality and Social Psychology*, *93*(6), 1028–1039. https://doi.org/10.1037/0022-3514.93.6.1028

cnbcindonesia.com. (2023). *Toko TikTok Makin Ramai, Shopee dan Lazada Kena Getahnya*. https://www.cnbcindonesia.com/tech/20230526130259-37-440882/toko-tiktok-makin-ramai-shopee-dan-lazada-kena-getahnya

Corrêa, S. C. H., Soares, J. L., Christino, J. M. M., de Sevilha Gosling, M., & Gonçalves, C. A. (2020). The influence of YouTubers on followers' use intention. *Journal of Research in Interactive Marketing*, *14*(2), 173–194. https://doi.org/10.1108/jrim-09-2019-0154

Darian, J. C., Wiman, A. R., & Tucci, L. A. (2005). Retail patronage intentions: the relative importance of perceived prices and salesperson service attributes. *Journal of Retailing and Consumer Services*, *12*(1), 15–23. https://doi.org/10.1016/j.jretconser.2004.01.002

Davis, F. D. (1989). *Perceived usefulness, perceived ease of use, and user acceptance of information technology.* MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008

Etemad-Sajadi, R. (2016). The impact of online real-time interactivity on patronage intention: The use of avatars. *Computers in Human Behavior*, *61*, 227–232. https://doi.org/10.1016/j.chb.2016.03.045

F. Breidbach, C., Brodie, R., & Hollebeek, L. (2014). Beyond virtuality: from engagement platforms to engagement ecosystems. *Managing Service Quality*, *24*(6), 592–611. https://doi.org/10.1108/msq-08-2013-0158

Fedorikhin, A., Park, C. W., & Thomson, M. (2008). Beyond fit and attitude: The effect of emotional attachment on consumer responses to brand extensions. *Journal of Consumer Psychology*, *18*(4), 281–291. https://doi.org/10.1016/j.jcps.2008.09.006

Festinger, L., Schachter, S., & Back, K. (1950). *Social pressures in informal groups; a study of human factors in housing, The Milbank Memorial Fund Quarterly, 30*(4), 384–387. https*://doi.org/10.2307/3348388*

Fiedler, M., & Sarstedt, M. (2014). Influence of community design on user

behaviors in online communities. *Journal of Business Research*, *67*(11), 2258–2268. https://doi.org/10.1016/j.jbusres.2014.06.014

Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research, 18*(3), 382–388. https://doi.org/10.1177/002224378101800313

Ginee.com. (2021). *Pengguna TikTok Indonesia Gempar, Potensi Cuan Menggelegar! https://ginee.com/id/insights/pengguna-tiktok/*

Gómez, M., Lopez, C., & Molina, A. (2019). An integrated model of social media brand engagement. *Computers in Human Behavior*, *96*, 196–206. https://doi.org/10.1016/j.chb.2019.01.026

Goraya, M. A. S., Jing, Z., Shareef, M. A., Imran, M., Malik, A., & Akram, M. S. (2021). An investigation of the drivers of social commerce and e-word-of-mouth intentions: Elucidating the role of social commerce in E-business. *Electronic Markets*, *31*, 181–195. https://doi.org/10.1007/s12525-019-00347-w

Grisaffe, D. B., & Nguyen, H. P. (2011). Antecedents of emotional attachment to brands. *Journal of Business Research*, *64*(10), 1052–1059. https://doi.org/10.1016/j.jbusres.2010.11.002

Guo, L., Hu, X., Lu, J., & Ma, L. (2021). Effects of customer trust on engagement in live streaming commerce: mediating role of swift guanxi. *Internet Research*, *31*(5), 1718–1744. https://doi.org/10.1108/intr-02-2020-0078

Guo, Y., Zhang, K., & Wang, C. (2022). Way to success: understanding top streamer's popularity and influence from the perspective of source characteristics. *Journal of Retailing and Consumer Services*, *64*, 1–13. https://doi.org/10.1016/j.jretconser.2021.102786

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2010). *Multivariate Data Analysis* (7th ed.). Pearson Prentice Hall.

Hu, M., & Chaudhry, S. S. (2020). Enhancing consumer engagement in e-commerce live streaming via relational bonds. *Internet Research*, *30*(3), 1019–1041. https://doi.org/10.1108/intr-03-2019-0082

Hu, X., Huang, Q., Zhong, X., Davison, R. M., & Zhao, D. (2016). The influence of peer characteristics and technical features of a social shopping website on a consumer's purchase intention. *International Journal of Information Management*, *36*(6), 1218–1230. https://doi.org/10.1016/j.ijinfomgt.2016.08.005

Hussin, H., Noor, R. M., & Suhaimi, M. A. (2008). Perceived attributes of e-commerce and the adoption decision: The case of Malaysian SMEs. *Jurnal Teknologi Maklumat & Multimedia*, *5*(1), 107–125.

Ilicic, J., & Webster, C. M. (2011). Effects of multiple endorsements and consumer–celebrity attachment on attitude and purchase intention. *Australasian Marketing Journal (AMJ)*, *19*(4), 230–237. https://doi.org/10.1016/j.ausmj.2011.07.005

Jiang, Y., & Dong, D. (2008). Strengthening consumers loyalty to a retail web site: an attachment theory perspective. *2008 International Seminar on Business and Information Management*, *2*, 71–74. https://doi.org/10.1109/isbim.2008.117

Kang, K., Lu, J., Guo, L., & Li, W. (2021). The dynamic effect of interactivity on customer engagement behavior through tie strength: Evidence from live streaming commerce platforms. *International Journal of Information Management*, *56*, 1–16. https://doi.org/10.1016/j.ijinfomgt.2020.102251

Kim, M. J., Lee, C.-K., & Preis, M. W. (2016). Seniors' loyalty to social network sites: Effects of social capital and attachment. *International Journal of Information Management*, *36*(6), 1020–1032. https://doi.org/10.1016/j.ijinfomgt.2016.04.019

Kirk, C. P., Chiagouris, L., Lala, V., & Thomas, J. D. E. (2015). How do digital natives and digital immigrants respond differently to interactivity online?: A Model for Predicting Consumer Attitudes and Intentions to Use Digital Information Products. *Journal of Advertising Research*, *55*(1), 81–94. https://doi.org/10.2501/jar-55-1-081-094

Klimmt, C., Hartmann, T., & Frey, A. (2007). Effectance and control as determinants of video game enjoyment. *Cyberpsychology & Behavior*, *10*(6), 845–848. https://doi.org/10.1089/cpb.2007.9942

Klimmt, C., Roth, C., Vermeulen, I., Vorderer, P., & Roth, F. S. (2012). Forecasting the Experience of Future Entertainment Technology: "Interactive Storytelling" and Media Enjoyment. *Games and Culture*, *7*(3), 187–208. https://doi.org/10.1177/1555412012451123

Kompas.com. (2022). *TikTok Rilis Fitur Baru "Shopping Center" di Indonesia*. https://tekno.kompas.com/read/2022/10/19/17450007/tiktok-rilis-fitur-baru-shopping-center-di-indonesia?page=all

Krotov, V. (2015). Critical success factors in m-learning: A socio-technical perspective. *Communications of the Association for Information Systems*, *36*(1), 106–126. https://doi.org/10.17705/1cais.03606

Leight, E. (2019). *Surprising no one: TikTok is driving a lot of new-artist growth*. Rolling Stone. https://www.rollingstone.com/pro/news/chartmetric-breakthrough-artists-report-958401/

Li, L. P., Juric, B., & Brodie, R. J. (2018). Actor engagement valence: Conceptual foundations, propositions and research directions. *Journal of Service Management*, *29*(3), 491–516. https://doi.org/10.1108/josm-08-2016-0235

Li, Y., Li, X., & Cai, J. (2021). How attachment affects user stickiness on live streaming platforms: A socio-technical approach perspective. *Journal of Retailing and Consumer Services*, *60*, 1–9. https://doi.org/10.1016/j.jretconser.2021.102478

Liao, J., Chen, K., Qi, J., Li, J., & Yu, I. Y. (2023). Creating immersive and parasocial live shopping experience for viewers: the role of streamers' interactional communication style. *Journal of Research in Interactive Marketing*, *17*(1), 140–155. https://doi.org/10.1108/jrim-04-2021-0114

Lin, J., Luo, Z., Cheng, X., & Li, L. (2019). Understanding the interplay of social commerce affordances and swift guanxi: An empirical study. *Information & Management*, *56*(2), 213–224. https://doi.org/10.1016/j.im.2018.05.009

Lin, Y., Yao, D., & Chen, X. (2021). Happiness begets money: Emotion and engagement in live streaming. *Journal of Marketing Research*, *58*(3),

417–438. https://doi.org/10.1177/00222437211002477

Liu, Y. (2003). Developing a scale to measure the interactivity of websites. *Journal of Advertising Research*, *43*(2), 207–216. https://doi.org/10.2501/jar-43-2-207-216

Lou, C., & Yuan, S. (2019). Influencer marketing: how message value and credibility affect consumer trust of branded content on social media. *Journal of Interactive Advertising*, *19*(1), 58–73. https://doi.org/10.1080/15252019.2018.1533501

Lu, H., & Lee, M. (2010). Demographic differences and the antecedents of blog stickiness. *Online Information Review*, *34*(1), 21–38. https://doi.org/10.1108/14684521011024100

Marangunić, N., & Granić, A. (2015). Technology acceptance model: A literature review from 1986 to 2013. *Universal Access in the Information Society, 14*(1), 81–95. https://doi.org/10.1007/s10209-013-0328-1

Mehrabian, A. (1966). Immediacy: An indicator of attitudes in linguistic communication. *Journal of Personality, 34*(1), 26–34. https://doi.org/10.1108/14684521011024100

Nugraha, Y. D., Permana, R. M. T., & Hadiarti, D. (2023). Impulsive purchase behaviour of Z generation of Muslim women on TikTok shop: the application of SOR framework. *Journal of Islamic Marketing*, *15*(2), 493–517. https://doi.org/ 10.1108/JIMA-06-2022-0182

O'Cass, A., & Carlson, J. (2010). Examining the effects of website-induced flow in professional sporting team websites. *Internet Research*, *20*(2), 115–134. https://doi.org/10.1108/10662241011032209

Phua, J., & Ahn, S. J. (2016). Explicating the 'like' on Facebook brand pages: The effect of intensity of Facebook use, number of overall "likes", and number of friends "likes" on consumers' brand outcomes. *Journal of Marketing Communications*, *22*(5), 544–559. https://doi.org/10.1080/13527266.2014.941000

Qin, F., Le, W., Zhang, M., & Deng, Y. (2023). How perceived attributes of livestreaming commerce influence customer engagement: a social support perspective. *Journal of Service Theory and Practice*, *33*(1), 1–22. https://doi.org/10.1108/jstp-01-2022-0022

Qin, Y. S. (2020). Fostering brand–consumer interactions in social media: the role of social media uses and gratifications. *Journal of Research in Interactive Marketing*, *14*(3), 337–354. https://doi.org/10.1108/jrim-08-2019-0138

Ren, Y., Harper, F. M., Drenner, S., Terveen, L., Kiesler, S., Riedl, J., & Kraut, R. E. (2012). Building member attachment in online communities: Applying theories of group identity and interpersonal bonds. *MIS Quarterly*, *36*(3), 841–864. https://doi.org/10.2307/41703483

Scheibe, K., Fietkiewicz, K. J., & Stock, W. G. (2016). Information behavior on social live streaming services. *Journal of Information Science Theory and Practice*, *4*(2), 6–20. https://doi.org/10.1633/jistap.2016.4.2.1

Sitgreaves, R. (1979). Review of Psychometric theory . *Psyccritiques*, *24*(7), 599–599. https://doi.org/10.1037/018882

Smith, T., Obrist, M., & Wright, P. (2013). Live-streaming changes the (video) game. *Proceedings of the 11th European Conference on Interactive TV

and Video, *11,* 131–138. https://doi.org/10.1145/2465958.2465971

Stever, G. S. (2011). Fan behavior and lifespan development theory: Explaining para-social and social attachment to celebrities. *Journal of Adult Development*, *18*(1), 1–7. https://doi.org/10.1007/s10804-010-9100-0

Sun, Y., Shao, X., Li, X., Guo, Y., & Nie, K. (2019). How live streaming influences purchase intentions in social commerce: An IT affordance perspective. *Electronic Commerce Research and Applications*, *37*, 1–12. https://doi.org/10.1016/j.elerap.2019.100886

Sundström, M., Alm, K. H., Larsson, N., & Dahlin, O. (2021). B2B social media content: engagement on LinkedIn. *Journal of Business & Industrial Marketing*, *36*(3), 454–468. https://doi.org/10.1108/jbim-02-2020-0078

Tajvidi, M., Richard, M.-O., Wang, Y., & Hajli, N. (2020). Brand co-creation through social commerce information sharing: The role of social media. *Journal of Business Research*, *121*, 476–486. https://doi.org/10.1016/j.jbusres.2018.06.008

Tang, J. C., Venolia, G., & Inkpen, K. M. (2016). Meerkat and periscope: I stream, you stream, apps stream for live streams. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 4770–4780. https://doi.org/10.1145/2858036.2858374

Thetradedesk.com. (2023). *New research shows 2 in 3 Indonesians to increase their digital time on news and websites, OTT and music streaming*. https://www.thetradedesk.com/us/news/press-room/new-research-shows-2-in-3-indonesians-to-increase-their-digital-time-on-news-and-websites-ott-and-music-streaming-2?utm_source=chatgpt.com

Thomson, M. (2006). Human brands: Investigating antecedents to consumers' strong attachments to celebrities. *Journal of Marketing*, *70*(3), 104–119. https://doi.org/10.1509/jmkg.70.3.104

Van Dolen, W. M., Dabholkar, P. A., & De Ruyter, K. (2007). Satisfaction with online commercial group chat: the influence of perceived technology attributes, chat group characteristics, and advisor communication style. *Journal of Retailing*, *83*(3), 339–358. https://doi.org/10.1016/j.jretai.2007.03.004

Van Noort, G., Voorveld, H. A. M., & Van Reijmersdal, E. A. (2012). Interactivity in brand web sites: cognitive, affective, and behavioral responses explained by consumers' online flow experience. *Journal of Interactive Marketing*, *26*(4), 223–234. https://doi.org/10.1016/j.intmar.2011.11.002

Vivek, S. D., Beatty, S. E., & Morgan, R. M. (2012). Customer engagement: Exploring customer relationships beyond purchase. *Journal of Marketing Theory and Practice*, *20*(2), 122–146. https://doi.org/10.2753/mtp1069-6679200201

Wan, J., Lu, Y., Wang, B., & Zhao, L. (2017). How attachment influences users' willingness to donate to content creators in social media: A socio-technical systems perspective. *Information & Management*, *54*(7), 837–850. https://doi.org/10.1016/j.im.2016.12.007

Wang, K., Pan, Z., Lu, Y., & Gupta, S. (2019). What motives users to participate in danmu on live streaming platforms? The impact of technical

environment and effectance. *Data and Information Management*, *3*(3), 117–134. https://doi.org/10.2478/dim-2019-0013

Wirtz, J., Patterson, P. G., Kunz, W. H., Gruber, T., Lu, V. N., Paluch, S., & Martins, A. (2018). Brave new world: Service robots in the frontline. *Journal of Service Management,* *29*(5), 907–931. https://doi.org/10.1108/JOSM-04-2018-0119

Wongkitrungrueng, A., & Assarut, N. (2020). The role of live streaming in building consumer trust and engagement with social commerce sellers. *Journal of Business Research*, *117*, 543–556. https://doi.org/10.1016/j.jbusres.2018.08.032

Zhang, H., Lu, Y., Gupta, S., & Zhao, L. (2014). What motivates customers to participate in social commerce? The impact of technological environments and virtual customer experiences. *Information & Management*, *51*(8), 1017–1030. https://doi.org/10.1016/j.im.2014.07.005

Zhang, X., Wu, Y., & Liu, S. (2019). Exploring short-form video application addiction: Socio-technical and attachment perspectives. *Telematics and Informatics*, *42*, 1–15. https://doi.org/10.1016/j.tele.2019.101243

Zimmer, F., Scheibe, K., & Stock, W. G. (2018). A model for information behavior research on social live streaming services (SLSSs). *Social Computing and Social Media. Technologies and Analytics: 10th International Conference, SCSM 2018, Held as Part of HCI International 2018, Las Vegas, NV, USA, July 15-20, 2018, Proceedings, Part II 10*, 429–448. https://doi.org/10.1007/978-3-319-91485-5_33

Appendix 1.

Convergent validity and reliability test result

Construct	Items	Factor Loading	Composite Reliability	AVE
Interaction	ITR4	0.846	0.9	0.687
	ITR3	0.873		
	ITR2	0.795		
	ITR1	0.800		
Synchronicity	SYN3	0.746	0.9	0.683
	SYN2	0.882		
	SYN1	0.845		
Emotional attachment to streamers	EMT3	0.899	0.8	0.706
	EMT2	0.923		
	EMT1	0.853		
Platform attachment	PTR2	0.922	0.9	0.796
	PTR1	0.750		
Visit duration	VST3	0.969	0.9	0.831
	VST2	0.899		
	VST1	0.863		
Customer engagement	CE2	0.954	0.9	0.780
	CE1	0.806		

Source: Author's work (2024)

Appendix 2.

Discriminant validity test result

Variable	ITR	SYN	EMT	PTR	VST	CE
Interaction	0.829					
Synchronicity	0.745	0.826				
Emotional attachment to streamers	0.569	0.565	0.892			
Platform attachment	0.345	0.145	0.42	0.840		
Visit duration	0.424	0.308	0.571	0.424	0.911	
Customer engagement	0.618	0.399	0.385	0.368	0.608	0.883

Source: Author's work (2024)