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December 2007

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Interpersonal Relationship Needs of Virtual Community Participation: A FIRO Perspective

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Abstract

Virtual communities (hereinafter as VCs) emerged as a new form of business model in electronic business field. Understanding motivations of members' participation is essential to virtual community organizers. Arguing that interpersonal relationship needs are important to drive members' participation, this paper used FIRO (Fundamental Interpersonal Relationship Orientation) as framework to explore why people participate in virtual communities. Data was collected in three large representative VCs and analyzed with ANOVA. It was found that people obtain information in virtual communities because they want to fulfill two kinds of needs—need for inclusion and need for affection; and people give information in virtual communities because they want to fulfill three types of needs—need for inclusion, need for control, and need for affection. This study thus contributed to the current knowledge of virtual communities by providing the integrative theoretical explanation and valid empirical results. This result is also meaningful to VC organizers.

Keywords: Virtual communities, members' participation, FIRO, interpersonal relationship

Introduction

The motivations of VC members' participation have been crucial research question since VCs are implemented into business applications. Researchers have investigated VC participation using the gift economy perspectives (Kollock 1999; Rheingold 1993; Ridings et al. 2002; Wang et al. 2004a; Wang et al. 2004b; Wasko et al. 2000; Wasko et al. 2005), the trust perspective (Ridings et al. 2002), and the social support and friendship perspective ((Ridings et al. 2004). Although all these prior studies contribute significantly to the understanding of VC participation, they have a common limitation of neglecting to consider members' participation in the context of community dynamics. When people participate in VCs, they are in fact interacting with each others. Thus, members' participation in VCs is a dynamic interpersonal relationship building process, through which members could fulfill a series of social psychological needs.

The purpose of this paper was trying to explore VC members' participation from the interpersonal relationship perspective with FIRO (Fundamental Interpersonal Relationship Orientation) theory from Schutz (1966). Specifically, the paper tried to identify what factors influence members' behavior in VCs. Two types of behavior—behavior to give information and behavior to obtain information were investigated. Data was collected in three large representative Chinese VCs and tested with ANOVA. Results showed that behavior to obtain information is influenced by members' need for inclusion and need for affection and behavior to give information is influenced by members' need for inclusion, need for control, and need for affection.

Literature Review

This part first reviewed past studies on the antecedents of VC participation then reviewed the interpersonal relationship theory—FIRO. Studies showed that the factors influencing VC members' behavior vary with participation activities as well as type of VCs. In general, previous literature has identified three types of participation behavior—general participation, lurking and active participation. Each of these three behaviors is contributive to the overall development of VCs.

Antecedents of VC Participation

The general participation behavior, defined either as the time and frequency spent in VCs (Wang et al. 2003; Wang et al. 2004a; Wang et al. 2004b) or the intention to participate in VCs (Bagozzi et al. 2002; Teo et al. 2003), has been investigated in several studies and the result showed the social psychological reasons are major causes to VC participation.

Lurking is the behavior of viewing messages in a VC but not posting any. People who lurk are called lurkers. Lurking behavior has been reported in a series of studies (Brazelton et al. 2003; Christie et al. 2004; McKee 2002; Preece et al. 2004) but has not been extensively investigated.

In fact, the behavior of posting messages in VCs generates more interest from VC researchers than lurking behavior and general participation behavior. The reason is that active VC participations are contributive to the VC's continued success, despite the fact that this behavior is spontaneous, unrewarding and time-consuming. In general, three perspectives have been proposed to explore and explain this behavior.

The first perspective is from the gift economy viewpoint, and has been studied by several researchers (Kollock 1999; Rheingold 2000; Wang et al. 2003; Wasko et al. 2000). The second perspective on active VC contribution can be attributed to and explained by social identity theory (Dholakia et al. 2004), self-efficacy theory (Wang et al. 2004b), and Self-presentation theory (Papacharissi 2002; Schlenker 1985), which are all sub-theories of self-concept theory. Based on the self-concept theory, an individual can gain satisfaction and build their ideal self through managing his or her social identity (Tajfel et al. 1986), self impressions (Schlenker 1985), and self-efficacy (Bandura 1982; Bandura 1986) in social groups. VCs, as examples of social groups, can enable members to build their social identity, manage their self-impression, and increase their self-efficacy. Such activities in VCs as answering messages, tackling difficult questions, and sharing experiences, may facilitate members in achieving their ideal selves.

The third perspective of active VC participation arises from social-related constructs such as culture (McKee 2002), trust (Ridings et al. 2002), and centrality in the network and self-related expertise (Wasko et al. 2005), friendship (Carter 2005). These constructs are based on social capital theories, which state that trust, social networks and other social factors people acquire in VCs are valuable resources and are beneficial for their social recognition.

Recently, several researchers also found that the antecedents of VC participation vary with typology of VCs, i.e., the type of VCs moderate the effect of antecedent of VC participation. For example, Dholakia et al. (2004) found that members in the network-based VCs are more driven by purposive motivations like obtaining information while those in the small-group-based VCs are more driven by the social benefits like interpersonal connectivity.

Over all, the explorative studies on these three perspectives are still in the early stages. First, the lurking behavior should be distinguished from the general participation behavior and the posting behavior; second, the antecedents of lurking behavior call for more theoretical investigation; third, the antecedents of active participation are not conclusive and complete; forth, the empirical studies are sparse.

FIRO

FIRO was the theory proposed by Schutz in 1958 with the purpose of describing and explaining individual behavior and the interaction of people, i.e., the interpersonal relationship, with simple but comprehensive characteristic orientations. To be applied empirically, FIRO was operationalized as FIRO-B (FIRO Behavior). Since FIRO's development, its measures had been widely adopted in social psychology research (Furnham 1990; Furnham 1996; Hurley 1990).

In his FIRO theory, Schutz (1966) proposed that interpersonal relationships could be measured by a person's intention to interact with others. He argued that people's intention to interact with others could be measured in three dimensions—Inclusion, control and affection. Each of these three dimensions has two behavior directions—expressed and wanted behavior. Thus, there are six dimensions in FIRO—Expressed Inclusion, Wanted Inclusion, Expressed Control, Wanted Control, Expressed Affection and Wanted Affection. Based on this framework, the expressed behavior describes the extent of

people's willingness to include, control and love others; while the wanted behavior describes the extent of people's willingness to be included, controlled and loved by others.

FIRO could be extensively applied to all situations where interpersonal relationships are investigated (Schutz 1966). Its theoretical applications could be viewed by number of persons involved in interpersonal relationships from three different levels—individual level (one person), family level (more than two persons) and group level (much more than two). While individual level applications described mainly one's orientation in the three dimensions, which provided the foundations to analyze his or her social behaviors, family level applications mainly deal with how family members' orientations in the three areas influence their relationships inside and outside the family, and group level applications discussed mainly how the match of group members' orientations in the three dimensions, namely, the group compatibility, affect the group performance (Di Marco 1974; Hill 1977; Ilgen et al. 1974), effectiveness (Fisher et al. 1995; Smith et al. 1975)and efficiency (Hewett et al. 1974).

Conceptual Model and Research Hypotheses

To further understand why people participate in VCs, we proposed that one of the main reasons members participate in VCs is to fulfill their interpersonal needs. This perspective not only gives the theoretical framework for many previous VC studies on friendship and relationship perspective VC participation (Carter 2005; Rheingold 2000; Ridings et al. 2004) but also supplements many other studies from social identity and self-concept perspective (Dholakia et al. 2004; Papacharissi 2002).

Figure 1 illustrated our research model and hypotheses. We proposed that VC members' behavior consists of two parts— behavior to obtain information (BOI) and behavior to give information (BGI), which is influenced by the six constructs in FIRO theory. FIRO is applicable to explain VC participation not only because FIRO is an interpersonal theory. To illustrate our conceptual model, we first explained why we adopted two types of VC behavior, and then gave our result.

Figure 1. Research Model and Hypothesis
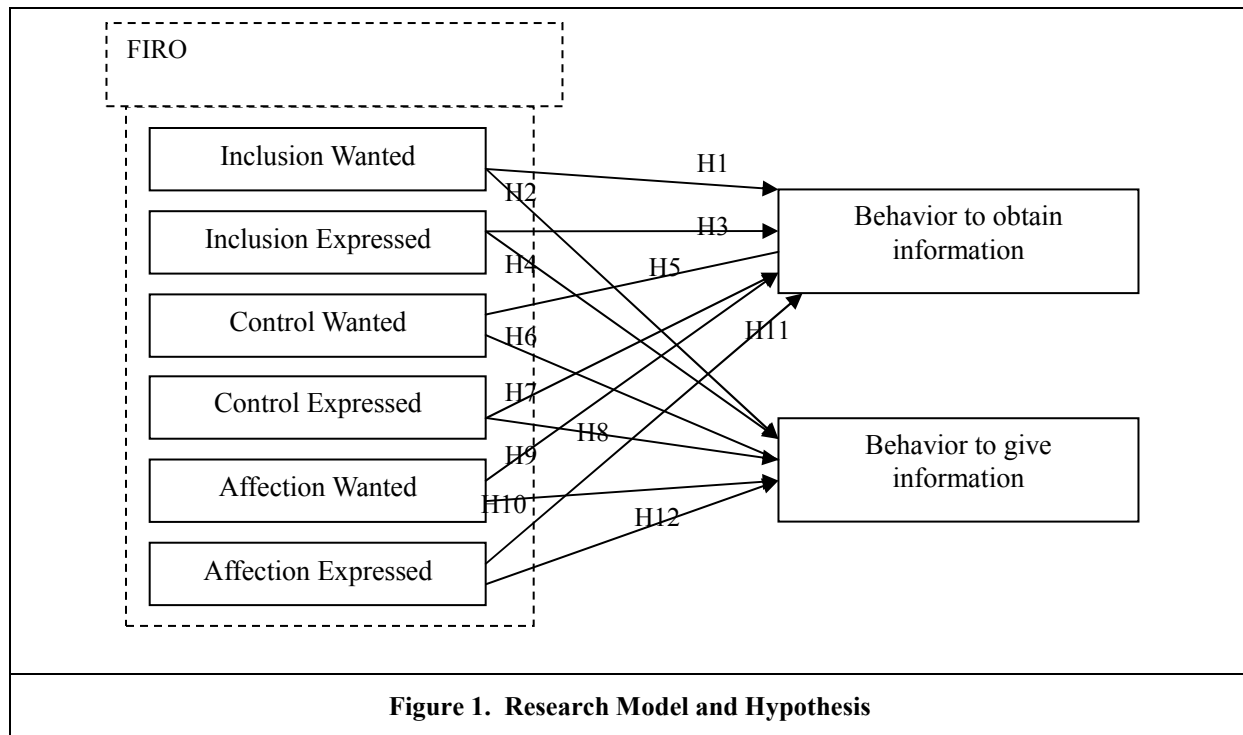
Two Types of VC Members' Participation Behavior

We adopted two constructs—behavior to obtain information and behavior to give information—to represent members' participation behavior because of the differences reported by previous studies. Earlier studies suggested that BOI & BGI differed in many ways. First, BGI is less frequent than BOI (Christie et al. 2004; McKee 2002; Preece et al. 2004). Second, the antecedents of BGI and GOI are theoretically different (Leimeister et al. 2005; Ridings et al. 2002; Wang et al. 2004a; Wang et al. 2004b; Wasko et al. 2000; Wasko et al. 2005).

Research Hypothesis

The twelve relationships between the six constructs from three dimensions of FIRO and the two types of VC participation behaviors—BOI and BGI are proposed in Figure 1.

Inclusion and VC Participation

Inclusion was the sense of attachment and some of the word may be the proxy of inclusion. Belongings, attachment, cohesiveness, association, and group identity, are also the reflection of inclusion. Some other behavior is in fact the reflection of inclusion too. For example, gaining status was the signal of one's fulfillment for his need for inclusion.

Though no direct studies examining the relationship between inclusion and VC behavior, there are a bundle of studies implicitly pointed out that inclusion and VC participation behavior had a strong relationships. In these studies, inclusion sometimes was referred as sense of belonging (Bressler et al. 2000; Rheingold 2000; Teo et al. 2003) or sense of attachments, associating, etc.

Based on the above findings, it's not hard to find that though previous studies didn't distinguish the need for wanted inclusion from need for expressed inclusion, they do pointed out that need for inclusion is the motivation for members to participate in VCs, either posting message or obtain messages. Based on previous findings, we proposed the following hypotheses 1 to 4.

> *H1 People scored high on wanted inclusion would obtain information more frequently than those who score low.*
>
> *H2 People scored high on wanted inclusion would give information more frequently than those who score low.*
>
> *H3 People scored high on expressed inclusion would obtain information more frequently than those who score low.*
>
> *H4 People scored high on expressed inclusion would give information more frequently than those who score low.*

Control and VC Participation

Like inclusion, there is no direct literature supporting the relationship between control and VC behavior. Our hypotheses are developed based on the theory itself and the indirect support from similar studies. Need for control manifests itself as an individual's desire for power, authority, and control over others' actions. The need for control can be achieved through dynamic interactions with other members in the VC environment.

Whether through expressed control or wanted control, the fulfillment of control needs is intended to gain a sense of security and safety. Wanted control refers to people's tendency to be controlled, led, or influenced by other people. People scoring higher in wanted control feel safe and secure under someone else's control. Extended into the VC environment, wanted control can be observed in many previous findings in VC studies. One major reason to participate in VCs is reported to obtain suggestions and information from others (Rheingold 2000), and this can be explained from the perspective of wanting control from others. Bakardjieva (2003) observed that some people tend to rely on the VC to obtain answers and consolation when they meet problems or decision-making situations. It is also reported that when some people decide to buy products, they tend to post their situations or problems for the community to make decisions for them (Munoz 2003). It is thus reasonable to give the following hypothesis 5 and 6:

> *H5 People scored high on wanted control would obtain information more frequently than those who score low.*
>
> *H6 People scored high on wanted control would give information more frequently than those who score low.*

The need for expressed control can be fulfilled through VC activities, and especially through behavior to give information. This has been reported by several studies on VCs. For instances, in an ethnographic study about social relationships and power structure in two Vietnamese VCs, Nguyen et al. (2006) observed that some members actively post messages in VCs because they want to dominate discussions and influence others' behaviors and thoughts. It is also interesting to observe that some members try to post messages often and try to gain popularity so that later they would be promoted to leaders who have the power to manage others' messages or influence others' behavior and thoughts. This is consistent with the other studies about gaining status and earning reputation (Rheingold 2000; Wasko et al. 2005). Members who gain status and reputation in VCs through participation can be promoted to leaders who have power to manage other members, as well as managing messages. Based on previous findings, the following hypotheses 7 and 8 are proposed:

> *H7 People scored high on expressed control would obtain information more frequently than those who score low.*
>
> *H8 People scored high on expressed control would give information more frequently than those who score low.*

Affection and VC Participation

Many studies have explored the constructs related with affection. Though affection wasn't identified as the single factor contributing to VC activities, some similar factors, such as online friendship (Ridings et al. 2004) and hedonic needs, defined by Wang and Fesenmaier (2004a; 2004b) as the emotional enjoyment, amusement, entertainment feelings members experienced during participating VCs, were found to be significant in explaining VC participation. Such participation could give members the feeling of happiness, excitement and enthusiasm. As Nip (2004) pointed out that the majority of messages in an online community of lesbian is expressing and sharing their feelings with others.

Wanted affection referred to people's tendency to get friendships and relationships from other people. People high in wanted affection always want to be loved by other, to be cared by others and to be close in relationship with others. Expressed affection referred to one's tendency to get close, develop relationship and friendships with others. People with higher needs for expressed affection often like to care others, show the empathy to others, and comfort others. They are peace maker and angel who bring love to others. When they participate VCs their needs for affection could also be fulfilled regardless posting or browsing messages. The following hypotheses are developed based on the above findings:

> *H9 People scored high on wanted affection would obtain information more frequently than those who score low.*

> *H10 People scored high on wanted affection would give information more frequently than those who score low.*

> *H11People scored high on expressed affection would obtain information more frequently than those who score low.*

> *H12 People scored high on expressed affection would give information more frequently than those who score low.*

Research Methodology

In this study, an online cross-sectional survey in online forums was adopted as the research method to investigate the behavior of VC members. A total of three VC companies participated in our study. These three companies were Tencent Community, a single commercial community; Xilu Community, a sole commercial community; and Microsoft Chinese Community, a value-added professional community of a large software company. These three communities were selected because they were of different natures and represented three of the largest VCs in China. To avoid the interaction effect brought by the types of VCs reported in previous study (Dholakia et al. 2004), these three VC are selected of different types in terms of social orientation with Tencent high, Xilu middle and Microsoft low in social orientation.

Data Collection

An online questionnaire was developed to collect data from members of the three participating VCs in China in the spring of 2004. For the ease of management, the online questionnaire was hosted in a service provider's site (http://www.my3q.com) that provided free questionnaire creation services. The use of a service provider also allowed us to deal with the problems of access control, authentication and multiple responses associated with the web-based data collection approach(Stanton et al. 2001).

Variable Operationalization

The dependent variables of this study are BOI and BGI. BGI measures how eagerly one "talk", namely post messages in a VC; and BOI measures the extent to which one retrieves information from a VC. BOI and BGI were operationalized in Likert scale (1 to 7) with measures developed from the actual usage behavior in information system (Davis 1989; Limayem et al. 2003; Ridings et al. 2002; Straub et al. 1995; Wang et al. 2004b). Most of these measures, which were derived from information technology adoption studies, were based on the users' time and frequency spent on the IT.

In this study we adopted Schutz's (1966) instrument to measure the three dimensions of FIRO—need for inclusion , need for control, and need for affection. According to Schutz (1966), each of the three dimensions has two aspects: expressed behavior and wanted behavior. Thus, the three dimensions could have six constructs—expressed inclusion, wanted inclusion, expressed control, wanted control, expressed affection, and wanted affection. Of these six constructs, there are nine items for each construct.

Instrument Validation

To ensure the validity and reliability of the questionnaire, a four-stage survey validation was conducted. First, whenever possible, previously validated questions were used, and generally accepted online instrument construction guidelines (Ridings et al. 2002; Stanton et al. 2001; Wang et al. 2003) were observed as much as possible. Second, the questionnaire was back-

translated to ensure the validity. Third, the questionnaire was pretested by one MIS professor, seven business doctoral students, and two experienced VC webmasters. Forth, a pilot test for the questionnaire was conducted on two small VCs.

Table 1. the reliability		
Construct	Cronbach's Alpha (Pilot)	Cronbach's Alpha
EI (Expressed Inclusion)	0.75	0.70
WI (Wanted Inclusion)	0.95	0.87
EC (Expressed Control)	0.85	0.83
WC (Wanted Control)	0.77	0.80
EA (Expressed Affection)	0.81	0.82
WA (Wanted Affection)	0.92	0.82

Data Analysis Result

A total of 1,406 responses were collected from the three participating communities. After checking for data integrity, seventy-six responses suffered from multiple responding problems and eighteen from ineffective response problem, thus giving us a total of 1,312 effective responses.

Profile of Respondents

Of the 1,312 valid responses, 98% of them were from Mainland China, Hong Kong, Macau or Taiwan. Most respondents are male (75%) and single (78.7%). Their occupations vary from unemployed to professionals, with most of them as engineers/computer technicians and students. Regarding their ages, the respondents were predominately (67.9%) in the range of 19-28. As for their education level, more than half of them (72.3%) were college graduates, with close to five percents receiving or completed their postgraduate studies. The profile of our respondents is very compatible to the VC profiles announced in official site of CNNIC[1] (China iNternet Network Information Center), thus suggesting the appropriate representation of our responses in this VC research.

Reliability of FIRO

Prior to testing our FIRO model for hypotheses validation, the research model was tested for its reliability by calculating all items' Cronbach's Alpha. Table 1 gives the Cronbach's Alpha value for each of the six dimensions of FIRO-B. The result showed that all the values are above the accepted 0.70.

Validity of FIRO

The validity of FIRO was assessed with reproducibility and scalability, which was based on Guttman scale (1950). Guttman (1950) and Menzel (1953) have developed two coefficients respectively. The accepted level for coefficient of reproducibility and coefficient of scalability were suggested by Guttman (1950) as above 0.90 and Menzel (1953) as somewhere between 0.60 and 0.65 respectively. The calculation method for coefficient of reproducibility and coefficient of scalability was showed in the following equations.

$$C.R. = 1 - \frac{Errors}{Total\ \text{Re}\,sponses}$$

$$C.S. = 1 - \frac{Errors}{Maximum\ Errors}$$

The coefficients of reproducibility and coefficients of scalability are depicted in Tables 2 and 3. The results showed that all of the reproducibility coefficients, are above the recommended 0.85 (Guttman 1944). As for scalability test, all of our coefficients were above the suggested 0.60 level, thus signifying good scalability for our instrument.

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[1] http://www.cnnic.net.cn/index/0E/00/11/index.htm

Table 2. Coefficient of Reproducibility for FIRO		
Construct	Coefficient of Reproducibility	Recommended value
EI	0.92	>=0.85
WI	0.92	>=0.85
EC	0.93	>=0.85
WC	0.93	>=0.85
EA	0.90	>=0.85
WA	0.87	>=0.85
Average	0.91	>=0.85

Table 3. Coefficient of Scalability for FIRO		
Construct	Coefficient of Scalability	Recommended value
EI	0.74	>=0.60
WI	0.80	>=0.60
EC	0.75	>=0.60
WC	0.76	>=0.60
EA	0.76	>=0.60
WA	0.65	>=0.60
Average	0.74	>=0.60

Table 4. One-way ANOVA of FIRO on VC Participation			
Construct	DV	F	Sig.
EI	BOI	2.783	.003**
	BGI	7.351	.000**
WI	BOI	2.033	.033*
	BGI	2.778	.003**
EC	BOI	.752	.661
	BGI	3.053	.001***
WC	BOI	2.360	.012*
	BGI	2.280	.016*
EA	BOI	1.719	.080
	BGI	3.610	.000***
WA	BOI	2.119	.025*
	BGI	2.769	.003*

*significant at .05 level **significant at 0.01 level *** significant at 0.001 level

Test of FIRO on VC behavior

The six dimensions of FIRO's effect on VC behavior were tested by ANOVA. The score of each dimension was first recoded into high and low, and then followed by an ANOVA test. The dependent variables of FIRO are BOI and BGI. Table 4 reported the ANOVA results of VC behavior.

Based on the findings depicted in Table 4, 10 out of 12 hypotheses were found to be significant. Table 5 summarized the supported hypotheses in our FIRO model.

Table 5 Supported Relationships

Hypotheses	Relationships	Supported or Not
1	EI→BOI	Yes
2	EI→BGI	Yes
3	WI→BOI	Yes
4	WI→BGI	Yes
5	EC→BOI	Not supported
6	EC→BGI	Yes
7	WC→BOI	Yes
8	WC→BGI	Yes
9	EA→BOI	Not supported
10	EA→BGI	Yes
11	WA→BOI	Yes
12	WA→BGI	Yes

Discussions and Implications

Discussions

The three dimensions of FIRO are validated to influence people's participation in VCs significantly. Previous studies have pointed out that factors such as sense of community, sense of attachment (Blanchard et al. 2004), sense of belonging (Bressler et al. 2000; Rheingold 2000; Teo et al. 2003; Wang et al. 2004b), pursuit of power, fame (Nguyen et al. 2006; Rheingold 2000; Wang et al. 2004b; Wasko et al. 2005), status (Rheingold 2000), and emotional feelings (Bakardjieva 2003) are the reasons people participate in VCs. However, none of these studies offers a systematic explanation for VC participation. The results of FIRO in this paper not only confirm the factors identified in previous studies, but also link these factors together to provide a systematic conceptual framework for these factors.

Inclusion

The distinction of expressed and wanted inclusion as antecedents of VC participation behavior also contributes to knowledge of VC studies. Previous studies have only pointed out that inclusion, or sense of belonging, or sense of attachment, or sense of community is a factor that motivates VC participation, but they have not differentiated the two dimensions of inclusion, that is, inclusion fulfilled through initiating behavior toward others and through receiving behavior from others.

The significance of wanted and expressed inclusion's effect on BOI and BGI is that people scoring higher in wanted inclusion tend to obtain and give more information to fulfill their inclusion need, which can explain a series typical VC behavior such as posting to gain fame (Rheingold 2000; Wasko et al. 2005).

Control

All variables except expressed control are found to have a significant effect on BOI. This statement implied that members who have a higher need for expressed control will seek to give information frequently which is consist with the report from Nguyen et al. (2006). The reason is that control of or power over others can be manifest through influencing others' behaviors and thoughts by giving information. Similarly, members scoring higher on wanted control are also satisfied by the information they obtain in VCs, which has a persuasive effect on their thoughts and behavior. Members scoring higher on wanted control will also give information more frequently when they want to get persuasive information to influence on their behavior and thoughts.

The reason that expressed control has a significant effect on BGI but not on BOI may be because people with a higher need to control others cannot be satisfied simply through obtaining information.

The past literature on VC studies rarely addresses the topic of control. Few studies have noticed the relationship between VC behavior and members' psychological needs for power. This study can doubtless serve as a starting point for further exploration of members' need for control in VC participation.

Affect

Three hypotheses are significant for the affection dimension, as follows: expressed affection has an effect on BGI; and wanted affection has an effect on BOI and BGI. These hypotheses imply that members scoring higher on expressed affection give information more frequently than those scoring lower, and members scoring higher on wanted affection obtain and give information more frequently than those scoring lower.

The non-significance effect of expressed affection on BOI may be due to several factors. First, the content of all the three communities is not relationship focused, and not many people will post their emotional needs, and people with a higher need for expressed affection thus have no particular interest to obtain information. Second, BOI can not satisfy the needs of people with a higher need for expressed inclusion. Merely obtaining information may be too passive and not interactive enough for those members with a strong need to actively show their closeness toward other members.

Currently, VC studies seldom touch the topic of affection's effect on VC participation, let alone the distinction between the wanted and expressed affection. Empirical studies that test this type of relationships are also limited. However, some previous studies are in agreement with the conclusion in this paper (Bakardjieva 2003; Burrows et al. 2000; Suzuki et al. 2004).

The result also showed that factors influence members' behavior to give information and behavior to obtain information is different. Though, wanted inclusion, expressed inclusion, wanted affection, and wanted control all significantly influence members' behavior to obtain information and behavior to give information, expressed control only significantly influence their behavior to give information. This finding is interesting and worthy further investigation.

Implications

The implications to researchers are that interpersonal relationship theories could effectively explain why people participate in VC activities. The conclusion in this study can serve as a starting point for future research to investigate the interpersonal relationship as a motivation to participate in VCs.

The implication to VC organizer can be viewed from three levels-the strategic level, the design level and the activity level. Members participate in VCs because they want to establish interpersonal relationships with others have strategic implications for VC organizers who are developing or want to develop VCs. A VC may have a mission other than relationship building, but it has to take relationship building into consideration to keep the sustainability of the community.

The design level consideration refers to functions that can be built into the overall framework of the VC software. Functions that can promote interactions among members can be designed into VC software structure to develop personal relationships. For instance, some VCs provide chat functions so that members can interact both publicly and privately; this helps members to communicate more and establish personal relationships. Some VCs provide a friend list in the members' profiles so that members can feel a sense of intimacy with other members.

The activity level consideration refers to the management issues associated with the topics in VCs. To facilitate relationship building, VC organizers can initiate theme activities periodically to foster interactions among members so that relationships can be established. Once relationships are established, members' attachment toward the VC will be higher and they will not easily leave the community. This kind of activity should be provided often to keep the community fresh.

Limitations

The first limitation of this paper is the cross-sectional survey of data collection, thus making it difficulty to observe the process by which the VC participation develops. The second limitation of this dissertation lies in the sample. There are thousands of members in one VC but only a fraction of them online at a given time; thus, the response rate is hard to estimate. The third limitation of this paper is the data analysis. Due to the limited space, the interaction effect of VCs on VC participation can't be reported here.

References

Bagozzi, R.P., and Dholakia, U.M. "Intentional social action in virtual communities," *Journal of Interactive Marketing* (16:2) 2002, pp 2-21.

Bakardjieva, M. "Virtual togetherness: An everyday-life perspective," *Media, Culture & Society* (25:3), May 2003, p 291.

Bandura, A. "Self-efficacy mechanism in human agency," *American Psychologist* (37) 1982, pp 122-147.

Bandura, A. *Social foundations of thought and action: a social cognitive theory* Prentice-Hall, Englewood Cliffs, N.J., 1986, pp. xiii, 617 p.

Blanchard, A.L., and Markus, L.M. "The Experienced "Sense" of a Virtual Community: Characteristics and Processes," *Database for Advances in Information Systems* (35:1) 2004, p 65.

Brazelton, J., and Gorry, A.G. "Creating a knowledge-sharing community: If you build it will they come?," *Association for Computing Machinery. Communications of the ACM* (46:2) 2003, p 23.

Bressler, S.E., and Grantham, C.E. *Communities of commerce: building internet business communities to accelerate growth, minimize risk, and increase customer loyalty* McGraw Hill, New York, 2000, pp. x, 324 p.

Burrows, R., Nettleton, S., Pleace, N., Loader, B., and Muncer, S. "virtual community Care? Social Policy and the Emergence of Computer Mediated Social Support," *Information, Communication & Society* (3:1) 2000, pp 95-121.

Carter, D. "Living in virtual communities: an ethnography of human relationships in cyberspace," Routledge, 2005, pp. 148 - 167.

Christie, C.A., and Azzam, T. "What's All the Talk About? Examining EVALTALK, an Evaluation Listserv," *The American Journal of Evaluation* (25:2) 2004, pp 219-234.

Davis, F.D. "Perceived Usefulness, Perceived Ease Of Use, And User Acceptance of Information Technology," *MIS Quarterly* (13:3) 1989, pp 319-340.

Dholakia, U.M., Bagozzi, R.P., and Pearo, L.K. "A social influence model of consumer participation in network- and small-group-based virtual communities," *International Journal of Research in Marketing* (21:3) 2004, pp 241-263.

Di Marco, N.J. "SUPERVISOR-SUBORDINATE LIFE-STYLE AND INTERPERSONAL NEED COMPATIBILITIES AS DETERMINANTS OF SUBORDINATE'S ATTITUDES TOWARD THE SUPERVISOR," *Academy of Management Journal* (17:3) 1974, p 575.

Fisher, S.G., Macrosson, W.D.K., and Walker, C.A. "FIRO-B: the power of love and the love of power," *Psychological Reports*), Feb 1995, pp 195-206.

Furnham, A. "The fakeability of the 16 PF, Myers-Briggs and FIRO-B personality measures," *Personality and Individual Differences* (11:7) 1990, pp 711-716.

Furnham, A. "The FIRO-B, the Learning Style Questionnaire, and the Five-Factor Model," *Journal of Social Behavior & Personality* (11:2), June 1996, pp 285-299.

Guttman, L. "A Basis for Scaling Qualitative Data," *American Sociological Review* (9:2), April 1944, pp 139-150.

Guttman, L. "The Basis for Scalogram Analysis," in: *Studies in Social Psychology in World War II: Measurement and Prediction,* S.A. Stouffer (ed.), Princeton University Press, N. J.: Princeton, 1950, pp. 60-90.

Hewett, T.T., and O'Brien, G.E. "The Effects of Work Organization, Leadership Style, and Member Compatibility upon the Productivity of Small Groups Working on a Manipulative Task," *Organizational behavior and human performance* (11:2), APR 1974, p 283.

Hill, R.E. "Managing interpersonal conflict in project teams," *Sloan Management Review (pre-1986)* (18:2), Winter 1977, p 45.

Hurley, J.R. "Does FIRO-B Relate Better to Interpersonal or Intrapersonal Behavior?," *Journal of Clinical Psychology* (46:4) 1990, pp 454-460.

Ilgen, D.R., and O'Brien, G. "LEADER-MEMBER RELATIONS IN SMALL GROUPS," *Organizational Behavior and Human Performance* (12:3) 1974, p 335.

Kollock, P. "The Economics of Online Cooperation: Gifts and Public Goods in Cyberspace," in: *Communities in cyberspace,* M.A. Smith and P. Kollock (eds.), Routledge, London; New York, 1999, pp. x, 323 p.

Leimeister, J.M., Ebner, W., and Krcmar, H. "Design, Implementation, and Evaluation of Trust-Supporting Components in Virtual Communities for Patients," *Journal of Management Information Systems* (21:4) 2005, pp 101-136.

Limayem, M., and Hirt, S.G. "Force of Habit and Information Systems Usage: Theory and Initial Validation," *Journal of the Association for Information Systems* (4) 2003, pp 65-97.

McKee, H. ""YOUR VIEWS SHOWED TRUE IGNORANCE!!!": (Mis)Communication in an online interracial discussion forum," *Computers and Composition* (19:4) 2002, pp 411-434.

Menzel, H. "A New Coefficient for Scalogram Analysis," *The Public Opinion Quarterly* (17:2), Summer 1953, pp 268-280.

Munoz, C.L. "The effect of interpersonal influence within virtual communities," Auburn University, United States -- Alabama, 2003.

Nguyen, L., Torlina, L., Peszynski, K., and Corbitt, B. "Power relations in virtual communities: An ethnographic study," *Electronic Commerce Research* (6:1) 2006, pp 21-37.

Nip, J.Y.M. "The relationship between online and offline communities: The case of the Queer Sisters," *Media, Culture & Society* (26:3), May 2004, p 409.

Papacharissi, Z. "The presentation of self in virtual life: Characteristics of personal home pages," *Journalism and Mass Communication Quarterly* (79:3) 2002, pp 643-660.

Preece, J., Nonnecke, B., and Andrews, D. "The top five reasons for lurking: improving community experiences for everyone," *Computers in Human Behavior* (20:2) 2004, pp 201-223.

Rheingold, H. *The virtual community : homesteading on the electronic frontier* Addison-Wesley Pub. Co., Reading, Mass., 1993, pp. viii, 325 p.

Rheingold, H. *The virtual community: homesteading on the electronic frontier*, (Rev. ed.) MIT Press, Cambridge, Mass., 2000, pp. xxxii, 447 p.

Ridings, C.M., and David, G. "Virtual Community Attraction: Why People Hang out Online," *Journal of Computer-Mediated Communications* (10:1) 2004, p Article 4.

Ridings, C.M., Gefen, D., and Arinze, B. "Some antecedents and effects of trust in virtual communities," *The Journal of Strategic Information Systems* (11:3-4) 2002, pp 271-295.

Schlenker, B.R. "Identity and self-identification," in: *The Self and social life,* B.R. Schlenker (ed.), McGraw-Hill, New York, 1985, pp. 15-99.

Schutz, W.C. *The interpersonal underworld* Science & Behavior Books, Palo Alto, Calif.,, 1966, pp. xi, 242 p.

Smith, P.B., and Linton, M.J. "GROUP COMPOSITION AND CHANGES IN SELF-ACTUALIZATION IN T-GROUPS," *Human Relations* (28:9) 1975, p 811.

Stanton, J.M., and Rogelberg, S.G. "Using Internet/Intranet Web pages to collect organizational research data," *Organizational Research Methods* (4:3) 2001, pp 200-217.

Straub, D., Limayem, M., and Karahanna-Evaristo, E. "Measuring system usage: Implications for IS theory testing," *Management Science* (41:8) 1995, pp 1328-1341.

Suzuki, L.K., and Calzo, J.P. "The search for peer advice in cyberspace: An examination of online teen bulletin boards about health and sexuality," *Applied Developmental Psychology* (25) 2004, pp 685–698.

Tajfel, H., and Turner, J.C. "The social identity theory of intergroup behavior," in: *Psychology of intergroup relations,* W.G. Austin and S. Worchel (eds.), Nelson-Hall Publishers, Chicago, 1986, pp. 7-24.

Teo, H.-H., Chan, H.-C., Wei, K.-K., and Zhang, Z. "Evaluating information accessibility and community adaptivity features for sustaining virtual learning communities," *International Journal of Human-Computer Studies* (59:5) 2003, pp 671-697.

Wang, Y., and Fesenmaier, D.R. "Assessing Motivation of Contribution in Online Communities: An Empirical Investigation of an Online Travel Community," *Electronic Markets* (13:1), January 2003, pp 33-45.

Wang, Y., and Fesenmaier, D.R. "Modeling Participation in an Online Travel Community," *Journal of Travel Research* (42:3), Feb 2004a, p 261.

Wang, Y., and Fesenmaier, D.R. "Towards understanding members' general participation in and active contribution to an online travel community," *Tourism Management* (25:6) 2004b, pp 709-722.

Wasko, M.M., and Faraj, S. ""It is what one does": why people participate and help others in electronic communities of practice," *The Journal of Strategic Information Systems* (9:2-3) 2000, pp 155-173.

Wasko, M.M., and Faraj, S. "Why should I Share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice1," *MIS Quarterly* (29:1), Mar 2005, pp 35-57.