

Understanding the what and how of successful social live streaming

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Abstract. Live Streaming is an emerging form of digital media. It enables real-time content generation and consumption and facilitates synchronous interactions between streamers and their community. Previous literature has neglected how streamers can drive specific outcomes of a live stream. Thus, in this research, the authors introduce communication foci (the “what”) and communication styles (the “how”) as levers of streaming success. To do so, they analyze their impact on non-monetary and monetary outcomes employing data gathered from a two-wave questionnaire. Results depict that communication foci represent a double-edged sword: community-focused communication has a positive (negative) influence on non-monetary (monetary) outcomes, and content-focused communication has a negative (positive) influence on non-monetary (monetary) outcomes. Further, when streamers center their communication on the content combined with utilitarian-superior style, monetary outcomes are increased. In sum, these findings are helpful for streamers because it shows how they achieve desirable or avoid undesirable outcomes.

Keywords: live streaming, synchronous interactions, engagement, social media

1 Introduction

Live streaming of digital media—the simultaneous broadcasting of audio and video media in real-time [1] — is rapidly growing and fueled by emerging technologies. It has recently gained immense popularity particularly indicated by the rising interest of viewers (40% compared to 2017; [2]). For instance, Twitch, the most successful social live streaming platform, accounted for 15 million unique daily viewers and over 1 million concurrent viewers on average in 2018 [3]. Social live streams allow for the streaming and the consumption of content in real-time as well as for synchronous interactions between the content creator (i.e., streamer) and his/her respective community (i.e., live-chat). That is, live streaming becomes more and more popular because it integrates social-media-functionalities by facilitating real-time interactions between streamers and their viewers.

Live streaming attracts content creators from different genres such as gaming, music, or cooking. For instance, the number of streamers on Twitch has increased by 70% in

2018, exceeding the proportional rise in viewership [3]. Moreover, 88% of the viewers are distributed among merely 10% of the streamers resulting in an unbalanced “superstar market” [4]. This fierce competition is intensified by the fact that live streams represent promising revenue streams. For example, video game streamer Ninja earns over \$875,000 a month from subscriptions alone, not considering in-stream donations from viewers [5]. The nascent research in this area has so far focused on how viewer motivations to watch a live stream lead to viewer activities resulting in non-monetary (i.e., viewing activities) and monetary outcomes (i.e., subscriptions and donations) for the streamer [6; 1]. Other related research has examined how linguistic style of influencers drives word of mouth [7]. Albeit providing important findings, these studies have neglected to zoom in on how streamers should communicate with their viewers to achieve non-monetary and monetary outcomes from the stream itself. To close this gap, we examine the impact of different streaming communication foci (i.e., the what) and styles (i.e. the how) on streamer-beneficial viewer activities.

The communication focus refers to the objects which streamers choose to center their spoken content on. We argue that streamers either focus more on interacting with their viewers by responding to questions or requests posted in the live chat (i.e., community-focused communication) or on describing the focal activity of their live stream such as commenting on the games they play (i.e., content-focused communication) [8]. We examine whether these communication foci impact how often viewers engage with the live stream (non-monetary outcomes) and the amount of money they donate to the streamer (monetary outcomes). This leads to our first research question:

RQ1: How do community-focused and content-focused streaming influence non-monetary and monetary outcomes?

We further consider a streamer’s communication style, which we define as the unique ways of communication how streamers interact with their viewers. We suggest that community- and content-focused communication can be conveyed in either a predominately educational (i.e., utilitarian-superior) or entertaining (i.e., hedonically superior) style [9]. This is in line with prior research, which has identified educational and entertaining aspects of live streaming as drivers of viewer activities (e.g., [10]). Hence, we expect that whether the streamer provides utilitarian versus hedonic value may affect how communication foci impact the outcomes mentioned above [11; 12]. We concentrate on utilitarian-superiority, because whether the information provided by the streamer is particularly valuable to viewers may shape their perception of the stream [13; 14]. Thus:

RQ2: How does utilitarian-superior communication style moderate the impact of communication foci on non-monetary and monetary outcomes?

To address these research questions, we draw on data based on a two-wave questionnaire comprising viewers’ perceptions of streamer communications and their actual behavior towards a specific stream(er). The empirical results show that community-focused communication is positively associated with non-monetary outcomes. Notably, community-focused communication negatively influences monetary outcomes, which

is enhanced when combined with a utilitarian-superior style. Content-focused communication, however, positively influences monetary outcomes and is further enhanced when being paired with utilitarian-superior style.

This study contributes to research on engagement in social media in general and the emerging literature on live streaming specifically. We are, to the best of our knowledge, the first to identify communication foci and styles for driving non-monetary and monetary outcomes of live streams and our findings add to research on customer engagement [15; 16]. More precisely, we expand research on the impact of marketer actions on engagement in asynchronous social media (e.g., social networking sites [7; 17]), by identifying how content providers (e.g., marketers or influencers) should adjust their communications for driving engagement in the context of synchronous social media (i.e., social live streams). Moreover, because influencer marketing has become a key social media tactic [18], our results help achieve a better understanding of peer-to-peer communications for researchers and managers.

2 Conceptual model and expectations

The purpose of this study is to examine how streamers can drive specific outcomes. Thus, our research model includes community-focused and content-focused communication as independent variables and non-monetary and monetary outcomes as dependent variables (see Figure 1). Moreover, we consider whether a streamer adopts a particular utilitarian or hedonic style [13] by adding utilitarian-superior style as a moderator.

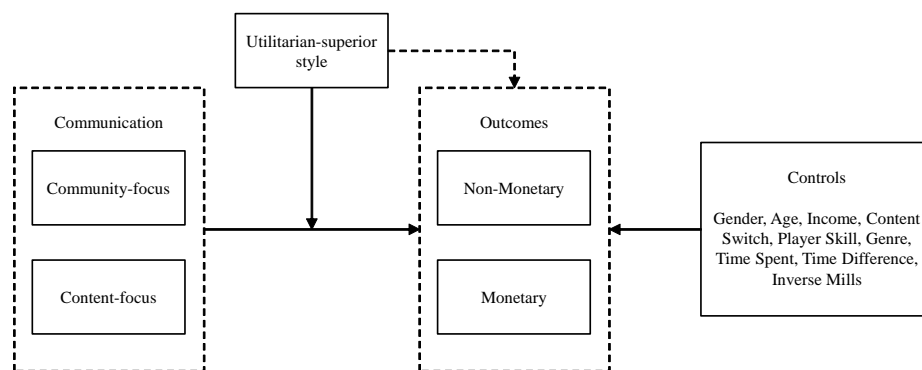


Figure 1. Conceptual Model

The increasing popularity of live streaming has resulted in a diverse selection of categories and topics of content. For instance, live streamers may focus on reviews to speak to users who seek to increase their knowledge or on collaborative gameplay (“Let’s plays”) to establish perceptions of communal belonging among viewers [19]. Consequently, a viewer may be motivated to engage with a particular stream from this vast offer to satisfy individual psychological needs. In fact, previous research has identified the satisfaction of cognitive and social integrative needs as the prevalent motivational drivers for watching and engaging with live streams [1; 6].

We draw on self-determination theory (SDT) [20], to explain how external stimuli assist individuals in satisfying such psychological needs and can spur internal motivations for engagement behavior (e.g., [17; 21]). SDT suggests that behavior is internally motivated through the satisfaction of the need for competence (i.e., to feel effective in one own's behavior) and the need for relatedness (i.e., perceptions of belonging to a social group) [22; 23], which is in line with the initial findings of live streaming literature discussed above. In the following, we discuss how streamers can facilitate the need satisfaction through their communication focus and style.

The impact of community-focused communication. Prior research has identified social integration as critical for live stream engagement (e.g., [6]). Thus, if streamers focus their communication on social interactions with their viewers (i.e., their community) it is likely to affect viewer engagement. Such a community-focused communication refers to frequent referencing and inclusion of as well as calling out to specific viewers to establish a sense of social belonging. This steady interaction with the audience makes a viewer feel as part of the community [20]. That is why we expect that live streams in which streamers deploy community-focused communication have potential for satisfying the need for relatedness of the viewers. Hence, the viewers will engage more often with the stream manifesting in increased non-monetary outcomes of the stream.

We expect that focusing on the community is less likely to result in reciprocal financial activities towards the streamer [24]. Community-focused communication is not a complex task, meaning that a streamer can readily give the viewer the feeling to be part of the community. It is reasonable to assume that viewers are aware of this fact and thus we expect that a highly perceived community-focused communication does not trigger monetary reimbursement on part of the viewer. We even expect that viewers will reduce their monetary activities towards the stream if the streamer is only concerned with the social aspects of streaming because socializing does not require intense preparation and resources. Consequently, we expect that high community-focused communication will have a negative influence on monetary outcomes of the stream.

The impact of content-focused communication. Streamers also frequently elaborate on the activity of the stream and showcase the required skills for performing the focal activity (e.g., gaming). Thus, viewers are also aiming at satisfying cognitive needs when turning to live streams [8]. By focusing their communications on the content of the stream, they help their viewers to learn more about it, supporting individual self-development in that specific field. If an activity helps an individual's self-development and thus satisfies the need for competence, he or she will engage in that activity more often and/or longer. Consequently, we expect a positive influence on non-monetary outcomes.

Furthermore, it is reasonable to assume that a viewer, who experiences a high satisfaction of the need for competence, wants to ensure that the streamer will continue to provide such helpful content in the future. That is why we expect that the viewer will engage in monetary activities to support the stream and help to maintain its quality and longevity.

The moderating role of utilitarian-superior communication style. Prior research suggests that there are parallels between live streams and social TV [25]. Central success

factors of social TV are the educational and entertaining characteristics of the interactions [26] which is in line with streaming literature (e.g., [10]). We draw on the concept of utilitarian and hedonic values from marketing literature [11; 27] to consider these two aspects. Utilitarian value describes how useful, beneficial, practical and intelligent a service or product is. Hedonic value describes how pleasant, agreeable and harmonious a service or product is. As mentioned above, we examine whether a streamer's communications is carried out in a more utilitarian versus a hedonic style [11; 9].

Employing a more utilitarian style combined with a community-focus might enable the streamer to support more intensive and collaborative interactions between members of the community. This empowerment and cocreation of value in the community could satisfy the need for competence, as well as the need for relatedness [28; 20]. Thus, we expect that the positive (negative) effect of community-focused communication on non-monetary (monetary) outcomes could be enhanced (mitigated) because viewers want to participate in the stream more often (reimburse the streamer for his/her efforts).

We further expect that if content-focused communication is paired with a utilitarian-superior style and is thus carried out in a rather educational and helpful way, the positive influence on both outcomes can be enhanced. A utilitarian-superior style can enhance the satisfaction of the need for competence, because such an educational communication may help viewers to process the information more quickly [29].

3 Study design

We conducted a two-wave online questionnaire among viewers of the most successful live streams on Twitch between June and August 2018. To achieve a representative sample, we focused on streamers with the highest number of followers (average: > 2,9 million followers). After accounting for a variety of streaming categories we ended up with 15 streamers. Participants were recruited through various internet forums and other social media focusing on gaming and/or streaming (e.g., Reddit, Facebook Groups). All respondents were given the opportunity to take part in a raffle to win vouchers (4 x 25\$ in the first, 2 x 50\$ in the second survey).

At the start of the survey, the participants chose which streamer they know best as the following questions focused only on this selected streamer. The participants were asked about the perceived communication foci and communication styles of their focal streamer and control variables. At the end of the first survey, the participants could opt in to participate in a second survey. In this follow-up survey (four weeks later), the participants were asked to report their behavioral manifestations toward the focal streamer including viewing behavior and their financial activities. In conducting two temporarily separated questionnaires to collect data on the independent and dependent variables, we aimed at reducing concerns regarding common method variance [25].

3.1 Sample and measurement

We excluded respondents that were not eligible for the study: (1) 329 respondents only participated in the first wave of the survey, (2) two participants didn't answer the questions conscientiously (≤ 3 on a seven-point Likert scale), and (3) 24 respondents did not invest enough time to answer the survey thoroughly (the 10th percentile). Our final sample consisted of $n = 215$ eligible respondents (92% male; $M_{age} = 23.4$).

To measure community-focused (content-focused) communication, we use two (four) self-developed items to capture its intensity and quality (e.g., "[Streamer] frequently interacts with his chat" for community-focused or "[Streamer] explains his decisions well while playing the game" for content-focused communication). Exploratory factor analysis confirms our expected factor structure with community-focused communication (Cronbach's $\alpha = .89$) explaining 34.22% and content-focused communication ($\alpha = .93$) explaining 47.22% of the variance. Utilitarian and hedonic values were measured with semantic differentials using 15 items from the scale by [11] capturing two contrary adjectives for utilitarian values ($\alpha = .91$; e.g., harmful – beneficial) and hedonic values ($\alpha = .88$; e.g., pleasant – unpleasant). To measure utilitarian-superior style we subtracted the hedonic from the utilitarian value mean scores. Non-monetary outcomes were measured by the weekly average time spent watching the chosen stream in the time between the two surveys. We measured monetary outcomes using a binary variable indicating whether a participant had donated either through actual currency (\$) or with the Twitch-specific currency (bits) during the observation period (1 = donation, 0 = no donation). All other constructs were measured with seven-point Likert scales ranging from 1 = strongly disagree to 7 = strongly agree.

We further consider different control variables such as gender (1 = female, 0 = male), age, and income. We also control for content switch which describes whether the chosen streamer has changed his/her focally played game between the two surveys using a dummy variable (1 = switch, 0 = no switch). A content switch might impact a viewer's intention to watch the stream or engage in financial activities [4]. Furthermore, we added the participant's perception of the streamer's skill in playing video games. We also account for the genre of the streamer's focal game by capturing whether the video game is more strategy-focused ($=1$; $n = 106$) or action-focused ($=0$; $n = 109$) and the number of exact days that have passed between the first and second survey participation. Finally, time spent describes how much time each participant has spent watching streams on Twitch in general. The items used are available upon request.

3.2 Model

We examined our proposed causal relations using different regression approaches. We use negative binomial regression for the non-monetary outcome model (Model 1) as this dependent variable follows a count variable distribution and is likely over-dispersed (i.e., the mean is lower than its variance). We use logistic regression to model monetary outcomes (Model 2) as it represents a binary variable indicating whether the participant has engaged in financial activities towards the chosen stream or not. We use seemingly unrelated regression to estimate the two equations simultaneously:

The sample consists of participants who opted-in to participate in the second online questionnaire in addition to the first one. This decision may be affected by specific individual characteristics, leading to a self-selected, potentially biased sample. To control for potential self-selection bias, we thus employ Heckman correction [30; 31]. First, a probit model was estimated with the participation decision as dependent variable (1 if the participant participated in the follow-up survey, 0 if not) and the ability of the English language as well as the current occupation category of the participant as determinants. We then calculated the inverse Mills ratio and included it as a control variable.

3.3 Results

The results are displayed in Table 1. Model 1 ($R^2 = .112$) indicates that community-focused communication has a positive influence on non-monetary outcomes ($\beta = .94$; $p < .1$). Content-focused communication, on the other hand, has a negative influence on non-monetary outcomes ($\beta = -.126$; $p < .05$). The main effect of utilitarian-superior style on non-monetary outcomes is positive and significant as well ($\beta = .149$; $p < .01$). The results of Model 2 ($R^2 = .174$) indicate that community-focused communication has a negative impact on monetary outcomes ($\beta = -.784$; $p < .05$) which is further enhanced if it is paired with utilitarian-superior style ($\beta = -.659$; $p < .01$). Content-focused communication has a positive impact on monetary outcomes ($\beta = .867$; $p < .01$) which is further enhanced when it is paired with a utilitarian-superior style ($\beta = .510$; $p < .05$).

Table 1. SUR estimates for non-monetary and monetary outcomes

Variable	Non-monetary Outcomes		Monetary Outcomes	
	Coefficient	SE	Coefficient	SE
Intercept	.145	1.779	8.512	13.443
Community-focus	.094*	.054	-.784**	.371
Content-focus	-.126**	.054	.867***	.334
Utilitarian Style	.149***	.040	.198	.252
Community-focus x Utilitarian	.012	.027	-.659***	.248
Content-focus x Utilitarian	-.049	.031	.510**	.210
Gender	.044	.156	1.443**	.733
Age	.005	.005	-.021	.039
Income	.010	.021	.034	.164
Content Switch	.151	.099	.397	.677
Player Skill	.021	.041	.209	.330
Genre	-.192**	.089	-.138	.722
Time Spent	.032***	.004	.031**	.015
Time Difference	.000	.000	.000	.000
Inverse Mills Ratio	1.036	1.549	-18.089	16.424
R^2	.112		.174	

4 Discussion and implications

Drivers of non-monetary outcomes. The empirical evidence partially supports our expectations. Community-focused communication seems to support viewers in satisfying relatedness needs, which causes them to engage more with the stream by watching it more frequently. Alarming, however, content-focused communication is negatively associated with non-monetary outcomes. These results seem to indicate that focusing on the stream's focal content alone cannot entirely motivate viewers to engage with the stream in the long run. Another interesting finding is that utilitarian-superior style translates into enhanced non-monetary outcomes, however, we do not find evidence for an interaction with either communication foci.

Drivers of monetary outcomes. As expected, community-focused communication has a negative impact on monetary outcomes possibly because this kind of communication is not perceived as resource costly and thus does not motivate monetary reimbursement on part of the viewer. Surprisingly, the interaction of community-focused communication and utilitarian-superior style represents an undesirable effect if streamers are concerned with enhancing the monetary outcomes of their stream. It is conceivable that this specific combination of focus (the what) and style (the how) thwarts the satisfaction of the need for competence and the need for social relatedness concurrently, as described in the SDT [22]. As suspected, content-focused communication satisfies the need for competence and leads to heightened monetary outcomes. Additionally, utilitarian-superior style enhances competence need satisfaction and thus strengthens the positive effect of content-focused communication on donations.

Communication foci represent a double-edged sword. While community-focused communication is associated with higher (lower) non-monetary outcomes (monetary outcomes), content-focused communication is associated with lower (higher) non-monetary outcomes (monetary outcomes). Consequently, streamers need to carefully consider whether they focus on building a viewer base or cashflow through donations because the communication foci yielded countervailing effects.

Communication style as an engagement lever. Depending on their communication focus, streamers should thoroughly choose between adopting a utilitarian-superior style or a hedonically-superior style. The utilitarian-superior style should be particularly embraced by streamers when they center their communication on the content to drive monetary outcomes as it can further enhance it. Nevertheless, it should be neglected when the streamer follows a community-focused approach, because it amplifies the negative impact on financial consequences of a stream.

5 Conclusion

This paper aimed at explaining viewer behavior in the context of live streaming. Because previous literature has already established the viewer needs that have to be addressed, we deemed the communication foci and communication styles as most promising to arrive at a broad understanding of the manageable success factors of live streaming. First, streamers can readily implement both aspects of their communication.

Second, developing an understanding of the success factors of non-monetary and monetary streaming outcomes attempts at closing a void in research: the examination of not only the viewers' motives but also the instruments available to streamers.

This study underlies certain limitations: First, because the streamers examined in our study mostly rely on video game-content (the most popular category), the empirical question remains whether our findings can be generalized to other genres. Second, the conceptualization of communication foci and style warrants further theoretical and empirical validation as a fruitful avenue for future research. Thus, we looked at a specific score for the unique style that a live streamer pursues and did not consider the separate, absolute values of utilitarian and hedonic dimensions. In future research, the mediating role of the proposed need satisfactions should be analyzed further.

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