Knowledge Sharing in Virtual Community: The Comparison between Contributors and Lurkers

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KNOWLEDGE SHARING IN VIRTUAL COMMUNITY: THE COMPARISON BETWEEN CONTRIBUTORS AND LURKERS

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Abstract

Internet-based virtual communities are growing with an unprecedented rate. Virtual communities have been viewed as platforms for sharing knowledge. The present study proposed an integrated model by investigating social capital and motivational factors that would influence the knowledge sharing attitude of members. Data were collected from 207 professional virtual community users (including 53 contributors and 154 lurkers). The results showed that trust and pro-sharing norms mediate the relationship between shared understanding and knowledge sharing attitude. Enjoy helping, commitment, and community-related outcome expectations enhance contributors' attitudes toward knowledge sharing. When lurkers perceived more reciprocity in their communities and expect more community-related outcome, they incline to sharing knowledge with others. The implications of these results are discussed.

Keywords: Virtual Community, Knowledge Sharing, Social Capital Theory, Motivation

Introduction

The Internet has become a vital resource for people to obtain information. Virtual community is an efficient platform for sharing knowledge. Community members can exchange their resources and enhance their relationship with other by formal or informal ways [17, 30]. People could produce new knowledge by continuously sharing and discussing with others.

According to the properties of user, virtual community could distinguish into three types: demographic, professional, and personal interest [1]. Knowledge capital has been regard as an important factor for establishing a professional virtual community [2]. These members who come from different social networks were connected by virtual ties. They can share their resources to each other. It enables members to accumulate social capital as well as gaining related information or knowledge. How to manage a professional virtual community and encourage members to share knowledge are always important issues for managers and researchers.

Past research points out that many members of virtual community are so-called "lurker", about 80% to 90% of total community users [25]. Lurkers are the members who surf on the website to gather the information or knowledge they need. They could be registered or non-registered members who opportunistically post articles to seek direct help. Developing virtual community initially needs to attract large number of users to participate as well as encouraging them to take part in knowledge sharing activities, such as voluntarily posting article and replying to others. They can develop long-term relationship with the community by building up the connection with other members.

Members in virtual community come from different organizations. They even are not acquainted with others. Sharing knowledge in virtual community would spend their time and efforts. Why people in virtual community would like to share their knowledge with others? The purpose of present study is to investigate the influence of social capital and motivational factors on members' knowledge sharing attitude. We also compare the difference between contributor and lurker to provide suggestions for community development and management.

Literature Review and Hypotheses

Virtual community is a social aggregation in cyberspace. Participators who have similar interests, goals, or experiences would discuss and interact over cyberspace [2] [8] [34]. Members view the virtual community as a knowledge sharing platform. Knowledge sharing is a kind of behavior that someone disseminates his/her knowing and experience to other members [29]. Different kinds of knowledge sharing activities are important for community to survive [7]. Therefore, it is always an important issue to discuss the factors which have influence on knowledge sharing.

Social Capital Theory

Social capital theory could be used to explain why people would engage in sharing knowledge with others and avoid opportunity for free-riding [32].

Social capital could be distinguished into three dimensions [23]: (1) Structural dimension. The influence of network type on members is considered, such as network ties, network configuration, and appropriable organization; (2) Cognitive dimension. The interaction between members would produce medium for member communication, such as shared language, symbols and stories; (3) Relational dimension. It would trigger interactions in the social network to develop individual network and achieve social goals such as social contact, identification, and reputation [9].

Granovetter [15] suggested that social capital is embedded in the social network. Devi and Ravindranath [13] proposed structural embeddedness and suggested that network density is an important property of network. Network density refers to the extent of member connection. Members interact with others by replying article on website or by sending e-mail. The more connection they build up, the higher density they have. Stronger network ties would form restriction and enable member to build up trust. Therefore, they would like to obey the norms and general behavioral models [6] [9]. Based on the argument above, we postulate two hypotheses.

H1: Network density is positively associated with trust.

H2: Network density is positively associated with pro-sharing norms.

Shared understanding refers to the similar work value, norms, philosophy, and experience for certain group [14] [24]. The knowledge sharing participants should have basic understanding about their communication language [23]. Through shared understanding, members can develop stronger trust and incline to comply with norms. We propose following two hypotheses:

H3: Shared understanding is positively associated with trust.

H4: Shared understanding is positively associated with pro-sharing norms.

Trust plays an important role in knowledge sharing [12]. Trust is an adhesive which could shorten the distance between members. If there is lack of trust, members would incline to hide their knowledge or experience and decline to spend their time and effort to share knowledge. The higher extent of trust community member has, the more sharing activities would take place [5]. The above argument is captured by the following hypothesis:

H5: Trust is positively associated with knowledge sharing attitude.

Pro-sharing norms are norms which were built up to stimulate members to share their knowledge [21] [27]. Stronger pro-sharing norms

would decline the influence of external benefits [19]. Pro-sharing norms could enhance sharing climate and motivate individual to share knowledge [31]. Members in a professional virtual community would like to engage in sharing knowledge if there were pro-sharing norms. We postulate the following hypothesis:

H6: Pro-sharing norms are positively associated with knowledge sharing attitude.

Extrinsic Motivations

Extrinsic motivations are extra resources that someone gains. Bock et al. [5] suggested that extrinsic motivations would trigger someone to share knowledge. One may share knowledge after balancing the costs and benefits and expect to have beneficial reward [11]. When the knowledge shared by someone had been adopted by others, contributor would increase his/her reputation and status.

Reputation is that someone perceived his/her status or image has been promoted by sharing useful and valuable knowledge [10] [21]. Constant et al. [10] found that reputation could stimulate employees to propose constructive advice and increase their participation in the activities of virtual communities. People would like to share their expertise with others for increasing his/her status and earning others' respect [21] [22]. Based on the argument above, we propose the following hypothesis:

H7: Reputation is positively associated with knowledge sharing attitude.

Reciprocity is defined as someone would share with others for expecting to have similar returns or help when they in need [12]. Two strangers with weak-ties would share their knowledge in electronic virtual community is evidence of reciprocity [33]. The higher level expectation on reciprocity of members, the more motivation to share knowledge they have [32]. The above argument is captured by the following hypothesis:

H8: Reciprocity is positively associated with knowledge sharing attitude.

Community-related outcome expectation is defined as the assessment by someone according to the knowledge sharing behavior in virtual community [8]. Chiu et al. [8] suggested that members would like to contribute more knowledge to help the community to sustain its operation. If members care more about the community-related outcomes, they would incline to share their knowledge to help the community to achieve its goal and vision. We postulate the following hypothesis:

H9: Community-related outcome expectation is positively associated with knowledge sharing

attitude.

Intrinsic Motivations

Osterloh and Frey [28] referred that intrinsic motivations can stimulate knowledge creation and transfer when extrinsic motivations do not work. Kollock [21] suggested that one believes in altruism would share knowledge. Pro-social behaviors are derived from stimulation of intrinsic motivations. They would help others and do not expect for returns.

Davenport & Prusak [12] advocated that the pro-social behavior of knowledge contributor is derived from the aspiration to help others. Kollock [21] found that one would contribute his/her knowledge in electronic virtual community for the property of enjoyment to help others. One may enjoy the fun and challenges during problem-solving. Members would gain psychological fulfillment through pro-social behavior. We propose the following hypothesis:

H10: Enjoy helping is positively associated with knowledge sharing attitude.

Self-efficacy is defined that someone perceives he/she has the capabilities to finish specific work [3]. Knowledge self-efficacy is someone believes he/she can provide valuable knowledge [10] [18]. When members have strong knowledge self-efficacy, they believe that they can provide valuable knowledge to others for solving their problems. The above argument is captured by the following hypothesis:

H11: Knowledge self-efficacy is positively associated with knowledge sharing attitude.

Commitment is a kind of duty or obligation which would drive someone to increase participation [9]. Commitment not only exists in the relationship between individuals but also in the relationship between individual and group. Wasko and Faraj [32] found that participation of member base on shared membership. They think that they have responsibility and obligation to help others. We postulate the following hypothesis:

H12: Commitment is positively associated with knowledge sharing attitude.
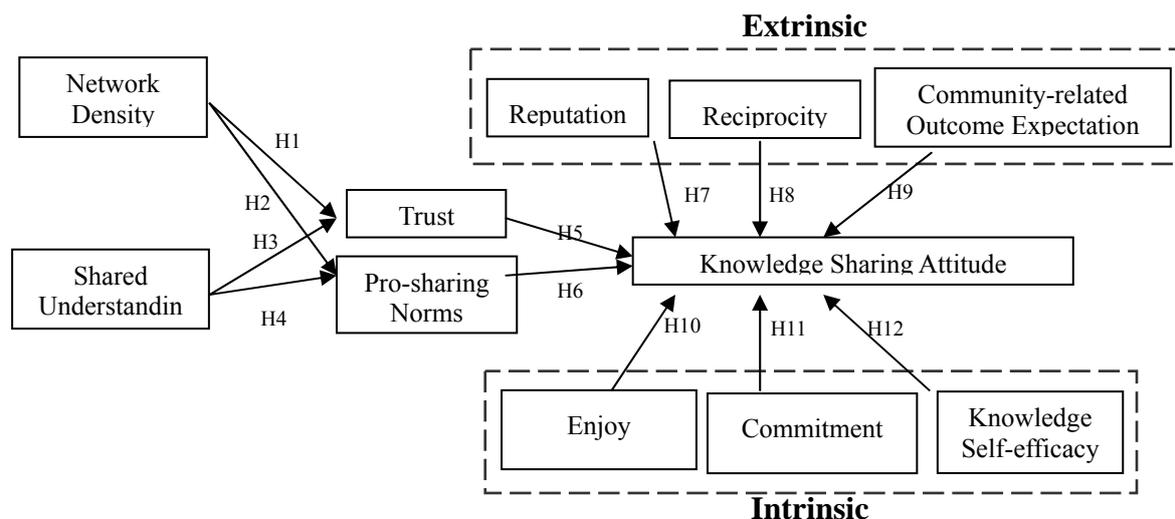
The research model is illustrated in Figure 1.

Figure 1. Research model

Methodology

Instrument Development

The research constructs were measured by adapting existing scales to enhance validity. Network density is adapted from Devi and Ravindranath [13]. We asked the extent of respondent's interaction with other members. The other 11 constructs were measured by five-point Likert scales, from "strongly disagree" to "strongly agree". In order to make sure the face validity and understanding of wording, we invited one manager and 11 members to conduct a pre-test. A summary of our questionnaire was shown in Table1.

Data Collection

Respondents were the users of a professional virtual community - "JavaWorld@TW". This virtual community focused on the discussion of Java-related techniques. We also discriminated users as contributors and lurkers. The former are registered members and also share their knowledge. Lurkers who may be registered or non-registered do not share their knowledge.

We conducted an Internet-based survey by posting the questionnaire link on the virtual community website. The survey was conducted during March, 2009 to April, 2009 by two phases and totally returned 207 valid responses (172 for phase 1, 35 for phase 2). According to the results of non-response bias test, there is no significant difference in gender ($x^2 = 0.600$, $p > 0.05$) and

average time online per day ($x^2 = 5.136$, p > 0.05).

Out of 207 respondents, 130 were male (62.8%). Most of respondents were in the age of 21 to 25 (46.9%). Many of respondents were Internet heavy users, about 80% of them spend

more than 3 hours online. Most of users were non-registered (46.4%). There are 25.6% respondents had shared their knowledge on the virtual community

Table 1. Summary of measurement scales

Construct	Item	Loading	Source
Shared Understanding (SU) Cronbach's α = 0.70	I and other members have mutual objectives.	0.85	Ko et al. [20]
	I and other members have similar values.	0.82	
	I and other members have similar professional background and work experience.	0.68	
Trust (TR) Cronbach's α = 0.77	I believe that members in the JavaWorld@TW will not take advantage of others even when the opportunity arises.	0.81	Chiu et al. [8] Kankanhali et al. [19]
	I believe that members in the JavaWorld@TW use other's knowledge appropriately.	0.87	
	I believe that people in the JavaWorld@TW share the best knowledge that they have.	0.81	
Pro-sharing norms (PNR) Cronbach's α = 0.82	There is a norm of cooperation and collaboration in the JavaWorld@TW.	0.86	Kankanhalli et al. [19]
	Members in the JavaWorld@TW are open to conflicting view.	0.86	
	There is a norm of sharing knowledge in the JavaWorld@TW.	0.84	
Reputation (REP) Cronbach's α = 0.72	I want to earn respect from others by sharing knowledge in the JavaWorld@TW.	0.90	Wasko & Faraj [32]
	I hope to improve my status in the profession by sharing knowledge in the JavaWorld@TW.	0.87	
Reciprocity (REC) Cronbach's α = 0.77	I hope that other members in the JavaWorld@TW would help me if I need help, therefore I should help them.	0.92	Kankanhalli et al. [19] & Wasko & Faraj [32]
	I think sharing knowledge in the JavaWorld@TW could provide me to have better chance to cooperate with other outstanding members.	0.89	
Community-related Outcome Expectation (COE) Cronbach's α = 0.87	Sharing my knowledge would help the JavaWorld@TW continue its operation in the future.	0.94	Chiu et al. [8] Hsu et al. [16]
	Sharing my knowledge would help the JavaWorld@TW accumulate or enrich knowledge.	0.91	
Enjoy Helping (EH) Cronbach's α = 0.85	I like helping others in the JavaWorld@TW.	0.89	Kankanhalli et al. [19] Wasko & Faraj [32]
	It feels good to help others solve their problems.	0.88	
	I would provide opinions and help to whom are seeking	0.86	
Knowledge Self-Efficacy (KSE) Cronbach's α = 0.70	I have confidenc in my ability to provide knowledge that others in the JavaWorld@TW consider valuable.	0.94	Kankanhalli et al. [19]
	I have the expertise needed to provide valuable knowledge for the JavaWorld@TW.	0.90	
Commitment (COM) Cronbach's α = 0.84	I really care about the fate of the JavaWorld@TW.	0.94	Wasko & Faraj [32]
	I feel a great deal of loyalty to the JavaWorld@TW.	0.94	
Knowledge Sharing Attitude (KSA) Cronbach's α = 0.87	I think sharing knowledge with other members is good.	0.90	Bock et al. [5]
	I think sharing knowledge with other members is valuable experience.	0.90	
	I think sharing knowledge with other members is a wise move.	0.86	

Results

Measurement model

Both Cronbach's alpha and composite reliability

(CR) were used to assess the extent of internal consistence. As show in Table 1 and Table 2, most of them were greater than 0.7 suggest by Nunnally [26].

As to convergent validity, the loading of all items were greater than 0.60 (see table 1). In table 2, the values of composite reliability range from 0.82 to 0.94; and AVE scores for each construct range from 0.62 to 0.89 and above the 0.50 recommended level. To examine discriminant validity, as table 2 shows, the square root of AVEs for each construct is great than the correlation between constructs.

Structure model

The proposed hypotheses were tested with Partial Least Squares (PLS). As shown in Figure 2, 59.2% of the variance in knowledge sharing attitude was explained. Network density and shared understanding explained 27.6% of the variance in trust and 13% of pro-sharing norms.

As to social capital factors, shared understanding had positive relationship with trust ($\beta = 0.523$, $p < 0.01$) and pro-sharing norms ($\beta = 0.358$, $p < 0.01$), supporting H3 and H4. Both trust ($\beta = 0.252$, $p < 0.01$) and pro-sharing norms ($\beta = 0.165$, $p < 0.01$) had a significant association with knowledge sharing attitude, supporting H5 and H6. For extrinsic motivations, reciprocity ($\beta = 0.155$, $p < 0.05$) and community-related outcome expectation ($\beta = 0.322$, $p < 0.01$) had positively association with knowledge sharing attitude,

supporting H8 and H9.

Post hoc Analysis

We divided respondents into two group namely contributors (n = 53) and lurkers (n = 154) to compare the difference in motivation factors. The knowledge sharing attitude of contributor was significantly influenced by community-related outcome expectation ($\beta = 0.321$, $p < 0.05$), enjoy helping ($\beta = 0.274$, $p < 0.1$), and commitment ($\beta = 0.159$, $p < 0.1$), supporting H9, H10, and H11. As to lurkers, reciprocity ($\beta = 0.148$, $p < 0.1$) and community-related outcome expectation ($\beta = 0.326$, $p < 0.01$) had positively association with knowledge sharing attitude.

Mediation Effect Tests

We adopted Baron and Kenny's [4] three-step method to examine the mediating effect of trust and pro-sharing norms. Firstly, independent variable (IV) should have significant effect on dependent variable (DV). Then, IV should significantly predict the mediator (M). Finally, IV and M should simultaneously include in the analysis model to predict DV. If M is significant but IV is not, this is full mediation. If both M and IV are significant, this is partial mediation. As shown in table 3, both trust and pro-sharing norms had full mediating effect on the relationship between sharing understanding and knowledge sharing attitude.
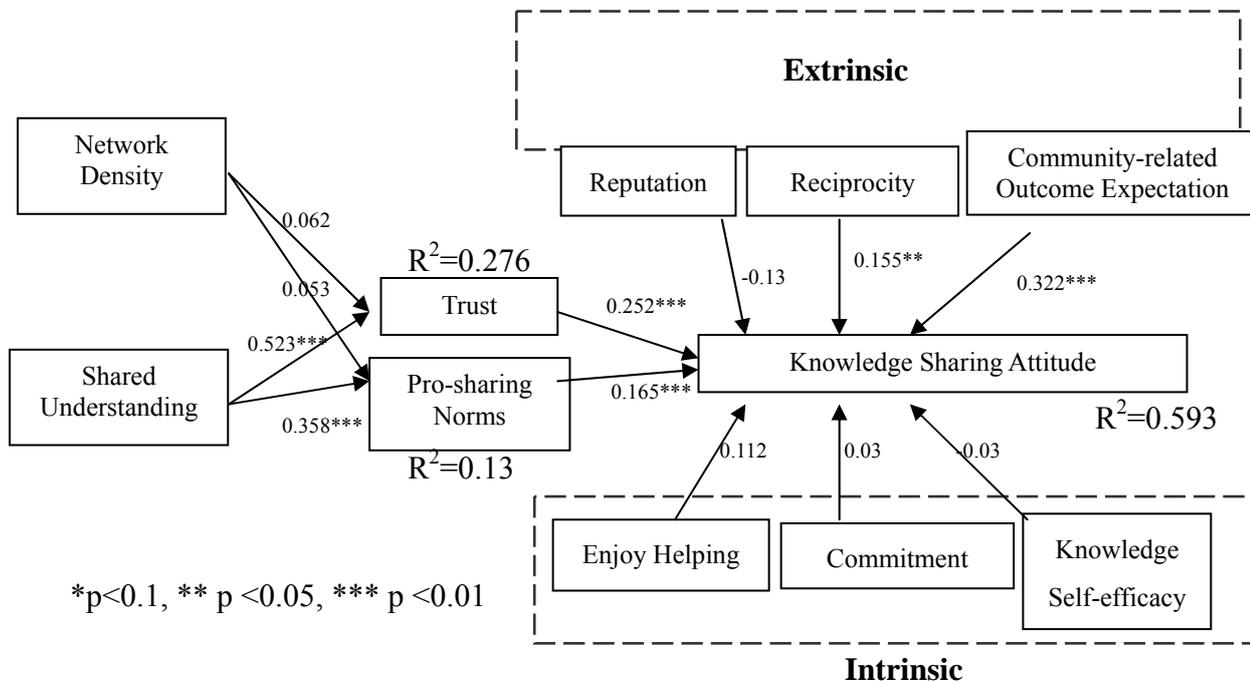

Figure 2. PLS analysis of research model

Table 2. Composite reliability, AVE and coreelations

	CR	AVE	REC	SU	TR	PNR	REP	REC	COE	EH	KSE	COM	KSA
SU	0.83	0.62	0.43	0.79									
TR	0.87	0.69	0.56	0.52	0.83								
PNR	0.89	0.73	0.50	0.36	0.56	0.86							
REP	0.88	0.78	0.61	0.44	0.30	0.28	0.88						
REC	0.90	0.81	0.90	0.43	0.56	0.50	0.61	0.90					
COE	0.94	0.89	0.65	0.45	0.62	0.49	0.49	0.65	0.94				
EH	0.91	0.76	0.66	0.44	0.53	0.49	0.61	0.66	0.66	0.87			
KSE	0.82	0.63	0.36	0.34	0.37	0.21	0.45	0.36	0.38	0.55	0.79		
COM	0.92	0.86	0.43	0.41	0.48	0.36	0.50	0.43	0.51	0.47	0.42	0.93	
KSA	0.92	0.79	0.58	0.42	0.65	0.57	0.31	0.58	0.67	0.56	0.29	0.42	0.89

Table 3. Results of mediating effect tests

	Model		Step 1	Step 2	Step 3		Mediati
IV	M	DV	IV to DV	IV to M	IV to DV	M to DV	on
SU	TR	KSA	0.393***	0.489***	0.088	0.482***	Full
SU	PNR	KSA	0.393***	0.319***	0.088	0.301***	Full

Discussion and Conclusion

The purpose of present study was to investigate the influence of social capital and motivational factors on members' knowledge sharing attitude. Our results had shown that shared understanding has positive influence on trust and pro-sharing norms. The consensus existed in the virtual community could enable the emergence of pro-sharing norms. Members with similar work experience and problem-solving method could increase the trust between virtual community members.

While higher trust and pro-sharing norms, member would incline to share their knowledge. Past research focused on the direct relationship between sharing understanding and knowledge sharing attitude. The present study found that trust and pro-sharing norms play mediating roles between sharing understanding and knowledge sharing attitude.

In general, the knowledge sharing attitude of member is affected by extrinsic motivators, such as reciprocity and community-related outcome expectation. But for contributors, they would share with others base on their enjoyment of helping and commitment. The objective of lurkers is to surf the information or knowledge they need, they would share with other only if they feel reciprocal and expect this community would have positive feedback to them.

Implications

In order to develop a successful virtual community, manager should promote more knowledge sharing activities to attract users to participate the activities of the community. Virtual community consists of people with similar knowledge background and work experience. They have shared understanding about the issues they discuss. But for new comers, this kind of shared understanding would be the barrier to share knowledge. Manager can set up a specific area for new comers to learn, such as FAQs. Manager also could establish rules and sharing principles to foster trust and pro-sharing climate.

Our results show that different kinds of users focus on different motivators. Contributor motivate by intrinsic factors such as enjoyment and commitment. However, lurker stimulate by extrinsic factors such as reciprocity. Both contributor and lurker would take community-related outcome expectation into consideration when they engage in sharing activity. Manager should have different strategies for attract lurkers and retain contributors.

Limitation and Future Research

There were several limitations in our study. Firstly, the data were collected through Internet base on self-report. Here, we focus our research on one professional virtual community. Future research could design a more comprehensive method to

compare the results from different communities. Secondly, although the items we used were adapted form past literature. Network density was measured by users' perception of their connection level with others. Future research could adopt more appropriate measures for structural dimension. Finally, our research is cross-sectional that limited our discussion on the difference between contributor and lurker. Future research could design a longitudinal research to discuss more detailed on the variation and difference of different users. We hope our study provides needed advancement for knowledge sharing.

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