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CONSUMER USE OF SOCIAL LIVE STREAMING SERVICES: THE INFLUENCE OF CO-EXPERIENCE AND EFFECTANCE ON ENJOYMENT

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CONSUMER USE OF SOCIAL LIVE STREAMING SERVICES: THE INFLUENCE OF CO-EXPERIENCE AND EFFECTANCE ON ENJOYMENT

Research paper

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Abstract

Social live streaming services (SLSS) have emerged as a new type of hedonic social media. SLSS allow users to watch and broadcast video streams in real-time, fostering sociability through synchronous communication via chat channels. While the extant literature has mostly examined producers' use of SLSS, the consumer perspective has been underexplored. Prior research has identified perceived enjoyment as consumers' primary motivation to use hedonic social media. However, it remains unclear how the specific affordances of SLSS affect consumers' enjoyment. Due to their synchronous nature, SLSS enable consumers to co-experience live streams together and to perceive so-called "effectance" by shaping the content of live streams through their actions. Consequently, research is required on how both co-experience and effectance influence consumers' enjoyment of SLSS. We empirically address this research gap by applying partial least squares equation modeling on web survey data of 127 consumers of SLSS. Our results show that consumers' perceived co-experience has a strong positive effect on the enjoyment of their active behavior (chatting) and their passive behavior (watching). Perceived effectance, however, only shows a positive impact on the enjoyment of active behavior, while playing no role for the enjoyment of passive behavior.

Keywords: Social Live Streaming Services, Co-Experience, Effectance, Social Media, User Generated Content

1 Introduction

Social live streaming services (SLSS), which enable users to broadcast, as well as to view, personal video live streams, have emerged as a new type of social media (Scheibe et al., 2016). After Amazon's acquisition of the market-leading SLSS Twitch for \$970 million in 2014, the rise of user-generated live streaming has continued with the advent of mobile live streaming applications like Periscope and Meerkat (Tang et al., 2016). Due to the success of these specialized SLSS, live streaming functionalities have recently been introduced to incumbent social media platforms, such as YouTube and Facebook. The increasing practical relevance of social live streaming is reflected in a recent market study, which shows that 28% of respondents have already used SLSS to watch live streams, while 13% have broadcast their own live streams (AYTM, 2016).

As SLSS rely on an active user base, their success depends heavily on attracting and sustaining users (Hess, 2014). Consequently, as for any other type of social media, it is important to understand what

determines an individual's acceptance and use of SLSS (Wirtz and Göttel, 2016). Users of social media act in a dual role as 'prosumers' (Toffler, 1980), serving as the producers as well as consumers of user-generated content (UGC) (Shao, 2009). Accordingly, extant literature on SLSS differentiates between the consumers (viewers) and producers (broadcasters) of live-content (Hamilton et al., 2014). Prior research on the use of SLSS has focused on the producer perspective, examining the factors behind broadcasters' production of live streaming content (Bründl and Hess, 2016; Hamilton et al., 2014; Tang et al., 2016). However, scholars have called for research which focuses on the consumer perspective, as the underlying factors of SLSS use are thought to differ between broadcasters and consumers (Scheibe et al., 2016).

Due to their primary pleasure-orientation, SLSS can be characterized as hedonic information systems (IS) (Chesney, 2006; Van der Heijden, 2004). Prior research has identified consumers' perceived enjoyment as the salient factor for the intention to use hedonic IS, and in particular hedonic social media (Van der Heijden, 2004; Wirtz and Göttel, 2016; Wu and Lu, 2013). There is as yet, however, little understanding of how the specific affordances of SLSS influence a consumer's enjoyment (Pozzi et al., 2014; Stendal et al., 2016). Contrary to on-demand services such as YouTube or Instagram, content on SLSS is produced and consumed in real-time. Therefore, SLSS allow for synchronous communication between the involved parties (Bründl and Hess, 2016). Based on their synchronous nature, SLSS provide two specific affordances to consumers, whose roles in the context of IS usage have not been investigated so far. Firstly, consumers are able to co-experience live streams together, influencing each other's viewing experience via the live stream's respective chat channel (Battarbee, 2003b; Lim et al., 2012). Secondly, consumers are able to shape the content of live streams through their actions in the chat, leading to the perception of so-called effectance (White, 1959). Consequently, we intend to address the following research question in this study:

What influence do perceived co-experience and effectance have on consumers' enjoyment of using social live streaming services?

To answer this question, we apply a hedonic variant of the Technology Acceptance Model (Davis, 1986; Davis et al., 1989) as a nomological net for examining consumers' perceived enjoyment and its antecedents. We propose that both co-experience and effectance have a positive impact on consumers' enjoyment of using SLSS. Subsequently, we apply partial least squares analysis on data from a two-stage online survey to test our research model and hypotheses.

The remainder of this paper is structured as follows: The next section presents the study's theoretical background, introducing SLSS as a new type of social media and elaborating on our adaption of the concepts of perceived co-experience and effectance. We then describe our research model and the underlying hypotheses. In the following section, we present our chosen research design and our data collection process. We next describe the process and results of our data analysis. Subsequently, we discuss our study's key findings, theoretical contributions, and practical implications. Finally, we close the paper with a summary, outlining limitations of our study and highlighting avenues for future research.

2 Theoretical Foundations

2.1 Social Live Streaming Services

The umbrella concept of social media refers to "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and allow the creation and exchange of user generated content" (Kaplan and Haenlein, 2010, p. 61). This definition highlights the pivotal role of UGC, which refers to content that is made publicly available over the Internet, reflects an amount of creative effort, and is created outside of professional routines (Wunsch-Vincent and Vickery, 2007). UGC acts as the common foundation for all of the various established types of social media, e.g. social networking sites, blogs, content-communities, or wikis (Heinonen, 2011; Shao, 2009). Recently, SLSS emerged as a novel type of social media, "where users broadcast as well as watch live video content and

features for synchronous interaction facilitate sociability” (Bründl and Hess, 2016, p. 1). Each live stream on SLSS is a combination of real-time video content and a text-based chat channel (Hamilton et al., 2014). SLSS exhibit asymmetrical interfaces, where producers broadcast video and audio, while viewers typically communicate by commenting in chat, which is a standard feature of all SLSS (Tang et al., 2016). The focus of SLSS is set on personal live streaming of video content, allowing users to broadcast their personal performances. This is different from impersonal live streaming, where a third party organization is in charge of performances (Karhulahti, 2016). SLSS can be categorized into two types. First, general live streaming services, without any thematic limitation. Second, topic-specific live streaming services, e.g. featuring gaming or art content (Scheibe et al., 2016).

Due to the phenomenon being so recent, academia has only lately started to examine the use of SLSS at the individual level. Hamilton et al. (2014) conducted a first ethnographic investigation of SLSS, characterizing SLSS as virtual third places where users socialize and participate in informal communities. Scheibe et al. (2016) provided a descriptive examination of the information behavior of SLSS users which includes a view on the legal aspects of information production. Tang et al. (2016) conducted semi-structured interviews with broadcasters of SLSS, examining their motivations for producing live content, their interaction with viewers, and their general live streaming experience. Bründl and Hess (2016) quantitatively investigated social live streaming from the producer perspective, determining the role of individual motives and social capital for broadcasting live streams. Sjöblom and Hamari (2016) applied a Uses and Gratifications approach to examine the various motivations behind watching gaming content on SLSS. Regarding the types of investigated SLSS, extant studies focused either on nonthematic SLSS (Scheibe et al., 2016; Tang et al., 2016) or on topic-specific SLSS (Bründl and Hess, 2016; Hamilton et al., 2014; Sjöblom and Hamari, 2016). To summarize, the use of SLSS has been extensively explored from the producer perspective. However, research on SLSS lacks a generalizable quantitative examination of the relationships between the underlying factors of consumers’ use, which incorporates the influence of SLSS’ specific affordances: perceived co-experience and effectance.

2.2 Co-experience

Even though social media focus on users’ shared experiences, the experiential aspects of social media have received little attention from IS research so far (Lim et al., 2012; Workman, 2014). The relevance of shared experiences is particularly true for SLSS, which were found to exhibit higher levels of social interaction than traditional on-demand social media services such as YouTube (Tang et al., 2016; Wang et al., 2016). We therefore introduce the concept of co-experience to research on social media use, examining its role for the enjoyment of SLSS. Originating from product design, co-experience refers to “the user experience which is created in social interaction” (Battarbee, 2003b, p. 1). The concept of co-experience highlights that the physical or virtual presence of others has an influence on an individual’s experiences (Forlizzi and Battarbee, 2004). Therefore, the concept of co-experience is based on the thought that experiencing a product or service is a social phenomenon and should be treated accordingly (Battarbee and Koskinen, 2005). Consequently, our perspective on experience should not be limited to an individual’s isolated reaction. Instead, it should be extended towards a view that takes into account that experiences are constructed through social interaction (Battarbee, 2003a). Focal point of co-experiences are products or technologies; their presence and possibilities allow and foster the creation of experiences by users (Battarbee, 2003b). Accordingly, the occurrence of co-experience can be facilitated through interactive technology systems (e.g. SLSS) by providing mediated communication channels for social interaction (Forlizzi and Battarbee, 2004). In summary, co-experience can be characterized as social (social situations incentivize users to respond and continue), multi-modal (technologies act as substitutes for face-to-face communication), and creative (shared technology use leads to more interesting results than one’s solitary use) (Battarbee, 2003a).

Lim et al. (2012) were the first to conceptualize and operationalize the concept of co-experience in human-computer interaction research. Based on the theory of socially shared cognition (Brewer, 1991; Higgins, 1999; Resnick et al., 1991), Lim et al. (2012) identified three sub-dimensions of co-experience:

First, the dimension of participation, referring to the perception that one's user experience contributes to the whole experience that individuals perceive together. Second, the dimension of cognitive communion, representing the perception that an individual shares information or meaning with others. Third, the dimension of resonant contagion, defined as influencing and being influenced by the experience of others so as to agree upon the same opinions in social media (Lim et al., 2012). Following this conceptualization, we understand co-experience in social media as the fusion of user experience and social interaction, which is reflected by the sub-dimensions of participation, cognitive communion, and resonant contagion (Battarbee, 2003b; Lim et al., 2012).

2.3 Effectance

Originating from psychology, White's (1959) theory of effectance motivation proposed that there is a motivational source which has not been covered by orthodox, biological drive theories (Hull, 1943; Spence, 1956). Effectance theory assumes that individuals naturally possess an intrinsic urge to explore and influence their environment, which motivates and satisfies them. The biological meaning behind such playful and exploratory behavior is to attain competence in dealing with one's environment (White, 1959). Based on this assumption, White (1959) introduces the concept of competence as "an organism's capacity to interact effectively with its environment" (p. 297). Actual competent interaction with the environment leads to the perception of effectance. Accordingly, the concept of effectance represents the successful production of effects upon an environment, acting as a motivational aspect of competence (Lamont, 1983).

Using the work of White (1959) as an anchor point, research on media psychology has adapted the concept of effectance and applied it to interactive media, e.g. in the context of computer games (Klimmt and Hartmann, 2006; Klimmt et al., 2007) or interactive story telling (Klimmt et al., 2012). Effectance in interactive media represents the influence of user actions, defined as the "salience of one's impact and consequential decisions" (Klimmt et al., 2012, p. 202). Drawing on White (1959) and Klimmt and Hartmann (2006), we introduce the concept of effectance to IS research. We conceptualize effectance as the perceived influence a user exerts on content produced by other users. While traditional on-demand services (e.g. Vimeo or Instagram) only allow for asynchronous feedback towards published content, the synchronous nature of SLSS provides possibilities for immediate, synchronous feedback. As the video content on SLSS is distributed in real-time, consumers are able to actively influence the content of the live stream through their comments in chat. Consequently, consumers' actions which successfully influence the live stream lead to a perception of effectance. Thus, we define effectance with regard to SLSS as the perceived influence consumers exert on live streams via their chat comments.

3 Research Model and Hypotheses Development

3.1 Nomological net

We apply Van der Heijden's (2004) hedonic extension of the Technology Acceptance Model (TAM, Davis, 1986) as a nomological net for examining the influence of perceived co-experience and effectance on consumers' enjoyment (see Figure 1). TAM is the most cited and most extended model in research on the acceptance and use of IS (Hassan and Lowry, 2015). For IS research on social media in particular, TAM is the most frequently utilized theoretical approach for exploring individuals' acceptance and use of a social medium (Ngai et al., 2015; Wirtz and Göttel, 2016). Past studies in social media research have demonstrated the suitability of TAM for examining manifold types of social media technologies, e.g. wikis (Arazy and Gellatly, 2012), social networks (Hu et al., 2011), review platforms (Benlian et al., 2012) or blogs (Hsu and Lin, 2008). Van der Heijden's (2004) hedonic variant of the TAM profits from the original theory's parsimony and strong generalizability, while incorporating the hedonic aspects that are essential to cover consumers' affordances in the context of SLSS. The final conceptualization of the original TAM includes three theoretical constructs to predict and explain actual

use behavior: perceived usefulness, perceived ease of use, and behavioral intention (Davis, 1986; Davis et al., 1989). The hedonic variant of the TAM expands the model by the construct perceived enjoyment, which is considered to be the dominant predictor over perceived usefulness in the context of hedonic IS (Wu and Lu, 2013). Furthermore, perceived enjoyment was found to play a major role in the acceptance and use of hedonic social media in particular (Wirtz and Göttel, 2016). Despite its proven importance for the acceptance and use of new technologies, perceived enjoyment has been treated mainly as a monolithic black box in past IS research (Junglas et al., 2013). While scholars have highlighted that consumers in social media may be passive as well as active entities (Heinonen, 2011; Shao, 2009), extant studies which incorporate enjoyment as antecedent of use intention or behavior (e.g. Li et al., 2015; Sukhu et al., 2015; Sun et al., 2014) do not differentiate between the enjoyment of active (e.g. commenting on others' videos) and passive (e.g. watching others' videos) behavior when using social media (Chen et al., 2014). To obtain a more fine-grained perspective onto enjoyment, we thus conceptualize perceived enjoyment as a formative second-order construct, constituted by the enjoyment of active and passive behavior (Becker et al., 2012). Drawing on the classification of active and passive behavior in social media (Chen et al., 2014), we define the sub-dimensions of enjoyment for SLSS consumers as follows: Enjoyment of active behavior represents the pleasure consumers derive from commenting in the chat. Accordingly, enjoyment of passive behavior refers to the pleasure consumers derive from watching the video stream. We assume that both sub-dimensions of enjoyment are positively influenced by consumers' perceived effectance and co-experience. In line with extant literature, co-experience is reflected in three sub-dimensions: participation, cognitive communion, and resonant contagion (Lim et al., 2012).

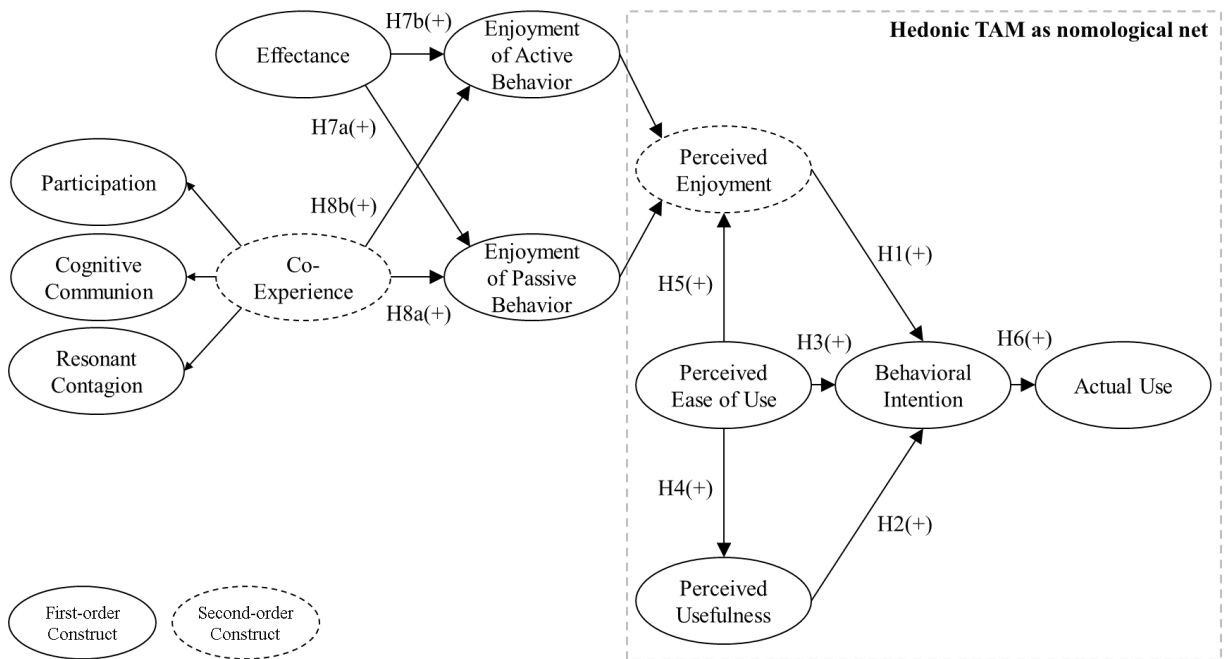


Figure 1. Research model.

As the hedonic TAM acts as the nomological net for examining the roles of the specific affordances of SLSS, we refer to the papers of Davis et al. (1986, 1989) and Van der Heijden (2004) for the development of our baseline model's hypotheses. Unlike most TAM-based studies, we examine not only consumers' usage intentions, but also their actual usage behavior (Turner et al., 2010). In line with Davis et al. (1986, 1989) and Van der Heijden (2004), we hypothesize:

- H1.** Perceived enjoyment is positively related to consumers' behavioral intention.
- H2.** Perceived usefulness is positively related to consumers' behavioral intention.
- H3.** Perceived ease of use is positively related to consumers' behavioral intention.
- H4.** Perceived ease of use is positively related to consumers' perceived usefulness.
- H5.** Perceived ease of use is positively related to consumers' perceived enjoyment.
- H6.** Behavioral intention is positively related to consumers' actual use.

3.2 Effectance

Effectance motivation theory proposes that individuals can derive satisfaction and enjoyment from competence by perceiving an influential effect of their actions on a situation (White, 1959). Thus, the perception of effectance is assumed to lead to rewarding and pleasurable feelings. Drawing on White (1959), media psychologists have empirically shown that perceived effectance has a positive influence on the enjoyment of using interactive media, e.g. computer games (Klimmt et al., 2007). Accordingly, we propose that perceived effectance has a positive impact on consumers' enjoyment of SLSS. Due to their synchronous nature, SLSS allow viewers to shape the broadcasted content by exerting influence on the live stream via chat comments (Tang et al., 2016). Prior research on SLSS identified that the possibility to affect the live stream is an important motive for viewing and that already low levels of interaction between a user and the broadcaster (and therefore the live stream) can be rewarding for the user (Hamilton et al., 2014). We propose that consumers derive enjoyment from the perception of affecting live streams in two ways. Firstly, we assume that the enjoyment of watching the content (passive behavior) increases because the content that consumers encounter is perceived to be a function of their influential effects on the live stream. For example, viewers ask questions in chat which are then answered on stream. Communication science has shown that content which is perceived as specifically tailored to a consumer has a higher appeal to the respective individual (Bright, 2014; Kalyanaraman and Sundar, 2006). This, in turn, positively influences the individual's attitude towards consumption (Kalyanaraman and Sundar, 2006), e.g. the enjoyment of watching live streams (Nabi and Krcmar, 2004). Thus, we hypothesize:

- H7a.** Effectance is positively related to consumers' enjoyment of passive behavior.

Secondly, we assume that consumers derive more enjoyment from their active behavior when they feel that their actions influence the live stream. Recent research argues that consumers enjoy seeing their actions affecting the live stream in front of an audience (Karhulahti, 2016). According to effectance theory, producing an effect on an environment or situation is an intrinsically motivated activity (White, 1959). Therefore, consumers seek to influence the content of the live stream for the sake of the activity itself, which is enjoyable on its own. Consequently, when consumers perceive that their chat comments affect the content of live streams, their enjoyment of active behavior, i.e. chatting, increases. We thus hypothesize:

- H7b.** Effectance is positively related to consumers' enjoyment of active behavior.

3.3 Co-experience

IS research acknowledges that individuals have a tendency to seek pleasurable social experiences with others and also highlights the relevance of technology in enabling such shared experiences (Junglas et al., 2013). Both of these aspects are included in the concept of co-experience, which represents the shared creation and experience of meaning and emotion, enabled through the use of a product or service (Forlizzi and Battarbee, 2004). The motivations behind co-experiencing a product or service are: passing time, keeping in touch, fostering social ties, and having fun together (Battarbee, 2003a). Of those motivations, having fun is the "driving-force behind co-experience" (Battarbee, 2003a, p. 2). Thus, users primarily seek co-experiences to derive pleasure from them. Therefore, we propose that perceived co-experience is positively associated with the enjoyment of using SLSS. Qualitative research on SLSS has identified that consumers watch live streams for two reasons (Hamilton et al., 2014). First, they are

attracted to the particular content of a live stream, e.g. a special event or broadcaster. Second, they enjoy the social interaction during live streams, which is reflected in all three dimensions of co-experience (Lim et al., 2012). Scholars argue that when watching content together in interactive settings users may even value the shared experience higher than the actual content (Weisz and Kiesler, 2008). Furthermore, studies have demonstrated that consuming content together at the same time can foster pleasurable experiences (Ducheneaut et al., 2008; Metcalf et al., 2008). Taken together, we thus hypothesize:

H8a. Co-experience is positively related to consumers' enjoyment of passive behavior.

Research on social television systems has shown that users who consume content together enjoy active behavior, e.g. by actively using the system's chat feature (Weisz and Kiesler, 2008; Weisz et al., 2007). Extant literature on co-experience goes one step further, positing that co-experience promotes active behavior, e.g. expressing meaning or opinion (Forlizzi and Battarbee, 2004). In line with the sub-dimensions of co-experience (Lim et al., 2012), we postulate that enjoyment of active behavior can be increased by co-experience in three ways: First, if consumers perceive that their chat comments constitute a part of the experience of others ("participation"). Second, if consumers feel that their opinion is shared by others in the chat ("cognitive communion"). Third, if consumers perceive that their comments influence others to agree upon similar opinions ("resonant contagion"). We thus hypothesize:

H8b. Co-experience is positively related to consumers' enjoyment of active behavior.

4 Research Design and Data Collection

4.1 Operationalization of constructs

In order to establish content validity, we measured all latent variables with scales adapted from extant literature, which were slightly modified to fit the target context. In line with the operationalization of Lim et al. (2012), co-experience was measured as a reflective-reflective (type I) second-order construct (Jarvis et al., 2003). Accordingly, scales for the sub-dimensions of co-experience were adapted from Lim et al. (2012). Measures for effectance were provided by Klimmt et al. (2007). Perceived enjoyment was measured as reflective-formative (type II) second-order construct (Becker et al., 2012). Scales for the two sub-dimensions of perceived enjoyment were adapted from Kim et al. (2005). Measurements for the TAM constructs perceived usefulness, perceived ease of use and behavioral intention were based on Davis (1986). As the scales of the TAM were originally developed for an organizational context, we adapted the items to our study's consumer context in line with Venkatesh et al. (2012). We measured all of the aforementioned constructs reflectively with multi-item scales. Items were operationalized as seven-point Likert scales, anchored at 1 ('strongly disagree') and 7 ('strongly agree'). In line with Davis (1986), actual use (AU) was formatively measured by asking participants how long (ratio variable) and how frequently (7-point scale ranging from "never" to "many times per day") they consume content on the SLSS per week. Table 1 presents an overview of the adapted measures and their sources.

| Construct | Item | Source |
|--------------------------|--|--------------------|
| Participation (PA) | PA1 When using [SLSS], I feel I am interacting as a group of users. | (Lim et al., 2012) |
| | PA2 When using [SLSS], I feel I am a part of the channel community. | |
| | PA3 When using [SLSS], I feel I am participating with the users in the chat. | |
| Cognitive Communion (CC) | CC1 When using [SLSS], I feel I share similar thoughts with the users in the chat. | (Lim et al., 2012) |
| | CC2 When using [SLSS], I feel my information is shared with the users in the chat. | |
| | CC3 When using [SLSS], I feel I share the same perspective as the users in the chat. | |

| | | | |
|--|--------------------|--|---------------------------------------|
| Resonant Contagion (RC) | RC1 | When using [SLSS], my behavior is influenced by the users in the chat. | (Lim et al., 2012) |
| | RC2 | When using [SLSS], my behavior influences the users in the chat. | |
| | RC3 | When using [SLSS], the users in the chat agree upon similar opinions. | |
| Effectance (EF) | EF1 | When using [SLSS], the video stream reacts to my comments. | (Klimmt et al., 2007) |
| | EF2 | When using [SLSS], the video stream is influenced by myself. | |
| | EF3 | When using [SLSS], I have the feeling that I am able to achieve something in the video stream through my comments. | |
| | EF4 ^{a,b} | When using [SLSS], my comments have low influence on the video stream. | |
| Enjoyment of Passive Behavior (EOPB) | EOPB1 | Watching live streams on [SLSS] is fun. | (Kim et al., 2005) |
| | EOPB2 | Watching live streams on [SLSS] is enjoyable. | |
| | EOPB3 | Watching live streams on [SLSS] is very entertaining. | |
| Enjoyment of Active Behavior (EOAB) | EOAB1 | Chatting on [SLSS] is fun. | (Kim et al., 2005) |
| | EOAB2 | Chatting on [SLSS] is enjoyable. | |
| | EOAB3 | Chatting on [SLSS] is very entertaining. | |
| Perceived Usefulness (PU) | PU1 | I find [SLSS] useful in my daily life. | (Davis, 1986; Venkatesh et al., 2012) |
| | PU2 | Using [SLSS] helps me accomplish things more quickly. | |
| | PU3 | Using [SLSS] increases my productivity. | |
| Perceived Ease of Use (PEOU) | PEOU1 | Learning how to use [SLSS] is easy for me. | (Davis, 1986; Venkatesh et al., 2012) |
| | PEOU2 | I find it easy to get [SLSS] to do what I want it to do. | |
| | PEOU3 | I find [SLSS] easy to use. | |
| | PEOU4 | It is easy for me to become skillful at using [SLSS]. | |
| Behavioral Intention (BI) | BI1 | I intend to continue using [SLSS] in the future. | (Davis, 1986; Venkatesh et al., 2012) |
| | BI2 | I will always try to use [SLSS] in my daily life. | |
| | BI3 | I plan to continue to use [SLSS] frequently. | |
| ^a Reverse item | | | |
| ^b Eliminated due to insufficient factor loading | | | |

Table 1. Survey instrument.

4.2 Data collection and sample

To test our hypotheses, we collected data via a two-stage online survey. The first stage of our survey collected data on participants' behavioral intention and its antecedents, while the second stage collected data on the actual use behavior of participants. Participants answered all questions with regard to their primarily used SLSS. A preliminary pretest of the two survey stages with 12 academic researchers was conducted to ensure the correctness and clarity of both questionnaires. Subsequently, we distributed the link to the first stage of our survey via a German university's mailing list and various social media. On completion of the first stage of the survey, participants gave their email addresses, which were used to invite them to the second stage of our survey 14 days after their completion of part one. Duplicate responses from participants were dropped from the final sample. In line with the consumer perspective of our study, we set our target population to all non-broadcasting users of SLSS (Tang et al., 2016). Accordingly, we added control questions to both survey stages, checking for broadcasting activity of the participants. Broadcasters excluded, the first stage of our survey was answered by 230 consumers of SLSS. Stage two of our survey received 127 fully completed responses. Respondents were 75.6% male

and 24.4% female. The sample mostly consisted of students (78%) and employees (15%). The age of respondents ranged from 14 to 48 years, with a mean age of 22.5 years. To check for a potential nonresponse bias, we conducted a comparison of the socio-demographics of respondents between the two stages of our survey. In addition, we compared the socio-demographic characteristics of the respondents and non-respondents in survey stage two (Armstrong and Overton, 1977). We did not find any significant differences in either case, which indicates that our results are not affected by nonresponse bias.

5 Data Analysis and Results

We relied on partial least squares (PLS) path modeling to analyze our research model and to test our hypotheses (Henseler et al., 2016). The PLS procedure allows the modeling of reflective and formative (higher-order) constructs under non-normality and small sample size conditions (Lohmöller, 1989). As a rule of thumb in IS research, minimum sample sizes should be 10 times the largest number of predictors for any endogenous construct in the model (Gefen et al., 2011; Hair et al., 2011). We used SmartPLS 3 for the path analysis and determined the significance of structural path estimates by running the bootstrapping resampling algorithm with 5000 subsamples (Ringle et al., 2016). We applied the repeated indicator approach to model the reflective-reflective second-order construct co-experience, measured with mode A (Lohmöller, 1989). As the reflective-formative second-order construct perceived enjoyment is influenced by another exogenous latent variable, we used a variant of the repeated indicator approach as recommended by Becker et al. (2012). In line with Becker et al. (2012), we applied measurement mode B on the reflective-formative second-order construct and the inner path weighting scheme for the PLS algorithm. Following recommended guidelines, we conducted our data analysis in a two-step process (Hair et al., 2016): First, we evaluated validity and reliability of the measurement model. Second, we assessed the relationships in the structural model.

5.1 Measurement Model

In order to ensure construct validity, we evaluated our measurement model following established validation procedures (Chin, 2010). Internal consistency reliability was determined by calculating each construct's composite reliability (CR). All of our constructs showed satisfactory CR values above the established threshold of 0.7 (see Table 2). Convergent validity was evaluated by assessing factor loadings and the average variance extracted (AVE). Factor loadings should optimally be above the threshold of 0.7. All of our indicators did fulfill this requirement, except CC2, RC3, and EF4. Literature recommends to retain indicators if their factor loadings are greater than 0.4 and the corresponding constructs' values for AVE are greater than 0.5 (Hair et al., 2016). This was the case for CC2 and RC3, while EF4 did not meet the former criterion. Therefore, we rejected EF4, whereas we retained CC2 and RC3. In addition, all other constructs exhibited values for AVE above the critical threshold of 0.5, thus showing convergent validity on construct level (Chin, 2010). Discriminant validity was determined by assessing indicator's cross loadings, the Fornell-Larcker criterion, and the recently proposed heterotrait-monotrait (HTMT) ratio of correlations. All factor loadings of indicators exceeded cross loadings. The Fornell-Larcker criterion was met, as each construct's square root of the AVE was greater than the interconstruct correlations (Fornell and Larcker, 1981). As also all HTMT ratio values were below the most conservative threshold of 0.85 (Henseler et al., 2015), our constructs showed sufficient discriminant validity.

Subsequently, we assessed the validity of the formative construct actual use. To assess potential collinearity issues between the construct's indicators, we calculated the outer variance inflation factor (VIF) of each indicator. The highest obtained VIF value was 2.04, which is far below the critical threshold of 5 (Hair et al., 2011). One indicator's weight exhibited no statistical significance ($p > .05$). Literature recommends to retain indicators despite their non-significant weight if their loadings exceed 0.5 and theory supports the indicators' relevance (Hair et al., 2016). To summarize, all of our formative as well as reflective constructs showed satisfactory quality concerning the measurement model. Furthermore, we checked for common method bias by applying Harman's one factor test (Podsakoff et al., 2003). In

our explanatory factor analysis on all variables, the first single factor accounted for 31.26% of co-variance in the variables. Therefore, common method bias is unlikely to have affected our results.

| Construct | Factor Loadings | CR | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|-----------|-----------------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------|
| (1) PA | .865-.913 | .916 | .886 | | | | | | | | | |
| (2) CC | .640-.863 | .831 | .528 | .790 | | | | | | | | |
| (3) RC | .565-.847 | .790 | .422 | .452 | .750 | | | | | | | |
| (4) EF | .837-.854 | .883 | .461 | .395 | .413 | .845 | | | | | | |
| (5) EOPB | .889-.933 | .942 | .399 | .332 | .123 | .182 | .918 | | | | | |
| (6) EOAB | .880-.960 | .942 | .666 | .561 | .487 | .511 | .335 | .919 | | | | |
| (7) PU | .814-.843 | .870 | .158 | .213 | .152 | .241 | .309 | .202 | .831 | | | |
| (8) PEOU | .780-.899 | .904 | .202 | .161 | .010 | .044 | .440 | .193 | .143 | .838 | | |
| (9) BI | .841-.936 | .920 | .421 | .261 | .231 | .278 | .653 | .395 | .467 | .443 | .890 | |
| (10) AU | - | - | .259 | .168 | .242 | .258 | .391 | .355 | .344 | .333 | .672 | - |
| Mean | - | - | 4.37 | 3.64 | 3.39 | 3.19 | 6.10 | 4.18 | 2.63 | 5.63 | 5.07 | - |
| SD | - | - | 1.67 | 1.30 | 1.31 | 1.32 | 1.04 | 1.66 | 1.22 | 1.22 | 1.60 | - |

Note: Diagonal elements in bold print represent the square root of AVE for the corresponding construct. Off-diagonal elements represent interconstruct correlations.

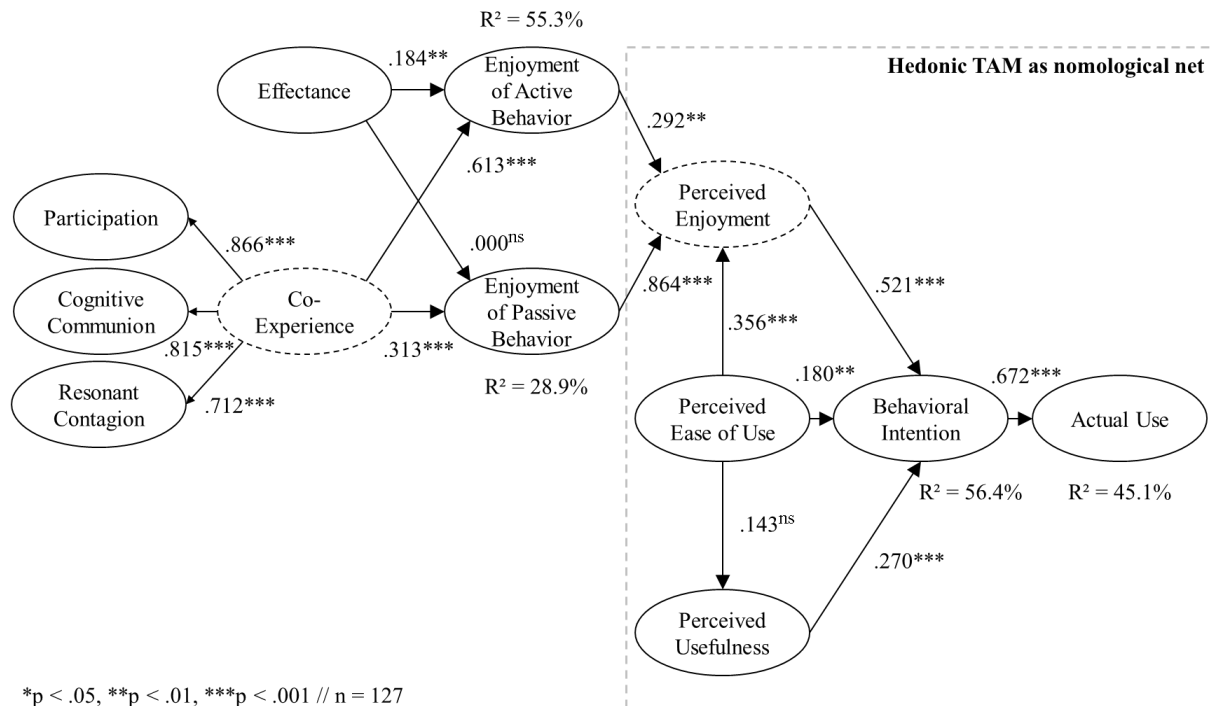
Table 2. Measurement statistics and latent variable correlation matrix.

5.2 Structural Model

We examined our structural model for collinearity by computing inner VIF values. With a maximum inner VIF of 1.43, all values were far below the critical threshold of 5, indicating that collinearity is no issue for our structural model. Furthermore, we applied finite mixture PLS (FIMIX-PLS) to check for unobserved heterogeneity in our structural model (Herrmann et al., 2002). The recommended information criteria AIC4, BIC, and CAIC all point towards one-segment data, strongly suggesting that our inner model is not affected by substantial heterogeneity (Sarstedt et al., 2011).

By assessing path coefficients and their significance, we found support for eight of our ten hypotheses. First, we examined the hypothesized relationships of the hedonic TAM. Perceived enjoyment ($\beta = .521$, $p < .001$), perceived usefulness ($\beta = .270$, $p < .001$), and perceived ease of use ($\beta = .180$, $p < .01$) had a significant positive effect on behavioral intention. We thus found support for the corresponding hypotheses H1, H2, and H3. Looking at the two dimensions of perceived enjoyment in detail, it shows that enjoyment of passive behavior ($\beta = .864$, $p < .001$) is a stronger predictor than enjoyment of active behavior ($\beta = .292$, $p < .01$). Perceived ease of use had no significant effect on perceived usefulness ($\beta = .143$, $p > .05$), thus we rejected H4. In line with Becker et al. (2012), we assessed the influence of perceived ease of use towards perceived enjoyment based on the total effect, i.e. the sum of the effects of perceived ease of use on the lower-order constructs of perceived enjoyment multiplied by the effect of the lower-order constructs on perceived enjoyment. Perceived ease of use had a significant positive effect on enjoyment of passive behavior ($\beta = .386$, $p < .001$), while showing no effect on enjoyment of active behavior ($\beta = .078$, $p > .05$). As the total effect of perceived ease of use on perceived enjoyment is significant ($\beta = .356$, $p < .001$), we obtained support for H5. Behavioral intention showed a strong effect on actual use ($\beta = .672$, $p < .001$), thereby supporting H6. Subsequently, we examined the hypotheses which are related to the specific affordances of SLSS. Effectance was shown to relate positively to enjoyment of active behavior ($\beta = .184$, $p < .01$), while having no significant effect on enjoyment of passive behavior ($\beta = .000$, $p > .05$). We therefore obtained support for H7b and rejected H7a. Co-experience had positive and significant effects on both enjoyment of passive behavior ($\beta = .313$,

$p < .001$) and enjoyment of active behavior ($\beta = .613, p < .001$). Therefore, we found support for hypotheses H8a and H8b. Furthermore, we calculated Cohen's f^2 to assess the effect sizes of the specific affordances of SLSS. Values of .02, .15, and .35, respectively indicate small, medium, and large effect sizes of exogenous latent variables (Cohen, 1988). Co-experience had a large effect on enjoyment of active behavior ($f^2 = .589$) and a medium effect on enjoyment of passive behavior ($f^2 = .096$). Effectance showed a small effect on enjoyment of passive behavior ($f^2 = .054$), while having no effect on enjoyment of passive behavior. Figure 2 presents our tested research model.



* $p < .05$, ** $p < .01$, *** $p < .001$ // $n = 127$

Figure 2. Tested research model.

Overall, perceived enjoyment, perceived usefulness, and perceived ease of use explained 56.4% of the variance in behavioral intention. In its role as antecedent, behavioral intention accounted for 45.1% of the variance in consumers' actual use behavior. Our research model explained 28.9% of variance in enjoyment of passive behavior and 55.3% of variance in enjoyment of active behavior. We additionally assessed Stone-Geisser's Q^2 , which serves as indicator for the path models predictive relevance towards a corresponding endogenous construct. As all of our endogenous constructs' Q^2 values were greater than zero, our model also showed predictive relevance (Stone, 1974).

6 Discussion

6.1 Key Findings

The primary goal of our study was to examine the role of co-experience and effectance on consumers' perceived enjoyment of SLSS. Overall, our results confirm the positive influence of SLSS' specific affordances on enjoyment. Through our PLS analysis, we discovered three key findings. Firstly, we found that consumers' enjoyment of active behavior is positively influenced by perceived co-experience as well as effectance. Both of these affordances of SLSS play a fundamental role for the enjoyment of active behavior, explaining more than half of its overall variance. Therefore, we found that the major part of the enjoyment of active chatting is actually independent from the content of the watched stream itself. Furthermore, our analysis revealed that perceived co-experience is a much stronger predictor for

the enjoyment of active behavior than effectance. This is counterintuitive, as we expected the feeling of influencing a live stream, and thus interacting with the broadcaster, to be more enjoyable than perceiving co-experience with other consumers (Hamilton et al., 2014).

Secondly, concerning the enjoyment of passive behavior, we only found a positive effect of consumers' perceived co-experience. Surprisingly, we did not find a significant positive relationship between effectance and the enjoyment of passive behavior. This finding was unexpected, as research in the fields of communication and media studies indicates that perceiving content to be tailored to oneself, positively influences an individual's media enjoyment (Bright, 2014; Kalyanaraman and Sundar, 2006). At first glance, this finding is also in contrast to Hamilton et al. (2014) who found out that consumers on SLSS greatly appreciate interacting with the broadcaster and influencing the content of the live stream. One possible explanation for this counterintuitive finding could be found in effectance theory itself. As effectance is inherently intrinsically motivated, consumers may only seek to influence the content of the live stream for the sake of the activity itself. Therefore, our results indicate that consumers are not interested in the perceived consequences of affecting the content, which means receiving content tailored to themselves, but that they solely enjoy the experiential aspects of affecting the live stream in front of an audience (Karhulahti, 2016).

Thirdly, our conceptual model allows us to assess the roles of the two sub-dimensions of enjoyment in the grand scheme of the acceptance and use of SLSS. This is particularly interesting as past research raised the question of whether the content or community aspects of a social medium are the decisive factors for consumers (Oestreicher-Singer and Zalmanson, 2013). Our results show that the enjoyment of passive behavior has a stronger influence on consumers' intentions to use SLSS than the enjoyment of active behavior. Even though SLSS are a highly social and interactive medium, this finding indicates that, while consumers' enjoyment of commenting in chat has a positive impact, enjoyment of the actual content of live streams is still the more decisive factor for the use of SLSS.

6.2 Theoretical Contributions

Our study contributes to social media research in general, and to literature on SLSS in particular, in three ways: Firstly, our study contributes to the scarce research on consumers' use of SLSS by quantitatively investigating the relationships between the underlying factors of SLSS use. Prior research from the consumer perspective has so far focused on users' various motivations to passively watch live streams on topic-specific SLSS (Sjöblom and Hamari, 2016). In contrast, we provide an understanding of how the specific affordances of SLSS influence consumers' enjoyment of passively watching, as well as actively chatting, on SLSS in general. Therefore, our work helps to broaden and strengthen the view on consumers' use of SLSS from an IS perspective.

Secondly, to the best of our knowledge, this study is the first to introduce the concepts of effectance and co-experience into research on social media use. Traditionally, research on technology usage primarily has taken an individualistic cognitive stance, looking at one-to-one interaction between the user and the system (Junglas et al., 2013). While research highlighted the role of external social influences and norms for using a technology (e.g. Venkatesh and Davis, 2000; Venkatesh et al., 2003), social and experiential aspects during the use of technology have so far received scant attention from academia (Junglas et al., 2013). We address such aspects by elaborating how the concepts of co-experience and effectance can be utilized by social media research, in particular research on SLSS. Furthermore, we have empirically shown the role of co-experience and effectance for the enjoyment of SLSS.

Thirdly, we have demonstrated the relevance and importance of perceived enjoyment for explaining social media use with regard to SLSS. Therefore, we followed Wu and Lu (2013), who suggested that the role of perceived enjoyment as the most salient factor for explaining acceptance and use must be examined and proven for new emerging technologies. While extant literature has primarily treated enjoyment as a monolithic black box, we proposed differentiating between the enjoyment of active and passive behavior (Chen et al., 2014). This conceptual approach highlights the relative importance of

active and passive behaviors for the formation of a user's overall perceived enjoyment, allowing future studies to apply a more fine-grained analysis of the role of enjoyment towards social media use.

6.3 Practical Implications

This study also yields several managerial implications for the providers of SLSS. Due to the strong user dependency of SLSS, providers need to understand what exactly drives consumers' acceptance and use of SLSS (Wirtz and Göttel, 2016). Our results show that SLSS providers should focus their capacities more on the hedonic aspects than on the utilitarian or usability factors of their services. As this study has described, enjoyment can be formed in two ways concerning SLSS use. On the one hand, consumers enjoy active behavior on SLSS. As this kind of enjoyment is to the major part made up of the specific affordances of SLSS, providers of SLSS should try to provide additional features which facilitate consumers' perceived co-experience and effectance. To foster co-experience, SLSS providers should focus on functionalities that enable interaction between consumers and visualize others' activities, e.g. the ability to directly interact with another consumer's chat comment or new ways to show agreement or disagreement with others' opinions. With regard to effectance, SLSS providers should increase consumers' possibilities to influence the content of the live stream. This could, for example, be done by adding built-in poll functionalities to the chat, allowing broadcasters to base their content on poll results. Another possibility would be to allow special consumer actions which automatically produce an effect on the live stream, e.g. consumer-sent texts or visual effects, which show up directly on the video stream. On the other hand, our findings show that consumers primarily derive enjoyment from passive behavior through watching live streams. Despite the proven effect of co-experience on the enjoyment of passive behavior, our results indicate that SLSS providers should still set their focus on the foundation of all social media – the user-generated content itself. Our results highlight that providers have to acknowledge the strong intertwining between producers and consumers of SLSS. Consequently, in order to maximize consumer acceptance and use, it is important for SLSS providers to attain sufficient quantity and quality of UGC by attracting and sustaining a broad base of content producing broadcasters (Bründl and Hess, 2016; Tang et al., 2016).

7 Limitations, Further Research and Conclusion

Three limitations of this study may provide avenues for future research. First, we conceptualized enjoyment of active behavior to solely represent a consumer's enjoyment of text-based chatting. The rationale for this is that chatting is the one common active behavior which consumers can perform on all the different SLSS. However, some SLSS provide further possibilities for active behavior, e.g. cheering functionalities. It may, therefore, be viable for future research to focus on such a specific SLSS in order to examine different dimensions of active behavior. Secondly, participants of our survey were restricted to non-broadcasting users. While viewing and broadcasting content are distinct activities which are motivated by fundamentally different factors, individuals' broadcasting activities may potentially influence their viewing activities or vice versa (Shao, 2009). Future research should therefore seek to provide a holistic view on SLSS use, taking into account the potential reciprocal action of broadcasting and viewing activities. Lastly, as with any study relying on online survey data, our data may be subject to self-selection and self-reporting biases. Therefore, future studies which examine the use of SLSS should include usage data from SLSS providers to validate survey data.

To conclude, our study examined consumers' use of a new type of hedonic social media, highlighting the social and experiential aspects of SLSS use. Our results have shown the influence of perceived co-experience and effectance on consumers' enjoyment of using SLSS. While consumers' enjoyment of active behavior is predominantly determined by perceived co-experience and effectance, only co-experience has an effect on consumers' enjoyment of passive behavior. As we demonstrated the role of co-experience and effectance for consumers' use of SLSS, we hope our study sparks future research interest on those affordances beyond the context of SLSS.

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