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ABSTRACT

We extended the current research stream about online communities by introducing sense of community as a new construct to understand the motivations of online collective and relational actions and highlight users' loyal promotion to both the online community and the host firm. In addition, through the lens of organizational citizenship behavior (OCB), membership performance was presented as a form of users' voluntary participation, voluntary cooperation, and firm-hosted loyalty, indicating users' total contribution to the online community and the host firm. We then examined the relationships between membership performance and its potential drivers. The research model was empirically tested using self-reported data from 247 users of four firm-hosted online communities. Overall, we found that sense of community, trust in the host firm, and community loyalty have either full or partial effects on membership performance.

Keywords

Sense of community, trust, membership performance, online community.

INTRODUCTION

Online communities (OC) defined as a web of personal relationship in cyberspace (Rheingold, 1993) have recently been a new social model employed to facilitate the collective action of information exchange (Armstrong & Hagel, 1996). As social communication methods continue to proliferate in the Internet, people are increasingly participating in different forms of online community (i.e. online forums, bulletin boards, message boards, chat rooms) for their purposes, such as solving problems, building social relationships, sharing passions, developing professionals, etc. Online communities become a habitual place for users to exchange information and search for valuable knowledge. Seeing a huge potential benefit from the new model, an increasing number of companies are now attempting to exploit this phenomenon by hosting and supporting their own online community (Wiertz and Ruyter, 2007). Typical examples of these firm-hosted online communities are Dell Community, Lego® Message Boards, Manhattan GMAT Forums, Ford Forums, iPod (Apple) Discussions, etc.

Firm-hosted online communities targeted in this study can be defined as firm-hosted online aggregations of users who collectively co-produce and consume content about a commercial or non-commercial activity that is central to their interest by exchanging intangible resources. These intangible resources can take the form of information, knowledge, socio-emotional support, and the like (Wiertz & Ruyter, 2007).

Some common types of firm-hosted online communities are product use/feedback support, brand building, and innovative user communities (Muniz and O'Guinn, 2001; Rainie and Horrigan 2005; Williams and Cothrel, 2000). Similar to a traditional community, these online communities allow for social interaction among like-minded people via computer interface (Hagel and Armstrong, 1997; Rheingold, 1993). Moreover, such online communities are also driven by voluntary choice, pleasure, task-oriented of self rather than conformity. Community users who have a common interest share their experience, influence each other's opinions, and accumulate user-to-community collective senses of connectedness, attachment, and belongingness to their community. However, these community feelings and behaviors do not always exist among people who interact with each other online. Only those communities able to maintain a sense of community can induce users to return and be successful of rich community outcomes (Blanchard & Markus, 2004). Although quite a lot of efforts have been done to understand users' voluntary behaviors in an online community context (Yu and Chu, 2007), there is little, if any, attention to the role of sense of community to understand users' collective action to contribute to their community. Moreover, in the case of firm-hosted online communities, users not only voluntarily give help to others by taking over service functions

traditionally provided by the host firm, but also voluntarily involve in community events by suggesting innovative ideas to improve products/services of the host firm (Jeppesen and Frederiksen, 2006; Wiertz and Ruyter, 2007). And, thus, the success of a company depends on sound relationships between the company and its customers (e.g. community users) (Morgan and Hunt, 1994). Although an increasing number of researchers have been interested in such firm-to-user relational dimension, it remains unclear which social factor is most important in driving users' relational efforts to promote both their community and the host firm in the absence of direct rewards.

In this paper, our main focus was on both firm-to-user relational and user-to-community collective dimensions to understand users' performance within the context of firm-hosted online communities. The main questions are (1) what is the role of sense of community to understand users' membership performance? And (2) what are potential drivers of users' membership performance?

LITERATURE REVIEW & HYPOTHESES

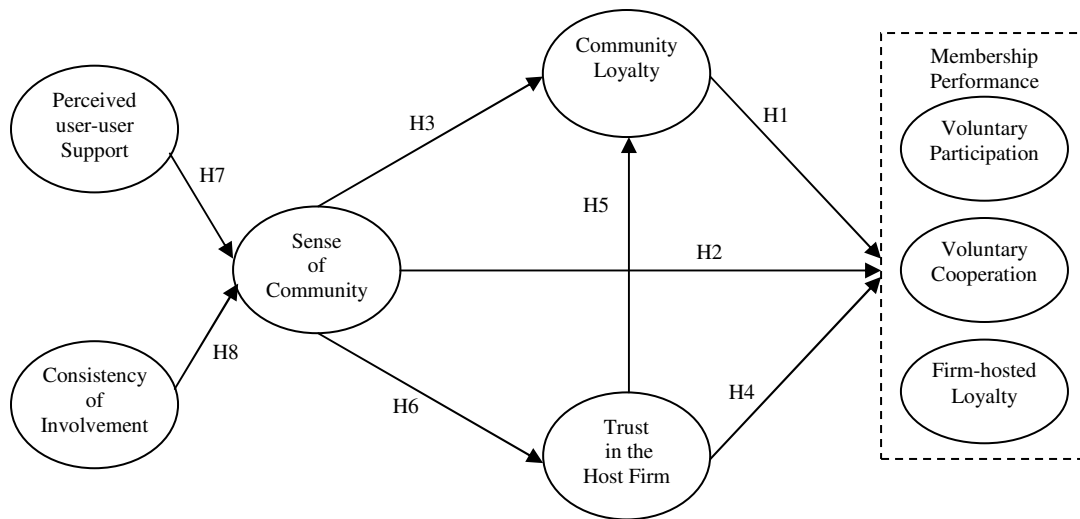


Figure 1: Research Model

Membership Performance

Organizational theory suggested that voluntary performance is reflected in an individual's actions that support an organization by acting as partial employees without monetary gain. Partial employees refer to users who contribute to the development and delivery of an organization's functionality, similar to an organization's employees (Organ, 1988; Podsakoff et al., 2000). Level of embeddedness and contribution to the organization may depend on the role of the partial employees in the reader-to-leader framework (Preece & Shneiderman, 2009). Through the lens of organizational citizenship behavior (OCB), this paper viewed users' membership performance as consisting of three subconstructs: firm-hosted loyalty, voluntary participation, and voluntary cooperation. Voluntary cooperation is conceptualized as a user's willingness to exhibit helping behaviors and undertake the coproduction of the firm's offerings. Voluntary participation is conceptualized as a user's willingness to participate in coordination tasks in collective events supported by the firm. Firm-hosted loyalty is conceptualized as a user's future intentions regarding doing future business with and engaging in positive word of mouth about the host firm.

Community Loyalty

Community loyalty is conceptualized as users' willingness to continue membership and to promote the community to other nonusers. Previous research found that community volunteers helped others because they learned from the process (Moon & Sproull, 2001). Usually, individuals participate in a community to accumulated knowledge to solve their own problems and then share their experience with other users. On one hand, continuing their membership longer, the users have more opportunity to learn about a particular product/program, becoming experts in that area. Thus, they are more likely to use the product/program again and feel more comfortable to promote the product/program to others. On the other hand, progressing from being a reader to a leader (Preece & Shneiderman, 2009), the users involve in their embedded relationship with the firm

more deeply, resulting in users' feeling more like insiders than outsiders (Bhattacharya & Sen, 2003). As partial employees¹, they become representatives of the organization to promote products/programs to others. Therefore, when users promote their community, they eventually promote the firm that supports their community. Moreover, more loyal users were found to be more socialized and active to participate in collective campaigns supported by the host firm (Kang et al., 2007; Kozinets, 1999). Since benefits of various community services and events are more frequently exposed to users who are committed to the community, it is likely that users with higher level of community commitment tend to participate in these activities more actively (Jeppesen & Frederiksen, 2006).

H1: Community loyalty has a positive effect on membership performance including a) voluntary participation, b) voluntary cooperation and c) firm-hosted loyalty.

Sense of Community

McMillan and Chavis (1986) developed the first and still the most accepted theory of sense of community (SoC) with four sub-dimensions. Membership refers to the feeling of belonging and identification, of being a part of a community. Influence is a feeling of having influence on and being influenced by the community. Integration and fulfillment assumes a feeling of being supported by others in the community while also supporting them. Shared emotional connection refers to spiritual bonds developed over time among users.

Normally, users do not expect to receive future help from the individual they gave help, instead they may reciprocally receive help from someone else (Chiu et al., 2006; McLure & Faraj, 2000). In fact, they expect to fulfill their needs from interactions with many different users by fostering a sense of membership with every user, even those they have never met. Because SoC is a form of an attachment relationship with the whole community, users not only interact or give and take with specific members of a group, but also with any unknown member of the group. Thus, users with some SoC not only take care of their group mates but also give help to newcomers that are strange to them.

A previous case study found that volunteers who exerted their contribution on maintaining community sites, training new users and involving community-related decisions were far more motivated by altruistic reasons than were other participants in the same communities (Moon & Sproull, 2001). Moreover, social identity theory suggested that users with a strong attachment to a community would be concerned about the fate of their community and show socially desirable performances for the community's successes and failures as their own (Mael and Ashforth, 1992). Innovation researchers also found the same results in which belonging to the fate of a community explained why people actively participated in joint-innovation activities (i.e. new product design, product enhancements, and test new products) and also acted as opinion leaders, providing insights into future trends and new application areas and importantly, acted as advocates for the host firm (Fuller et al., 2007; Jeppesen & Frederiksen, 2006). Thus, when users have a motivated, responsible sense of belongingness they will mobilize their social capital more willingly and effectively by undertaking coordination tasks and joining communal programs supported by the firm (Wellman et al., 2001).

Organizational researchers have consistently shown that the engagement of employees or alumni, leads to increase loyalty to their organization and decreased turnover (Mael & Ashforth, 1992). Fostering a strong sense of community among stakeholders can withstand the firm's occasionally honest mistake and reduce dissatisfaction and movement out of the stakeholder group. Similar to organizational employees who feel that it is their responsibility to provide assistances to others within an organization, users with a feeling of moral responsibility toward their community desire to promote the host firm by sharing both quality and quantitative of consumption knowledge with other users (Chiu et al., 2006; Hsu et al., 2007). Thus, it is reasonable to argue that a sense of community is a driver of these activities.

H2: sense of community has a positive effect on membership performance including a) voluntary participation, b) voluntary cooperation, and c) firm-hosted loyalty.

An emotional bond was found to be an important motivator for users to sustain their membership (Hsu & Lu, 2005; Kang et al., 2007). A perception of acceptance by other users will encourage a user to stay with the community. These collective senses would develop cohesion and consequently form an individual's emotional bond or sense of belonging to the community, which is similar to emotional commitment proposed by Ellemers et al. (1999). Sense of belonging fosters community loyalty in group settings, and thus is useful in explaining users' willingness to maintain committed relationships with their communities (Dholakia et al., 2004).

H3: Sense of community has a positive effect on community loyalty

¹ With or without monetary rewards.

Trust in the Host Firm

In this study, trust is defined as the willingness of a user to be vulnerable to the actions of the firm based on the expectation that the firm will perform a particular action important to the member, irrespective of the ability to monitor or control the firm's behaviors (Hsu et al., 2007). Prior online studies suggested that trust affects loyalty (Shankar, Urban, and Sultan 2002). Furthermore, another study found that trust is the most important antecedents to loyalty (Kim et al., 2004). Previous research also conceptualized trust as a relational effect on voluntary performances (Ba, 2001; Chiu et al., 2006; Hsu et al., 2007). According to social capital theory, organizational features such as norms of reciprocity and social trust were found to facilitate coordination and cooperation for mutual benefit (Putnam, 1995). Thus, users are expected to perceive cooperation and coordination efforts as extra-role performance beyond that of the traditional user-community exchange when they believe in their relationship with the firm.

H4: Trust in the host firm has a positive effect on membership performance including a) voluntary participation, b) voluntary cooperation, and c) firm-hosted loyalty.

Online communities tend to be characterized by low entry and exit barriers. If a user does not agree with her/his community norms, the easiest option is to leave the community and join another that is more similar in beliefs and behaviors. An alternative to explain why users continue their membership of a certain community is their belief in the trustworthiness of the firm supporting the community. Specifically, since trusting beliefs will relate positively to trusting intentions (McKnight et al., 2002), a user with high trusting beliefs is likely to use more community services that enable the user to depend on the firm to inquire information about the firm's products or services (Gefen, 2000).

H5: Trust in the host firm has a positive effect on community loyalty

Previous studies identified a wide range of Web site characteristics including community features as potential drivers of online trust (Shankar et al., 2002). Organizational behavior literature also found the relationship between "camaraderie", a kind of sense of community defined as the degree to which staff feels like a team or a family, and trust in an organization (Marrewijk, 2004). According to social network theory, users with a sense of membership are more likely to develop ties (i.e. business, connection) with the whole community, and thus have more chance to perceive the connection and similarity between the host firm and its subunit, the community. Perceived interaction and similarity between the community, trusted target, and the firm, less trusted target, is the premise for user's trusting beliefs in the host firm (Stewart, 2003). In such case, users use their trusting definition on community as a "proof source" to trust the host firm with which users has little or no direct experience.

H6: Sense of community has a positive effect on trust in the host firm

Perceived user-user Support

Although researchers have suggested various types of user-user supportive values, a majority of taxonomies concluded that two types – social support and instrumental support – are essential in a community (Bagozzi and Dholakia, 2002; Leimeister et al., 2009). Social support provides users with emotional concerns and worries, while instrumental support provides users with practical help, assistance or financial aid to accomplish specific tasks. Prior studies suggested that higher user-user exchange within a community is more likely to satisfy users' needs. When having both public and private social-emotional support, users are considered as accepted and valued users in their community (Blanchard & Markus, 2004). Moreover, by receiving social-emotional and instrumental support, users can fulfill their needs (e.g. professional development), be more congruent with group norms and perceive cohesiveness (Bagozzi & Dholakia, 2002), influence on and be influenced by other users, create identities for themselves and make identifications of others (Blanchard & Markus, 2004), and increase feelings of attachment to the whole community (Dholakia et al., 2004).

H7: Perceived user-user support has a positive effect on sense of community.

Consistency of Involvement

Derived from information systems literature, consistency of involvement was conceptualized as the consistency of connecting to a community and amount of shared information a user exchanges with others. Past studies found that users' involvement in community activities, such as meetings, related to the users' sense of community (Kruger et al., 2001). McMillan and Chavis (1986) proposed that involvement within a community helps build an emotional connection among its members. Dunham et al.'s (1998) findings supported the importance of involvement in an on-line setting. They found that consistency of involvement (i.e., connections to the computer network) related positively to sense of community.

H8: Consistency of involvement has a positive effect on sense of community

RESEARCH DESIGN

Instrument Design and Pretest

Based on existing scales from the literature, a web-based instrument was carefully constructed and items were slightly revised for the purpose of the study. A seven-point Likert scale is anchored for each item. The instrumented was then examined by one faculty staff and two graduate students who are experienced in firm-hosted online communities. A total of 32 undergraduate business students were participated in the pretest. Reliability of each scale was assessed to ensure the feasibility of the instrument.

Data Collection

A list of 28 firm-hosted online communities was found. One of the authors contacted the admin of each community for permission to collect data in the community. Four communities including Nike+ Community, myNBC Community, Campbell's Community, and Kraft Community agreed to support the study. A thread titled 'Survey Announcement' with a link to the web-based questionnaire was posted by the admin to invite users to participate in the study. Two weeks after the survey was introduced, a follow-up threat was re-posted to increase the number of responses. A total of 263 completed responses from the four online communities were received. Of the completed responses, 16 questionnaires were dropped out and 247 questionnaires were useable. The sample size of 247 acceptably meets the recommended minimum sample size requirement for stable parameter estimates using the SEM technique (Anderson and Gerbing, 1988).

ANALYSES AND RESULTS

Sample Profile

The sample includes 174 (71%) female and 71(29%) male. Age of respondents ranges from 21 to above 65. The two largest groups were 21-30 and 31-40 years old ((27.7% and 32.1%). The majority of the sample (51%) spent on average 1-4 hours per week in their community. In terms of membership tenure, more than half of the respondents (51.8%) have joined their community from 1 to 2 years. The current paper was able to capture the so-called "lurkers", who only read online community dialogues without contribution. Overall, 7.7% of the respondents self reported that they have not posted anything on discussion boards, and nearly 24% indicated that they seldom posted their messages.

Table 1 shows the descriptive statistics of constructs. Note that level of message exchanged and consistency of connecting to community are single-item measurements, and thus their reliability is not available. Overall, the reliability of all scales (0.85-0.95) exceeded Nunnally's (1978) recommended minimum level of 0.70, showing an internal consistency for each scale.

Construct	Mean	S.D.	Reliability
Trust in the host-firm (Tru)	4.65	1.34	0.95
Sense of community (SoC)	4.79	1.43	0.94
Voluntary participation (Par)	4.73	1.41	0.88
Voluntary cooperation (Cop)	5.45	1.24	0.85
Firm-hosted loyalty (Loy)	5.41	1.48	0.95
Community loyalty (Com)	5.40	1.41	0.89
Perceived user-user support (Mem)	4.97	1.42	0.88
Level of message exchange ² (Post)	3.11	1.14	NA
Consistency of connecting to community (Visit)	5.34	1.73	NA

Table 1: Descriptive Statistics and Measurement Reliability of the Scales

Measurement Model

Following the two-step approach (Anderson and Gerbing 1988), internal consistency, convergent validity, and discriminant were examined in the first step of measurement model assessment. Then, parameters of the hypothesized paths among

² Scale from 1 to 5

constructs and the goodness of fit of the research model were assessed in the second step of structural model assessment. AMOS with a covariance matrix of the data was used to analyze the research model.

The measurement model was first examined in a confirmatory factor analysis (CFA) after dropping the items with factor loadings lower than 0.6 (Hair et al., 1998). Criteria to assess the fit indices were based on threshold standards recommended by Kline (2005). The overall CFA of the measurement model showed acceptable fit indices with the $\chi^2_{168} = 322.5$, CFI = 0.964; RMSEA = 0.061; GFI = 0.884, NFI = 0.915. The normed chi-square ($\chi^2_{338}/df = 1.92$) was lower than 3. RMSEA was acceptable and both CFI and NFI ≥ 0.9 indicated reasonable fit, while the GFI value indicated marginal fit.

Convergent validity is achieved when items to measure a common underlying factor all have relatively high standardized loadings on the hypothesized factor. Specifically, three criteria are individual loadings greater than 0.70 (0.72 – 0.97), t statistic values (13.0 and 34.9) significant (0.001 level) for loadings, and each loading greater than twice its standard error (0.028 – 0.085) (Anderson and Gerbing 1988).

Consistent with Fornell and Larcker's (1981) test for discriminant validity, the average variance extracted (AVE) is greater than 0.50 for proposed constructs meaning that the latent construct captures more construct-related variance than error variance, and it was further verified that the square root of AVE of all constructs should be greater than the correlations for all constructs. Table 2 shows the correlations ($p < 0.01$) and covariances (above diagonal) between constructs, composite reliability, and the average variance extracted (AVE). From the table, square roots of AVE are larger than the correlations between constructs (i.e., the below-diagonal elements in Table 2), giving a support for discriminant validity.

Construct	Visit	Post	Par	Cop	Loy	Tru	SoC	Com	Mem
Consistency of connecting to community (Visit)	na	0.91	0.41	0.41	0.32	0.19	0.43	0.66	0.67
Level of message exchange (Post)	0.46	na	0.69	0.48	0.29	0.01	0.64	0.53	0.41
Voluntary participation (Par)	0.17	0.43	0.84	0.79	0.58	0.39	0.67	0.68	0.56
Voluntary cooperation (Cop)	0.19	0.34	0.45	0.81	0.83	0.75	0.87	0.80	0.91
Firm-hosted loyalty (Loy)	0.13	0.17	0.28	0.45	0.93	1.32	1.26	1.32	1.20
Trust in the host-firm (Tru)	0.08	0.01	0.21	0.45	0.68	0.86	1.07	1.04	1.04
Sense of community (SoC)	0.17	0.39	0.33	0.49	0.60	0.56	0.86	1.36	1.28
Community loyalty (Com)	0.27	0.33	0.34	0.46	0.63	0.55	0.67	0.86	1.18
Perceived user-user support (Mem)	0.27	0.25	0.28	0.52	0.57	0.55	0.63	0.59	0.85

Table 2: Construct Correlations, Covariance, and AVE square root

Structural Model

As suggested by Kline (2005), the current paper employed a multiple-step approach including a series of nested models to test the proposed hypotheses, in which a maximum likelihood procedure and a fit saturated & independent model were used. Overall, the results supported the hypothesized model. Figure 2 shows the results of the parsimonious research model estimated by AMOS software after justifying modification indexes and deleting non-significant paths (non-significant paths were not shown in Figure 2). The majority of path coefficients were significant. Fit indexes were all within the accepted threshold: $\chi^2_{213} = 500.0$ with a ratio of $\chi^2/d.f.$ less than 3, goodness of fit index GFI = 0.840, adjusted goodness of fit index AGFI = 0.792, normed fit index NFI = 0.895, comparative fit index CFI = 0.936, and root mean square error of approximation RMSEA = 0.074 (Kline, 2005). Moreover, the squared multiple correlations (SMCs) for the structural equations indicate that the research model explains 61.3 percent, 41.3 percent, 62.1 percent, 15.8 percent, 38.4 and 66.1 percent of the variance in sense of community, trust in the host firm, community loyalty, voluntary participation, voluntary cooperation, and firm-hosted loyalty, respectively. As expected, based on standardized coefficients, trust in the host firm was empirically the strongest predictor of firm-hosted loyalty, while sense of community is the overall strongest predictor of membership performance, trust in the host firm, and community loyalty.

Finally, based on parameter estimates and associated t-values, the majority of hypotheses were supported with some notable exceptions. Specifically, community loyalty had a positive and significant effect on firm-hosted loyalty ($\beta=0.258$; $t=3.27$), but did not reveal a significant effect on either voluntary participation or voluntary cooperation. Hence, hypothesis 1 was marginal supported ($p<0.01$). As expected, sense of community had a positively significant impact on all three subconstructs of membership performance including voluntary participation ($\beta=0.269$; $t=2.18$), voluntary cooperation ($\beta=0.367$; $t=3.32$),

and firm-hosted loyalty ($\beta=0.164$; $t=2.10$). Hence, evidence seemed sufficiently strong to support hypotheses 2b ($p<0.01$), 2a and 2c ($p<0.05$). Sense of community was also found to be a significant predictor of both trust in the host firm ($\beta=0.643$; $t=9.37$) and community loyalty ($\beta=0.620$; $t=8.65$). Hence, both hypotheses 3 and 6 were strongly supported ($p<0.01$). Although trust in the host firm did not have a significant impact on voluntary participation, it was found as a predictor of voluntary cooperation ($\beta=0.254$; $t=2.92$) and the strongest predictor of firm-hosted loyalty ($\beta=0.490$; $t=7.29$). Hence, hypothesis 4 was given qualified support ($p<0.01$). Trust in the host firm was also found to have a positive and significant impact on community loyalty ($\beta=0.230$; $t=3.36$). Hence, hypothesis 5 was supported ($p<0.01$). While perceived user-user support was found to strongly influence sense of community ($\beta=0.714$; $t=12.33$), consistency of involvement only have a marginal impact of level of message exchange on sense of community ($\beta=0.262$; $t=4.92$). Hence, hypothesis 7 was strongly supported ($p<0.01$) and hypothesis 8 was marginally supported ($p<0.05$).

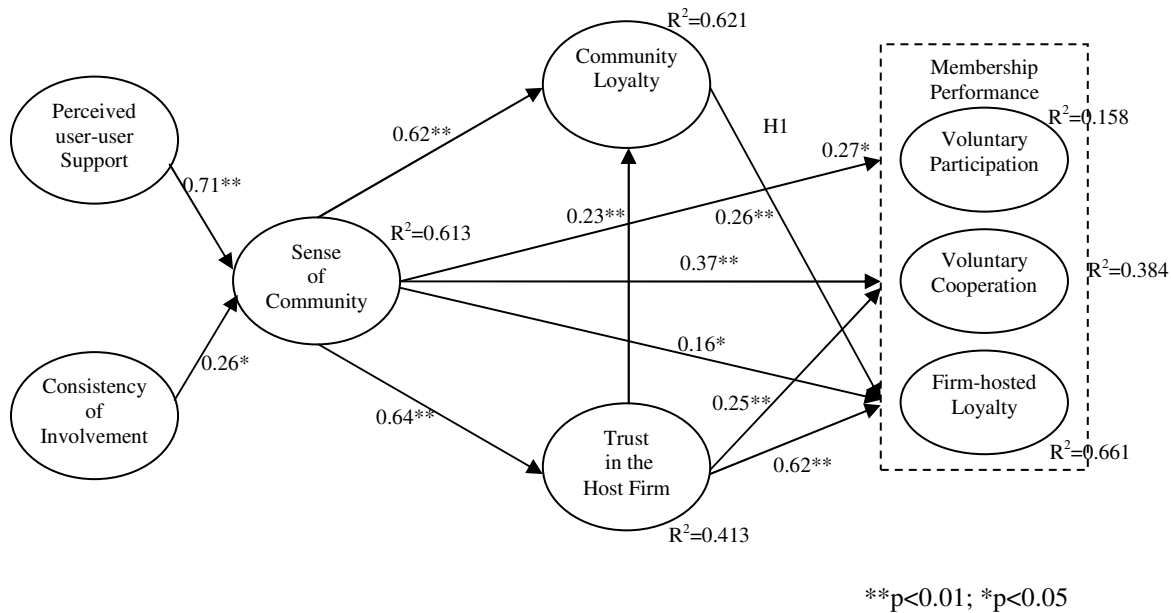


Figure 2: Structural Model Results

CONCLUSION/DISCUSSION

Although researchers have addressed the issue of sense of community and membership performance in online communities, much of the extant research either missed out the role of sense of community in explaining users’ voluntary contribution to their community or was unclear about the drivers of users’ relational efforts to promote both their community and the host firm. This study represents one of the first attempts to quantitatively measure the impact of sense of community on membership performance and incorporate both collective and relational perspectives into one theoretical framework.

The purpose of this paper was to investigate both relational and collective dimensions to understand users’ performance within the context of firm-hosted online communities, and to gain insight into how community interactions motivate users to exhibit their voluntary contributions and continue their membership in a firm-hosted online community. To that end, the authors developed a social relational model combining existing community-related theories. Given the research context of firm-hosted online community, the authors focused the hypothesized model on the relationships between user-user collective constructs (sense of community and community loyalty) and firm-user relational constructs (trust in the host firm and firm-hosted loyalty). Surveys were conducted in four firm-hosted online communities (one sport-related, one entertainment-related and two food-related communities) to provide empirical support for the research model.

Overall, the findings provided strong empirical support for the hypothesized relationships. The findings also clearly showed that a social sense and commitment to a collective group developed during the course of online communication can lead to an increase in trust and loyalty to the host firm. The most important finding was that sense of community is a powerful predictor

of membership performance and an important mediator between user-user support and membership performance. This means that a user with more emotional connection, more sense of belonging (attachment with), and more influence to her/his community as a whole will inspire the user to exhibit higher commitment to the host firm, closer cooperation with the firm staff, and stronger participation in the firm programs.

Another aspect of the findings that is consistent with previous research on e-business is that online trust plays the most crucial role to build long-term relationship between the host firm and its user/customer and between the collective and its users, especially in an online environment where lack of physical cues.

Furthermore, contrary to Chiu et al.'s (2006) and Hsu et al.'s (2007) findings, an unexpected finding was that data from four communities did not support the hypotheses on the relationship between community loyalty and both voluntary participation and voluntary cooperation. Users who are committed to their firm-hosted online community are not necessary to contribute their efforts to the host firm.

Contributions and Implications

The paper made some theoretical and managerial contributions. First, it extended the current research stream about online communities by introducing sense of community as a new construct to understand the motivations of online collective and relational actions and highlight users' loyal promotion to both the online community and the host firm. The implication is that the host firm can use users themselves to build long-term firm-user relationships, and based on it to maintain and increase the firm's market share.

Second, the paper provided an interdisciplinary perspective on firm-hosted online communities and built on it to develop a conceptualization of relationships between user-user collective outcomes and firm-user relational outcomes. While previous research predominantly focused on either collective perspective or relational perspective, this research incorporated both perspectives into a social relational model.

Third, the paper presented membership performance as a form of users' voluntary participation, voluntary cooperation, and firm-hosted loyalty, indicating users' total contribution to the online community and the host firm.

Finally, from a managerial standpoint, this study proposed a general framework that can enable companies to better understand some of the key aspects that define and drive loyalty in online communities. Since sense of community is unique to a specific community, this study also illustrated that an online community is an inimitable asset which can be used as a strategic tool to build competitive advantage by a firm in an online environment.

Limitations and Future Research

The authors acknowledged the following limitations of this study.

First, although the sample size of the study was adequate for testing the theoretical model, the survey was conducted in only four communities. Hence, some of the findings reported here may not extend to other community settings. Additional investigation with other types of online communities such as brand community, problem-solving or technical support community is necessary to generate findings that are more robust and generalizable. Furthermore, since the number of responses from the studied communities is asymmetric, it may not be possible to test path coefficients and significance across the four sites studied. An application of hierarchical linear model on a sample containing a wide range of online communities (e.g. 20 online communities and 30 respondents each) would be useful to evaluate typical characteristics of a firm-hosted online community.

Second, because of the cross-sectional design of this study, the significant paths between constructs can only be interpreted as caution. The causal inferences were actually based on theoretical argumentation. The authors acknowledged the possibility of non-recursive relationships between the studied constructs. For instance, on one hand, sense of community may be an effective predictor of membership performance and consistency of involvement may be an effective mean to increase sense of community. On the other hand, it is possible that users may develop a positive sense toward their firm-hosted community while participating in events supported by the firm or their excitement about the community may urge them to communicate to other users even more. It is also possible that sense of community may well correlate to virtual social relationships and thus, sense of community may become an antecedent of social supports (Leimeister et al., 2008). Further studies employing longitudinal or experimental designs would help clarify the causal relationship between constructs. A longitudinal study that relates sense of community and membership performance to longer-term user activity and behavior would enrich the findings further.

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