

Developing the Commitment to Virtual Community: The Balanced Effects of Cognition and Affect

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ABSTRACT

A virtual community (VC) of committed members is of great strategic value to online firms and vendors owing to its ability to attract and retain members. However, online firms and vendors find it difficult to instill commitment among their VC members. Therefore, this study examines the mechanism of customer commitment formation in a relationship-cum-interest based VC. By understanding the mechanism of customer commitment formation in a VC, online firms and vendors can enhance customer commitment to the VC. Using the theory of reasoned action, this study finds that encouraging participation among customers is the springboard for customer commitment to the VC. However, customer participation should be balanced with a proper mix of cognition and affect enhancing aspects, particularly those aspects that arouse customers' interests and encourages relationship building among them. Online firms and vendors would thus benefit by encouraging personal relationships among their VC participants.

Keywords: community information systems; cognition and affect; computer-mediated communication; customer commitment; electronic commerce; human/computer interaction; user behavior; user attitudes; virtual community

INTRODUCTION

A Virtual Community is a community of people with common interest or shared purpose, whose interactions are governed by policies in the form of tacit assumptions, rituals, protocols, rules and laws and who use computer systems to support and mediate social interaction and to facilitate a sense of togetherness (Preece, 2000). Traditionally, VCs have acted as a vir-

tual meeting place for people to share interests, build relationships, create fantasies or conduct transactions (Armstrong & Hagel, 1996). Many people join such communities to fulfill their communication and social needs. The ability of a VC to attract and retain members has also attracted attention of online firms and vendors (Zingale & Arndt, 2001) who find the VC useful for developing deeper and broader relationships

with their customers. For example, online firms and vendors can easily disseminate product related information, help their customers in troubleshooting and streamline the complaints and returns processes through a VC. Apart from providing better customer service, VCs can also be useful in product development, in advertising and sales, in gauging demand for products and in increasing barriers to entry for the competitors (Holmstrom, 2001). Thus, VCs could be of a great strategic value to the online firms and vendors. However, reaping such benefits from a VC is possible only when the customers are committed to the VC.

Although, a traditional VC (i.e., a non-commercial VC) attracts a large number of people who become committed to the VC, it has been found that online firms and vendors fail to instill significant commitment among their customers through a VC (Andrews, 2001). One of the reasons for such low commitment could be that the commercial goals of online firms and vendors do not match the goals of their customers. Understanding the mechanism behind commitment formation in traditional VCs would help online firms and vendors in addressing those aspects that motivate the customers to become committed to the VC. However, there is hardly any empirical research that studies the mechanism of customer commitment formation to the VC.

Commitment to a VC is characterized by the member's helping behavior and active participation (intense interaction) in the activities of the VC, based on a strong psychological attachment to the VC. Therefore, commitment to VC can be studied from the perspective of human behavior. Most of the studies in information systems (IS) study human (or user) behavior from the perspective of the theory of reasoned action (TRA) and its derivatives, such as the technology adoption model (TAM). These theories, however, address only the cognitive aspects of human beliefs and behavior and do not consider the role of affect (e.g., customer emotion or feelings). One of the reasons for neglecting the role of affect may be that the software or IS under study (such as Word or

Excel) is cognitive in nature. As the nature of IS are evolving to also include the affective aspects (e.g., chatting software), IS researchers are also beginning to consider the importance of affect in influencing customer attitude and behavior. For example, Venkatesh (1999) considered the sequential role of affect on IS user attitude via cognition. As a VC has both cognitive (e.g., communication) and affective (e.g., enjoyment) aspects, affect may play an important role in influencing customer commitment to the VC. Since our study is related to customer behavior, we will study the balanced role (as against sequential role) of cognition and affect, as advocated by consumer behavior researchers (Batra & Ahtola, 1990).

In view of the above discussion, the aim of this study is to examine customer commitment formation in a VC from the perspective of balanced cognition and affect. In this study, we examine two specific research questions. (1) *What are the cognitive and affective antecedents of customer attitude toward participation in the VC?* (2) *How does attitude toward participation in the VC influence customer commitment to the VC?* Understanding the mechanism underlying commitment formation will help online firms and vendors in enhancing customer commitment to the VC.

The rest of the article is organized as follows: we briefly review the evidence regarding commitment formation in a VC, followed by the theory of reasoned action and its application to our study. This is followed by the research model and hypothesis section. In the research methodology section we discuss about the VC which is empirically examined in our study, the data collection, analysis and results. Finally, we discuss the findings and their implications to theory and practice and conclude with a summary of contributions of this study.

THEORETICAL BACKGROUND

Virtual Community and Commitment Formation

The central purpose of a VC may range from mere enjoyment (fantasy) to information

or knowledge sharing, building relationships or conducting transactions (Armstrong & Hagel, 1996). Most VCs fulfill one or more of these purposes. Particularly, VCs are known for their relationship building characteristic (Hagel & Armstrong, 1997).

The interaction among members in a VC is a springboard for members to develop relationships and become emotionally attached to the VC. Several studies (Blanchard & Markus, 2004; Maloney-Krichmar & Preece, 2005) have reported that members develop some sort of emotional attachment or obligation to the VC. This phenomenon is particularly exhibited in those VCs, which serve noncommercial purposes (such as health issues and gardening). According to Hiltz and Wellman (1997), when members interact over a period of time with sufficient feelings they become addicted to the VC (Rheingold, 1993). This addiction is an indication of members' commitment to the VC. According to Blanchard and Markus (2004), the members' attachment to the VC is related both to their activity level and the benefits they obtain from the VC. For example, participants of an online health VC report that the information, social support and empathy they obtain from the VC helps them to cope with their illness (Preece, 2000). This feeling of empathy and support from other VC members is an indication of members' obligation or commitment to the VC. Obligation is a deeper level of commitment, where a member feels the need to "give back" to the VC.

Commitment to a relationship has been studied widely in the marketing studies. Relationship commitment is defined as the belief of an exchange partner to warrant maximum efforts at maintaining the relationship. In other words, the committed party believes that the relationship is worth working on to ensure that it endures indefinitely (Morgan & Hunt, 1994). Commitment has three components, namely an input component, an attitudinal component and a temporal dimension (Gundlach, Achrol, & Mentzer, 1995). Input component refers to an affirmative action taken by one party that creates a self-interest stake in the relationship

and demonstrates something more than a mere promise. Attitudinal component signifies an enduring intention of the parties to develop and maintain a stable long-term relationship. This could be recognized as members' commitment to go beyond their prescribed roles and perform above the call of duty. Existence of a committed relationship implies acting instinctively for each other's benefit, which is possible when parties share goals, values and an affective attachment. The temporal dimension highlights the fact that commitment is something only over a long-term, that is, the inputs and attitudes brought to the relationship must reveal consistency over time. Therefore, we define commitment to a VC as the member's helping behavior and active participation in the VC.

Theory of Reasoned Action

The theory of reasoned action (TRA) is a widely-studied model from social psychology, which is concerned with the determinants of consciously intended behaviors (Fishbein & Ajzen, 1975). TRA links beliefs, attitudes, intentions and behaviors. Beliefs influence one's overall attitude about an object. This, in turn, guides the individual's intentions, which influence behaviors regarding the subject. TRA can provide the basic framework for understanding the members' commitment to a VC. However, for two reasons, application of TRA is slightly different in our study. First, commitment to a VC is a natural outcome of a member's participation in the VC. Here, the term "natural outcome" means that members do not necessarily intend to become committed to the VC through their participation. On the other hand, an intended behavior (e.g., purchasing a product) is preceded by an intention of performing that behavior (e.g., intention to purchase). Second, commitment formation takes place among members who are already participating in the VC. This means that the outcome of attitude toward participation in the VC would be commitment to the VC. Therefore, we propose the direct influence of attitude on behavior rather than through behavioral intention. This modification is supported by attitude-behavior theory

(Fazio, Powell, & Williams, 1989). According to Fazio et al. (1989), influence of attitude on behavior is strong if the attitude is based on direct experience, or it is readily accessible from memory if based on past experience. As the VC members already have direct experience of participation, the likely outcome of their positive attitude toward participation in the VC would be commitment to the VC.

Determinants of Members' Attitude Toward VC Based on TRA

IS studies have examined many types of beliefs which may determine an individual's attitude. Notable among such beliefs are perceived usefulness and perceived ease of use (Davis, 1989). We use these beliefs in studying members' attitude toward participation in the VC. Usefulness of a VC refers to the degree to which an individual believes that interaction in a VC is useful for fulfilling those purposes. Usefulness of a VC can be of two types, namely, functional usefulness and social usefulness. Functional usefulness refers to the benefits related to functional, utilitarian or physical performance of a product or a service. In case of a VC, such functional benefits would be sharing information, sharing interests and/or knowledge. Social usefulness refers to the benefits related to the social standing one obtains in being a part of the VC, such as recognition and social approval from other VC members. Ease of use refers to the degree to which an individual believes that using a particular system would be free of physical and mental effort. We use system quality to represent the ease of using a VC (McKinney, Yoon, & Zahedi, 2002). System quality is the basic component of any information system and represents the effort a member needs to put forth for participating in the VC.

Usefulness and ease of use represent the cognitive aspect of human decision making. Studies in consumer behavior (Batra & Ahtola, 1990) and social psychology (Zajonc, 1980) also consider the affective aspects of human decision-making in studying attitude formation, which represent the feelings side of consciousness (Oliver, 1997). From the affective perspec-

tive, we consider pleasure and arousal. Pleasure and arousal allow for a greater range of positive emotions as compared to only joy, happiness and interest in other emotion models (Oliver, 1997). As members experience enjoyment in interacting with other members of the VC (Hiltz & Wellman, 1997; Rheingold, 1993) affect can represent the emotional experience of a member from such interaction in the VC.

RESEARCH MODEL AND HYPOTHESIS

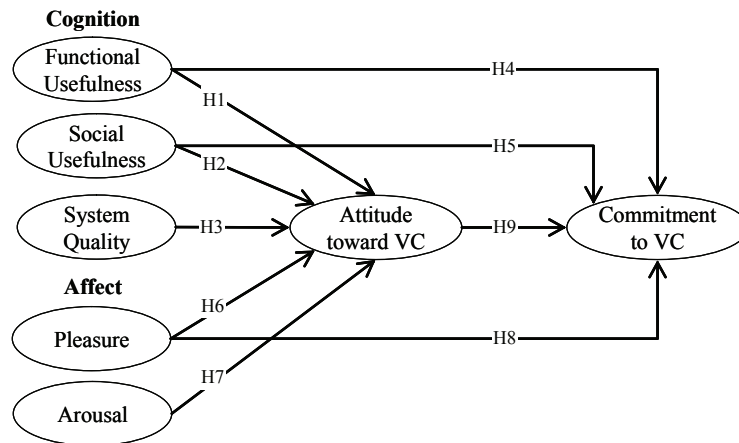
Research Model

Based on the above discussion, we developed a research model presented in Figure 1. We consider both the cognitive (functional usefulness, social usefulness and system quality) and the affective (pleasure and arousal) determinants of a member's attitude toward interaction in the VC. Cognition differs from affect in that cognition refers to a thought process or evaluation of the attributes of the attitude object, whereas affect is an emotion associated with the attitude object.

Attitude toward a VC is an overall evaluation or judgment of the VC based on the members' cognitive and affective beliefs regarding interaction in the VC. Attitude is distinct from affect as it is evaluative or judgmental in nature and contains both the cognitive and affective elements (Allen, Machleit, & Kleine, 1992; Batra & Ahtola, 1990). Affect, on the other hand, comprises a class of mental phenomena uniquely characterized by a consciously experienced subjective feeling state, commonly accompanied by emotions (Westbrook, 1987).

The outcome of a positive attitude toward interaction is commitment to the VC. Different members interact in the VC at different levels, ranging from merely lurking to being very active participants. Commitment to the VC is characterized by the members' helping behavior and active participation (intense interaction) in the activities of the VC based on a strong psychological attachment to the VC. Commitment to the VC can be, therefore, considered

Figure 1. Research model



as the behavioral outcome of attitude toward interaction in the VC.

Hypothesis

As discussed earlier, usefulness of a VC is of two types, functional usefulness and social usefulness. Functional usefulness of a VC includes gathering information, sharing knowledge and sharing interests. Social usefulness of a VC includes the approval, recognition and respect one receives from being a member of the VC. VCs also provide the benefit of forming relationships with its members. Numerous studies (e.g., Braithwaite, Waldron, & Finn, 1999; Preece, 2000) indicate that the online support communities provide important opportunities for learning, information sharing, social interaction and support (such as esteem support). According to TAM, usefulness and ease of use influence attitude toward the behavior in question. Also, according to the cost-benefit paradigm of behavioral decision theory (Johnson & Payne, 1985), an individual's choice among various decision-making strategies is dependent on the cognitive trade-off between the effort required to employ the strategy (i.e., of ease of use) and the quality (i.e., usefulness) of the resulting decision. Hence:

H1: Perceived functional usefulness of the VC is positively related to attitude toward VC.

H2: Perceived social usefulness of the VC is positively related to attitude toward VC.

System quality refers to the Web site's performance in delivering information. Good system quality enhances the ease of use of the system. Members prefer Web sites that are simple in design, faster to load and easier to use (Reichheld & Scheffer, 2000). Previous studies (Maloney-Krichmar & Preece, 2005) indicate that the most important technical concern for the VC members is to have a reliable means of communication. Especially when members are committed to the VC, they become uneasy in case of any malfunctioning (such as server breakdown) in the system (Blanchard & Markus, 2004). Hence:

H3: Perceived system quality of the VC is positively related to attitude toward VC.

Apart from the indirect influence of cognition on behavior through attitude, cognition can have a direct influence on behavior (Bagozzi,

1982; Triandis, 1977). As commitment to VC is a natural outcome of participation in the VC, we propose that cognitive beliefs about participation in the VC would also directly influence commitment to VC. A study of a sports VC conducted by Blanchard and Markus (2004) indicated that the members experienced various levels of obligation to the VC. Some of the reasons the members identified for such obligation towards the VC were the recognition from other members, identification of themselves and others and giving and receiving of informational support. All of these reasons describe perceived usefulness of the VC. However, we do not hypothesize the influence of system quality (ease of use) on commitment. Evidence (see Maloney-Krichmar & Preece, 2005) indicates that even with moderate system quality, committed members participate actively in the VC. For example, the kneeboard health VC as discussed by Maloney-Krichmar and Preece (2005) has very active discussions indicating commitment among the members to the VC. However, the Web site is not very user-friendly. Hence:

H4: Perceived functional usefulness of the VC is positively related to commitment to VC.

H5: Perceived social usefulness of the VC is positively related to commitment to VC.

Pleasure refers to the degree to which a person feels good, joyful or happy in the situation (Mehrabian & Russell, 1974). Pleasure represents the feelings of the member about interacting with other VC members. Members interact informally, inquire about, and seek and receive suggestions from one another. Thus, they feel happy in interacting with other members in the VC. Also, members feel happy in forming relationships with other members. The positive perception of pleasure in the VC would, therefore, enhance the member's attitude toward participating in the VC. Donovan and Rossiter (1982) showed that affect has a substantial impact on the customer's emotional evaluation and judgment (attitude) of the service

environment. This relationship has been supported by previous research (Batra & Ahtola, 1990; Haddock & Zanna, 1999). Hence:

H6: Perceived pleasure in the VC is positively related to attitude toward VC.

Arousal refers to the degree to which a person feels excited, stimulated, alert or active in the situation (Mehrabian & Russell, 1974). Arousal represents the degree to which a member feels excited about interacting with other VC members. Members may feel aroused to interact in the VC depending on the type of interaction in the VC or the environment of the VC. Usually, members become stimulated to interact because of interesting discussions in the VC. This relationship has been supported by previous research (Haddock & Zanna, 1999), which proposes affect as an important predictor of attitude. Affect has also been proven to have a substantial impact on the consumer's emotional evaluation (attitude) of the service environment (Donovan & Rossiter, 1982; Donovan, Rossiter, Marcoolyn, & Nesdale, 1994). Hence:

H7: Perceived arousal in the VC is positively related to attitude toward VC.

Affect may also have a direct influence on commitment to the VC. According to Allen et al. (1992), emotions can be better predictors of behavior than attitude, when the behavior in question has become habitual. If the behavior has become habitual, then it is no longer under volitional control. Rather, it is relatively independent of attitudes, although it may not be devoid of emotion. As the members become habituated toward participation in the VC, they begin to feel a sense of commitment or obligation to the VC (Blanchard & Markus, 2004). In an empirical study of the effect of pleasure and arousal on actual shopping behavior in retail settings, Donovan and Rossiter (1994) found pleasure to be a significant predictor of the shopping behavior. However, arousal was found to vary in its effects. Usually the environment of a VC consists of a series of discussion threads

on various topics. Such environment may not arouse a customer to become committed to the VC. However, one may be inspired by the interactions or discussion topics in the VC and may start interacting with other members of the VC. In other words, the role of arousal is limited to influencing one's attitude toward interaction in the VC. Therefore, the relationship of arousal to commitment was not hypothesized in this research. Based on the pleasure experienced, the members may approach the VC with a desire to stay in, explore, interact or enhance the environment or avoid the VC by leaving it, lurking, stopping communication with others or hindering the performance and satisfaction of the VC. Hence:

H8: Perceived pleasure in the VC is positively related to commitment to VC.

As discussed earlier, commitment to VC is not an intended behavior. The intended behavior is to participate in the VC. A committed behavior is characterized by the active participation and helping behavior of the members in the VC. Since the members are already participating in the VC, they may become committed to VC activities in the course of such interaction. In situations where past experience and direct experience plays a significant role in determining behavior, attitude influences behavior directly rather than through behavioral intention (Fazio et al., 1989). Therefore, the direct influence of attitude to behavior has been hypothesized in this research. Hence:

H9: Attitude toward the VC is positively related to commitment to the VC.

RESEARCH METHODOLOGY

There are different types of VCs on the Web, which fulfill one or more of the fantasy, transaction, relationships and interest needs of their members (Armstrong & Hagel, 1996). VCs of fantasy (e.g., *activeworlds.com*) are not useful for a meaningful and mature communication. In VCs of transaction (e.g., *eBay.com*) participation among members is usually

for a short term and is usually restricted to purchases. Therefore, to understand the factors that influence commitment to the VC, we studied a relationship-cum-interest based VC. The reason for choosing a relationship-cum-interest based VC is that most of the VCs which are successful in terms of instilling commitment among its members are either relationship based or interest based or a mixture of the two. A brief description of the VC examined (*Uree.com*) is provided in Appendix A. *Uree.com* is primarily a VC of relationship and to some extent a VC of interest also. The relationship part is to invite discussion among mothers and interest part is that it caters to baby care needs of mothers. *Uree.com* also incorporates an online store, thus fulfilling the transaction needs of its members.

Data Collection

The empirical data for the study were collected from the Web site of *Uree.com* for two weeks. We publicized the online survey with a banner at the home page of *Uree.com*. To ensure that only the members of *Uree.com* participated in the survey, we asked the respondents to indicate all the forums they participate in. To encourage participation in the survey, we offered US\$5 to \$200 to randomly chosen respondents.

We received a total of 275 valid responses. The descriptive statistics of the respondent's characteristics for *Uree.com* are shown in Table 1. Almost all the members in *Uree.com* are women (mostly housewives). The mean age of the members of *Uree.com* is 30.43 years and the mean usage experience is 1.27 years. Non-response bias was assessed by comparing the sample of VC members with the database of registered VC members at *Uree.com*. T-tests showed that the sample of VC members and the population of registered VC members do not differ significantly in terms of age and Internet experience. A Mann-Whitney test revealed no significant difference in gender ratio between the sample of VC members and the population of the registered VC members.

Table 1. Descriptive statistics of the respondent's characteristics

ITEM	ATTRIBUTES	URII.COM		
		TOTAL	%	MEAN (S.D.)
GENDER	Male	7	2.55%	
	Female	268	97.45%	
AGE	<20	1	0.36%	30.43 (3.47)
	20-30	149	54.18%	
	30-40	118	42.91%	
	40-50	3	1.09%	
	>50	0	0.00%	
	Not Answered	4	1.45%	
PROFESSION	Housewife	189	68.73%	
	Professional	21	7.64%	
	Employed	34	12.36%	
	Self-employed	8	2.91%	
	Other	19	6.91%	
	Not Answered	4	1.45%	
USAGE EXPERIENCE	< 1 year	143	52.00%	1.27 (0.63)
	1 - 2 years	105	38.18%	
	> 2 years	27	9.82%	
REASONS FOR USING VC	Fulfilling interests / hobby	270	98.18%	
	Performing transactions	45	16.36%	
	Having fun by interacting with others	93	33.82%	
	Forming relationships with the community members	17	6.18%	
Total respondents		275	100.00%	

Instrument Development

We developed the survey instrument (Appendix B) by adopting the existing validated scales wherever possible or adapting them to the current context, whenever required. The items for functional usefulness were adapted from Dodds, Monroe and Grewal (1991). The items for social usefulness were adapted from Sweeney and Soutar (2001). The items for system quality were adapted from McKinney et al. (2002). The items for pleasure and arousal were adopted from Mehrabian and Russell

(1974). The items for attitude were adopted from Ajzen (2001), although two items, namely, worthless-valuable and enjoyable-unenjoyable, were omitted. This is because worthless-valuable is not suitable in the context of VCs and the enjoyable-unenjoyable item overlaps with the pleasure item. Commitment to VC was developed with items from various sources including Garbarino and Johnson (1999) and Morgan and Hunt (1994). One item was self-developed so as to make measures more accurate as defined by Gundlach et al. (1995). We measured the

variables on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Online survey at Urii.com was conducted using a Korean survey instrument because the pilot study site for Urii.com was located in Korea. First, the English survey instrument was developed and distributed to 4 graduate students, 15 Ph.D. research scholars and 3 IS staff (all Ph.D.) for obtaining feedback on face and content validity, length of the instrument, format of the scales, context and question ambiguity. The respondents were also asked to identify the factors they felt relevant but not present in the questionnaire. After incorporating the feedback into the questionnaire, a pilot test was conducted to examine the data for completeness of response, reliability and construct validity. This English survey instrument was then translated into Korean. As this could introduce a risk of language bias (Heijden, 2002), a double back translation of the measures was conducted. The English survey instrument was translated into Korean by two IS (Ph.D.) staff independently. The best translation (of items) was then chosen from these two Korean instruments by an independent person who was not aware of the original instruments. This translation was then back translated into English by another independent person and the back-translated instrument was then compared with the original English instrument for consistency. As there were no inconsistencies, so the survey instrument was selected.

DATA ANALYSIS AND RESULTS

We carried out data analysis in accordance with the two-stage methodology using LISREL as proposed by Anderson and Gerbing (1988). The first step in the data analysis was to establish the convergent validity and discriminant validity of the constructs. We tested the measurement model using Confirmatory Factor Analysis (CFA). In the second step, the structural model was examined based on the validated measurement model.

Confirmatory Factor Analysis

First, we checked for unidimensionality. Unidimensionality means that for each measurement item, there should be one and only one underlying construct, that is, the variance shared by items is not related to an unspecified latent variable. According to standard LISREL methodology, we revised the measurement model by dropping items, one at a time, which shared a high degree of residual variance with other items (Gefen, Straub, & Boudreau, 2000). The test results indicate that PLEA3 violated unidimensionality and dropping it would drop chi-square significantly. Therefore, we dropped PLEA3. After dropping PLEA3, the CFA showed good model fit.

Next, we assessed the convergent validity and discriminant validity of the constructs. Convergent validity is the degree to which the items of a given construct measure the same underlying latent variable. It is assessed on the following criteria: (a) Individual item lambda coefficients should be greater than 0.70 and each path loading should be greater than twice its standard error; (b) a significant t-statistic should be obtained for each path (standardized path loadings which are indicators of the degree of association between the underlying latent factor and each item should be significant) (Gefen et al., 2000); (c) The composite reliabilities (CR) for each construct should be greater than 0.7; and (d) The average variance extracted (AVE) for each factor must exceed 50% (Fornell & Larcker, 1981). As shown in Table 2, all standardized path coefficients (except FUSE1, AROU1, AROU3, COMM1 and COMM3) in the case of Urii.com are greater than 0.7. FUSE1, AROU1, AROU3 and COMM1 were marginally below 0.7. COMM3 was very low, hence it was dropped from the model. The individual path loadings are all greater than twice their standard error. The t-statistic was significant for all the items. The CR for each construct was greater than 0.7 and the AVE for each construct was greater than 0.5. Thus convergent validity was adequately established.

Table 2. Results of convergent validity testing

ITEMS	PATH LOADING	STD. LOADING	T-VALUE	STD. ERROR	MEAS. ERROR	AVE	CR
FUSE1	0.66	0.68	9.90	0.056	0.54	0.61	0.82
FUSE2	0.95	0.87	5.27	0.058	0.25		
FUSE3	0.96	0.78	8.19	0.068	0.40		
SUSE1	0.81	0.74	10.16	0.059	0.45	0.72	0.89
SUSE2	1.08	0.92	4.63	0.058	0.16		
SUSE3	1.06	0.88	6.35	0.060	0.22		
SYSQ1	1.00	0.73	10.30	0.075	0.47	0.68	0.89
SYSQ2	1.05	0.85	8.27	0.062	0.27		
SYSQ3	1.21	0.87	7.72	0.069	0.25		
SYSQ4	1.00	0.84	8.66	0.060	0.30		
PLEA1	0.90	0.84	8.22	0.055	0.30	0.68	0.86
PLEA2	0.87	0.87	7.15	0.050	0.25		
PLEA4	0.83	0.76	9.77	0.059	0.43		
AROU1	0.59	0.66	9.74	0.053	0.57	0.51	0.76
AROU2	0.81	0.80	6.97	0.056	0.36		
AROU3	0.70	0.68	9.45	0.059	0.53		
ATTI1	0.91	0.80	9.59	0.058	0.36	0.68	0.89
ATTI2	0.97	0.89	7.21	0.053	0.21		
ATTI3	0.87	0.82	9.28	0.054	0.33		
ATTI4	0.90	0.78	9.88	0.060	0.39		
COMM1	0.75	0.65	10.69	0.066	0.58	0.66	0.85
COMM2	1.15	0.92	4.08	0.063	0.16		
COMM4	1.03	0.85	6.84	0.062	0.27		

Discriminant validity is the degree to which the measures of two constructs are empirically distinct. Discriminant validity is established if the square root of a construct's AVE is larger than its correlations with any other construct (Fornell & Lacker, 1981). As shown in Table 3, the square root of AVE for each construct exceeded the correlations between that construct and other constructs. Discriminant validity can also be assessed using a process of constrained confirmatory factor analysis (Anderson & Gerbing, 1988).

We conducted χ^2 difference tests for every pair of constructs. A significant χ^2 statistic indicates discriminant validity. All χ^2 statistics were significant, indicating that the measurement model was significantly better than other alternative models (obtained by combining pairs of latent constructs). Thus, the questions used in this study have discriminant validity.

Hypothesis Testing

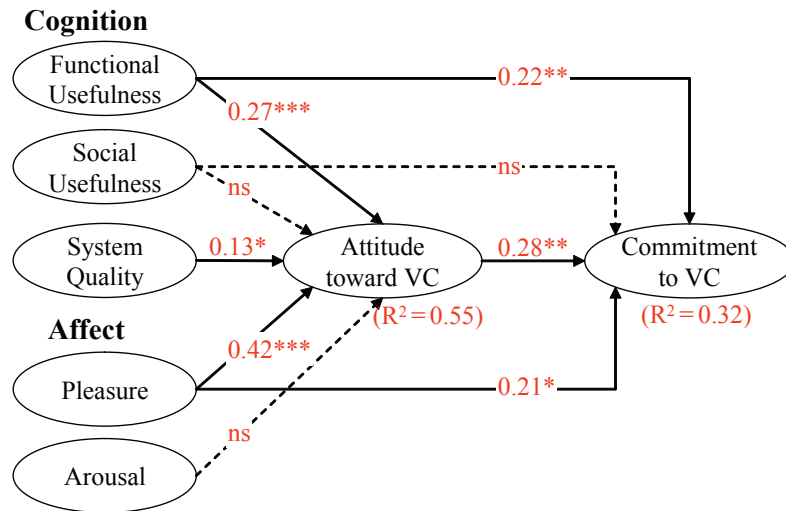
We then examined the structural model of Urii.com using LISREL (Figure 2). The fit

Table 3. Intercorrelations between latent variables

CONSTRUCT	Mean	SD	FUSE	SUSE	SYSQ	PLEA	AROU	ATTI	COMM
FUSE	5.81	0.94	0.78						
SUSE	4.15	1.04	0.26	0.84					
SYSQ	4.73	1.13	0.35	0.19	0.82				
PLEA	5.30	0.91	0.43	0.30	0.45	0.82			
AROU	4.90	0.80	0.29	0.33	0.39	0.61	0.71		
ATTI	5.64	0.96	0.50	0.23	0.42	0.63	0.49	0.82	
COMM	5.76	1.05	0.45	0.19	0.34	0.48	0.36	0.51	0.77

-FUSE: Functional Usefulness, SUSE: Social Usefulness, SYSQ: System Quality, PLEA: Pleasure, AROU: Arousal, ATTI: Attitude, COMM: Commitment

Figure 2. Results of hypothesis testing using LISREL



Note: ns = not significant, * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$
 Urii.com: Normed $\chi^2 = 1.82$, GFI=0.89, AGFI=0.86, NFI=0.96, NNFI=0.97, CFI=0.98, RMSEA=0.055, Std. RMR=0.066

indices suggest an excellent fit (Figure 2). The hypothesis testing results indicate that functional usefulness, system quality and pleasure significantly influence attitude toward VC ($R^2 = 55\%$) and functional usefulness, pleasure and attitude significantly influence customer commitment to VC ($R^2 = 32\%$).

DISCUSSION AND IMPLICATIONS

Discussion of Findings

We examined a relationship-cum-interest based VC to understand the mechanism behind commitment formation in a VC. We found the cognition and affect related factors that influ-

ence customer attitude toward participation in the VC. The results support the significant role of affect in predicting attitude toward behavior. The effect of functional usefulness and system quality on attitude is significant and is consistent with the TAM model. The effect of pleasure is significant in predicting attitude and is consistent with the previous studies (Batra & Ahtola, 1990) which studies the role of affect in predicting attitude. To further confirm the role of affect, we examined the separate effects of cognition and affect on attitude and commitment. The variance explained in attitude (cognition: 48%; affect: 51%) and commitment (cognition: 31%; affect: 27%) is almost the same for both cognition and affect. The findings suggest that affect plays an equally important role in predicting customer behavior especially for those products or services which are affective in nature.

The influence of social usefulness on attitude was not significant. This finding is surprising as it is commonly understood that people join a VC to build friendships. In Urii.com, members participate primarily for sharing their common interests (98.18%) as shown in Table 1. The relationship building is a consequence of interaction, not the prime motivator for members to participate in the VC. Members come together with other motivations of having fun, transaction or sharing common interests with one another. In the course of interaction, they may form relationships. The insignificant influence of social usefulness on attitude may also be due to the effect of gender, which is known to influence the dynamics of a VC. Several studies report that women communicate to develop rapport and affinity with other members (Tannen, 1994; Weatherall, 1998). Men, on the other hand, communicate to establish social standing, controlling the conversation and/or exchanging information with other members. Therefore, men are more likely to seek recognition and approval from others and prove themselves to be more knowledgeable and important. Since most of the members (97.45%) in Urii.com are women who are less likely to seek social approval, gender bias maybe one of the reasons for insignificant influence of

social usefulness on members' attitude toward participation in the VC.

The influence of arousal on attitude was also not significant. The concept of arousal is related to the stimulation that a member feels toward interacting in the VC. A member may be stimulated to interact if the environment of the VC is stimulating (e.g., an avatar based VC), or if the Web site holds interesting discussions. The environment of a VC of relationship and interest usually consists of a thread of postings by members as in a bulletin board, and therefore, may not be very stimulating. Although, Urii.com definitely holds interesting discussions for a niche audience, its members do not perceive it to be a sufficient reason to interact in the VC.

We also examined the mechanism of commitment formation in the VC. Cognition (functional usefulness) and affect (pleasure) influenced commitment to VC both directly and indirectly (through attitude). The insignificant influence of social usefulness on commitment might be due to it being female dominated (97.45%), as women are more rapport building (Gefen & Ridings, 2005) and less inclined to seek approval or recognition from others (Tannen, 1994; Weatherall, 1998). Women communicate to create rapport and affinity more than men do and their communication tends to be oriented toward creating a group where all the participants are involved (Tanner, 1994; Weatherall, 1998). Men, on the other hand, seek more social approval and recognition from other members and less of personal relationships.

Limitations and Future Research

We acknowledge several limitations of our study. First, there are different types of VC on the Web and we examined only one of very specific types (interest-cum-relationship based). This may affect generalizability of the results. Therefore, the balanced cognition-affect framework needs to be validated across different types of VCs for establishing generalizability. Second, the VC examined was female dominated. Errors may creep in the analysis due to gender as it plays a significant role in influencing the dynamics of participation in the VC (Gefen

& Ridings, 2005). Particularly, men seek more recognition and social approval than personal relationships. Therefore, based on previous research (Gefen & Ridings, 2005), we assert that in a male dominated VC, social usefulness may significantly influence commitment, while pleasure might not significantly influence commitment. And in a mixed gender VC, both social usefulness and pleasure may significantly affect customer commitment. This is also natural, as in mixed gender communities men tend to seek recognition to show off to their counterparts and women tend to seek more personal relationships with other members. Thus, the role of gender in affecting customer commitment is worth examining in future research. A mixed gender VC may be more useful for studying customer commitment to the VC. Future studies may examine the current balanced cognition-affect model in a similar type of mixed-gender and/or male dominated VC for understanding the effect of gender on VC commitment. Last, this research did not examine the benefits an online vendor can obtain from the community of committed members (such as enhanced store image and member loyalty). As relationship commitment is central to relationship marketing (Morgan & Hunt, 1994), this research can be extended to examine the role of relationship commitment in enhancing a member's loyalty to the Web site using a VC.

Implications for Theory and Practice

This research has several implications for theory. We examined the role of affect on members' attitude toward participation in the VC. Previous studies (Venkatesh, 1999) have examined the sequential role of affect on attitude via cognition. However, most of the studies in consumer behavior (Batra & Ahtola, 1990) argue for a balanced role of cognition and affect. The balanced framework of cognition and affect on attitude showed that cognition and affect explain almost equal variance in attitude and commitment to VC. This framework will, therefore, be useful in studying consumer behavior toward products and services (especially services because of their

experiential nature) involving both cognitive and affective decisions.

Our study also showed the importance of affect in predicting member's attitude toward behavior. Affect has been considered an important source of attitude in consumer behavior and social psychology. However, it has been given a little attention in IS research. Our research showed that the inclusion of affect improved the prediction of attitude toward participation in the VC.

Our study also provides some support to previous studies (Gefen & Ridings, 2005) on the role of gender on group dynamics, although it is not the main finding of this study. In the female dominated VCs, the members are inclined to create rapport and affinity or personal relationships and there is less inclination toward seeking approval or recognition from others.

This research has several implications for practice. This research offers insight on how online firms and vendors can improve customer commitment to the VC. Although, VCs are successful in building commitment among members toward the VC, one of the major reasons why many commercial VCs fail to obtain significant commitment of customers toward their VC is goal incongruity (Andrews, 2001), that is, the goals of customers do not match the commercial goals of online firms and vendors. Customers primarily come to such sites to obtain product information or purchasing products. Their primary interest in the VC might be to know more about product or service offered by the vendor and/or after sales service. Therefore, although the traffic at such commercial VCs is high, the members are fleeting in nature. Our study offers suggestions about the elements that online firms and vendors can incorporate in their VCs to foster commitment among their customers. In a nutshell, discussions that promote personal relationships among customers should be encouraged. Online firms and vendors should encourage long-term participation among customers and provide some autonomy to the customers to carry out personal discussions in the VC. Kodak's Web site, for example, features an embedded discus-

sion board that serves as a gathering place for discussion of photographs, visual storytelling and interactive demos for learning photography. Thus, it addresses the affect aspect and at the same time keeps customers' interest intact.

CONCLUSION

The aim of this study was to examine the mechanism of customer commitment formation in the VC from the balanced cognition and affect perspective. Encouraging participation among members is the springboard for customer commitment and it should be balanced by a proper mix of cognition and affect enhancing aspects, particularly those aspects which are interest arousing and relationship building. By incorporating elements of relationship and interests, commercial VC organizers can foster commitment among VC members. A VC of committed members can help the online firms and vendors to obtain strategic advantage from the VC. Organizations seeking to enhance commitment to their VCs would be well advised to not only support but also promote the development of personal relationships among their VC participants.

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APPENDIX A. A BRIEF NOTE ON URUI.COM

Urii.com: Urii.com is an online store (Urii shopping mall) of IDR International Incorporated (www.withidr.com), which specializes in the art of parenting. IDR International Inc. was formed as an effort of Maeil Dairy Industry Co. Ltd. (www2.maeil.com/eng/index.php) to go online. Maeil Dairy Industry Ltd was established in 1969 as a joint venture between the government and the private sector. IDR International Inc. began its online operations from Feb. 2000 in Infant rearing, infant/kids food, dairy and other food products. As its online commerce site it opened its online store for e-commerce, Urii.com. Urii.com focuses on issues related to baby and mom.

Urii.com has around 400,000 registered members which mainly consist of women between 20s and 50s. The Web site of Urii.com has 5 sections. The first section is the community section which is divided into several forums based on same hobby, same age, same residential area and toy community, kids clothes community, nutrition/health community and education community. The second section is an expert section. Here expositions/lectures from experts are provided. There is an expert column and consultation sub-section. Questions regarding parenting are answered in the expert community section. The third section is mom and baby and consists of information provided by the company (Urii.com) regarding pregnancy, prenatal care, delivery, and infant health/nutrition. The fourth section is a shopping mall for selling products like milk, infant food (~ 2 yrs. old), toys, and products for pregnant women. The fifth section is Urii style, where information is provided by the company on infant/kids clothes and so on.

APPENDIX B. ENGLISH SURVEY INSTRUMENT

Scale Items		Source
Functional Usefulness		
FUSE1	The VC of this Web site is useful for gathering information.	Dodds et al., 1991
FUSE2	The VC of this Web site is useful for exchanging knowledge with other VC members	Dodds et al., 1991
FUSE3	The VC of this Web site is useful for sharing common interests with other VC members	Dodds et al., 1991
Social Usefulness		
SUSE1	Interacting in the VC of this Web site helps me to gain respect from other VC members	Sweeney & Soutar, 2001
SUSE2	Interacting in the VC of this Web site improves the way I am perceived by the other VC members	Sweeney & Soutar, 2002
SUSE3	Interacting in the VC of this Web site helps me in forming warm relationships with other VC members	Sweeney & Soutar, 2001
System Quality		
SYSQ1	The VC of this Web site quickly loads all the text and graphics	McKinney et al., 2002
SYSQ2	The VC of this Web site is easy to use	McKinney et al., 2002
SYSQ3	The VC of this Web site is easy to navigate	McKinney et al., 2002
SYSQ4	The VC of this Web site is well designed for users	McKinney et al., 2002
Pleasure - Interaction in the VC of this Web site makes me feel		
PLEA1	Unhappy – Happy	Mehrabian & Russell, 1974
PLEA2	Annoyed – Pleased	Mehrabian & Russell, 1974
PLEA3	Unsatisfied – Satisfied	Mehrabian & Russell, 1974
PLEA4	Discontented -- Contented	Mehrabian & Russell, 1974
Arousal - Interaction in the VC of this Web site makes me feel		
AROU1	Calm – Excited	Mehrabian & Russell, 1974
AROU2	‘Relaxed – Stimulated	Mehrabian & Russell, 1974
AROU3	Unaroused – Aroused	Mehrabian & Russell, 1974

-FUSE: Functional Usefulness, SUSE: Social Usefulness, SYSQ: System Quality, PLEA: Pleasure, AROU: Arousal, ATTI: Attitude, COMM: Commitment

APPENDIX B. ENGLISH SURVEY INSTRUMENT (CONT.)

Attitude - How would you evaluate interacting in the VC of this Web site?		
ATTI1	Bad – Good	Ajzen, 2001
ATTI2	Dislikable – Likable	Ajzen, 2001
ATTI3	Harmful – Beneficial	Ajzen, 2001
ATTI4	Unpleasant – Pleasant	Ajzen, 2001
Commitment		
COMM1	I am proud to belong to the VC of this Web site	Garbarino & Johnson, 1995
COMM2	I am very committed to my relationship with the VC of this Web site	Morgan & Hunt, 1994
COMM3	I actively contribute to the VC of this Web site	Self-Developed
COMM4	I care about the long-term success of the VC of this Web site	Garbarino & Johnson, 1995

-FUSE: Functional Usefulness, SUSE: Social Usefulness, SYSQ: System Quality, PLEA: Pleasure, AROU: Arousal, ATTI: Attitude, COMM: Commitment

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