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A functional and structural diagnosis of online health communities sustainability: A focus on resource richness and site design features

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ABSTRACT

The reality of online communities' under-contribution issues has often been clouded with theoretical rather than real-world insight. The present study aims to neutralize this disparity, through content analysis on 196 health websites and online communities to systematically evaluate their functional and structural interfaces—the ingredients for a thriving online environment. Particular attention is paid to what variables equate to successful site traffic and impressions, ultimately providing suggestions to facilitate and optimize user contribution. While the majority of health websites and online health communities offered users fairly rich information about general health concerns, user environments in online health communities significantly lacked both structural and functional cues to encourage user contribution. External sponsorship could mitigate the discrepancy between the real world situations and academic suggestions.

1. Introduction

Previous literature has widely investigated the problem of under-contribution in knowledge sharing and social support domains (e.g., Kim & Sundar, 2014; Nonnecke, Preece, & Andrews, 2004; Preece, Nonnecke, & Andrews, 2004; Voelpel, Eckhoff, & Förster, 2012). Beginning with classifications on posters/contributors, lurkers, and latent users, otherwise known as newcomers, the identified literature primarily reasons that people tend to expect more resources in these online settings than they are willing to offer to themselves (Fox & Jones, 2009; Preece et al., 2004). From this, studies continued to examine the potentiality of technological affordances that could help reduce lurking populations in online communities and foster burgeoning contributions (e.g., Farzan, Dabbish, Kraut, & Postmes, 2011; Kim & Sundar, 2014; Lampe, Wash, Velasquez, & Ozkaya, 2010; Ling et al., 2005; Ridings & Gefen, 2004). Such a line of research provides greater theoretical implications and practical applications for the environment of health-related knowledge and support sharing than other domains of knowledge sharing for which most of people willingly devote their time, genuinely driven by their personal-health interest, experience, and expertise (e.g., Fox & Jones, 2009; Lampe et al., 2010).

In fact, researchers have focused on this problem of under-contribution because it has emerged as such a significant node in the formation of online community sites, particularly when considering their sustainability (Bishop, 2007; Butler, 2001; Nonnecke & Preece, 1999; Preece & Maloney-Krichmar, 2005; Preece, 2000, 2001). The chief principle of these online communities' operation and growth is to generate resources for community users, encouraging users to continue their membership within that site (Valacich, Dennis, & Nunamaker, 1992; Wasko & Faraj, 2000). As a result, the communities expect to grow in size. On one hand, the critical mass theorists (e.g., Oliver & Marwell, 1988; 2001) argue the production of available resources in online communities rely on a critical but small group. This group makes up only a fraction of the whole community yet plays a chief role in its sustainability, as they serve as all-the-time contributors based on their own expertise and interests, regardless of a presence of external reinforcements such as interface-supported community environments or continuous interactions with other users (Preece et al., 2004). However, this assumption of the critical mass theory may be dangerous to the life cycle of online "health" communities in that information, voices, and advice from a limited number—although still influential to other community members—could impede the diversity of the sites (e.g., Cline & Haynes, 2001).

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Given the significance of unbiased, thriving online health communities as a result of continuous contributions by a wide range of user groups, previous literature has addressed key factors that would effectively deter lurking tendencies (e.g., Bishop, 2007; Chidambaram & Tung, 2005; Farzan et al., 2011; Kim & Sundar, 2011; Ling et al., 2005). What is missing from this body of literature, however, is a comprehensive diagnosis on the real environment of these online health communities with respect to their functional and structural adequacy, as well as the likelihood for the sites' success and sustainability. Do online health community sites offer users a viable environment to facilitate and optimize user contributions? Thus, the present study attempts to systematically assess the status quo of user environments in online health communities. Drawing primarily from online lurking and community sustainability (e.g., Butler, 2001; Preece et al., 2004), social support (e.g., Cutrona, 1990), and user perceptions on technological affordances research (e.g., Kim & Sundar, 2011), the present study conducted a content analysis with 196 health websites and online communities, offering online health community sites practical insights for their long-term success in addition to suggesting theoretical approaches to curb under-contribution for health communication research.

2. Literature review

2.1. Mechanisms of online community operation and sustainability

Thanks to new media technology, online health communities now gather users based on their common interests and needs without geographical limitations, further encouraging members to share their knowledge and experiences with other members (Kollock & Smith, 1999; Ridings, Gefen, & Arinze, 2002). In order to maintain the ideal cycle of online community operation by fulfilling this fundamental definition, online health community sites need a sustainable environment for both resource generation and size expansion (Faraj, Jarvenpaa, & Majchrzak, 2011).

2.1.1. Requirements for online community operation, user contributions and sustainability (or lack thereof)

Online communities are similar to the basic concept of a real-world, physical community insofar as people visit them, do their business—generally obtaining necessary information and support—and leave with or without having the intent to revisit (Faraj et al., 2011). Therefore, one of the critical factors in online communities is having sufficient resources for people to create and/or consume. Of course, the resources exchanged through online communities, as a form of public goods, are free (Kollock, 1999). This resource-based point of view calls for other subsequent factors with regard to the structure and function of online communities. For instance, users do not have particular obligations to create public goods even if they do have the need to consume it. Few individuals are willing to pay more than what they can gain from a pool of public goods. As a result, no one is likely to participate in sharing information if s/he knows others did not put much effort into the sharing process. Such a user perception, in turn, leads to an "undersupply of discretionary information" (Connolly & Thorn, 1990, p. 221; Fox & Jones, 2009). In order to prevent information undersupply, online communities focus on expanding community size by recruiting more members (Mo & Coulson, 2010).

In order to attract more community members, online communities need an effective user environment in which members are willing to not only spend time with the site but also share their experiences with others. The importance of interface design now comes into play, attracting users to go beyond being newcomers or lurkers. Latent users who are at a monitoring stage as well, seeking community membership and quietly preparing for future contribution, would show selective and consistent motivation to participate once they consider contributing to an appealing community (Valasquez et al., 2014). To appease all these kinds of potential community members—from newcomers to latent members—online communities need to present (1) how relevant their communities are to users, (2) how diverse their members are, and (3) how efficient their community interface is for the members' knowledge and support sharing (Toral, Martinez-Torres, Barrero, & Cortés, 2009). As a result, such members would perceive benefits from the community, negating hesitancies on the cost of contribution (e.g., time to spend with the site and sharing activities) (Li, 2011).

Needless to say, a well-designed online community is the priority for online community success and sustainability. A critical point needs to be noted, however: People are mostly cognitive misers, quickly scanning sites to glean what is offered in terms of site features, resources, and community size, rather than carefully examining the site resources and structure for a long period of time (Chaiken, 1987; Kim & Sundar, 2011; Petty & Cacioppo, 1986). Thus, online communities need to impress site users—current and prospective—with a variety of cues instantly translating the cohesiveness, diversity and efficiency of their community sites (Toral et al., 2009).

2.2. Functional interface cues for resource richness

2.2.1. Community size, health topics, and information breadth and depth

Community culture along with resource availability is not easily detected unless each member spends a certain amount of time with the community. In this case, most members want to appraise community structure and resource with a quick scan. Based on such cues (e.g., community size information, topical interest of community members, a number of menu tabs for information depth and breadth), newcomers could form perceptions on the overall community function and value, ascertaining the viability of joining and hence making their decision to stay with the community or leave (Chu, 2009).

Ren and Kraut (2014) also found a wide breadth of topics and great depth of information positively influenced online community users' commitment. In addition, user contribution increased when the community site offered an interface feature that allowed user-controlled content moderation. Between the two types of content moderation features, community-level moderation—a common interface feature that filters out appropriate or relevant information to a user across a macro site level—only predicted user commitment given a narrow topic breadth. On the other hand, when the study simulated a personalized-level moderation—a user-controlling content filtering system (e.g., topic selection drop-down menu or user-to-user matching system on a user profile page)—it predicted user commitment and contribution given a wide breadth of topics and in-depth information.

R1. Do online health community sites well display cues that signal community resources regarding (a) community size, (b) focal health topics, (c) depth and breadth of information and support and (d) topic filtering system and content moderation for users?

2.2.2. Support systems and types of support

Given the positive relationship between user satisfaction with online communities and online community success (e.g., Stoerger, 2007; Wang & Clay, 2012; Zhang & Yang, 2009), optimal matching theory (hereafter OMT, Cutrona, 1990) suggests satisfaction amongst site users will be determined by the degree to which the users find their needs adequately addressed and served. Therefore,