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User Behaviors, Attitudes, and Information Structure: Towards a Model for Developing an Effective Enterprise Social Media Site

Social media sites have exploded in popularity in recent years, leading researchers to develop usage models to explain user behaviors and account for the ways in which people utilize these sites. Simultaneously, the ubiquity of these sites and their popularity with persons in the 21-30 age bracket as well as with teens and college students has led employers to explore ways that they can utilize social media and web collaboration to reach out to potential employees and increase employee productivity, company efficiency, and employee satisfaction. Many employers have attempted to block employees from accessing social networking sites (SNS's) on company owned computers (Boyd & Ellison, 2007), but this maneuver seems increasingly pointless as social media applications are available for most varieties of smart phones and firewall workarounds are numerous. Since social network sites and collaborative sites have the potential to benefit commercial and non-profit sector organizations, a logical step is to explore how to design SNS's (similar to Facebook) and collaborative authoring sites (similar to Wikipedia) that actively engage users and promote contribution.

To address this research issue, I will analyze the relationship between social media structure, user attitudes, and user participation. There are numerous articles on motivating or describing user behavior within SNS's and collaborative sites, especially in terms of motivating users to increase quantity and quality of contributions as well as assume niche roles within online communities. Likewise, there are several studies on usage of SNS's and collaborative authorship sites within an enterprise environment. As of writing, most of these studies examine the effect

that structural components (specifically structuring information, access, and options within SNS's and collaborative authorship sites) have on users in very narrow case studies. In this paper, I plan to analyze studies that focus on analyses of usage in narrow areas and synthesize their findings to demonstrate linkages between the structure of information, the structure of SNS's and collaborative authorship sites, and usage patterns. The goal of exploring this issue is to take the first step towards a model of developing enterprise SNS's that take full advantage of existing research done on user behaviors, expectations, and perceptions of what a social media site should accomplish. Since enterprise SNS's are geared towards a voluntary participation market, companies must be prepared to meet user expectations and have functionality and organization that encourages not only registration, but continued user contribution. This paper will provide some guidelines to consider when developing enterprise SNS's.

Methods

To accomplish my goal, I will review literature pertaining to increasing user participation in SNS's, definition of user roles in online communities, user perceptions and attitude studies, and usages of social media in an enterprise environment. My analysis of these articles will be along three dimensions that I discovered as important, recurring themes within the research I reviewed: user attitudes, participation rates, and user behaviors. I will begin by offering some definitions taken from existing research, which will clarify certain terminology and explain what constitutes "information" on a social media site. Next I will explore existing observations on user behavior in both wikis and SNS's. I will then discuss the structural changes made to social media sites in these studies and analyze how they relate to user behavior. The conclusion of the paper will describe some existing models of behavior applied to social media sites, followed by a

discussion that offers suggestions for further research studies in the area of how to structure enterprise SNS's.

Definitions

Since the goal of this paper is to use localized studies dealing with very specific criteria to draw broader conclusions about models for user behavior and information structure in social media sites, I will elaborate on my conceptions of some of the terminology that I will use in my analysis.

What is social media and what information is contained in social media?

Boyd and Ellison's (2007) oft cited definition of SNS's includes three criteria for what social media sites should allow users to do: "construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system" (p. 1). Smith et al. (2008) describe social media broadly as "'collective goods produced through computer mediated collective action,'" meaning that the goods (or information) produced for common consumption are the contributions of the individual users and the action taken by the collective of users is the process that produces those goods (p. 92). On Wikipedia, for instance, "the collective goods are the articles, and the collective action is action is the coediting process of article writing"; on Facebook, collective goods are the "social capital, measured in the number and kinds of people active in the social network" and the collective action is the development of an individual profile and friend network (Smith, et al., 2008, p. 92). Along with interpersonal networks and coauthored writings, photos, videos, tags, and lists are all other types of information stored in SNS's and other social media sites; I will refer to these

various media as 'information' or 'content' throughout this paper. The types of information analyzed in this paper will include social networks, wiki content, photos and lists.

How is this information structured and mediated?

Users access information on social media sites through the interface provided by the designers of the site. More sophisticated sites have multiple methods of searching, sorting, browsing, and manipulating information as well as multiple outlets for sharing or distributing information within social networks and between different social media sites. It is important to note that the names of different features and actions differ from site to site (Boyd and Ellison, 2007). However, it is conceivable that users who belong to one or more social media site are familiar with many different types of interfaces and can form preferences on how information is presented to them and distributed within and between those networks (indeed, this is the premise—stated or unstated—of most of the studies analyzed here). This paper will attempt to distil principles of information structure from studies analyzing observed user preferences and user perceptions of different social media sites.

User Behaviors in Collaborative Social Media

Preece and Shneiderman (2009), the study which most closely resembles this paper, attempt to articulate a model of user progression within social media and collaboration sites (although even they admit that a reliable model is still not available). They define four types of users of social media sites: readers, contributors, collaborators, and leaders (the "reader-to-leader model") (Preece & Shneiderman, 2009). Readers are users of the site who contribute nothing to the site, and they are often called lurkers in other studies. They can serve the collective goals of the site through positively recommending or linking to the site in other networks, but do not contribute content to the site itself. To function effectively in this role, readers need a stable,

easy to use interface; interesting, frequently updated content; and a safe environment free from derision of other users (presumably brought about their status as lurkers, thought that is not stated by Preece and Shneiderman). Contributors add something to the site in accordance with the actions available to them as members (Preece & Shneiderman offer the example of making an edit on a wiki). To distinguish themselves from other users, contributors need some kind of rating system or distinction which recognizes their contribution of information. Collaborators work in groups to make contributions toward a collective goal within the construct of the site. Finally, leaders "[set] longer range goals, [define] the desired audiences, and [enforce] policies" in communities (Preece & Shneiderman, 2009, p. 23).

User-defined roles in relation to management or alteration of information are the subject of much critical inquiry, and seem to be of the highest importance when discussing wikis or other collaborative projects. The general accessibility of wikis can allow for vandalism, often with legal consequences such as libel if the wiki is publically accessible, thus the information must be constantly reviewed for misleading or libelous vandalism (Hasan & Pfaff, 2006). This presents a challenge due to the accumulative nature of a wiki. While comprehensive in their storage of knowledge and page edits, wikis can also become unwieldy and difficult to maintain after long spans of accumulation (Hasan & Pfaff, 2006). Wikipedia, one of the largest websites in the world, is a model for how users can adapt to monitor and restructure information into manageable granularity for modification and maintenance.

To handle issues such as vandalism as well as information structure issues (e.g. disambiguation, fact checking, etc.), Wikipedia users define roles for themselves and construct collaborative endeavors. One such role is that of the "vandal fighter," who spends his or her time seeking out vandalism as opposed to making original contributions or editing articles

(Smith, et al., 2008; Forte, Larco, & Bruckman, 2009). It is reasonable to assume in the case of a collaborative social media site such as Wikipedia that there is a direct linkage between the large volume of information to be managed and the formation specialized individual roles to manage that information. Another strategy employed by users to manage the vast content on the site is to form WikiProjects, groups which divide the information on the site into subject matter areas along the interests of the users in the projects (Forte, Larco, & Bruckman, 2009). It is interesting to note that within WikiProject groups, user-defined roles emerge that are similar to those in the Wikipedia community as a whole (i.e. within a group such as the Military History WikiProject, there will also be users who take on the role of vandal fighter) (Forte, Larco, & Bruckman, 2009). Within small groups, leaders must also be selected who can perform the leadership tasks described by Preece & Shneiderman (2009). This leads to Knoieczny's (2009) position that the specialized leadership role is engendered by the need for quick, decisive action that cannot be achieved by a large body of people, especially when disputes occur between groups within a community. In this case, there must be leaders of the groups themselves, as well as leaders within the community that can settle disputes between leaders, which leads to a complicated bureaucratic system (Knoieczny, 2009). While this may lead to problems in user attitudes, people still tend to participate more when they have a role and are aware of other's roles within a community (Smith et al., 2008).

User Behaviors in SNS's

Major interest in SNS's developed largely in part due to the decision by Facebook to extend membership to the general public, and the subsequent unparalleled success of the site when compared to SNS's that came before. Boyd and Ellison (2007) suggest that user behavior on SNS's mirrors actual social behavior and that user networks on SNS's are essentially

reproductions of their actual social networks; likewise, they claim that there is little or no actual "networking" done on the site since the term networking means forming new connections as opposed to simply reproducing your existing social networks in a new format. Users are also concerned with building social capital which provides a type of gratification not found in other, unidirectional media such as reading book or watching television (Joinson, 2008). This type of gratification is powerful, but equally powerful is the ability to surveil old acquaintances or maintain distant networks of people (Joinson, 2008) and find out additional information about people you have just met or will be meeting in the future (Lamp, Ellison, & Steinfield, 2008). From these usages, it is clear that both profile and networks are important to the social capital contained within SNS's.

With the prevalence of SNS's in enterprise environments, several studies explore the ways in which users behave when using SNS's at work. DiMicco et al. (2008) analyze how users of the "Beehive" SNS at IBM generally use the site to make personal connections, make connections that are relevant to career advancement, and use their networks to advocate or solicit support for projects they are involved in. User motivation is a concern in opt-in SNS's, especially when they are used as an alternative or supplement to traditional directories that lack personalized information; there are high stakes to ensure that employees buy into the network so that it does not have to compete with functionality offered elsewhere (e.g. the message board on a SNS competing with a bulletin board nailed to the wall) (DiMicco et al., 2008). As pointed out by Hasan & Pfaff (2006), development of social media in the workplace is optional and sometimes contested by traditionalists who fail to see the value, value which often lies in the features a site possesses.

Structural Changes

When contributions on a social media site begin to flag, the amount of new information plunders and even lurkers who have no investment in the site abandon it (Preece and Shneiderman, 2009). A documented case of this was the SNS SixDegrees, which had few features available to users after they had developed their social network and subsequently failed due to user boredom (Boyd and Ellison, 2007). In order to increase participation, users must encounter features which meet their expectations according to their behavior within the system of the social media site. This means that the features must coalesce with user attitudes and perceptions in order for a site to succeed.

An example of failure of site designers to structure information adequately occurred on the now defunct Friendster SNS. Some Friendster users designed "Fakesters" which lampooned celebrities or had other entertainment value, which aggravated the site designers who made ad hoc changes the site policies and deleted these accounts (Boyd and Ellison, 2007). Some of the Fakesters, however, were functional workarounds to the limited capabilities of the networking functions on the site, and thus allowed users to create repositories of user information (e.g. lists of people at a certain university); the deletion of these accounts, according to Boyd and Ellison (2007) was one of the actions which contributed to the failure of Friendster. While this is only one case of poor design choices leading to user dissatisfaction, it emphasizes the fact that social media cannot exist without user support. In this section, I will describe some of the structural changes that recent studies have explored to alter user perceptions or attitudes and increase user contributions.

Role Construction and Group Construction

Mentioned above, the construction of roles within a community is primarily a usage-end phenomenon, but it is nonetheless an important consideration when designing a social media site. Participation in relation to clearly defined roles is addressed by Smith et al. (2008) and they discovered that user participation is directly linked to their sense of having a place within a community. This is especially important in communities where there are large amounts of users and information (such as a large wiki or enterprise SNS) since there is less pressure on the individual to contribute, a theory that will be addressed later in this paper (Smith et al., 2008). Providing tools that facilitate the formation of groups or the delegation/assumption of roles within their groups and the community at large can increase participation.

Groups also serve another role: the separation of social spheres. As indicated in Boyd and Ellison (2007), SNS's tend to mirror a users actual social life. Binder, Howes, and Sutcliffe (2009) build on that idea, questioning why social networks fail to allow people to maintain separate social spheres as they do in their regular social life. They indentify three problems that create tensions in social networks: "broadcast," or the unwanted wide dissemination of information across networks; "persistence," or the tendency for unwanted information to linger or be reintroduced in networks; and, "awareness," or the fact that users don't consider their potential audience when posting information (Binder, Howes, and Sutcliffe, 2009, p. 967). In enterprise networks, the problems associated with a lack of audience awareness are presumably mitigated as the social-context is such that a person would self-monitor contributions for embarrassing or harmful content (as would be the case at a workplace social gathering). The ability to create groups would, however, prevent the broadcast of information to uninterested or unintended parties.

Likewise, expansion of broadcast capabilities can anger users who previously thought their conception of their audience was correct and adjusted their contributions to the site accordingly, an effect that the development of the "news feed" had on Facebook users who contributed content that they assumed only a select few would view (Lampe, Ellison, & Steinfield, 2008). As such, changes in the structure of a site that allow for viewing of information by persons in extended networks (or by the entire community) should be either be coordinated with users or heavily publicized to avoid creating tension within a person's network.

Singling Out Individual Efforts

Many studies linked contribution rates to the public singling out of individuals for their constructive contributions to a social media site. Konieczny (2009) demonstrates that although the graphic next to an editor's name in Wikipedia is a mop and bucket (a comparison to a janitor), the token graphic carries a great deal of significance within the community. Likewise, persons who contributed to promoting content within the IMB Beehive SNS received mention on the featured page where promoted content appeared, and subsequently had a graphic added to their profile that indicated to other users that they had participated in the program: this graphic in turn increased knowledge about the content promotion program and generated a desire in other users to participate and earn the promoter graphic (Farzan, DiMicco, & Brownholtz, 2009). The benefit of this type of program is twofold: content that might otherwise remain undiscovered is featured and user attitudes and contributions increase (Farzan, DiMicco, & Brownholtz, 2009). Further, singling out individuals with token rewards that carry social capital addresses Hassan & Pfaff's (2006) concern that individual effort within collaborative or social media systems goes largely unrewarded.

A key to this type of structural change is creating a sense of uniqueness, which can motivate users who would normally not participate by reminding them that their contributions are valued by the community (Breenen et al., 2004). Breenen et al. (2004) model their investigation into infrequent contributors on a movie review website on the social psychology theory of "social-loafing," which states that people involved in large collaborative efforts tend to exert less effort at a task than if the effort was solitary. Their study found (amongst other conclusions) that people who are made to feel unique for their contribution (by receiving an email that confirms their unique taste in movies and asking them to contribute) were more likely to increase the quantity of their contributions in the future than those who just received a request to contribute (Breenen et al., 2004).

Features and Feedback

It seems obvious, but features are what make a social media site unique from another site, especially in the case of SNS's where, apart from creating a network and occasionally expanding it, features determine what information can be contributed and provide options for structuring that information according to personal preferences. The ubiquitous feature on social media sites is the ability to leave comments, or provide feedback on information. Discussion threads are common, but generic feedback is also available (e.g. on Facebook, "liking" a status update or photo). Brzozowski, Sandholm, & Hogg (2009) argue for the concept of an "attention economy" on the internet, and describe peer feedback as exogenous motivation for users to continue to contribute content (i.e. feedback provided by other users, as opposed to, endogenous, or self-motivation). In their study, they found that attention in the form of feedback was a powerful motivator for employees to contribute content in an enterprise SNS (Brzozowski, Sandholm, & Hogg, 2009). Features such as the ability to provide feedback are extremely common on most

social media sites, and should be considered almost a pillar of an enterprise social media site rather than an option to consider including.

Simply including standard features may not be enough when constructing a social media site. Geyer et al. (2008) described the introduction of a feature called "High5" into the IBM Beehive SNS, which is essentially a unique list with five entries that is posted by users of the SNS for other users to read and comment on (e.g. "five cars I am considering buying"). The authors described their motivation for such a feature in relation to a feature like photo sharing; there are many SNS's available (Flicker, Picassa, etc.) that allow users to share photos, hence while that feature is a useful addition to an enterprise SNS, it is not unique to that SNS and does little to pull a user away from other available photo sharing sites (Geyer, et al., 2008). Features, therefore, should be novel in order to encourage higher user contribution rates. However, moderation must also be considered when adding features, as an oversaturation of a site with features can confuse and frustrate users (Lampe, Ellison, & Steinfield, 2008). Also, an excess of features that vary contribution types could potentially split contributed information into too many different streams, burying information or requiring the development of an aggregator to consolidate user contributed information into a single stream. Features must therefore be designed with some inclination towards how users behave in a social media environment.

Existing Models of User Behavior

The most ambitious attempt to develop a model of user behavior on social media sites comes from Preece and Shneiderman (2009) in the form of their "reader-to-leader" framework. While their model explains the stages users progress through, it does not (nor does it claim to) provide a comprehensive model for how users will interact in a social media community. Some

other existing models draw on theoretical frameworks from a variety of disciplines in an attempt to explain how users and communities behave.

Based on the work of Nobel Prize winning economist Evelyn Ostrom, Forte, Larco, & Bruckman (2009) seek to define users of social media sites as individuals utilizing and consuming a common resource. The authors utilize Ostrom's theoretical principles of self-organizing communities to explain how Wikipedia users carefully craft roles and namespaces (for articles) so as to preserve Wikipedia as a valuable resource. They use Ostrom's theory to explain how users self-regulate functions of a site where a decentralized approach leaves much of the policy making and role regulation to the users. Along the same vein, Singh, Jain, & Kankanhalli (2009) utilize game theory to explain how users determine whether or not to contribute to the common site. They define users as "rational selfish agents" and suggest that designers can manipulate contribution levels by utilizing game theory to discover the cost-benefit calculations employed by users; once they determine the appropriate costs and benefits, the designers can adjust structural changes to reward desired contributions with social capital that has no real world value, but high virtual value (Singh, Jain, & Kankanhalli, 2009; c.f. Farzan, DiMicco, & Brownholtz, 2009; Konieczny, 2009). Thus, individual users are posited as agents with something to gain by maintaining or contributing to the common resource. Rewarding contributions is key to these theorists

However, such a theory is challenged by Konieczny (2009) who argues that seemingly benign elevations in status, despite best intentions, can create an oligarchy within a social media community. In his study of Wikipedia, Konieczny (2009) applies Robert Michels' "Iron Law of Oligarchy" to Wikipedia and concludes that although there is no one force that dominates Wikipedia, the bureaucrats who hold little actual power are perceived by some to have a

stranglehold on the policies of the site, even though policies are editable by all members. Thus, even status symbols that carry little in the way of social capital or actual power to manipulate information carry the risk of socially stratifying the community in unintended and undesirable ways. Studies such as Farzan, DiMicco, & Brownholtz (2009) show that a reward structure is possible and productive, but contextual issues should be carefully considered prior to instituting such a reward structure.

Suggested Future Research

Binder, Howes, & Sutcliffe (2009) warn in their study of social spheres that "it is not easy, nor often wise, to offer instant design solutions on the basis of a single study designed to test a particular, and limited, theory of social interaction" (972). Preece and Shneiderman (2009) in their encyclopedic cataloging of different specialized models admit that their own model is simple and requires empirical testing. It may be that a model which comprehensively explains user behavior in conjunction with design choices in social media will have to consist of a loose framework that is adapted to individual situations. It is also worth noting that models explaining behavior must adapt to fit the technological context of social media which frequently changes as new technologies and ways of displaying and organizing information are developed. Current studies mostly involve controlled experiments where data is collected on users and then analyzed to reveal patters. Some qualitative methods are introduced to balance studies (interviews, surveys) but most focus on analyzing user responses to changes in design or other stimuli.

My recommended approach to conducting research would be to actually develop an enterprise SNS/wiki combination. Constructing an enterprise social media site would allow a researcher to avoid the problem of a snapshot study as described by Lampe, Ellison, & Steinfield (2009) where researchers can only study a portion of activity on a site and not its whole history.

The construction of a site would also allow researchers to gauge expectations of users prior to the introduction of the site, which would help establish a baseline of what users expect based on their past experience. In designing the site, I recommend using participatory design as defined in Spinuzzi (2000). Such a technique takes advantage of a social constructivist approach to researching human behavior, and being present prior to, during, and subsequent to the construction of the social media site would allow a researcher to gain valuable insights into how users "recognize, produce, and reproduce social actions" in a social media environment (Schwandt, 2007, p. 39). Including users in the design of the site could also lead to unexpected insights into what their expectations and behavior patterns are as it would allow users to critically reflect on their own actions and expectations from a design perspective.

While such an approach to researching the issue of a user behavior model would not necessarily end with a comprehensive model (as it is yet another localized study), it would provide insights not yet available on user expectations and could contribute to a more holistic understanding of the relationship between design elements, information, and user behaviors in social media sites.

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