Motivation for contribution in online health community: An exploratory study

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Abstract

Social support, including emotional support, companionship other than information and knowledge, is the most important resource in online health community (OHC). From the view of contributors' utility, we explore the motivation for users' social support contribution in online health community. With Zero-inflated negative binomial regression on a set of user activity data from OHC, we found the motivation is complicated and pure altruism, warm glow, reciprocal altruism could promote social support contribution behavior.

Keywords: contribution, online health community, social support

1. Introduction

Online communities are spaces where people with common interests gather together to share information and support each other, without physical contact or geographical limitations[1]. To individuals who pursue health, Online Health Community (OHC) is very popular for social support exchanging. Studies prove that online social support could be used to promote health behavior [2] and health condition [3] for individuals. Individuals are more likely to obtain information and support from other users than offer help to other users in OHC [1]. It is important to study on social support contribution in OHC. However, fewer studies research on why people provide social support in OHC and how to promote social support contribution in OHC.

The motivations to participate online communities has been proved to be different depending on the type of community [4]. Although there are some researchers study on motivation for knowledge and information contribution in online community [5, 6], which is not proper for explaining the social support contribution in OHC. The OHC provides social support, which contains emotional support and companion support other than knowledge support. Like the information and knowledge are public goods, the emotion support and companion support are also kinds of resources. The emotion and companion support are more precious because of timeliness, specific support target and cannot been recycled as knowledge and information. Social support exchange could improve the overall happiness of the society, contribution of social support is the essential part. Little attention has been paid to the provision of emotional support to people who are experiencing chronic stressful conditions[7]. What's more, previous works on social support contribution mainly based on survey data[5], which is not objective.

We will study on the social support contribution behavior in this paper. We will explore the motivations for contribute social support from the point of contributors' utility in the process of contributing. We examine the relationship between the pure altruism motivation, warm glow motivation, reciprocal altruism motivation and the contributors' contribution level. With data from an OHC, we found that users' motivation to contribute is complicated. The motivation of pure altruism, warm glow and reciprocal altruism are positive with social support contribution. Based on studies of the knowledge and information contribution in online communities, we extend previous research to social support contribution in OHC, where contain a mass of emotional support other than information. The result could be used to promote the social support contribution for the OHC operator.

The reminder of this paper is organized as follows. We develop the hypotheses in Section 2. We introduce our study setting and describe our data in Section 3. Section 4 presents the research

framework and reports the results of our analysis. Finally, in Section 5, we conclude with a discussion of study implications, limitations of current work and future research directions.

2. Theories and Hypotheses

Considering the utility of the contributors getting from the contribution process, we study the motivation from the next point of view: 1) the pure altruism (contributors get utility from beneficiaries' condition improvement); 2) warm glow (contributors get utility from their own contribution behavior); 3) reciprocal altruism (contributors get utility from the continuous social support exchanging).

2.1 Pure altruism

Pure altruism is that people are motivated by an ultimate desire (e.g., reduce others' suffering) to help others at a personal cost and without any personal benefit [8]. The support seeker's level of distress and the style of the support seeker's coping stress have been linked to support provision [7]. The displays of distress or support-seeking efforts by the recipient is the first phase of supportive interaction [9]. To increase ones' own benefits, their seeking for support will motive the contributor to provide support to increase the welfare of support seeker. According to income related altruism theory, the contributor's utility is influenced by the beneficiary's income [10]. Support seeking behavior will provide the contributors an opportunity to increasing the support seeker's welfare.

H1: others' seeking support will motivated individuals to provide social support.

2.2 Warm glow

Warm glow giving refers that helping behaviors will be sustained by the sense of positive emotional gain from the act of contributing [8]. The utility of warm glow is the positive emotional feeling, which comes from the act of giving. Contributors' warm glow gain includes social & self-image, norms/expectations, signaling & social status, social pressure, warm fuzzy etc. Descriptive norm describes what others actually do and has a significant effect on intentions[11]. With participating the OHC, users will see others' providing support behaviors, which will form the descriptive norms (which is one type of social norms) for the contributor. If he didn't help, he feel pressure. Others' contribution behavior in OHC will provide individuals social norms to provide social support[11].

H2a: individuals will be motivated to provide social support by social norm.

Image motivation is the desire to be liked and well-regarded by one's self and others[12]. People will contribute motivated by a desire to win prestige and respect[6]. Users' helping behavior will give himself a selfless signal about himself and also could be seen by other users in the OHC, which could improve the image of himself. Studies have shown that image motivation can explain the performance of pro-social activities like providing social support. Motivated by warm glow, individuals will support others to improve self-emotion.

2b: individuals will be motivated to provide social support by image motivation.

2.3 Reciprocal altruism

Reciprocal altruism assumes that the contributor's altruism depends on the beneficiary's altruism towards him [10]. Individuals' utility come from the support given by the beneficiary. Based on social exchange theory, a norm of reciprocity is a universal principle, which includes a sense that all exchanges reach a fair equilibrium and those who are helpful will receive help in the future [13]. People get help from the OHC, he will contribute back to the community.

H3: individuals will be motivated to provide social support by supported by others.

3. Research Context

We totally get information of users who are active from 2015.6.25 to 2015.7.4, delete users who do not public their information and finally get 3,933 users. We get users' demographic information (participate OHC time, mental state). We then download their activity information from dailystrength from 2015.7.5 to 2015.9.6. Users could see all activities of their friends, groups members and everyone else in the community.

Dependent variable. We define the contribution level as the total number of activity that provide support to others (including replying others' journal, replying discussion post and giving hug to others) during a one-week time period.

Independent variables. We identify independent variables corresponding to each of the three drivers of contribution behavior mentioned in previous section: 1) pure altruism, 2) warm glow, 3) reciprocal altruism. Seeking support is a kind of behavior motivated by getting support from others, which could drive the contributors to pure altruism behavior. In the OHC, users post in the support group, write journal to describe his condition and problems, which could drive others' attention to provide support. In this paper, we apply the number of discussion post, journal post as ones' behavior of support seeking. We make use of Friends_Seek and Others_Seek as the proxy of pure altruism, which is computed as the total number of friends seeking support and the total number of all others in the community seeking support respectively. We apply the Friends_Provide and Thanks_Reply to be the proxy of warm glow. Friends_Provide is the number of providing support by one's friends in OHC, which will provide social norm for his/her contribution behavior. Thanks_Reply is a proxy for a personalized reward and could improve the self and social image of the user, which will be computed as the number of "thank you" reply that the user gets. For the reciprocal altruism, we apply the Be_Supported to be the proxy, which is the number of post reply, journal reply and hug received by a user.

Control variables. We will also apply the online time of users to control the effect of OHC availability. We use the health condition of the users to control the self-efficacy, which will promote the activity of the users. The Friends_Num is used to control the activity of the user. OHC_Age is the OHC participating time of the user.

Table 1 Variables description

Dependent variable	Provide_Support	the number of post reply, journal reply and hug giving provide by user i at week t
Independent variables	Be_Supported	the number of post reply, journal reply and hug received by user i at week t
	Friends_Provide	the number of friends providing support
	Thanks_Reply	the number of "thank you" reply user i get at week t
	Friends_Seek	the number of user i's friends' posts and journals
	Others_Seek	the number of all others in OHC posts and journals
Control variables	Online_Time	the time long of user i login in OHC at week t
	Health_Condition	health condition of user i at the start of week t
	Friends_Num	the friends number of user i at week t
	OHC_Age	the participate time of user i at time t

4. Data Analysis

We choose Zero-inflated negative binomial regression (ZINB) for future analysis[14]. ZINB models have two sets of predictors; one set is used to predict zero-values (the Online_Time is used in this case) and others variables used to predict counts of Provide_Support.

The result of Zero-inflated negative binomial regression is showed in Table 2. The alpha (dispersion parameter) is not zero, which means that Poisson model would be not appropriate for

our model. The Vuong test compares the zero-inflated negative binomial model to a standard negative binomial model and gets zero-inflated negative binomial model more appropriate for our study. The result shows that the health condition of the users is significantly positive related with Provide_Support, which means that users with high self-efficacy will get higher contribution level. The coefficient of the Online_Time means that with increasing one unit, the odds that sample would be in the "Certain Zero" group would increase by a factor of $\exp(-0.47887) = 0.61948$. In other words, the higher a user online time, the less likely he will provide no social support.

The coefficient of Friends_Seek and Others_Seek are significantly positive related with providing social support. The H1 is supported. The more the surrounding others seek social support, the user will provide more social support. We multiply the coefficient by its mean and get Friends_Seek (0.01899) < Others_Seek (0.26851), which means users care all the others in the OHC, not just the friends or strong social ties.

The coefficient of Friends_Provide is significantly positive related with provide social support. The H2a is supported. If one's friends provide much more social support, he/she will also provide more support. Which can be explained by the descriptive norms, people tend to do what is socially approved as well as what is popular. Users will feel positive when they behave similar to others as the crowd mentality. The Thanks_Reply gets significantly positive relationship with providing social support. The H2b is supported. If one gets more "thanks" from others, he/she will feel a great self-image, which will promote to provide more social support to improve self-image in future.

The Be_Supported is significantly related with the providing social support. The H3 is supported. Users get more social support from OHC, will make he/she feel obligatory to "payback" to the OHC. With considering continuous social support exchanging, users will also supported others to support others when he/she gets social support.

Table 2 Zero-inflated negative binomial regression

Number of obs:	39319	Non zero obs:	2613
Log likelihood:	10812.97	Zero obs :	36706
Variables	coefficient	Std. Err.	P
Provide_Support			
Friends_Seek	0.01066	0.00233	0.000
Others_Seek	0.00002	0.00001	0.043
Friends_Provide	0.00197	0.00026	0.000
Thanks_Reply	0.18440	0.00956	0.000
Be_Supported	0.01126	0.00412	0.006
Health_Condition	0.03892	0.02200	0.077
OHC_Age	0.00038	0.00003	0.000
Friend_Num	-0.00002	0.00004	0.657
_cons	-0.98414	0.17256	0.000
Inflate			
Online_Time	-0.47887	0.02048	0.000
_cons	4.14866	0.07657	0.000
/lnalpha	0.57596	0.04083	0
alpha	1.77884	0.07264	

Vuong test of zinb vs. standard negative binomial: z = 29.03 Pr>z = 0.0000

5. Conclusion

In this paper, we explore the motivations to contribute social support in the OHC. From the point of contributors' utility in the process of contributing, we explore the relationship between

the pure altruism motivation, warm glow motivation, reciprocal altruism motivation and the contributors' contribution level. With data from an OHC name dailystrength, we proved that users' motivation to contribute is complicated. The motivation of pure altruism, warm glow and reciprocal altruism are positive with social support contribution.

There are previous researches that explore the motivation for contributing to online community. However, most of them are mainly based on the knowledge and information contribution. With containing a mass of emotional support other than information, we extend previous research to social support contribution in OHC. We also consider users' pursuing for health in OHC, which will affect contributors' decision to support. The result could be used to promote the social support contribution for the OHC operator.

6. Reference

[1] Kim, H.-S., and Sundar, S.S., "Can Online Buddies and Bandwagon Cues Enhance User Participation in Online Health Communities?", Computers in Human Behavior, 37(2014, pp. 319-333.

[2] Li, Y., Yan, X., and Tan, Y., "Promoting Health Behaviors with Help of Online Social Ties: An Exploratory Study", Hawaii International Conference on System Sciences, 2016

[3] Yan, L., and Tan, Y., "Feeling Blue? Go Online: An Empirical Study of Social Support among Patients", Information Systems Research, 25(4), 2014, pp. 690-709.

[4] Malinen, S., "Understanding User Participation in Online Communities: A Systematic Literature Review of Empirical Studies", Computers in Human Behavior, 46(2015, pp. 228-238.

[5] Chu, K.-M., "A Study of Members' Helping Behaviors in Online Community", Internet Research, 19(3), 2009, pp. 279-292.

[6] Jabr, W., Mookerjee, R., Tan, Y., and Mookerjee, V., "Leveraging Philanthropic Behavior for Customer Support: The Case of User Support Forums", MIS Quarterly, Forthcoming, 2013,

[7] Dunkel-Schetter, C., and Skokan, L.A., "Determinants of Social Support Provision in Personal Relationships", Journal of Social and Personal Relationships, 7(4), 1990, pp. 437-450.

[8] Ferguson, E., Atsma, F., De Kort, W., and Veldhuizen, I., "Exploring the Pattern of Blood Donor Beliefs in First‐Time, Novice, and Experienced Donors: Differentiating Reluctant Altruism, Pure Altruism, Impure Altruism, and Warm Glow", Transfusion, 52(2), 2012, pp. 343-355.

[9] Burleson, B.R., "Understanding the Outcomes of Supportive Communication: A Dual-Process Approach", Journal of Social and Personal Relationships, 26(1), 2009, pp. 21-38.

[10] Otto, P.E., and Bolle, F., "Multiple Facets of Altruism and Their Influence on Blood Donation", The Journal of Socio-Economics, 40(5), 2011, pp. 558-563.

[11] Staunton, M., Louis, W.R., Smith, J.R., Terry, D.J., and Mcdonald, R.I., "How Negative Descriptive Norms for Healthy Eating Undermine the Effects of Positive Injunctive Norms", Journal of Applied Social Psychology, 44(4), 2014, pp. 319-330.

[12] Ariely, D., Bracha, A., and Meier, S., "Doing Good or Doing Well? Image Motivation and Monetary Incentives in Behaving Prosocially", The American Economic Review, 2009, pp. 544-555.

[13] Trivers, R., "Reciprocal Altruism: 30 Years Later": Cooperation in Primates and Humans, Springer, 2006, pp. 67-83.

[14] Simons, J.S., Neal, D.J., and Gaher, R.M., "Risk for Marijuana-Related Problems among College Students: An Application of Zero-Inflated Negative Binomial Regression", The American journal of drug and alcohol abuse, 32(1), 2006, pp. 41-53.