

Building Trusting Relationships in Online Health Communities

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Abstract

This study investigates consumers' use of online health communities (OHCs) for healthcare from a relationship building perspective, based on the commitment-trust theory of relationships. The study proposes that perspective taking, empathic concern, self-efficacy, and network density affect the development of both cognitive and affective trust, which together determine OHC members' membership continuance intention (MCI) and knowledge contribution. Data collected from eight existing OHCs ($N = 255$) were utilized to test the hypothesized model. Results show that perspective taking and self-efficacy can increase cognitive trust and affective trust, respectively. Network density contributes to cognitive and affective trust. Both cognitive trust and affective trust influence MCI, while only affective trust impacts members' knowledge contribution behaviors.

Introduction

Over the past 40 years, online health communities (hereafter OHCs) have received attention as agents in the reshaping of healthcare.¹ There are many aspects to the reshaping of healthcare, including the incorporation of Internet and health information technology, changes in philosophies toward medical ethics, concerns regarding health inequality between social classes, and the impacts of economy-related variables (e.g., the increase of the uninsured, the decrease in health care funding by states and localities, the increase of medical bill problems). Reshaping is taking place against a background of continuing growth in health care spending. It has been estimated that by 2019, health care spending will account for 19.3% of US GDP. This reflects an average annual growth rate of 6.1 %, which surpasses a projected economic growth rate of 4.4%.² Moreover, these phenomena are not just issues specific to one country but are also global issues.³

The aforementioned trends, together with the growing demand for more effective health care services, have placed greater emphasis on consumers as an integral part of healthcare delivery. OHCs, accelerated by the advancement in internet technology, have emerged as a medium for consumer self-healthcare management. Research indicates that OHCs have dramatically changed health information seeking and exchange among people, and consequently made virtual integration of health services delivery possible.¹ As a result, OHCs have gone beyond the adoption stage to reach a diffusion phase of development. In this phase, consumers equipped with knowledge about issues surrounding health care are capable of switching across different communities in order to maximize the value of their activities in OHCs.

Previous research on OHCs has focused on (1) design factors determining what makes OHCs effective and successful,^{4,5} (2) missions, benefits, and drawbacks of OHCs,⁶⁻¹⁰ and (3)

psychological factors shaping users' attitudes and behaviors (e.g., sociability, usability, empathy).^{11,12} One important question that remains to be addressed is: *What factors drive users to develop and maintain a lasting relationship with an OHC?* This study aims to address this question by applying the commitment-trust theory of the relationship marketing literature to explore users' motivations to sustain relationships with OHCs.

The study proceeds as follows. First, trust is proposed as a key element that leads users to build a relationship with other users in an OHC and with the OHC itself. Generally, trust refers to a user's confidence in the quality and reliability of the services available in an organization.¹³ While focusing on a user's trust in other members of an OHC, this study examines multi-faceted aspects of trust in order to better capture its formation and explanatory insights.¹⁴ Both cognitive and affective dimensions of trust are explored.

Second, motivations that prompt users to build trust in an OHC are explored. The unique nature of OHCs as both medical and nonmedical (social and psychological) resources requires an OHC to offer a wide array of functions that meet various needs of users. Given the multiple functions that occur in an OHC, this study suggests that these different functions of the OHC are likely to have dynamic associations with cognitive and affective trust.

Third, what contributes to the building of a strong and sustained relationship is examined. As OHCs transition from the diffusion stage to the maturity stage, OHCs will look beyond attracting new members to building relations with existing users. To our knowledge, no empirical research exists that looks at the users–community relationship from a relationship marketing viewpoint. This study will examine whether users' trust in an OHC contributes to their relational responses to the OHC in terms of membership continuance intention, and knowledge contribution.

Online health community (OHC)

An OHC is a group of people who interact in health and wellness related virtual communities to seek information, assistance, emotional support and communication opportunities, and/or to influence public opinion.^{4,8,15} Various advantages of OHCs include: linking people with similar experience together beyond the constraints of geographic proximity or social status, maintaining access to the community without concern for time, location, and schedule changes, and further enhancing health outcomes and life quality.¹⁵⁻¹⁷ People benefit from participating in OHCs by gaining not only scientific knowledge from professionals (e.g., accurate medical information), but also experiential knowledge from lived-experiences among members (e.g., information relevant to the individual user).^{7,8,11} Hence a deeper understanding of the process of relationship-building in OHCs would be desirable.

The commitment-trust theory of relationship marketing

Morgan and Hunt¹⁸ conceptualize trust with the commitment-trust theory of relationship marketing, in which trust plays a critical role in establishing and maintaining successful relational exchanges. According to this theory, relationship commitment and trust are two essential factors for the success of relational exchanges. In particular, trust antecedes relationship commitment and both factors are established by social exchange cost/benefit (e.g., relationship termination cost, relationship benefits), social psychology factors (e.g., shared values, social bonds), and social interactions (e.g., communication, opportunistic behavior).¹⁸

Commitment-trust theory has been extensively applied to explain business-to-business, business-to-consumer, not-for-profit organization-to-funder, and Micro-blog-to-member relationships in various contexts, from traditional to internet-mediated settings.¹⁹⁻²³ As yet, the applicability of the theory to the OHCs context has not been tested. This study contributes to the

literature by applying the theory and its key concepts to the development of trusting relationships in OHCs.

Trust represents the extent to which a user has confidence in the reliability of members of an OHC.^{13,18,24} Although the theoretical importance of trust as a multi-dimensional construct has been claimed by researchers,^{14,25,26} empirical evidence is lacking. With respect to the multi-dimensional nature of trust, three trust dimensions have been proposed, namely cognitive trust, affective trust, and behavioral trust.¹⁴ Among them, more emphasis is placed on cognitive and affective trust, or sometimes the combination of both. These two trust constructs motivate and serve as the basis for trusting actions (behavioral trust).¹⁴ Cognitive trust and affective trust are the two trust constructs of focus in this study, as they are likely to build behavioral reactions to OHC (knowledge contribution and membership continuance intention).

Cognitive trust builds on the belief that a member embodies competence and integrity.^{26,27} Affective trust reflects “genuine care and concern for the welfare of partners”²⁷ (p. 26) and the belief that care and concern are reciprocated.^{26,28} While cognitive trust can be promoted by the reputation of the organization, people and/or through direct interactions between the user and the organization,^{29,30} affective trust stems from emotional bonds between members.^{14,26,31} Mayer and Davis²⁷ claim that affective trust is partially cognition related to people’s benevolence.

Antecedents of trust: Perspective taking, empathic concern, self-efficacy and network density

The original commitment-trust theory proposed three antecedents of trust, namely shared value, communication, and opportunistic behavior. While Morgan and Hunt¹⁸ demonstrated significant impacts of the three predictors on trust in the buyer-seller relationship context, they also indicated a need for exploring other potential predictors of trust. Later studies accordingly examined different antecedents of trust specific to the relationship context of interest. For

example, Selnes³² indicates that competence and communication are determinants of trust in buyer-seller relationships. Eastlick et al.³³ reveal that service e-tailer reputation and privacy concern predict trust, while Goo and Huang³⁴, examining IT outsourcing, show that foundation characteristics, governance characteristics, and change management characteristics of the IT outsourcing determine trust. In sum, different determinants may play a role in enhancing trust depending on the context of relationship. Drawn from an extensive review of trust literature in socio-psychology, virtual communities, and marketing, this study identifies four predictors of trust for relationship building in the OHC setting: perspective taking, empathic concern, self-efficacy, and network density. These factors reflect individual (e.g., self-efficacy), interpersonal (e.g., perspective taking, empathic concern), and technological (e.g., network density) characteristics of OHC aspects, all of which will contribute to either cognitive evaluations or affective evaluations of an OHC

Perspective taking refers to one's ability to accept others' points of view.³⁵ As a cognitive process, perspective taking allows users to better understand other OHC members and to make efforts to better predict other members' behavior and emotional responses.^{31,36} Consumers who are perspective-taking tend to provide emotional support to those in need, and/or will share medical information embodying their personal experiences, which is conducive to the development of cognitive trust. In addition, perspective taking can serve as the motivation for people to place more value on other members' welfare as well as to promote mutual caring and mutual help, both of which can reinforce affective trust.^{31,37,38} Hence, it is suggested that perspective taking would have a positive influence on trust in OHCs.

One's personal concern for others' bad stories/experience generates feelings of warmth and compassion.³⁵ This represents empathic concern, an affective aspect of empathy.³⁵ An

outcome of empathic concern is altruistic helping behavior,³⁹ which provides opportunities for members to demonstrate their ability and expertise, thus allowing members to interact and update their knowledge of each other's skills and benevolence.⁴⁰ Therefore, empathic concern creates cooperative opportunities for developing both cognitive trust and affective trust in an OHC. Research also shows that emotions generated by empathic concern affect the motivation to cooperate with or avoid other members⁴¹ and thus the motivation to trust other members.⁴⁰ In an OHC setting, this study posits that empathic concern would increase trust in OHCs.

Self-efficacy refers to one's belief that he/she is capable of realizing a desired outcome by taking a necessary action. Self-efficacy contributes to the development of trust as it stimulates prosocial behaviors, such as cooperation, helpfulness, resource sharing, and concern for other members' welfare.⁴²⁻⁴⁴ Self-efficacy can create cooperative opportunities to develop both cognitive trust and affective trust⁴⁰ or can directly reinforce a trusting relationship in an OHC.^{37,38,40} Therefore, the higher the level of perceived self-efficacy in an OHC environment, the greater the trust in the OHC.

Network density refers to the strength of relationships between group members in an organization.⁴⁵ A dense network affects community characteristics such as sanctions, norms, and shared values,^{46,47} which together can reduce risk and uncertainty during social interactions in the community and are conducive to the development of cognitive trust.⁴⁸ In addition, a dense network can facilitate information dissemination, and thus can enhance reputation effects, which contributes to the development of both affective trust and cognitive trust in the community.⁴⁹ Hence, this study proposes that consumers' perceived network density would influence trust in an OHC positively.

Based on the above, this study postulates the relationships between trust and its antecedents in OHCs as follows:

H1: Perspective taking will increase trust in an OHC (H1a: cognitive trust; H1b: affective trust).

H2: Empathic concern will increase trust in an OHC (H2a: cognitive trust; H2b: affective trust).

H3: Self-efficacy will increase trust in an OHC (H3a: cognitive trust; H3b: affective trust).

H4: Network density will increase trust in an OHC (H4a: cognitive trust; H4b: affective trust).

Relational outcomes of trust in an OHC: Knowledge contribution and membership continuance intention (MCI)

Two relational outcomes of interest in this study are knowledge contribution and MCI, both of which reflect members' cooperative behaviors and are critical for members to obtain mutual supports and valuable information from an OHC. Higher trust in an OHC will increase users' knowledge contribution to, and intention to maintain membership in, the OHC.

Knowledge contribution refers to "codification and storage of existing knowledge generated by a different individual or group within the same firm in order to be more effective and productive in their work".^{50 (p. 143)} Within the context of OHCs, knowledge can be varied, from personal experience to specific wellness/health matters that users know.⁷ When one trusts others within a group, strong relational capital develops⁴⁸ and members are willing to share resources (e.g., knowledge) to benefit the group.^{51,52} Hence, this study suggests that trust in an OHC would encourage willingness to contribute knowledge to the OHC.

MCI refers to the likelihood that one is willing to keep his/her involvement in an OHC. A trusting relationship means that members feel connected to each other due to shared visions and shared values, both of which motivate them to maintain relationships with other members.⁵³ In addition, trust can reduce transaction costs, risk, and uncertainty,⁵⁴ and thus reduce members' propensity to leave the OHC.¹⁸ The more one trusts an OHC, the more likely he/she is to develop a habit of visiting and participating in the OHC. Therefore, trust is likely to sustain cooperative action and strengthen one's intention to continue membership. From the above, the remaining hypotheses for the study are:

H5: Trust (H5a: cognitive trust; H5b: affective trust) will increase knowledge contribution to an OHC.

H6: Trust (H6a: cognitive trust; H6b: affective trust) will increase membership continuance intention toward an OHC.

Figure 1 presents the research model this study proposes along with hypotheses.

Insert Figure 1 about here.

Methods

This study utilized an online survey to collect data for hypotheses testing. Potential participants were recruited through advertisements placed on eight existing US-based OHCs. We approached OHCs that cover various health arenas, including both life threatening illnesses (brain tumor and breast cancer) and non-life threatening illnesses (allergies, headache and muscle pain, and diabetes), which allowed us to nullify disease-specific findings. All OHCs contain health-related online discussion forums. Six operated community websites in which various resources such as information on doctors and health insurance providers are available, while two primarily offer mailing lists with minimal website presence. Half were supported by

research foundations/not-for-profit organizations and half were administered by individuals affected by a health problem.

The survey progressed as follows: after a brief introduction about the research project, the survey asked about users' general usage of the focal OHC. Next, participants evaluated their experience with the OHC by answering questions regarding: (1) antecedents of trust (perspective taking, empathic concern, self-efficacy, and network density), (2) cognitive and affective trust in the OHC, and (3) their reactions to the OHC in terms of knowledge contribution and membership continuance intention (MCI).

All measurements were adopted from previous studies. Perspective taking and empathic concern were each measured with four items adopted from Davis.³⁵ To measure self-efficacy, ten items were adopted from Schwarzer and Jerusalem.⁵⁵ A five item scale adopted from Antia and Frazier⁵⁶ was used to measure network density. Cognitive trust (5 items) and affective trust (4 items) were assessed using scales from Chiu, Hsu, and Wang⁵⁷ and Mayer and Davis⁵⁸, respectively. Knowledge contribution and MCI were each measured with four items adopted from Ma and Ritu⁵⁹ and Chen⁶⁰. All variables were rated on a 7-point Likert scale, anchored from strongly disagree (1) to strongly agree (7).

Results

A total of 255 responses were used for data analysis. Most respondents were from five OHCs. Over half of the respondents ($n = 136$) participated in OHCs relating to life threatening illnesses and 119 were participants of OHCs focusing on non-life threatening illnesses. Respondents' age ranged from 18 to 85 years (mean = 49). The majority of respondents were Caucasian (89.8%), well-educated (some college or higher = 82.6%), and had a high annual

household income (\$40,000 or above = 72.5%). Over 70% of respondents indicated that they joined the OHC for themselves (79.2%) and visited their OHC daily (72.9%).

Preliminary analyses

Preliminary analyses were conducted to test common method variance (CMV), reliability, and unidimensionality of each construct. First, the results of Harman's single-factor test showed no concern with CMV, because all eight factors emerged and the first factor explained 31.38% of the overall variance.⁶¹ Second, an exploratory factor analysis confirmed the reliability and unidimensionality of each construct.⁶² (Table 1)

Insert Table 1 about here.

Measurement model assessment

Confirmatory factor analysis (CFA) employing maximum likelihood estimation (AMOS 20.0) was used to test the measurement model. The goodness-of-fit statistics indicated an acceptable model fit: $\chi^2 = 1256.86$, $df = 708$, $p < 0.001$, $\chi^2/df = 1.78$, IFI = 0.92, CFI = 0.92, and RMSEA = 0.06. Composite reliability of each construct ranged from 0.81 to 0.96, indicating high reliability. Further, AVE of each construct was above 0.50, confirming convergent validity.⁶³ As the AVE for each construct was higher than the squared correlation between pairs of variables, discriminant validity was also established.⁶³ (table 2)

Insert Table 2 about here.

Hypotheses testing

Structural equation modeling (SEM) using maximum likelihood estimation (AMOS 20.0) tested the hypothesized model. The results indicated an acceptable model fit: $\chi^2 = 1378.23$, $df = 722$, $p < 0.001$, $\chi^2/df = 1.91$, CFI = 0.90, IFI = 0.90, and RMSEA = 0.07. In terms of perspective taking and trust, H1a ($b = 0.19$, $p = 0.03$) was supported, while H1b ($b = -0.03$, $p = 0.77$) was not

supported. H2a ($b = 0.10, p = 0.32$) was not supported, while H2b was marginally supported ($b = 0.18, p = 0.08$), indicating empathic concern exerts a significant effect on affective trust in an OHC. H3b was supported ($b = 0.18, p = 0.04$), while H3a ($b = 0.11, p = 0.19$) was not supported, indicating self-efficacy is related to affective trust, but not cognitive trust. H4 was supported showing that network density exerts significant effects on both cognitive trust (H4a: $b = 0.51, p < 0.001$) and affective trust (H4b: $b = 0.76, p < 0.001$). With respect to the relationship between trust and knowledge contribution, H5a was not supported ($b = 0.00, p = 0.98$), while H5b was supported ($b = 0.33, p < 0.01$). That is, cognitive trust increases knowledge contribution but affective trust does not. Lastly, the results yield support for H6 (H6a: $b = 0.40, p < 0.001$; H6b: $b = 0.25, p < 0.001$), indicating that both cognitive trust and affective trust increase members' intention to continue membership in an OHC.

Insert Table 3 about here.

Discussion

The development of OHCs has dramatically changed people's health information seeking behaviors and has enabled the transition of the health care system toward the emphasis of consumer-empowered healthcare. However, few studies have investigated users' motivation to use an HOC from the standpoint of developing lasting relationships in OHCs. This study examined antecedents and relational outcomes of trusting relationships in an OHC setting.

The findings reveal that perspective taking only contributes to the development of cognitive trust, which is inconsistent with previous studies.³⁷ Since perspective taking is a social cognitive process of people's intention to engage in forethought,⁴⁴ cognitive rather than affective trust is predicted by perspective taking.

This study also shows that empathic concern marginally influences the development of affective trust. This may be so because empathic concern can generate strong emotion,⁴¹ which is the foundation of affective trust. Further, self-efficacy only increases affective trust. A reason might be that in an OHC setting self-efficacy can promote positive emotion,⁶⁴ which underpins the development of affective trust. Finally, network density plays an important role in facilitating trust building in an OHC, indicating that maintaining a highly cohesive network is necessary for building trusting relationships in OHCs.

In terms of relational outcomes of trust, both affective trust and cognitive trust increase members' MCI. This is consistent with previous research,⁶⁵ confirming the importance of trust in an OHC environment for successful relationships between members and the OHC. In addition, the results show that affective trust, rather than cognitive trust, influences knowledge contribution. This could be because knowledge sharing is a type of low cost helping behavior, which is associated with positive affect and consumes little time and cognitive resources.⁴⁰

The findings have several theoretical implications. First, this study enriches the literature on the commitment-trust theory of relationship marketing by testing the model and the core role that trust plays in the development of relationships within the context of consumers' use of OHCs. Testing the commitment-trust theory in a relationship building environment, that has been less explored thus far, adds external validity to the theory. This study examined the effects of perspective taking, empathic concern, self-efficacy, and network density on trust by consumers toward an OHC, all of which are very important in social interactions and information exchange among members of OHCs.

Second, this study contributes to the literature on trust by empirically demonstrating the multi-dimensional nature of trust. While having different antecedents, cognitive trust and

affective trust play different roles in members' responses to an OHC in terms of MCI and knowledge contribution. The findings indicate the need to distinguish affective trust from cognitive trust in future studies.

The findings also have several practical implications. Given the importance of interpersonal trust, OHC administrators should consider employing practices that will help members easily recognize and reach others whom they can trust. This can be done in ways such as designing and installing member mutual rating systems (for member's contribution, caring for other members, and integrity) and publicizing real time mutual rating information. In addition, similarity between people contributes to the development of empathy. Thus OHC administrators should help members to easily identify similar others by applying appropriate practices, such as employing special designed templates.⁶⁶

Like other studies, this study has limitations. First, data were collected from eight existing OHCs, whose topics of interest cover non-life-threatening illnesses and life-threatening illnesses. Due to the limited types of illness, whether the findings can be generalized to all OHCs is unclear. Therefore, future research should include OHCs addressing a wider range of health issues. Second, this study utilized cross sectional data to examine the development of trusting relationships in OHCs, which may not fully capture the evolution of trust. Future research may want to conduct longitudinal designs to better understand the development and functions of trust in OHCs.

Finally, although this study demonstrates that the commitment-trust theory can explain relationship building within OHCs, careful consideration of the applicability of the theory may enrich current understanding of the theory as well as OHCs. For example, the application of the theory might work differently by types of OHCs. In particular, OHCs adapting early

communication technologies such as Usenet News, listservers, and mailing lists rarely encouraged interactions among community members. Contrarily, internet-based OHCs seem to be a more appropriate context to explore relationship building. They facilitate the development of online community groups and synchronous communications among members by sophisticated communication software and techniques (e.g., streaming video, avatars). Additional investigation of such groups should make theoretical and practical contributions to an understanding of the dynamics of relationship building.

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