# Motives for Mass Interactions in Online Sports Viewing

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## ABSTRACT

Recent advances of social TV services allow sports fans to watch sports games at any place and to lively interact with other fans via online chatting. Despite their popularity, however, so far little is known about the key properties of such mass interactions in online sports viewing. In this paper, we explore motives for mass interactions in online sports viewing and investigate how the motives are related to viewing and chatting behaviors, by studying Naver Sports, the largest online sports viewing service in Korea.

## Categories and Subject Descriptors

H.5.3 [Group and Organization Interfaces]: Synchronous Interaction

## Keywords

Online Sports Viewing, Mass Interactions, Sports Fan, Social TV

## 1. INTRODUCTION

Nowadays, sports fans now can watch sports games at any place using social TV services such as YouTube Live, MLB TV, Naver Sports TV, lively interacting with other fans via online chatting; e.g., cheering their favorite teams in the workplace or the commuting bus. Social TV services provide unique viewing experiences in that viewers have a similar degree of freedom like home viewing and can share and affirm their fanship with many other online viewers.

Live chatting behavior in social TV can be considered as mass interactions in that a large number of online viewers have a single public space for cheering their favorite teams, expressing their feelings, and even asking/answering questions. However, our knowledge about the nature of mass interactions in online sports viewing is still limited. Prior works on mediated sports are limited to social experiences in offline setting like sports bars [1].

The goal of this paper is to deepen our understanding on mass interactions in online sports viewing and to identify practical implications for social TV system design. To this end, we have the following research questions: (1) What are the major motives of engaging in mass interactions while viewing online sports? and (2) How are these motives related with the usage characteristics (physical/social context, chatting patterns)? We answer these questions by analyzing 6.5 million chat messages from Naver Sports, the most popular live streaming service for sports game in Korea. We supplement a large scale data analysis the data analysis with a survey study with 1,123 Naver Sports users.

## 2. MOTIVES FOR MASS INTERACTION

To study motives of mass interaction in social TV environments, we adopt the Use and Gratification approach [3], a theoretical framework that examines 'how' and 'why' of media use. We first

explore motives for mass interaction in online sports viewing and develop a scale to measure them. Then, we investigate how usage motives are related to actual usage behavior via a series of multiple linear regression analysis.

## 2.1 Identifying Motives for Mass Interaction in Online Sports Viewing

We use a two-stage process of identifying motives, which is typically used in existing UGT work. In the first stage, we conduct an exploratory study to find users' motives, e.g., by soliciting answers in free-text format like previous UGT work [2]. Sixty Naver Sports users responded our surveys. Two raters then worked collaboratively to perform affinity diagramming to extract main themes of motives from the participants' response data. As the results, five main themes were emerged as outlined: *sharing feelings & thoughts*, *membership*, *information sharing*, *fun and entertainment*, and *emotional release*.

In the subsequent stage, we perform a large-scale survey and conduct an exploratory factor analysis that groups relevant survey items, deriving statistically significant motives. We prepared 26 survey items to measure motives based on the response data in the exploratory study. Participants are asked to rate each of the items on a 7-point Likert scale. In addition, the survey content includes several questions about their chatting and viewing behaviors. Total 1,123 users responded to the survey.

**Table 1. Main themes of motives**

| Motive | Example item |
|---|---|
| Sharing feelings & thoughts | I want to know how others respond to my chat messages about feelings and thoughts. |
| Fun & entertainment | Chatting is fun and enjoyable itself. |
| Information offering | I can answer to others' questions. |
| Information sharing | I can ask questions about something I do not know while watching a game. |
| Emotional release | I can express my excitement in writing just as I were shouting in a stadium. |
| Intra-membership | Fans can be united by cheering their teams and favorite players together. |
| Inter-membership | I want to boo the opposing team, and its fans |

We conducted exploratory factor analysis on the survey responses on the 26 questions about motives. We identified seven factors that explain 69.32% of the variance. To identify key items for each component, we eliminated the items which have a lower factor loading value and does not affect the reliability of the factor seriously. Based on the selected items, we named each component as follows: sharing feelings & thoughts (7 items, $\alpha = 0.871$), fun and entertainment (4 items, $\alpha = 0.788$), information offering (3 items, $\alpha = 0.872$), information seeking (3 items, $\alpha = 0.874$), emotional release (3 items, $\alpha = 0.767$), intra-membership (3 items, $\alpha = 0.811$), and inter-membership (3 items, $\alpha = 0.716$). Table 1 shows an example item of each motive.

It is interesting to note that building interpersonal relationship is not identified as a key motive. In earlier work on social TV, this motive

is commonly observed [4]. We posit that this characteristic is attributed to the fact that a large number of "strangers" are participating in a chat session, which is the main difference from earlier work in which small group-based user studies are assumed. Users would identify themselves as fans (membership), and yet due to massive number of participants, mass chat may not facilitate interpersonal relationship building.

## 2.2 Relationships between Motives and Usage of Online Sports Viewing System

We study how usage characteristics are related to the motives through multiple regression analysis. Dependent variables are the seven motive scores (i.e., for each motive, its score is the mean of all the ratings). Usage characteristics as independent variables are classified into three types: demographics, viewing behavior, and chatting behavior. The values of these types are measured by analyzing the survey results and the chat messages in Naver Sports. Table 2 shows significant results of the analysis.

**Table 2. Multiple regression analysis results**

|  | M1 | M2 | M3 | M4 | M5 | M6 | M7 |
|---|---|---|---|---|---|---|---|
| **Age** | .073* | .071* |  |  | .101** |  |  |
| **Gender** | -.082** | -.079** | -.106*** |  |  | .109*** | .093** |
| **ViewingFrequency** |  | -.073** |  |  |  |  |  |
| **LocationHome** |  | .057* |  |  |  |  |  |
| **SmartDeviceUse** | .074* |  |  | .058† | .056† |  |  |
| **Multitasking** | .068* | .063* |  |  |  |  |  |
| **CheckingChats** | .440*** | .529*** | .232*** | .282*** | .404*** | .312*** | .260*** |
| **AbuseReporting** |  |  | .137*** | .065* |  |  |  |
| **TeamFiltering** |  |  |  |  |  | .087** |  |
| **ChatTotalCnt** |  | -.043† | .066* |  |  |  |  |
| **FanLoyalty** | -.062* | -.057* | -.103** | .049† |  | -.066** | .056† |
| **MsgLength** |  | -.087** |  | -.049† | -.053† | -.069*. |  |
| **SentimentNegRate** |  | .057* |  |  |  |  |  |
| **R²** | .217*** | .306*** | .130*** | .111*** | .176*** | .136*** | .105*** |

† $p<0.1$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$, M1: Sharing Feeling & Thoughts; M2: Fun and Entertainment; M3: Information Offering; M4: Information Seeking; M5: Emotional Release; M6: Intra-membership; M7:Inter-membership

Among demographic variables, Age and Gender showed significant relationship with some motives. Sharing feelings & thoughts, Entertainment, and Emotional release were positively correlated with Age. Sharing feelings & thoughts and Entertainment were negatively correlated with Gender, meaning that males may be more motivated by these motives than females. In addition, gender was positively correlated with the information offering, pointing that males more like to offer information to others.

Several usage patterns significantly reflect users' motives for enjoying mass interaction. Checking chats emerges as the strongest predictor of all the motives. Intuitively, viewing the chat screen frequently represents the strong motives of enjoying participating in chatting with others.

The sharing feelings & thoughts is positively associated with multitasking and use of smart devices for viewing. This indicates that users having this motive desire to check others' responses occasionally while they do other works simultaneously, or to compensate lack of interaction affordances in smart devices via chatting functions. The fanship (representing a tendency that a user chats to only a few of teams) is also negatively correlated with this motive, indicating that those users tend to chat while watching games among diverse teams.

The entertainment motive was positively correlated with the multitasking and negatively correlated the fanship, the frequency of online sports viewing and the amount of chats. This possibly means that the users with high entertainment motive may want to spend their extra time for watching sports games; not only their favorite teams, but also other teams. Indeed, our data shows that they tend to post short, positive messages and to frequently respond to amusing chat messages using simple emotional expressions such as emoticons.

Predictors of the emotional release motive were similar to those of the sharing feelings & thoughts and entertainment. Like the entertainment motive, the emotional release was negatively associated with the length of chat messages, perhaps relating to the frequent use of simple interjections and emoticons.

Information offering and seeking motives were positively associated with the number of chats. Users who frequently participate in message exchanges with others more likely perceive chats as useful source of information. Also, reporting abusive users was positively correlated with both motives, representing their efforts to develop a better communication environment for information sharing.

There are other significant variables for predicting information offering and seeking motives. Information offering is negatively correlated with fan ship, meaning that informative users tend to watch sports games of many teams rather than focusing on favorite teams. Information seeking was positively correlated with the use of smart devices for viewing. While watching sports game on smart devices, the chat room would be the most convenient information source. Thus, the smart device viewers would value the usefulness of chats for information seeking. Also, information seeking was negatively related to the length of chats. Questions are short in length as watchers have a good shared context.

The membership related motives were significantly related to the behaviors reflecting fanship and group affiliation [3]. Those who have these motives tend to user online sports viewing more frequently. Also, they showed a distinguished chatting behavior of concentrating on a few teams. The intra-membership motive has a significant relationship with the use of team-specific chat filtering. This reflects that those who have high fan-membership want to communicate with other members. The length of chats was also negatively correlated with the intra-membership, partly because they frequently use simple cheering expressions.

## 3. ACKNOWLEDGMENTS

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