Creative participation: Collective sentiment in online co-creation communities

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ABSTRACT

Co-creation communities allow companies to utilize consumers' creative thinking in the innovation process. This paper seeks to understand the role of sentiment in user co-creation. The results suggest that management style can affect the success of co-creation communities. Specific employees' communication styles, the sentiments embedded in the messages, task-oriented content, and proactiveness can all influence individual user sentiment. The aggregation of these individual user sentiments, resulting in collective sentiments, affects co-creation performance. Increasing negative collective sentiment results in decreased subsequent creativity and increased future participation. Conversely, growing positive collective sentiment leads to a lower level of participation.

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1. Introduction

In recent years, research about online communities has proliferated. Co-creation communities, in particular, have gained significant popularity among scholars and practitioners. Examples of co-creation practices abound across industries. Companies such as BMW [32], Ducati, Samsung [50], IBM [9], LEGO [74], Starbucks [48], Proctor & Gamble [38], and Dell [22] have all been successfully leveraging creative ideas contributed by internet users. Co-creation seems to be an effective way to enhance customer relations and improve business process efficiency (e.g., [55]). For example, in 2012, Heineken launched its IdeasBrewery website, where users can submit ideas for a number of challenges focused on reinventing beer-drinking experiences or packaging design. While the economic benefits of this co-creation practice may not be immediately apparent, there is evidence that companies may ultimately increase their profitability. For example, Proctor & Gamble started its co-creation practices with non-employees in 2001. In three years, innovative ideas contributed from outside the company increased from 20% to 35%, which resulted in a 20% reduction in their R&D investment [38].

One of the typical co-creation practices, and the type discussed in this paper, is the establishment of company-hosted consumer communities in which direct benefits to the company (such as actionable ideas on improving current products and services or creating new ones) largely result from the creative participation of a crowd of consumers. Similar to new product development in the organizational context, creativity in such online communities can be broadly defined as the "production of novel and useful ideas" ([2], p. 1155). Most prior literature investigating how to increase a community's creative output revolves around structural and technical issues, such as the design of virtual interaction tools (e.g., [29]). Despite indications that affective factors contribute to developing creativity [68] and improving user co-creation experience [73], little attention has been paid to how an affective environment can help sustain continuous creativity and ongoing user participation in co-creation communities.

This paper proposes that *collective sentiment* is one of the potentially important affective factors that have been overlooked. "Sentiment" refers to positive and negative affective expressions in communication [35]. In the online environment, sentiment is found to help predict the popularity of products and the virality of information (e.g., [8]). However, little is known about how collective sentiment affects collective online activities—in particular, co-creation output. Only recently has collective sentiment, or the total number of affective expressions relayed in a community, been empirically demonstrated to influence the development of discussions in online forums [11]. As another factor, affect-relevant

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cues from company communications are found to influence future participation intention in co-creation activities [73]. Building on prior research, this paper aims to understand how sentiment functions in online co-creation communities and the way it can be affected by employees' behavior.

In this endeavor, it is important to examine both the antecedents and the effects of sentiment on community performance. Prior research on online communities suggests that the affective tones of community moderators and users' perceived affect-relevant cues are crucial in influencing user behaviors [72,73]. In line with this, we investigate whether employees participating in co-creation communities can directly affect user sentiment by varying their affective communication style. Whether employees are reactive or proactive and whether they adopt a task- or social-oriented approach are factors that can potentially affect user sentiment. Subsequently, we examine how the collective sentiment may help sustain co-creation communities by influencing collective behaviors. Drawing on signaling theory [10] and message framing [62], we argue that collective sentiment serves as a contextual cue that influences the activities of individual users, which consequently affect and comprise the collective online community performance. The performance of co-creation communities typically includes user creativity (i.e., contributing creative ideas) and user participation (i.e., commenting on the ideas of others).

This research makes several important contributions to the literature. While most prior literature focuses on cognitive and rational aspects of community management, we highlight the importance of affective management. Just as group leaders are expected to manage the collective affective states of groups in offline contexts, our study sheds light on how companies can influence user sentiment through the participation of employees in the online arena. For example, employees who act as community moderators can have a critical influence on motivating and sustaining member contribution (e.g., [70]). By defining the concept of collective sentiment and introducing it into our analysis, we demonstrate how the affective characteristics of a community can drive its user activities, and we simultaneously enrich understanding of the nature of affective states in online co-creation communities.

The rest of the paper is organized as follows. In Section 2, we review the concept of sentiment and collective sentiment, followed by a discussion of how the communication style of employees can influence user sentiment. Next, we discuss the influence of collective sentiment on community output. In Section 3, we briefly describe the methodology used in our study, followed by our findings in Section 4. In Sections 5 and 6, we conclude with comments about managerial implications and future research.

2. Collective sentiment and co-creation communities

2.1. Collective sentiment

Prior literature on information systems often empirically measures collective sentiment as the aggregated sum of individual sentiment in the community (e.g., [11,12,52]). Sentiment, as one type of affect, is a person's positive and/or negative emotional disposition toward another person or object [28]. These affective expressions serve as informational cues for others to evaluate the social environment, thereby shaping individual behaviors [59]. In general, positive sentiment is believed to result in positive responses, whereas negative sentiment elicits negative reactions. Individual sentiment is influenced by that of others. Sentiment affects individual behaviors and subsequently influences group behaviors. For example, in the organizational literature, it was found that individuals could manipulate others to achieve certain

goals by adjusting their own affective expressions, which subsequently influence the group affective states (e.g., [14]). In a group, the collective affective states are critical to maintain the viability of a group in achieving its common goals [33].

In an online community, users may share their sentiment with each other through textual interactions. Distinct from offline contexts, where verbal and facial communication is used, affective expressions of oneself in an online environment can be reflected only by the use of written emotional words. Prior research on online communities has found evidence that collective sentiment may determine individuals' evaluations of online communities [61], which will subsequently influence their behaviors. In the context of internet communication, written texts are especially found to facilitate the creation and moderation of collective sentiment, which is critical to sustaining the communities [11,12]. A person's perceived intensity of affect-relevant cues embedded in the co-creation community is found to directly influence user intention for future participation [73].

It is important to note that while the use of emotional words is significantly associated with individual affective states, their use does not fully represent the feelings an individual experiences [66]. In other words, in an online environment, the term "collective sentiment" does not indicate how users feel collectively or individually at all times; it only represents the affective state of the whole community at a certain point in time. Collective sentiment, being the total number of sentiment expressions that occur in the community, merely represents the composition of various sentiments *exhibited*—which is not necessarily the sentiment that is *shared*—in an online community. We argue that the affective environment that is created by all community members plays a crucial role in influencing future behaviors of users. To better understand the functions of collective sentiment, it is necessary to first discuss the antecedents of the formation of individual sentiment.

2.2. Employee communication and user sentiment

In online communities, one way companies can facilitate the sentiment of a group is by managing the individual sentiment. In line with prior research (e.g., [72]), we argue that individual sentiment may be influenced by having direct or indirect contact with employees who are acting as moderators. In general, sentiments can be affected via two pathways: primitive emotional contagion and entrainment of behaviors [13]. The assumption of emotional contagion is that the affective expression of an individual can elicit similar affective reactions from the receivers. Through the process of emotional contagion, a person's affective displays, which can be triggered by the affective displays of others, could influence affective states at the group level [18]. In recent years, a handful of studies on the effects of emotional contagion in an online context have revealed that affective expressions through written forms trigger emotional contagion and influence the affective responses of readers. For example, reading a message with negative sentiment would result in a higher number of negative words used in the reply messages [34].

Individual sentiment is also affected via entrainment of behaviors, which occurs when individuals interact with each other in such a way that their communication styles (such as gestures, mannerisms, and lexical choices) synchronize over time. Prior research in marketing and communication suggests that the communication styles of individuals can elicit relational perceptions from others. Holding positive sentiment toward a person, such as increased liking and affiliation, would increase the likelihood of having entrained behaviors. In turn, the perceived synchrony of affects and actions with conversational partners would encourage positive responses toward each other [44]. This