Summer 2008

A Social Relational Model for Firm-Hosted Virtual Communities: The Role of Firm Support

Tung Duy Cu
Old Dominion University

A SOCIAL RELATIONAL MODEL FOR FIRM-HOSTED

VIRTUAL COMMUNITIES: THE ROLE OF FIRM SUPPORT

By

Tung Duy Cu
MBA April 1999, Asian Institute of Technology

A Dissertation Submitted to the Faculty of Old Dominion University in Partial
Fulfillment of the Requirement for the Degree of

DOCTOR OF PHILOSOPHY

BUSINESS ADMINISTRATION

OLD DOMINION UNIVERSITY
August 2008

Approved by:

Sylvia Hudgins (PhD Program Director)

Yuping Liu (Member)

Edward Markowski (Member)

ABSTRACT

A SOCIAL RELATIONAL MODEL FOR FIRM-HOSTED VIRTUAL COMMUNITIES: THE ROLE OF FIRM SUPPORT

Tung Duy Cu
Old Dominion University, 2008
Chairman: Dr. Kiran W. Karande

Since the ease of participation and the usefulness of information provided by online groups continue to proliferate in the World Wide Web, people increasingly participate in different forms of virtual community (i.e. online forums, bulletin boards, message boards, chat rooms) for their purposes, such as solving problems, building social relationships, sharing passions, developing professionals.

Accordingly, an increasing number of companies are now attempting to exploit this phenomenon by hosting and supporting their own online community for commercial and non-commercial purposes, such as building relationships with their customers, getting their feedback, strengthening the brand, and reducing customer service costs by enabling customer-to-customer problem solving (e.g. Wiertz and Ruyter, 2007). Typical examples of these firm-hosted online communities are Dell Community, Lego® Message Boards, Manhattan GMAT Forums, Ford Forums, iPod (Apple) Discussions, etc.

The purpose of this study is to examine factors such as consumers' feelings (sense of community, trust) and the host firm's supports that motivate consumers to exhibit their voluntary contributions and continue their membership in a firm-hosted online community.

This dissertation conceptualizes a relational social model in which sense of virtual community and virtual community loyalty are hypothesized to influence customer trust in the host firm and customer citizenship performance (loyalty intention to the host firm, voluntary participation, voluntary cooperation), respectively. Three components of the firm's support to the virtual community – support for member communication, content enhancement and recognition for contribution – are theorized to moderate the relationships between sense of virtual community and trust, and between virtual community loyalty and customer citizenship performance.

The overall finding that emerges from the dissertation is that customer citizenship performance is impacted by a customer's sense of virtual community, loyalty to the community, and customer trust in the host firm. Of the three firm support variables, only support for member communication moderates the relationship between virtual community loyalty and voluntary participation.

The dissertation makes four theoretical and managerial contributions. First, the paper presents an interdisciplinary review of extant literature on firm-hosted virtual communities and builds on it to develop a conceptualization of relationships between customer-customer social outcomes and customer-business relational outcomes. Second, while previous research has predominantly focused on firm support as an antecedent of trust in customer-business dyadic relationships (Porter, 2004), this research investigates the role of firm support as a moderator of social relational relationships. Third, the study extends the notion of relationship marketing to include customer-customer relationships which has been forgotten in the marketing literature (Clark & Martin, 1994). The

implication is that the host firm can use customers themselves to build long-term customer relationships, and based on it to maintain and increase the firm's market share. Finally, from a managerial perspective, this study proposes a general framework that can enable companies to better understand some of the key aspects that define and drive loyalty in online communities. Since sense of community is unique to a specific community, this dissertation also illustrates that a virtual community is an inimitable asset which can be used as a strategic tool to build competitive advantage by a firm in an online environment.

ACKNOWLEDGEMENTS

Encouragement and support from parents and relatives are keys to the success of the work. Last but not the least, support, patience and dedication from my lovely wife are the secret of the whole success.

TABLE OF CONTENTS

viii

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Virtual communities (VC) defined as a web of personal relationship in cyberspace (Rheingold, 1993) have recently been a new business model employed to increase customer relation & loyalty (Armstrong & Hagel, 1996). Both web-based and traditional companies have started establishing their own virtual community sites to attract potential customers to their homepages (Kozinets, 1999). For example, Sun's Java center community is the host of many Java language creators, developers and architects from many firms across countries to share their solutions and knowledge and to make significant investments in building and facilitating the communities (Williams and Cothrel 2000). Members of European car clubs (e.g., BMW, Volkswagen) not only meet face-to-face on a regular basis, but also communicate extensively with one another online through e-mail lists, bulletin boards (Brown et al., 2003). Establishing a place to make VC members interact with each other is a powerful way to increase net gain (Hagel & Armstrong, 1997).

From Hagel & Armstrong's manuscript in 1997, marketing researchers and scholars from other disciplines have found more interested in studying virtual communities (Bagozzi & Dholakia, 2002; Dholakia et al, 2004; Muniz & O'guinn, 2001; Porter, 2004; Ridings et al., 2002). Many reasons underlie this interest including virtual community sustain (Teo et al., 2003); VC successful factors (Williams & Cothrel, 2000); the optimal size of a specific VC (Orman, 2006); increasing participation (Bishop, 2006); VC participants' attitudes and behaviors (Nonnecke et al., 2006); factors influencing members' knowledge sharing, learning, and posting behaviors (Chiu et al., 2006; Hsu et al., 2007); technology

acceptance model of a specific VC (Hsu & Lu, 2005); brand building in VC (Muniz & O'Guinn, 2001); relationships among different VC participants (Farquhar & Rowley).

While marketing researchers focus on customer-business relationships and relational outcomes such as loyalty and purchasing intention, researchers from other disciplines interest in member-member relationships and social outcomes such as social capital, knowledge and professionals. There is no empirical research that combines both perspectives to study virtual communities. Moreover, while research on supports by VC members has received more interest in the literature (Ridings et al., 2002), empirical studies in VC have paid insufficient attention to the moderating role of the firm's supports in the context of a virtual community.

The purpose of this research is to develop and estimate a conceptual model of how different aspects of customer-customer social outcomes influence on customer-business relational outcomes under moderating effects of the firm's supports in the context of a virtual community. Specific research questions to be explored include the following:

- Whether social outcomes of customer-customer interactions have positive effects on relational outcomes of business-customer relationship? Or in other words, how trust in the host firm and sense of virtual community mediate the impacts of firm-related supports and VC members-related supports on the community-expected and the firm-expected outcomes?

- How firm-related variables – support for member communication, content enhancement and recognition for contribution – moderate the relationship between customer-customer social outcomes and customer-business relational outcomes?

- How firm-related variables – support for member communication, content enhancement and recognition for contribution – foster consumer trust in the host firm and consumer sense of virtual community?

- How VC member-related variables – perceived member's support and level of involvement – contribution to the creation of sense of virtual community?

Contributions: theoretical and managerial.

This paper makes four theoretical and managerial key contributions. First, the paper presents an interdisciplinary review of extant literature on firm-hosted virtual communities and builds on it to develop a conceptualization of relationships between customer-customer social outcomes and customer-business relational outcomes. Second, while previous research has predominantly focused on firm supports as antecedents of trust in customer-business dyadic relationships (porter, 2004), this paper investigates the role of firm supports as moderators of social relational relationships. Third, the study extends the notion of relationship marketing to include customer-customer relationships which has been forgotten in the marketing literature (Clark & Martin, 1994). The implication is that the host firm can use customers themselves to build long-term customer relationship and bases on it to maintain and increase the firm's market share. Four, this study managerially proposes that the development of a general framework could enable companies to understand better some of the key aspects that define and drive loyalty in online communities. The paper also illustrates that a virtual community is an imitable asset which can be used as a strategic tool to build competitive advantage of the firm in an online environment.

CHAPTER II

LITERATURE REVIEW

This chapter describes a review of the virtual community literature. The chapter begins with the concept and typology of virtual communities. It then presents current theories and multi-discipline perspectives regarding the VC research. Finally, the chapter focuses on main constructs that contribute to the proposed model.

THE CONCEPT OF COMMUNITY

There is a wide variety of community conception. From an anthropological perspective, the traditional community could be defined as a collective of kinship networks, which share a common geographic territory, history, and value system, usually rooted in a common religion (Jones 1997). This perspective primarily focuses on tangible and physical connection.

Within the foundational sociological literature, Hillery (1955) uncovered ninety-four different definitions of community. He suggested that the only common dimension among the definitions was that communities are concerned with people. Lawrence (1995) defined community with three elements: sustained social interaction, standards, and membership. This perspective mainly concentrates on intangible and social connection.

Most scholars would agree that community members have shared understandings, values or purposes (Gusfield 1978), a sense of common character, identity or interest (Fernback & Thompson 1999). Therefore, communities tend to be identified on the basis of

commonality or identification among their members, whether a neighborhood, an occupation, a leisure pursuit, or devotion to a brand (McAlexander et al. 2002).

There is also a lack of agreement about the definition of virtual community. Howard Rheingold is the first to coin the term virtual community and his definition is probably the most frequently quoted one. Rheingold defines virtual communities as "social aggregations that emerge from the Net when enough people carry on public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace" (Rheingold 1993). Moreover, there are a lot of phrases to express a virtual community, such as

- **General terms** – Virtual communities, online communities, Internet communities, computer-mediated communities, electronic communities, and cyber communities.
- **Content, purpose** – Communities of interest, communities of relationship, communities of fantasy, communities of practice, transaction communities, brand communities, consumer communities, and support communities.
- **Small groups** – Tribes, boards, forums, rooms, rings, lists, dungeons, and portals.
- **Network-based** – Arpanet, Usenet, Internet, intranet, email, chat systems, conferencing systems, graphical worlds, electronic auctions, and online payment systems.

These inconsistencies leaded to a debate about the appropriateness of the community concept to describe online groups. According to Watson (1997), most online relations are characterized by a lack of commitment and dedication since people pretend to be a completely different person than in reality. He argued that the inferior communication

exists because social cues like gestures, intonation, and facial expressions are lacking. Thus, the term "virtual" means unreal and insincere.

Another research into computer-mediated communication has shown that it is indeed possible to exchange emotions and build affectionate relationships via computer networks (e.g., Walther 1992, 1995). Online virtual community which unrestrained by time and space can do just about everything people do in real life while leaving our bodies behind (Kim et al., 2004).

The online virtual community is similar to a social community in that it allows for social interaction among its members using the Internet (Hagel and Armstrong, 1997). VC definitions still vary depending on the purpose of VC studies. For example, virtual communities are viewed as consumer groups of varying sizes that meet and interact online for the sake of achieving personal as well as shared goals of their members (Dholakia et al., 2004); Virtual communities can be defined as groups of people with common interests and practices that communicate regularly and for some duration in an organized way over the Internet through a common location or mechanism (Ridings et al., 2002).

In their brand building study, Muniz and O'Guinn (2001) define a VC via three core components or markers of community: (1) consciousness of kind is the intrinsic connection that members feel toward one another, and the collective sense of difference from others not in the community; (2) shared rituals and traditions perpetuate the community's shared history, culture, and consciousness; and (3) a sense of moral

responsibility is a felt sense of duty or obligation to the community as a whole, and to its individual members.

Because community feelings (a sense of community) and behaviors do not always exist among people who interact with each other online, the term virtual community should be reserved for those in which a sense of virtual community (SoVC) has been observed. All others should be referred to as virtual groupings, collectives, or settlements (Blanchard & Markus, 2004). Therefore, according to them, virtual communities are referred to as virtual groupings, collectives, or settlements in which SoVC has been observed.

In short, firm-hosted virtual communities[1] targeted in this study can be defined as firm-hosted online aggregations of customers who collectively co-produce and consume content about a commercial or non-commercial activity that is central to their interest by exchanging intangible resources. These intangible resources can take the form of information, knowledge, socio-emotional support, and the like (Wiertz & Ruyter, 2007).

TRADITIONAL VS. VIRTUAL COMMUNITIES

Unlike traditional community, the online virtual community was established with computer interface among people who have similar interests and experiences (Rheingold, 1993).

On one hand, traditional communities are characterized with social control function, particularly liberating, more mandatory imposed by chance of birth or proximity of residence (Bagozzi & Dholakia 2002). Thus, by nature, there is a common obligation in a traditional community.

---

[1] Synonymous to "Virtual Community" the term "Online Community" can be used.

On the other hand, virtual communities are driven by voluntary choice, pleasure, task-oriented of self rather conformity. VC members have a common interest and much more influence and feelings of connectedness (Blanchard & Markus, 2004).

TYPOLOGY OF VIRTUAL COMMUNITY

In general, online communities have three common dimensions: purpose, platform and structure.

Purpose: communities are distinguished on the basis of the central goal – information exchange, social ties or mixed – for which they are organized. For example, communities of relationships, communities of interest, communities of fantasy, and communities of professionals or practice. Other communities with specific names such as community of ethnicity (Mitra 1999), community of consumption (Kozinets 1999), brand community (McWilliam 2000; Muniz & O'Guinn 2001; McAlexander et al. 2002), tourist community (Wang, Yu & Fessenmaier 2002), and support community (Warisse Turner, Grube & Meyers 2001).

Platform: communities are designed to have synchronous, asynchronous or hybrid communication in various software systems. For example, email lists, asynchronous boards, synchronous chat rooms, text-based or graphical fantasy worlds, game online, electronic auctions or online buying functionalities.

Structure: communities are organized upon six type of structure such as

- Commercial vs. Non-Commercial: whether a VC creates tangible economic value

- Endorsed vs. Non-Endorsed: linked to companies, institutes or initiated by independent customers

- Open System vs. Closed System: access is only limited to a specific group of people or not

- Hybrid vs. purely Virtual: linked to real life communities or not

- Regulated vs. Non-Regulated: strict control or no control at all

- Registered vs. Non-Registered: required information to register

LIST OF VIRTUAL COMMUNITIES

Dell Community Forum (http://www.dellcommunity.com/supportforums/)

ManhattanGMAT Forum (http://www.manhattangmat.com/forums/)

Lego MessageBoard (http://messageboards.lego.com/default.aspx)

Harley Owners Group[2] (http://members.hog.com/)

Microsoft MVP (http://www.microsoft.com/communities/products/default.mspx)

Sun Microsystems Developer Forum (http://forum.java.sun.com/index.jspa)

Tide Message Board (http://www.tide.com/en_US/messageboard/index.jsp)

Amazon.com (http://forums.prosperotechnologies.com/am-custreview)

Kaiser Permanente (http://www.kaiserpermanente.org/)

BabyCenter Community (http://www.babycenter.com/community)

iVillage Message Board (http://www.ivillage.com/messageboards)

Ford Forum (http://www.fordforums.com/forum.php)

Sony Playstation (http://www.station.sony.com/community.vm)

Microsoft Xbox (http://www.xbox.com/en-US/community/forums/)

HP-Compaq Forum (http://forums1.itrc.hp.com/service/forums/home.do)

Palm Forum (http://forums.palm.com/)

AT&T Wireless Forum (http://forums.wireless.att.com/)

Cambell's Community (http://kitchentable-campbells.forums.liveworld.com/index.jspa)

Cisco Netpro Forum (www.cisco.com/go/netpro)

Kraft Foods Message Boards (http://www.kraftfoods.com/kf/Community/)

Apple Discussions (http://discussions.apple.com/index.jspa)

Xbox Forums (http://forums.xbox.com/)

Fourtitude Forums (http://forums.fourtitude.com/)

Nike Discussions (http://forums.nike.com/index.jspa)

Sims Community (http://thesims2.ea.com/community/)

NBC Borads (http://boards.nbc.com/nbc/)

---

[2] Only Harley owner can join this community.

TYPES OF VC MEMBERS

Table 1: Classification of virtual community member

Author	Year	Classifying Dimensions	Member types
Kozinets, Robert	1999	Self-centrality of consumption activity & Social ties to community	Tourist, Mingler, Devotee, Insider
Valck, Kristine	2005	Frequent visits, social involvement, length of membership, supply, discuss and retrieve information	Core members, Conversationalists, Informationalists, Hobbyists, Functionalists, Opportunists
Matchwick, Charla	2002	Exchange orientation & Communal orientation	Lurkers, Personal connectors, Socializers , Transactional community
Blanchard & Markus	2004	Active vs. passive, public vs. private	Leader, Participant, Lurker
Fuller et al.	2007	Social tie, frequent contribution, influent power	Lurker, Poster, Frequent Poster
Cova & Cova	2002	Visibility (occasions, institutions) and invisibility (trend, everyday life)	Adherent or devotee, Participant, Practitioner, Sympathizer

THEORIES

SOCIAL COGNITIVE THEORY

Social Cognitive Theory (SCT) explains psychosocial functioning in terms of triadic reciprocal causation. In this model of reciprocal determinism, behavior, cognitive, and other factors and environmental events operate as interacting determinants that influence each other bidirectionally (Wood & Bandura, 1989). The Social Cognitive Theory argues that a person's behavior is partially shaped and controlled by the influences of social network (i.e., social systems) and the person's cognition (e.g., expectations, beliefs). Because of the bidirectionality of influence, people are both products and producers of their environment.

Social cognitive theory has been utilized in a number of disciplines due to its dynamic nature as it considers human behavior to constantly change (Kock, 2004). It has been applied in business through the analysis of organizational management (Wood and Bandura, 1989), technological innovation adoption (Compeau et al., 1999), and knowledge sharing in virtual communities (Chiu et al., 2006; Hsu et al., 2007). A dynamic environment and diversified relationships in VC have meant that social cognitive theory is a useful theoretical framework to understand human behavior (Ratten & Ratten, 2007).

Chiu et al. (2006) and Hsu et al., (2007) explain the affect of personal cognition (e.g. expectations) on knowledge sharing behavior. Specifically, Chiu et al. (2006) argue that outcome expectations – community-related outcome expectations and personal outcome expectations – can engender knowledge sharing in virtual communities. Hsu et al., (2007) proposed a social cognitive theory (SCT)-based model that includes knowledge sharing

self-efficacy and outcome expectations for personal influences, and multidimensional trusts for environmental influences. They found that self-efficacy has both direct and indirect effects (e.g. via outcome expectations) on knowledge sharing behavior, implying that self-efficacy plays a critical role in guiding individuals' behavior. However, Chiu et al.'s (2006) and Hsu et al.'s (2007) findings are quite different in both direction and magnification.

SOCIAL CAPITAL THEORY

Social capital has been defined as "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet & Ghoshal, 1998). The principle of the Social Capital Theory (SPT) is that social relationships among people can be productive resources (Coleman, 1988). It also suggests that social capital, the network of relationships possessed by an individual or a social network and the set of resources embedded within it, strongly influence the extent to which interpersonal information sharing occurs (Chiu et al., 2006).

Nahapiet and Ghoshal (1998) define social capital with three distinct dimensions: structural (the overall pattern of connections between actors), relational (the kind of personal relationships people have developed with each other through a history of interactions), and cognitive (those resources providing shared representation, interpretations, and systems of meaning among parties). In a more specific definition, Pooley et al. (2005) propose the concept that has three integrated themes: relationships, networks and competencies. By relationships they mean those between individuals

(interpersonal) as well as between groups (intra-group). By networks, they mean concepts such as trust (goodwill), reciprocity (interaction), structure (formal and informal), density (size, number, and complexity), and membership of groups. Competencies refer to the individual's personal resources, which include the individual's self-esteem and self-efficacy. Competence, from a psychological perspective, also refers to the individual's capacity to interact effectively with their environment. Putnam cites two other characteristics of networks that are important. First, flatter or more horizontal networks add to social capital where as vertical or more hierarchical networks detract from it. Second, weak ties in the network such as ties between acquaintances or colleagues in a civic organization contribute more to social capital than do strong ties between kin and intimates. Weak network ties provide the mechanism through which information about an individual's trustworthiness travels to a wide variety of groups.

The current study is based on the premise that VCs are likely to increase social capital because when people have a strong positive attitude toward community – have a motivated, responsible sense of belongingness – they will mobilize their social capital more willingly and effectively (Wellman et al., 2001).

SOCIAL EXCHANGE THEORY

Social Exchange Theory (SET) (Kelly & Thibaut, 1978) is based on the notion that people review and weigh their relationships in terms of costs and rewards and unlike economic exchange, which focuses on economic capital such as goods and money, social exchange focuses on the exchange of social capital such as power and trust. Costs are those elements in the relationship that have negative value to a person and rewards are

those that have positive value to a person. People will strive to minimize costs and maximize rewards and then base the likelihood of developing a relationship with someone on perceived possible outcomes.

Under SET, trust plays a critical role to create and maintain exchange relationships. Moreover, norm of reciprocity builds trust, which in turn is centrally important to social exchange relationships. Blau (1964) implies reciprocity as actions that are contingent on rewarding reactions from others and that cease when these expected reactions are not forthcoming. Therefore, participants in virtual communities expect mutual reciprocity that justifies their expenses in terms of time and effort spent sharing their knowledge. For example, exchange-oriented members are more likely to provide feedback in products or service with expectation of repayment in the future (Mathwick, 2002).

SOCIAL IDENTITY THEORY

According to Social Identity Theory (SIT), people tend to classify themselves and others into various social categories, such as organizational membership, religious affiliation, gender, and age cohort (Tajfel & Turner, 1985). SI serves two functions. First, it cognitively segments and orders the social environment, providing the individual with a systematic means of defining others. Second, social classification enables the individual to locate or define him or herself in the social environment. Social identification, therefore, is the perception of belongingness or connectedness to a group with the result that a person identifies with that group (i.e., I am a member) (Bhattacharya et al., 1995). Specifically, when a person identifies with an organization, he or she perceives "a sense

of oneness with to an organization, where the individual defines him or herself in terms of the organization of which he or she is a member" (Mael and Ashforth, 1992).

Ashforth and Mael (1989) were the first to examine explicitly the role of organizations in people's social identities, conceptualizing the person–organization relationship as organizational identification. They found that social identification stem from the categorization of individuals, the distinctiveness and prestige of the group, the salience of outgroups, and the factors that traditionally are associated with group formation; and social identification leads to activities that are congruent with the identity, support for institutions that embody the identity, stereotypical perceptions of self and others, and outcomes that traditionally are associated with group formation, and it reinforces the antecedents of identification.

Marketing researchers has used SIT to explain relationships between alumni and their alma mater in a university; between members and art museum in a non-profit organization; or between consumer and company in a profit organization. VC research in the marketing literature, however, tends to focus on consumer motivations to participate in VCs rather than customer retention (Mael and Ashforth, 1992). For example, Bagozzi and Dholakia's (2002), using the social psychological model of goal-directed behavior and social identity theory conceptualized participation "we-intentions" as a function of social determinants (i.e., subjective norms, group norms, and social identity) and found that internalization and identification were significant predictors of participation. Dholakia et al. (2004) examined how VC typology moderates consumers' reasons for participating, as well as the strengths of their impact on group norms and social identity.

VC RESEARCH PERSPECTIVES

SOCIAL SCIENCE VIEWS

In this section, virtual community research will be classified into five main perspectives: information system, sociology, psychology, economic and marketing. See Table 2 for a summary of five main perspectives.

Table 2: Five VC research perspectives of social sciences

Perspectives	Main Ideas	Focal Constructs	Authors/Year
Psychology	Emphasizing on human cognitive and affective processes of trust building to develop psychological bonding among group members in the virtual environment	Group cohesion and unity	Hill (1996); Obst et al. (2002); Postmes et al. (2002); Ren et al. (2007)
Information system	Highlighting interactivity, usability (useful contents and IT system quality) and sociability (VC elements involving in social interactions)	Ease of use, usefulness, intention to use the system	Hsu & Lu (2005); Preece (2001); Teo et al. (2003); Wong et al (2005)
Sociology	Focusing on the social structure of the virtual environment and its effect on social processes and outcomes among group members	VC structure, social ties, social capital (network, norms, trust)	Rheingold (1993); Wellman et al. (1996);
Economic	Positing that VC is an economic entity embedded in social environment in which value and resources can be created and increased through members' contribution of information content	VC ROI, membership, content, commerce	Balasubramanian & Mahajan (2001); Cothrel (2000); Hagel & Armstrong (1997)
Marketing	Arguing that communal bonds and interests among VC members drive consumer behaviors to form relationship with the firm (or brand) and to consume products/services	Brand integration, loyalty to the firm, buying decision	Kozinets (1999); Muniz & O'Guinn (2001); Porter (2004)

PSYCHOLOGICAL VIEW

Psychological perspective emphasizes on human cognitive and affective processes of trust building to develop psychological bonding among group members in the virtual environment. There are several lines of research found in the existing literature: social cues, deindividuation (social identification) and sense of community.

The first stream concerns the question whether VCs have enough social characteristics and structure to consider a social-like entity. In the very early stage of VC emergence, social cues research suggested that lack of social cues among communicators in virtual world inhibits social bonding among VC members. However, scholars have recognized that many communication tools have been created to denote VC members' social behaviors such as graphics, textual styles and predetermined language. Eventually, current literature agrees that VCs are socially constructed environments (Porter, 2004; Sproull et al., 2007). The second stream addresses deindividuation effects in VCs. Psychologists use prescriptive theories to distinct the nature of common identity and common bond since these concepts help to make managerial and technological choices that will contribute to the success of VCs and to explain the evolution of VCs (Bergami & Bagozzi, 2000; Postmes et al., 2002). These theorists explore bond-based attachment to community members, which explains community attachment in terms of individuals' bonds with one another; and Identity-based attachment to community as a whole, which explains community attachment in terms of people's identification with a group, or common goal or interest. This stream calls for research on the dynamic and transformation of an individual's attachment from identity-based attachment into bond-based attachment and vice versa (Ren et al., 2007). Finally, the focus of research in social psychology has been conducted around the research questions related to the effects of sense of community (Hill, 1996). Although these studies provide the insight of customer-business relationship since they explain the belonging effect between individual and organization, there has been little known effects of sense of community in online community settings (Obst et al., 2002).

INFORMATION SYSTEMS VIEW

Information system view highlights the importance of interactivity, usability and sociability in which usability describes the nature of human-computer interaction, whereas sociability describes the nature of social interaction in an online community (Preece, 2001).

Sociability and usability determine and measure the success of VCs. Determinants of sociability include obvious measures such as the number of participants in a community, the number of messages per unit of time, members' satisfaction, and some less obvious measures such as amount of reciprocity, the number of on-topic messages, trustworthiness and several others. Measures of usability include numbers of errors, productivity, user satisfaction and others (Preece, 2001).

A parallel stream is the application of technology acceptance model (TAM) that incorporates sociability and usability into VC. TAM basic model includes ease of use and usefulness as primary drivers of VC outcomes and these relationships are mediated by social variables (Hsu & Lu, 2005; Song & Kim, 2006; Teo et al., 2003).

Information system researchers argue that many-to-many communication in VCs helps to reduce information asymmetry since all members can communicate openly with each other (Wong et al., 2005). This type of interaction is supported by peer-to-peer system architecture, where each member of the community is able to interact with all other members. Information system researchers also interest in discussion of knowledge development (Wiert & Ruyter, 2007), online and offline contrast and complementation (Lin, 2007) and information diffusion (Wong et al., 2005).

SOCIOLOGICAL VIEW

Sociological view focuses on the social structure of the virtual environment and its effect on social processes and outcomes among group members. The focus of sociological view is on social capital, social tie and the connection between VC and society.

Does VC increase, decrease, or supplement social capital? The effect of virtual communities on the development of social capital and trust among community members is unclear and requires more empirical investigation. While Blanchard and Horan (1998), Putnam (2000) suggested that VCs decreases social capital, Porter (2004), Wellman et al. (2001) found a significant increase of social capital (e.g. trust) when people interact in VCs. Chiu et al. (2006), Uslaner (2000) concluded that VCs neither destroys nor creates social capital. Pooley et al. (2005) correlated social capital with a psychological construct, sense of community, to argue that a successful VC with observed sense of community would increase social capital since it support individual's connection to the community, which is central to the concept of social capital.

Which type of social ties, weak tie or strong tie, promote social capital in VCs? VCs can be constructed by social ties that result in strong or weak connections among members in the community. Strong ties are created among close friends, family members or groups. In contrast, weak ties are formed by members who are not dependent on each other, emotionally or financially, but still maintain some degree of meaningful or important contact (Wellman et al., 1996).

There are two schools of thought about the mechanism by which social capital should be produced and mobilized. Coleman (1994) and Walker et al. (1997) argued that closure or

density of social relations is the primary component for the generation of social capital since these strong ties facilitates smooth coordination and cooperation from member to member, which reduce uncertainty and maintain trust, authority, and norms. In contrast, Horrigan (2001) who advocate the bridge, structural hole or weaker tie view asserted that social capital can be efficiently produced and maintained under open or loosely coupled networks since they allow the individuals to create and mobilize new social resources.

In general, the effectiveness of a VC structure, in terms of creating social capital would depend on either promoting the existence of weak ties or strong ties (Okoli & Oh, 2007).

How does VCs connect with our real society? Romm et al. (1997) described three types of relationships between virtual communities and society in which membership in virtual communities: (1) as a dependent variable is affected or caused by a series of externally imposed independent variables; (2) as an independent variable that has a series of effects on its immediate environment and (3) as an independent variable which affects society as a whole through changing production systems, national identities, community integration/fragmentation, and personal relationships.

ECONOMIC VIEW

Economic view proposes that VC is an economic entity embedded in social environment in which value and resources can be created and increased through members' contribution of information content (Balasubramanian & Mahajan 2001). In general, these researchers address that outcomes of VCs can have an economic impact due to the quantity and quality of information produced in the community (Gu et al., 2007). There are two approaches to determine the economic value of a VC: total virtual information capital and return on investment (ROI).

In the first view, virtual information capital, which is defined as the body of information formed by the cumulative contributions of, and consumed by, the members of the community, can have an increasing economic return since information does not depreciate with usage (Balasubramanian & Mahajan, 2001). In these communities, members choose to consume and/or contribute in a manner that maximizes their total social-interaction utility which can be defined as the sum of one of the five sources: (1) Focus-related utility is the utility the member receives when adding value to the community through his or her contributions; (2) Consumption utility refers to members obtaining value through direct consumption of the contributions of other community members; (3) Approval utility is concerned with a member's satisfaction that comes when other members consume and approve of the member's own contributions; (4) Moderator-related utility is derived when a third party makes the complaint act easier for the community member and (5) Homeostase utility is based on the notion that people have a basic desire for balance in their lives (Balasubramanian & Mahajan, 2001; Hennig-Thurau et al., 2004).

While utility values in the first approach are derives from member-member interactions, the second approach suggests that ROI of a VC can be determined by the community variables including (1) incremental value which is defined as the difference between the value created by a business with an online community and the estimated value that the business would generate in the absence of a community; (2) community membership including community programs or many-many interactions that produce dynamic values and (3) the rate of conversion defined as the process of driving visiting members to using members to commercial transactions (Cothrel, 2000).

MARKETING VIEW

Marketing researchers argue that communal bonds and interests among VC members drive consumer behaviors to form relationship with the firm (or brand) and to consume products/services. Although VC effects are widely studied by the above disciplines (e.g. information systems, psychology, etc.), empirical studies examining VCs in the marketing literature are still limited. Most studies focus on brand communities, consumer participation in VCs and consumer communal orientation (Bagozzi & Dholakia, 2002; Dholakia et al., 2004; Kozinets, 1999; McAlexander et al., 2002; Muniz & O'Guinn, 2001; Mathwick, 2002).

Brand communities vs. virtual communities. Brand communities are physical-based and, then, extend to the online environment. Muniz and O'Guinn (2001) conceptualized brand communities as (1) non-geographically bound consumption communities (2) based on a network of social relations among brand admirers and (3) commercial or non commercial exchanges. Drawing from sociological and anthropological literature on communities, they also used three constructs – consciousness of kind, presence of shared rituals and traditions, and a sense of moral responsibility – to identify the distinguishing features of brand communities or brand tribes.

Although brand relationship and brand identification have been mentioned in brand community literature (Algesheimer et al. 2005), there are gaps that have implications for the study of firm-hosted virtual communities.

First, impacts of social relational common interests among customers on customer-marketer relationship in VCs have not been studied. Instead, researchers have focused on consumer integration in a brand community (McAlexander et al., 2002).

Second, brand researchers studied the impact of communal events (brandfests) with face-to-face interactions on consumer relationships with marketers, products, brands and other consumers (McAlexander et al., 2002). Brandfests are costly and time-consuming for marketers, and these festivals mainly attract brand admirers. Thus, the impacts of marketer's efforts on customer propensity to brand loyalty are somewhat clearly defined, while more research is needed to better understand the role of these supports in VCs.

Third, while online brand communities are the celebration of the brand and the affiliation with other brand enthusiasts (e.g. Algesheimer et al. 2005), firm-hosted online communities for service support focus on peer-to-peer problem solving and information exchange (Wiertz & Ruyter, 2007). Thus, the question is whether findings from brand literature would hold for a broader consumer base in an online environment.

Marketing researchers should shift to virtual communal marketing rather than simply apply the notions of relationship marketing in a VC environment. Virtual communities enhance relationship marketing primarily in two ways. First, they provide the opportunity for interactivity and the building of a consumer relevant community. Secondly, by assessing the nature of such communities, organizers can meet the needs of the community participants better (Szmigin et al., 2005).

Fournier, Dobscha, and Mick (1998) argue that relationship marketing is powerful in theory but troubled in practice. They extensively criticize the attempts of marketers to implement relationship marketing and build partnerships with consumers without understanding how customer trust factors into a relationship. One problem is that firms may attempt partnering initiatives with all customers, without regard to the customers' relational orientations. In such an online environment as VCs, Mathwick (2002) argues that customer relational norms have an important role to determine if a consumer is loyal to membership in communal programs of the host firm.

Kozinet proposed a new term "virtual communal marketing" as the revised framework of relationship marketing in environs of retribalized 'cyberspace' virtual communities of consumption. He also suggested that the new framework should be constructed through naturalistic observation of online consumers in social interaction, as well as by the principles of network economies. However, Kozinets' qualitative approach renders his findings more descriptive than explanatory.

Therefore, marketing research in online communities suggests that communal variables in VC such as sense of virtual community and social identification are candidates to explain why customers stay in a VC and why they voluntarily contribute to the host firm. While social identification is focal in a series of research to explain customer participation in VCs or a customer's identification with an organization (Ahearne et al., (2005); Bagozzi & Dholakia, 2002; Bhattacharya & Sen, (2003); Dholakia et al., 2004;), sense of virtual community is forgotten by marketing researchers to explain a VC

member's long-term attachment with an online community and their favorable behaviors toward the host firm.

In summary, studying VC is complicated and requires multi & combination approach to study it. However, too few researches which combined different theories have been done (Chiu et al., 2006; Tan et al., 2001). Building on research in various fields of study (e.g., marketing, information system, psychology and sociology), the current study attempts to integrate these disciplines into a conceptualized model. Moreover, analyzing the VC literature based on five different aspects is helpful in the way that gaps in the literature can be evaluated exhaustedly. However, to be more deeply on marketing perspective, it is needed to have an analysis of literature in term of business-customer and customer-customer focuses.

CUSTOMER-BUSINESS VS. CUSTOMER-CUSTOMER FOCUS

Two main streams of research are found in the existing literature: customer-customer focus and customer-business focus. See Table 3 for the comparison between the two main streams.

While customer-customer studies mainly centralize on member-member relationships to create social benefits such as social capital, knowledge and professionals, customer-business researches deriving from relationship marketing and customer relationship management concern about customer-business relationships to create mutual benefits such as consumption knowledge, loyalty and profits.

Table 3: Comparison between Customer-customer vs. Customer-business focus

Perspectives	Customer-Customer	Business-Customer
Main Ideas	Focusing on member-member relationships to create social benefits such as social capital, knowledge and professionals	Focusing on firm-customer relationships to create mutual benefits such as consumption knowledge, loyalty and profits
Outcomes	Customer-Customer social benefits, social capital	Customer-Business relational benefits, profit
Performance	VC loyalty, participation rate, contribution of knowledge	Loyalty intention, customer citizenship behaviors
Relationship constructs	Representing interpersonal connections or bonds among customers Major variables: sense of community, interpersonal trust	Reflecting relationships between a customer and the firm Major variables: customer trusting belief, social identification with firm
Antecedents	Focusing on usability and sociability Variables: Supports from VC members	Focusing on customer and firm characteristics and/or behaviors Variables: Supports by firm

CUSTOMER-CUSTOMER VIEW

A review of VC literature emphasizing customer-customer focus has been suggested three main schools of thought: (1) knowledge sharing in VC contexts; (2) success factors and sustainability of VCs and (3) Design and implementation of VCs.

Knowledge sharing in VC contexts. A growing literature addresses issues surrounding knowledge contribution in VC contexts from a variety of social-psychological perspectives. For instance, research by Garton et al. (1997) reveals that knowledge contributions in Usenet (an Internet-based worldwide network of discussion groups) tend to be dominated by a small number of members, in contrast to the more equal level of participation in face-to-face interaction.

In studies of online communities of professionals Wasko and Faraj (2005) note that reputation, altruism, generalized reciprocity, and community interest may be important motivations underlying member knowledge contribution.

More recently, a study by Jeppesen and Frederiksen (2006) reports that user experience, recognition from the site, and individual attributes (such as being a hobbyist) tend to positively influence contribution. Chiu et al. (2006) also affirm the influence of social capital and outcome expectancy on an individual's willingness to share knowledge online.

Likewise, in their study of how an identity-based verification in online communities is associated with online knowledge contribution, Ma & Agarwal (2007) theorize that a key driver of knowledge contribution behavior in an online community is the accurate

communication and verification of identity that can, in turn, yield extrinsic benefits such as recognition, and intrinsic benefits such as an amplified sense of self-worth.

Success factors vs. Sustainability. The current literature on success factors generally focuses on the search for methods and models that explain success for and sustainability of VCs and how to maximize it. Research in this stream also reveals a great diversity of factors which influence the success of virtual communities. For example, Leimeister et al. (2004) summarized 32 success factors of virtual communities on the view of both VC operators and members, and subsequently suggested top-ten factors according to their importance for operators and members of virtual communities. Commonly, VC researchers use amount and quality of participation as the primary indicators of success (Cothrel & Williams, 1999).

From a different perspective, sociologists evaluate the success of VCs by measuring level of social capital and construction of sense of community in which a strong sense of community and the ability to identify with the virtual community have also been found to enhance the likelihood of members' contribution and participation in a community (Blanchard & Markus, 2004; Fraering & Minor, 2006; Koh & Kim, 2004; Pooley et al., 2005)

Extant psychological literature examining the success factors of virtual community have largely focused on factors such as trust and identity. Numerous authors have stressed the importance of trust for a virtual community to flourish (Ridings et al., 2002). This is because when members place trust on one another, they are more likely to open up and participate in the community. Moreover, while ensuring the personal privacy of members

through anonymity was suggested as a strategy for the creation of a successful virtual community, it was found that receiving recognition, either in the form of financial reward or status to affirm one's status in the virtual community, also encourage participation in virtual community (Chan et al., 2004).

In fact, E-commerce researchers have long recognized that a web site's structure can significantly influence users' search strategies and performance (Teo et al., 2003). Likewise, Preece's (2001) method is to focus on key elements of sociability and usability to identify and measure the determinants of success for online communities. However, Campbell & Uys (2007) argue that technology can play a key role to support community formation and development in a learning community only when the technology has become an accepted form of communication and is a transparent means of communicating. Moreover, they posit that the influence of culture in such technology-mediated environment is even more important since culture impacts on the ability of the members to develop a shared understanding and ties among subgroup members, based on these cultures can easily emerge.

Design of VCs. The goal of this stream is to examine the role of the technology infrastructure of an online community in facilitating VC outcomes.

While a common theme underlying the research summarized above is that the design of the community is assumed to be given or immutable, this stream of research has manipulated the social-psychological factors underlying knowledge sharing and relationship building, and then, integrated them into the design of the community to promote VC outcomes. For example, Ma & Agarwal (2007) construct a community that

reminds users about the uniqueness of their contribution and find that this feature increases participation significantly. In a study comparing different network-based and small-group-based VCs, such as newsgroups versus web-based chat rooms, Dholakia et al. (2004) found that the structure of these VCs can significantly influence on member participation. Specifically, in the less socially-cohesive network-based virtual communities, purposive values (e.g. information seeking and problem solving) and self-discovery motivate consumers to participate. In the small group-based virtual communities, however, maintaining interpersonal connectivity (e.g. avoiding loneliness) and social enhancement (e.g. status seeking) were shown to motivate consumers to participate.

Adopting an extended technology acceptance model (TAM), Teo et al.'s (2003) experimental study indicates that information accessibility (low vs. high) and community adaptivity (run-time vs. static) had significant effects on the community's perceived usefulness and perceived ease of use from the perspective of the participants. Mediated by sense of belonging, these perceptions in turn had significant effects on participants' intention to use the system. Similarly, Hsu & Lu (2005) proposed effects of social norms and group cohesion as sociable factors and perceived ease of use as a designable factor on member's loyalty toward the online community. Using a mathematic approach, Ziegler & Golbeck (2007) demonstrated that collaborative filtering algorithms can support recommendation systems to determine the correlation between interpersonal trust and interest similarity and then provide an appropriate recommendation for VC members.

In summary, customer-customer perspective only looks at a group of members. It neglects the host firm's behaviors which may influence on the member group. Thus, the customer-customer perspective does not address whether activities of the host firm to support its VC may influence customers' feelings and behaviors; and whether consumers can develop the relationship with the host firm derived from their relationships with other VC members. The current study will answer these questions.

CUSTOMER-BUSINESS VIEW

Unlike the above view, customer-business perspective considers VC a dependent entity or a tool that serves to the objective of the host firm. While customer-customer perspective only focuses on trust among VC members, customer-business view studies trust between VC members and the host firm. Two main streams are emerged in this perspective.

The first school of thoughts, in accordance with the notion of relationship marketing, highlights the importance of building, maintaining and developing customer bonds with all parties such as other customers, intermediaries and the host firm in VCs (Szmigin et al., 2005).

Binodal vs. Multinodal relationship. Binodal studies assume that the host firm is the primary target of consumer trust in VCs and consumer-business quality is the primary driver of customer-business relational outcomes such as loyalty intention or transaction participation. Moreover, although commitment to the host firm has been mentioned (Wiert & Ruyter, 2007), most studies agree that trusting relationship is the most important issue in VC (Gefen, 2000; Porter, 2004).

For example, Gefen (2000) found that both familiarity with an Internet vendor and its processes and trust in the vendor influenced the respondents' intentions to inquire about products, and their intentions to purchase them. More recently, Porter (2004) suggests that a consumer's perception of a marketer's efforts fosters favorable consumer attitudes toward and trust in a marketer that sponsors a virtual community. Furthermore, consumer trust in a marketer is hypothesized to motivate consumers to share information with and grant loyalty to the marketer.

However, these studies limited on understanding binodal consumer-marketer relationship rather than the complex network of relationships among the entire VC membership, since customer relationships with the host firm manifests not only as binodal but also multinodal relationships (Kozinets, 1999).

In contrast to binodal studies, multinodal perspective argues that customer-business outcomes are not only affected by customer-business relationship but also fruited from customer-customer interactions. Multinodal research views that VC is not just a two party business-customer dialogue, but a rich set of relationships and that VC customer-business interaction is secondary to customer-customer interaction (Hagel & Armstrong, 1997; Hagel, 1999).

On a similar vein, Armstrong and Hagel (1996) suggested that firms that wish to participate in these online communities will need to learn how to manage commercial activity in a social online setting. They propose that online communities must be

managed by recognizing their dual roles (i.e., commercial and social) and developing a synergy between them.

For example, both Tan et al. (2001) and Pavlou & Gefen (2004) posited that VC members' trusting relationship with the firm depends on their relationship with other VC participants such as other VC members and intermediary. Their empirical findings confirm that increased level of trust in VC members enhances customer-business trust building, in turn encouraging greater ecommerce participation in light of lower perceived risks and greater perceived benefits of online transactions. However, while Pavlou & Gefen (2004) found a direct effect of consumer trust in the firm on transaction intention, Tan et al.'s (2001) results only highlight the indirect contribution of consumer trust to the outcome.

Although these researchers have explored the interaction pattern and outcomes of customer-marketer relationship, they continue to assume that customers are passive recipients of information rather than active co-producers.

The second stream suggests that due to the ready availability of communication tools and the reduced cost of acquiring and using these tools, customer is likely to shift from traditional information recipients to a new role of information originators (Yadav & Varadarajan, 2005). Two questions emerge in this stream. The first addresses a consumer's motivations underlying his/her behavior as originators or contributors. The second relates to the mechanism to promote quality and quantity of contributions.

Consumer motivations to participate in and contribute to VCs. Bagozzi & Dholakia (2002) found that consumers who want to participate in VCs do so because they anticipate that it will result in positive emotions and evoke a sense of social identification with other community members. Thus, consumers participate in virtual communities because they intend to become an integral part of the social relations of the virtual community.

Continuing Bagozzi & Dholakia's (2002) study, Dholakia et al. (2004) examine how a virtual community's structure affects consumer participation. Their results show that depending on the structure of a virtual community different type of motivators (e.g., perceived values, norms, social identification) can have different effects on consumer's desire to participate in VC topics.

Jeppesen & Frederiksen (2006) and Fuller et al. (2007) investigate a VC member's motivations for participation and innovation in the process of new product development of the host firm. The results indicate that innovative members are likely to be hobbyists in the field in which they innovate. The authors also found that these members do so because they wish to be recognized by the firm hosting the user community. However, unlike Jeppesen & Frederiksen (2006) who state that lead users are the most important contributors to product innovation, Fuller et al. (2007) argue that excitement rather than pure need drives innovation creation.

Mechanism to promote quality vs. quantitative contribution. Wiert & Ruyter (2007) extend a model of social capital based on Wasko and Faraj (2005) to incorporate and contrast the direct impact of commitment to both the online community and the host firm,

as well as reciprocity, on quality and quantity of knowledge contribution. However, they failed to support their hypotheses.

Unlike Wiert & Ruyter (2007), Gu et al. (2007) found that virtual investing-related communities engage in differentiated competition as they face trade-offs between information quantity and quality. This differentiation among these communities, in turn, attracts users with different characteristics. They proposed and validated that the key factor that determines the direction of network externalities is posting quality that conflicts with Wiert & Ruyter's (2007) findings.

Although the above studies emphasize on the role of customers as generators, these researches did not investigate the role of the host firm as a supporter and catalyst participating in the process of generating values in VCs.

Some studies such as Yadav & Varadarajan (2005), Szmigin et al. (2005), Wong et al. (2004) also mentioned customer-customer and customer-business interactions. Brand community researchers also propose similar findings. For example, Yadav & Varadarajan (2005) described a schematic explanation of how enhanced firm-consumer, consumer-consumer, and firm-firm interactivity can be leveraged to create and support business-to-consumer (B2C) and consumer-to-consumer (C2C) e-commerce initiatives. However, their primary focus is to develop a scale to measure interactivity in an ecommerce context rather than presents an exploratory model to explain the relationship between these initiatives. Szmigin et al. (2005) based in their direct experience of working with online communities have developed a bonding triangle framework that aims to explore how a service provider (i.e. the main community organizer) can create what will be referred to

as customer bonding among its customers in a networked environment and help to create a community that is beneficial to all involved. The customer bonding triangle is built around three key elements: interactivity, technical infrastructure and service value that foster not only business to consumer interaction, but also consumer to business interaction (which can help strengthen the bond between customers and service providers) and consumer to consumer interaction. A critical idea from the proposed framework is that to build customer bonding the firm should not overwhelm with traditional "top-down" communication and regard customers as a passive group, instead, the firm should strategically provide the community with the three key elements to promote bottom-up information flows and exchanges between customers, marketers and others involved in the community. Wong et al. (2004) investigate how information diffusion antecedents and consequences affect the interconnectedness between customers and services providers. Consistent with Szmigin et al. (2005), they also support reversed communication from top-down to bottom-up in which customers can generate information that value to the firm and other customers who interest in the community. They suggest that VCs may provide increasing returns to the firm by (1) integrating potential customers and creating more value to customers themselves and companies and (2) empowering customers in the production of ideas and daily business practices on team basis. Although Yadav & Varadarajan (2005), Szmigin et al. (2005) and Wong et al. (2004) assume a certain relationship between customer-customer outcomes and customer-business outcomes, they did not develop a mechanism of how customer-customer interactions relate to customer-business interactions and measure these variables in an empirical way.

The above review of literature about different perspectives to study VCs has come out some conclusions such that there is no empirical study about relationship between relational customer-business outcomes and social customer-customer outcomes. Moreover, the current literature does not address firm supports as moderators and why consumers stay in VC for long time and voluntarily contribute to the host firm. The current study will answer these questions.

CUSTOMER-CUSTOMER SOCIAL OUTCOMES

SENSE OF VIRTUAL COMMUNITY

ROLE OF SoVC

SoVC is one of central constructs since it is, first, the most important factor to secure VC success. A sense of community or belongingness is essential to achieve a high level of participation (Cothrel & Williams, 1999), increase social capital (knowledge) of VC (Campbell &Uys, 2007), and promote communal loyalty programs (Rosenbaum et al., 2005).

Second, SoVC help to distinguish community with settlement, team, or organization. Because community feelings (a sense of community) and behaviors do not always exist among people who interact with each other online, the term virtual community should be reserved for those in which SOVC has been observed. All others should be referred to as virtual groupings, collectives, or settlements (Blanchard &Markus, 2004).

Finally, SoVC creates positive and beneficial outcomes. Sense of community has been found to have several positive outcomes, including subjective perceptions of well-being (Davidson & Cotter, 1993; Szmigin & Carrigan, 2006), participatory problem solving (Chavis & Wandersman, 1990), professional enhancement (Kruger et al., 2001), employee loyalty (Wagner, 2006; Wunder, 1998) and profit (Heerema & Giannini, 1991). Identity (and the sense of community) provides a way to explain why individuals might act on behalf of team, and helps predict the direction and persistence of collective behaviors (Javenpaa &Leidner, 1999).

PREVIOUS STUDIES OF SoVC

A literature review about SoVC found that sense of community (SoC) has been widely studied in the real world. For example, Wicker & Mehler (1971) studied assimilation of new members in church communities; Pooley et al. (2005) explored SoC in Western Australian communities; A recent paper written by Obst & White (2007) compared SoC among neighborhood, student community and interest group; Heerema & Giannini (1991) investigated sense of community under stakeholder perspective; Marrewijk (2004) suggested that inclusiveness and connectedness are two social dimensions of SoC in a context of organizational management; Rosenbaum et al. (2005) found that communal loyalty programs is able to boost SoC among customers who participate in the program. Table 4 shows some studies about sense of community.

Table 4: Some studies of sense of community

Study	SoVC Dimensions	Context	Antecedents	Consequents
Dunham et al. (1998)	Membership, satisfaction & fulfillment, influence	SoVC helps to reduce parent's stress who participate in computer-mediated social network	Emotional, tangible, informational support	Decrease in parenting stress
Kim et al. (2004)	Membership (identification), influence & relatedness, integration & fulfillment of needs (involvement), and shared emotional connection (unity)	Effects of SoVC on community loyalty in virtual community of travel		Community loyalty
Pretty et a. (1996)	Sense of community index	Relationships between SoC and social benefits	Social support	Loneliness, well-being
Rosenbaum et al. (2005)	Membership, influence, integration & fulfillment of needs, and shared emotional connection	This study examines sense of community in organizational settings	Participation of loyalty program	Customer loyalty

Sense of virtual community (SoVC) is currently a hot topic in VC research. In 1998, Dunham, Hurshman, and Litwin published the first empirical study on sense of

community in a computer-mediated discussion group. They investigated an on-line group of young, single mothers, a community of individuals with common interests. They found a strong relationship between SoVC and member support. Then, Kruger et al. (2001) investigated the development of a professional community among school psychologists and found similar results.

Muniz and O'Guinn (2001) suggest three dimensions of SoVC in brand community: consciousness of a kind, i.e. a sense of belonging to an in-group; evidence of the rituals and traditions that surround the brand; and a sense of moral responsibility, obligation to the community and its members which is often shared by group members. Kim et al. (2004) modified psychological sense of community scale including four factors of membership, influence and relatedness, integration and fulfillment of need, and shared emotional connection that were found to be associated with loyalty and purchase intention in Korean travel community. Blanchard & Markus (2004) explored the concept of SoVC in a newsgroup named Multiple Sports Newsgroup. They found a new SoVC dimension – identity and identification with community.

Conceptually, past research indicates that there is a strong correlation between the constructs of sense of community (SoC) and social identification (SI) Cameron (2004). In a study by Obst & White (2007) examining participants' levels of SoC and social identification in three different communities, results showed that participants felt higher levels of social identification and SoC across all dimensions (e.g. membership, influence, fulfillment of needs, and shared emotional connection). Thus, SoC and social identification are highly correlated. Under this perspective, therefore, sense of VC is a

congruent form of SI in the sense that the individual defines him or herself in terms of their membership in or belonging to a particular virtual community.

There are some gaps in literature. First, most of studies use SoC scale (McMillan and Chavis, (1986)) developed in real world to measure sense of community in virtual context. There is little research on the development of a sense of community among groups that communicate by means of computer technology (Hill, 1996). Second, Few studies adapt this measure to develop SoVC scale (Blanchard & Markus, 2004; Kim et al., 2004). However, these studies did not follow a rigorous procedure of scale development.

Finally, marketing researchers who studied VC under relationship marketing perspective did not incorporate SoVC in their models (Dholakia etal., 2004; Porter, 2004). Thus, they did not take into account the notions of communal marketing to supplement relationship marketing weakness in explaining VC member behaviors (Kozinets, 1999).

SoVC Definition

McMillan and Chavis (1986) developed the first and still the most accepted theory of SoC. SoC is defined as a feeling that members [of a group] have of belonging, a feeling that members matter to one another and to the group, and a shared faith the members' needs will be met through their commitment to be together. This theory proposes that SOC consists of four elements:

• *Membership* refers to the feeling of belonging and identification, of being a part of a community. Feelings of membership arise from community boundaries (deviants help establish boundaries), perceptions of emotional safety, members' sense of belonging to,

and identification with, the group, personal investment of time into group, and a common symbol system.

• *Influence*, emerging from processes of maintaining norms within the group, is a bi-directional concept, a feeling of having influence on, and being influenced by, the community; for example for a group to be attractive, an individual must feel he or she has some control and influence over it, and for a group to be cohesive, the group itself must also have influence on its individual members.

• *Integration and fulfillment* of needs assumes that for a community to maintain a positive sense of togetherness, a feeling of being supported by others in the community while also supporting them. It comes from the rewards of being a member such as status in the group, competence in functioning in the group, shared values, and meeting other's needs while having one's own needs met.

• *Shared emotional connection* is based on a sense of shared history and a "spirit" of community, and refers to the bonds developed over time through frequent interaction, high quality interaction with other community members, investment of time and resources, the effect of honor and humiliation for members, and spiritual bonds among members.

Following Blanchard & Markus' (2004) work, the concept of sense of virtual community is defined as a characteristic of successful virtual communities distinguished by members' helping behaviors and their' feelings of emotional attachment to and self identification with the community. In short, sense of community is a sense of all of VC members working together for a commonly accepted goal.

VIRTUAL COMMUNITY LOYALTY

Brand building studies (Algesheimer et al., 2005) suggested that people who intend to continue their membership are more likely to recommend the brand community to nonmembers. Membership continuance is the degree to which member's intentions to maintain membership and ties to the brand community in the future

Information system researcher (Kang et al., 2007; Koh & Kim, 2004) found the relationships among community promotion, community commitment and community loyalty. Loyalty refers to online community member behaviors indicating allegiance to and promotion of the organization's interests beyond individual interests. Table 5 presents typical studies of VC loyalty.

In this study, VC loyalty is conceptualized as a community member's willingness to continue his or her membership and to promote the VC to other nonmembers.

Table 5: Typical studies of virtual community loyalty

Authors/year	Concepts	Conceptualization	Measures	Related Constructs
Koh & Kim (2004)	Community promotion	Community members' efforts to stimulate the community and informal behaviors contributing to VC without formal rewards	Srinivasan, Anderson, and Kishore (2002)	Knowledge sharing activity
Hsu & Lu (2005)	Customer loyalty	The degree to which a user believes that he/she will re-participate in the online game community	Lin, J. C., & Lu, H. (2000)	Perceived cohesive, enjoyment, preference, social norms
Kang et al. (2007)	VC loyalty	Loyalty refers to online community member behaviors indicating allegiance to and promotion of the organization's interests beyond individual interests	Van Dyne et al. (1994)	Support member communication, contribution recognition
Algesheimer et al. (2005)	Membership continuance intentions Community recommendation intentions	Member's intentions to maintain membership and ties to the brand community in the future. Person's intentions to recommend the brand community to nonmembers	Algesheimer et al. (2005)	Community engagement, normative community pressure, reactance
Kim et al. (2004)	Loyalty	Member's commitment to repatronize the online community	Fay (1994)	Travel product purchase, sense of community

CUSTOMER-BUSINESS RELATIONAL OUTCOMES

CUSTOMER TRUSTING BELIEF

ROLE OF TRUST IN VCs

Trust is a crucial factor to sustain the continuity of VCs. Especially, in the time of economic downturn and high Internet crime, people prefer to buy from and do business with organizations with the most trusted Web sites and electronic networks (Shankar et al., 2002). Trust is also a key element in fostering the voluntary online cooperation between strangers joining in virtual communities (Ridings et al., 2002). In the virtual world, a lack of face-to-face communication (anonymity: faceless and nameless) and legal guarantees make it harder for members of VCs to share their knowledge. Trust would reduce these problems and help interpersonal communication become more open, honest, frequent exchange of information and rules out the undesired and opportunistic behaviors (Dwyer, Schurr and Oh, 1987; Ridings et al., 2002). Table 6 presents trust-related studies in online and virtual community settings.

TRUST DEFINITION

Trust is widely conceptualized from a party's willingness to accept vulnerability but with an expectation or confidence that it can rely on the other party (Mayer et al., 1995) to 'the probability one attaches to cooperative behavior by other parties' (Hwang and Burgers, 1997) and to an individual's beliefs about the extent to which a target is likely to behave in a way that is benevolent, competent, honest, and predictable in a situation (McKnight et al., 1998).

Table 6: Trust-related studies in online and virtual community settings

Study	Trust Dimensions	Context	Target of Trust	Antecedents	Consequents
Hsu et al. (2007)	Economy-based trust: members' trust toward VCs due to decreased costs and increased benefits in time, knowledge, and advantage. Information-based trust: members' trust toward VCs due to sound privacy and technology mechanisms. Identification-based trust: members' trust due to emotional interaction among members in VCs.	This study identifies trust as environmental antecedents that support an individual' knowledge sharing behavior	Interpersonal trust in virtual communities of professional associations		Knowledge sharing behavior, self-efficacy
McKnight et al. (2002)	Competence: ability of the trustee to do what the truster needs Benevolence: trustee caring and motivation to act in the truster's interests Integrity: trustee honesty and promise keeping	Relationships of disposition to trust, institution-based trust, trusting beliefs, and trusting intentions for ecommerce	Consumer trusting beliefs in ecommerce context	Disposition to trust, institution-based trust	Following advice, giving personal information, making purchase
Ridings et al. (2002)	Ability or competencies: trustee to satisfy trustor needs. Benevolence/Integrity: a desire to do good to the trustee	Trust has effects on members' intentions to get and give information through the VC.	Interpersonal trust in online communities of interests	Perceived responsiveness, other confiding, disposition to trust	Desire to get and to give information
Bart et al. (2005)	Integrity: perception of the firm's good intention behind the online storefront Competence: perception of a site's competence to perform the required functions	Different drivers of online trust across Web site categories	Consumer trust in the Web site	Community features, consumer characteristics	Purchase decision, problem-solving tasks
Schlosser et al. (2006)	Ability: firm has the skills necessary to perform the job Benevolence: firm has a positive orientation toward its consumers beyond an "egocentric profit motive" Integrity: firm adheres to a set of moral principles or professional standards that guide its interactions with customers.	Consumer's trusting beliefs mediate the effects of Web site investments on online purchase intentions	Consumer trust in the virtual firm	Web site investment	Online purchase intentions

Moorman, Deshpande, and Zaltman (1992) define trust as a willingness to rely on an exchange partner in whom one has confidence. They propose that an expectation of trustworthiness results from the ability to perform (expertise), reliability, and intentionality. Morgan and Hunt (1994) define trust as the perception of confidence in the exchange partner's reliability and integrity. Bart et al. (2005) adopt a definition of online

trust as a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or behaviors of another.

In this study, trust is defined as the willingness of a VC member to be vulnerable to the actions of the firm based on the expectation that the firm will perform a particular action important to the member, irrespective of the ability to monitor or control the firm's behaviors (Hsu et al., 2007).

COMPONENTS OF TRUST

Three trusting beliefs are utilized most often: competence (ability of the trustee to do what the trustor needs), benevolence (trustee caring and motivation to act in the trustor's interests), and integrity (trustee honesty and promise keeping) (Mcknight et al., 2002).

Ability is skills or competencies that enable the trustee to satisfy trustor needs. Benevolence is the expectation that others (i.e. trusted parties) will have a positive orientation or a desire to do good to the trustee. Integrity is the expectation that another will act in accordance with socially accepted standards of honesty or a set of principles that the trustor accepts (Ridings et al., 2002).

Since firm-hosted virtual communities are the focal object in the current study, consumer trust can be conceptualized as consumer trusting beliefs in the host firm with three elements: benevolence, integrity and competence

CUSTOMER CITIZENSHIP PERFORMANCE

CONSUMER CITIZENSHIP PERFORMANCE (CCP) AS AN ORGANIZATIONAL CITIZENSHIP BEHAVIOR (OCB)

Bettencourt (1997) defines OCB as "behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization".

This paper extends Bettencourt's concept into the VC study by considering that customer citizenship performance is a form of OCB in which a customer willingly spreads positive WOM about the firm's offerings, acts as the firm's partial employee, and cooperates with the firm's employees in the context of virtual community (Rosenbaum & Massiah, 2007).

DIMENSIONS OF CONSUMER CITIZENSHIP PERFORMANCE

Previous *relationship marketing* research (Gruen et al., 2000) in the context of professional association markets suggested three dimensions: retention, participation, and coproduction that are analogous to organizational citizenship behaviors in which retention rate is defined as the percentage of the membership that renews its membership from one membership year to the following membership year; participation is defined as the extent to which the membership consumes the association's services; and coproduction, the quality of the membership, is defined as the extent to which the membership is involved in the production of the association's products, services, and/or marketing.

Table 7: Typical studies of customer citizenship performance

CCP Dimensions	Authors/ Year	Concepts	Conceptualization	Measures	Related Constructs
Loyalty to the Firm	Koh & Kim (2004)	Loyalty to VC portals (VC provider)	Repetitive use of functions or services provided by a Website	Reinartz & Kumar (2002)	Community participation, community promotion
	Bhattacharya & Sen (2003)	Company loyalty Company promotion Customer recruitment Resilience to negative information Stronger claim on company	A sustained, long-term preference for products of the company over those of its competitors. Likely to defend or positive wom about the company and its products or actions. Recruiting new customers for the company Overlook or downplay any negative information about the company and its products. Claim on the organization as more active, positive, legitimate and urgent.	Bhattacharya & Sen (2003)	Consumer-company identification
	Rosenbaum & Massiah (2007)	Consumer Loyalty	WOM as communication about a service provider that is offered by a customer who is not trying to obtain monetary gain by doing so	Bettencourt (1997)	Social & instrumental support
Voluntary Cooperation	Bhattacharya (1998)	Volunteering (Helping behavior)	Volunteering time and gifting money to the focal organization	Bhattacharya (1998)	
	Gruen et al. (2000)	Coproduction	The extent to which the membership is involved in the production of the association's products, services, and/or marketing	Gruen et al. (2000)	Affective commitment, member interdependent
	Bettencourt (1997); Rosenbaum & Massiah (2007)	Cooperation	Members cooperate with employees and pertain to services that are simultaneously produced and consumed	Bettencourt (1997)	Social-emotional support, instrumental support
Voluntary Participation	Jeppesen and Frederiksen (2006)	User innovation (NPD cooperation)	Contribution into NPD	Jeppesen and Frederiksen (2006)	Peer and firm recognition, hobbyist, lead user, professional learning
	Füller et al. (2007)	Join innovation (NPD cooperation)	Members actively discuss provided ideas, offer possible solutions, further elaborate and test them, or just give their opinion		Fun, recognition and feedback from audience
	Gruen et al. (2000)	Participation	The extent to which the membership consumes the association's services	Gruen et al. (2000)	Continuance commitment, reliance on external membership
	Bettencourt (1997); Rosenbaum & Massiah (2007)	Participation	Customers contribute to the development and delivery of an organization's service quality, similar to an organization	Bettencourt (1997)	Social-emotional support, instrumental support

Likewise, Service marketing literature (Bettencourt, 1997; Rosenbaum & Massiah, 2007) describes CCP customer as exhibiting loyalty (i.e., spreading positive word of mouth; WOM), acting as partial employees or offering an establishment suggestion for improvement (i.e., participation) and cooperating with employees (i.e., cooperation) in which WOM is defined as communication about a service provider that is offered by a customer who is not trying to obtain monetary gain by doing so; partial employees refer to customers who contribute to the development and delivery of an organization's service quality, similar to an organization's employees; and cooperation pertains to services that are simultaneously produced and consumed.

Table 7 illustrates typical studies of customer citizenship performance.

Following previous studies, the current paper suggests three dimensions:

Loyalty intention to the host firm: a customer's future actions regarding doing business with and engaging in positive word of mouth about the host firm.

Voluntary participation: a VC member's willingness to participate actively in extra roles such as consultancy and governance that are beyond generally expected levels.

Voluntary cooperation: a VC member's willingness to cooperate with the host firm.

TURNING MEMBERS INTO CONTRIBUTORS AND CONTRIBUTORS INTO RECRUITERS

For many people, the experience of obtaining valuable benefits builds a sense of indebtedness that ultimately will be expressed in contributions when that person has something of value to share. Thus, higher participation levels lead to higher levels of involvement with firm-hosted communities, "turning visitors into members, members into contributors, and contributors into evangelists" (Langerak et al., 2003; Schlosser et al., 2006).

Notice that key objective of the host firm is to form relationship and eventually to gain profit maximization (Szmigin et al, 2005). Therefore, profit or purchasing intention is not VC direct outcomes. They are consequences of VC outcomes.

FIRM SUPPORTS – CUSTOMER-BUSINESS

Rothaermel and Sugiyama (2001) pointed out that effectively managerial supports by the host firm may contribute to intangible benefits of trust, relationship building and knowledge generation associated with virtual communities. A rigorous literature review reveals that three most important supports by the host firm are mechanisms to facilitate member communication, efforts to enhance VC information content and rewards to recognize VC members' contributions.

Table 8 presents typical firm support studies.

SUPPORT FOR MEMBER COMMUNICATION

From the literature, customer interaction in brand-based Internet communities and customer interaction during periods of waiting in lines in the real world influence on their satisfaction (Grove and Fisk, 1997).

Interactive networks, bulletin boards, chat rooms, blogs are frequently used services. Thus, an increasing number of online firms realized that communication among customers is becoming increasingly managerially relevant in online services (e.g., online product review, seller rating).

In order to build relationships with customers, the firm must address the ways that help its customers build productive relationships among themselves (i.e., enhancing the interdependence among its customers). For example, supporting member communication with means such as bulletin board, chat room, mailing service, game, member search function, and special interest discussion forum.

Williams & Cothrel (2000) suggested that marketers' role is to understand participant's needs, keep conversation on going, put members at center stage, and clarify but don't edit or police. Moreover, VC supporters should provide users with tools that are able to change the rules, structures and content of a virtual community (Teo et al., 2003).

Therefore, support for member communication is a key element to flourish the VC. In this study, support for member communication is defined as the extent to which the organization provides its members with the motivation, opportunity, and ability to exchange value with one another (Gruen et al., 2000; Porter, 2004).

CONTENT ENHANCEMENT

Customers visit the firm-hosted community because they have an information need and hope to get answers from fellow customers. Providing valuable content is a key driver of value in firm-hosted virtual communities (Balasubramanian & Mahajan 2001). High quality content not only drive repeat visits (Yoon et al., 2002), but also reinforces the shared interests of consumers (Preece, 2000).

Hagel and Armstrong suggest that VCs provide consumers with the ability access to quality information and the opportunity to exchange ideas and solutions, thus bringing greater opportunities for building relationships among themselves and the host firm. Similarly, VCs make it easier for customers to reduce search costs and satisfy their information needs because all the relevant information regarding the products and services are centrally located and made available in the online community (Tan et al., 2001). Moreover, Virtual communities also provide valuable content as they filter and aggregate the overloaded and unorganized information of varying quality available in

cyber space into information of interest for their members (Rothaermel & Sugiyama, 2001).

In a social network system, therefore, the issue of information quality in VCs is inherent in the success of a virtual community.

Without the cues provided by face-to-face contact, successful communities are those that clearly define the community's focus, truly provide the host firm's past trading behavior, and effectively disseminate complete, up-to-date, and unbiased information about the firm's products and services (Lin, 2007; Rothaermel and Sugiyama, 2001; Pavlou & Gefen, 2004; Porter, 2004; Teo et al., 2003; Williams and Cothrell, 2000).

Perceived effort to provide quality content is conceptualized as a community member's belief that the host firm makes efforts to provide members with access to quality information. Information quality refers to the quality of the information provided by the host firm. Its measure includes dimensions such as information credibility, accessibility, relevancy, timeliness and information presentation format (Lin, 2007).

RECOGNITION FOR CONTRIBUTION

Moon & Sproull (2001) illustrated that recognition for a VC member's contribution can range from tangible rewards to psychological satisfaction of gaining prestige within the VC.

Tangible rewards are the most popular form of reward for appropriate behavior and outstanding performance. For example, recognized VC members can have free access to valuable resources available through the company website as well as special offers to try

new or related products and services. Rewards can also be in the form of gaining credits such as points, virtual dollars or the like that is considered high value within the context of a particular online community.

People may also be rewarded by explicit recognition of their contributions. High visibility of membership as indicated by the category of membership to which a person belong is a signal of having contributed something important to the community and having significant impact on the community as a whole, an important determinant of intentions to volunteer. For example, contributors are routinely honored among different membership groups or have their name published in the company's brochures and attend exclusive events organized for their special benefits (Bhattacharya et al., 1995)

Psychological recognition may take a form that fulfills participants' needs of affiliation, identity, self-efficacy, recognition of expertise. One way of rewarding participation is by giving customers a voice in the company's activities, by giving them an opportunity to influence company policies and actions. For example, they may play a specific organizational role such as facilitating discussions on a voluntary basis, meeting with mangers, employees (engineering, officer…), developing friendship with staffs (McAlexander et al., 2002; Williams & Cothrel, 2000)

In general, depending on customer needs of extrinsic or intrinsic recognition, the firm must value members' contributions and provide proper rewards so that these recognized people continue to contribute to the VC. Community members must feel free to contribute or participate when it suits their needs (Kang et al., 2007).

Table 8: Typical firm support studies

Grouping Variables	Authors/Year	Concepts Examined	Conceptualization	Measures
Recognition for Contribution	Kang et al. (2007)	Recognition for contribution	Recognition for member contribution, refers to the extent the online community recognizes a members' contribution	Gruen et al. (2000)
	Jeppesen and Frederiksen (2006)	Recognition from firm	User innovations are noted and acknowledged by firm	Jeppesen and Frederiksen (2006)
	Gruen et al. (2000)	Recognition for contributions	The extent to which the association demonstrates to the co-producing members that it values their contributions.	Gruen et al. (2000)
	Bhattacharya & Sen (2003)	Embeddedness	Consumers' embedded relationships with companies are likely to be strong, intricate, and trusting, resulting in consumers feeling more like insiders than outsiders.	Faust (1997); Bhattacharya & Sen (2003)
	Williams & Cothrel (2000)	Peer moderator Moderation enhancement	Members who facilitate discussion on a voluntary basis Developing moderation skill by facilitating learning and support group	
	Bhattacharya et al. (1995)	Visibility of membership (visible affiliation)	Category of membership to which a person belong closer to the center of the company	Dutton, Jane M. and Janet M. Dukerich (1991)
	McAlexander et al. (2002)		Playing specific org. role, meeting with org. employees (engineering, officer...), developing friendship with staffs	
Support for Member Communication	Kang et al. (2007)	Support for member communication Freedom of expression	Support for member communication represents the extent to which an online community provides its members with the means, capability, and opportunity to communicate The extent that a community facilitates members' rights to express diverse opinions	McWilliam (2000) Kim (2000)
	Gruen et al. (2000)	Member interdependence enhancement	The extent to which the organization provides its members with the motivation, opportunity, and ability to exchange value with one another.	Gruen et al. (2000)
	Williams & Cothrel (2000)	Moderating policy Control policy	Understand participant's needs, keep conversation on going, put members at center stage, and clarify but don't edit or police	
	Dunne (1986)	Reciprocity of influence	Influence and modify owner's original ideas and expectations	
	Teo et al. (2003)	Community adaptivity	Ability of users and systems to change the rules, structures and content of a virtual community.	Teo et al. (2003)
Content Enhancement	Wiertz & Ruyter (2007)	Informational value	Information provided is useful and valuable	Okleshen & Grossbart (1998)
	Pavlou & Gefen (2004)	Effectiveness of feedback mechanism	A buyer believes that the feedback mechanism in an online marketplace is able to provide accurate and reliable information about the past transaction behavior of the marketplace's sellers.	Pavlou (2002)
	Porter (2004)	Quality information	Credibility, accessibility, relevancy and importance of the information provided by the community sponsor.	Porter (2004)
	Lin (2007)	Information quality	Quality of the information such as information accuracy, completeness, currency and information presentation format provided by the online services.	Nelson et al. (2005)
	Teo et al. (2003)	Information accessibility	Type and amount of information, and the cohesiveness of information organization assigned to the participants.	Teo et al. (2003)

Recognition for member contribution refers to the extent the online community recognizes a members' contribution and is defined as the extent to which the association demonstrates to the coproducing members that it values their contributions (Gruen et al., 2000; Kang et al., 2007).

In summary, current literature only discuses about role of firm supports as antecedents of trust, there is little known about the moderating role of firm supports. This paper will fill this gap by rigorously exploring the present of firm support variables in the relationship between social customer-customer outcomes and relational customer-business outcomes.

SUPPORTS FROM MEMBERS – CUSTOMER-CUSTOMER

SUPPORTS FROM MEMBERS

The current literature of product and brand communities hosted by firm focuses on the marketing bonds (e.g. marketing relationship, brand relationship) that develop between the host firm (the brand) and its customers or on the characteristics (e.g., consciousness of kind, shared rituals, transference of product knowledge) and dynamics (e.g., geography, social context, community characteristics) of product/brand communities (Muniz and O'Guinn 2001) rather than on highlighting the rich, social supportive bonds that often form among customers in VC settings. For example, a qualitative study by McAlexander et al. (2002) evidenced that people attend events and meetings organized by firms because of the desire to get in touch with customers they already met in previous meetings. Riding et al. (2002) contented that people desire to exchange information when they perceive an increased responsive supports from others.

Marketing researchers traditionally explore the dyadic interface of relationship between one host firm and one customer (Porter, 2004; Price and Arnould 1999), little is known about the influence of supportive bonds that may form between customers in a VC setting. Critical to this conceptualization is the fact that the nature of online communities offers the potential to foster not only consumer-business interaction, but also consumer-consumer interaction, which eventually influences on the bond between customers and the host firm (Szmigin et al., 2005).

Perceived supports from VC members can take a variety of customer-customer forms such as purposive aspect (e.g. accomplishing some pre-determined instrumental purpose;

exchanging know-how, practical skill or expertise; or sharing ideas that lead to reduced costs or increased revenues); social aspect (e.g. sharing stories or good times on the golf course); emotional or personal aspect (e.g. providing encouragement) (Bagozzi and Dholakia, 2002; Dholakia et al., 2004; Gruen et al., 2005). Similarly, McAlexander et al. (2002) note that the essential resources shared among individuals in a community can be cognitive, emotional, or material in nature. In addition, they show how utilitarian exchanges often precede exchanges that are more social in nature, providing social, emotional, intellectual capital, and/or direct economic benefits.

From a perspective of service marketing, Rosenbaum & Massiah (2007) concluded that three resources – companionship, emotional support, and instrumental support – are essential to human well-being. Companionship provides people with a partner for activities. Emotional support provides people with outlets for discussing their feelings and expressing their concerns and worries. Instrumental support provides people with practical help, assistance with mundane activities, or financial aid. On the same vein, Moore et al. (2005) studied a multi-dimensional nature of human supports incorporating social as well as hedonic and utilitarian aspects. Hedonic aspects may include feelings that customer-customer interaction may cause one to simply feel good/warm or vice versa angry or annoyed. A utilitarian component of customer-customer interaction may include task-oriented aspects such as whether an interaction with another customer helped one find an item or was counterproductive, causing one to take longer to find a product.

Following Dunham et al. (1998), the current study defines perceived supports from VC members based on three types of customer-customer social support: (a) positive

informational support provided information or guidance relevant to the content of the message posted; (b) emotional support provided empathy, sympathy, comfort, and/or general encouragement to the person posting the message; and (c) tangible support offered concrete physical, financial, or material assistance relevant to the content of the message posted.

LEVEL OF VC COMMUNICATION

Results of previous studies have supported the importance of level of VC communication in an on-line setting (Dunham et al., 1998; Kruger et al., 2001; Tan et al., 2001). For example, Dunham et al. (1998) investigated an online group of forty-two single mothers participating in a computer-mediated social support network concerned with parenting issues. They found that consistency of connections to the computer network (e.g. frequency and duration) positively related to an increase in close personal relationships and a decrease in parenting stress. Similarly, in a study of a professional community among school psychologists, Kruger et al. (2001) found that a member's consistency of participation (e.g. number of weeks during which a participant used the community at least once) and number of email messages sent in online community contribute to his/her social bonds with other VC members. Focusing on how online vendors can develop trusting relationships with consumers through the establishment of VCs, Tan et al. (2001) found an empirical support for the effect of VC involvement (measured by frequency of visiting the community) on VC outcomes such as participation in electronic commerce.

The current study defines level of VC communication with two measures: (a)

Consistency of connecting to an on-line community and (b) Level of messages exchange

in the community.

Table 9: Typical customer-customer studies

Antecedent Constructs	Authors/Year	Variables	Concept Definition	Measures
Perceived Support from Other Members	Kang et al. (2007)	Perceived communication value Interactive communication	Perceived community value is described as the degree to which members believe the benefits they seek is consistent with the online community's stated value The extent of community sponsor's efforts to insure speedy and proper response to member's communication effort including characteristics such as multiple information flows, real-time feedback, and responsive interaction	Kim (2000) Anderson (1996)
	Teo et al. (2003)	Perceived usefulness	The extent to which a person believes that using the system will enhance his or her job performance	Davis et al. (1989)
	Dholakia et al. (2004)	Level of value perception (purposive & entertainment)	Value derived from accomplishing some pre-determined instrumental purpose Value derived from fun and relaxation through playing or otherwise interacting with others.	Flanagin, A. J., & Metzger, M. J. (2001)
	Ma & Agarwal (2007)	Information need fulfillment	The extent to which information need is fulfilled	Dholakia et al. (2004)
	Hsu & Lu (2005)	Social norms	The degree to which the user perceives that others approve of their participating in the online game community	Liker, J. K., & Sindi, A. A. (1997)
	Ridings et al. (2002)	Perceived responsiveness	Response or reply messages from other members	Ridings et al. (2002)
Level of VC Communi-cation	Tan et al. (2001)	Level of involvement	Frequency of visiting VC in the period of one month prior to taking the survey	Tan et al. (2001)
	Kruger et al. (2001)	Consistency of participation	Consistency of participation and number of email messages sent in online community	Dunham et al. (1998)

CHAPTER III

PROPOSED MODEL AND HYPOTHESES
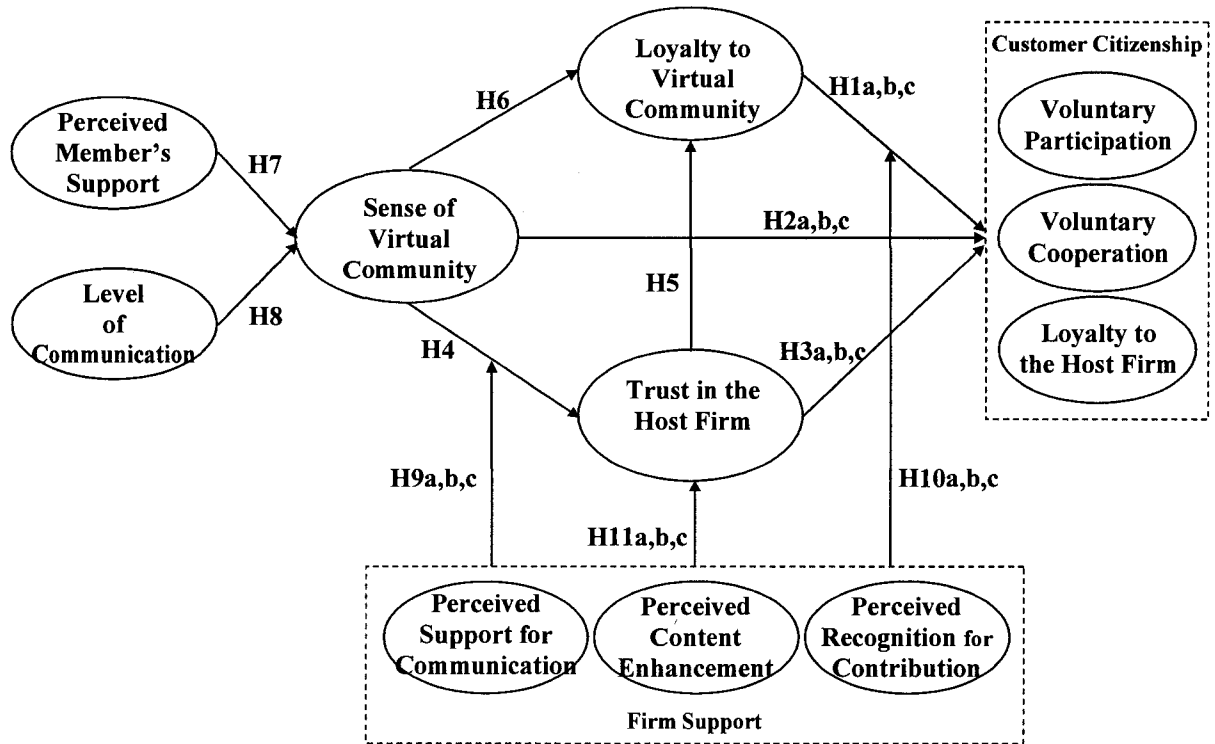
Figure 1: Proposed model

There are several VC social outcomes which can result from customer-to-customer relationships for value sharing: members' feeling of membership of a virtual community, member' loyalty to the community (i.e. member's promotion to the community).

While social researchers (sociologist, psychologist) consider these social outcomes as a successful measure for a VC performance, marketing researchers mainly focus on other relational variables such as customer trust, loyalty intention and citizenship performances (i.e. voluntary cooperation, coordination, participation) which result from interactions between a customer and the host firm (Porter, 2004).

Although both social and relational outcomes of virtual community activity have been widely studied by researchers as well as by practitioners, there have been few studies that empirically examined the relationship between customer-customer social outcomes and customer-business relational outcomes in the context of VC.

In this study, VC social outcomes (i.e. sense of virtual community, VC loyalty) is posited to have direct effects on customer-business relational outcomes (i.e. customer trust, customer citizenship performances) and moderated by supports from the firm. Specifically, the model proposes that given a set of antecedents when customer trust and sense of virtual community are likely occurred, the customer's SoVC with a given VC has direct effects on customer citizenship performance, customer trust and VC loyalty and, in turn, both customer trust and VC loyalty lead to customer citizenship performance toward the host firm. Moreover, customer trust is hypothesized to affect on VC loyalty.

CUSTOMER CITIZENSHIP PERFORMANCE

Management theory suggests that voluntary performance is reflected in an individual's actions that support an organization by acting as partial employees without monetary gain. Partial employees refer to customers who contribute to the development and delivery of an organization's functionality, similar to an organization's employees (Organ, 1988). Marketing literature originally views VC voluntary performances as consisting of three performances: loyalty, participation, and cooperation (Bettencourt, 1997; Rosenbaum & Massiah, 2007). Cooperation is conceptualized as a customer's willingness to exhibit help-giving behaviors and undertake the coproduction of the firm' offerings and/or marketing that are simultaneously produced and consumed. Participation is conceptualized as a customer's willingness to participate in coordination tasks in VC collective events supported by the firm.

Recent marketing research defined loyalty as a deeply held commitment to repurchase or repatronize a preferred product or service consistently in the future (Oliver, 1997). Prior research frequently suggests that loyal customers are likely to provide new referrals through positive word of mouth (Jones & Sasser, 1995). They buy more products (Berry & Parasuraman, 1991) and resist competitive pressures (Dick & Basu, 1994).

While behavioral loyalty means that customers will repeatedly purchase the same brand, intentional loyalty is assumed to be more stable than behavioral loyalty and represents customers' commitment or preferences when considering unique values associated with a brand (Chaudhuri and Holbrook, 2001). Oliver (1999) defined loyalty as a strong commitment to re-buy a preferred product or re-patronize a service consistently in the

future, thereby causing repetitive purchasing of same-brand or same brand-set products, despite situational influences. Conceptually, consumer loyalty is indicated by an intention to perform a diverse set of behaviors that signal a motivation to maintain a relationship with the focal firm, including allocating a higher share of the category wallet to the specific service provider, engaging in positive word of mouth (WOM), and repeat purchasing (Zeithaml, Berry, and Parasuraman 1996).

In this study, customer loyalty to the host firm is conceptualized as a customer's future intentions regarding doing future business with and engaging in positive word of mouth about the host firm.

VC LOYALTY AND CUSTOMER CITIZENSHIP PERFORMANCE

Hagel and Armstrong (1997) predict that participation in voluntary contributions will transform active contributors into the most attractive purchasers online. This means that higher VC contribution levels lead to higher levels of loyalty with the host firm, "turning visitors into members, members into contributors, and contributors into evangelists" (Langerak et al., 2003; Schlosser et al., 2006). That is, VC voluntary performances may be directly linked to loyalty toward the host firm.

Brand community researchers also show that sharing meaningful consumption experiences strengthens interpersonal ties and enhances mutual appreciation for the product, the brand, and the facilitating marketers. These analyses suggested that customer relationships with different entities in the brand community might be cumulative or even synergistic in forming a single construct similar to customer loyalty (McAlexander et al., 2002).

When community members promote their community, they also promote the firm that supports their community. Some volunteers report that they help others in part because they learn from the process (Moon & Sproull, 2001). When community members involve in community promotion through advice-seeking behaviors or positive word-of-mouth (i.e. product or service promotion), it may allow them to gain more specific and useful feedback that increase his or her knowledge of the particular product domain. This voluntary motive is concerned with acquiring the skills necessary to utilize firm's offerings better (Hennig-Thurau et al., 2004). Eventually, giving a positive communication about the VC's services, they are coincidentally promoting the firm

which hosts their community. Moreover, progressing from being a visitor to an insider, VC members have encountered problems and accumulated knowledge and experience more frequently. Thus, they became experts both in a particular product or program and experts in giving help electronically to others with problems.

Since benefits of various VC services and events supported by the host firm are more frequently exposed to the community members who are committed to the virtual community, it is likely that members with higher level of community commitment tend to participate in these activities more actively (Jeppesen & Frederiksen, 2006). Eventually, community members repeatedly interact with the firm and more likely consume VC services when they participate in their community. It may generate community members' participation in and cooperation with firm-supported programs. More loyal members were also found to be more socialized and active to participate in collective campaigns to support the firm's image (Kang et al., 2007; Kozinets, 1999; McAlexander & Koenig, 2002)

H1: Member's level of loyalty to the VC has positive effects on customer citizenship performance: a) voluntary participation, b) voluntary cooperation and c) loyalty intention to the host firm.

SENSE OF VC AND CUSTOMER CITIZENSHIP PERFORMANCE

SENSE OF VC AND COOPERATION (HELP-GIVING, COPRODUCTION)

Members with strong SoVC not only take care of other members they have emotional bond with but also give help to newcomers that are strange to them. On one hand, social exchange theory suggests that one would not contribute his or her consumption experience unless other members are recognized as his or her group mate and the contribution is conducive to his welfare (Chiu et al., 2006).VC members maintain emotional relationship with other known members by expressing care and concern for the welfare of their partners because they believe in such relationships, and believe that these supports are reciprocal (McAllister, 1995). Reciprocity occurs when one community member helps another member and eventually is helped in return.

On the other hand, unlike the direct reciprocity noted in social exchange theory (Blau, 1964), norms of reciprocity in social capital theory suggest that people do not expect to receive future help from the same individual, instead they may reciprocally receive help from someone else (McLure & Faraj, 2000). Because SoVC is a form of an attachment relationship with the whole community, VC members not only interact or give and take with specific members of a group, but also with any unknown member of the group. In fact, they would probably fulfill their needs from interactions with many different members by fostering a sense of membership with every other member, even those they have never met (Hill, 1996). Brand community researchers also reported the same findings in which members of brand communities express similar feelings, reporting "having helped others, both known and unknown. It was something they did without thinking, acting out of a sense of responsibility that they felt toward other members of the

community". This suggests a sense of community can exist in any interaction "in which each person has a concern for the welfare of the other," regardless of motive (Muniz & O'Guinn, 2001).

SENSE OF VC AND PARTICIPATION (COMMUNAL PROGRAM, COORDINATION)

Members with strong SoVC are more likely to participate in collective task to advance the community as a whole. In one direction, group cohesiveness means that the group has ability to influence its members and in the other direction, the acceptance of the group implies that a member also has some influence over what the group does (Hill, 1996). Thus, when people have a feeling of strong SoVC, they are more likely to exert their contribution on maintaining virtual community sites, training new members and involving VC-related decisions. A recent case study of virtual communities found that volunteers who maintained those sites were far more motivated by altruistic reasons than were other participants in the same communities (Moon & Sproull, 2001).

Because social relationships among people can be productive resources, social capital theory suggests that positive communication with others in VCs are essential in generating intended informational benefits and social benefits such as strong interpersonal ties and sense of belonging that leads to higher network strength (Kang et al., 2007). Thus, the current study is based on the premise that VCs are likely to increase social capital because when people have a strong positive attitude toward community – have a motivated, responsible sense of belongingness – they will mobilize their social capital more willingly and effectively by undertaking coordination tasks and joining communal programs supported by the firm (Wellman et al., 2001).

Members with strong SoVC would be concerned about the fate of their community and show socially desirable performances for community and toward the host firm. Sense of membership is also understood as a perceived oneness with a VC and the experience of the VC's successes and failures as one's own (Mael and Ashforth 1992). Laboratory and field experiments of voluntary contributions have shown that people will volunteer substantially when they perceive that their contributions are important to the success of the collective purpose and when the reward for volunteering hosts is recognized and valued by peers and the supporter (Fisher & Ackerman, 1998). These volunteer hosts had spent years of their lives adding value to the host firm and were happy to continue doing it, because they were giving it away to support the fate of their community (Mathwick, 2002). Innovation researchers also found the same results in which recognitions by peers and by the firm are two main drivers to explain why people actively participate in joint-innovation activities (i.e. new product design, product enhancements, and test new products) and also act as opinion leaders, providing insights into future trends and new application areas and importantly, act as advocates for the host firm (Fuller et al., 2007; Jeppesen & Frederiksen, 2006; McWilliam, 2000).

SENSE OF VC AND LOYALTY INTENTION

Members with strong SoVC are more active to involve in product or service promotion and attract new customers. Similar to organizational citizenship behavior exhibited by members of an organization who feel that it is their responsibility to provide technical assistance to others within the organization, VC members with a feeling of moral responsibility toward peers in their community desire to help others in more effective use of the product or service, to save others from negative buying experiences, or both. In an

organization with well-identified community attributes, individuals respond to unmet expectations by thinking that it must have been a mistake rather than thinking that the organization doesn't care about its customers or employees (Strong et al., 2001). Thus, when facing negative consumer experiences with a product or service, VC members more likely reduce the magnitude of negative impact by giving a more constructive suggestion.

Bhattacharya & Sen (2003) use the term "embeddedness" in their description of the extent to which customers form bonds with other customers of an organization and suggest that as a customer becomes embedded in the social network of the firm they will recruit other customers as well as exhibit positive company WOM.

Because of anonymity, people help others in order to build their identity and trustworthiness in the eyes of other members. Since it is assumed that little information comes through the person's social networks about other group members especially in virtual environment, highly active members of virtual communities may be more trusting than other group members (Blanchard & Horan, 2000). In addition, the perception of social unity and togetherness of the community will elevate one's activeness to share knowledge and increase both of quality and quantitative of shared consumption experience and interest (Chiu et al., 2006; Hsu et al., 2007). Therefore, their advices more likely influence on help-seekers' behaviors and attract new customers.

Organizational researchers have consistently shown that the engagement of members, such as employees or alumni, leads to increased member loyalty to the organization (Mael & Ashforth, 1992) and deceased turnover (Strong et al., 2001; Wagner, 2006). Fostering a strong sense of community among stakeholders can withstand the firm's

occasionally honest mistake and reduce dissatisfaction and movement out of the stakeholder group (customers changing banks, employees resigning, or owners selling stock). Consequently, individuals feel a strong sense of loyalty to their own and other stakeholder groups (Strong et al., 2001).

Public administration researchers has found convincing evidence that civic engagement is strongly and positively related to performance of the government and other social institutions (Putnam, 1995). Civic engagement which is similar to the sense of community concept refers to "people's connections with the life of their community" and includes such things are membership in neighborhood associations, choral societies, or sports clubs (Putnam 1995). Putnam's theory of social capital involves the norms of reciprocity and networks of civic engagement that encourage social trust and cooperation. Since VC members with strong SoVC are more like active to interact with other strangers, weak social network ties are created which positively affect norms of reciprocity and social trust. This process is self-reinforcing and cumulative and eventually leads to increased performance of the whole virtual community. Thus, it is expected that the average level of loyalty toward the firm is increased when SoVC is observed in the VC.

Sense of community and loyalty relationship is also confirmed in marketing literature. When customers get together in an establishment (i.e. hair salon) for an extended period of time, their compatibility allows a sense of community to develop and, through this, loyalty to the firm (Moore et al., 2005). A study comparing the effects between communal programs and financial incentives on loyalty has also found that communal

programs elicit stronger sense of community and participants are significantly less predisposed to competitor switching (Rosenbaum et al., 2005). A strong sense of community is also distinguished through a meaningful and long lasting interaction between customers and the firm. This is likely to be resulted through a sustained, long-term preference for the firm's products over those of its competitors. In other words, customer's loyalty is a key consequence of customer-firm emotional attachment (Bhattacharya & Sen, 2003).

Coproduction, participation performances are voluntary and, therefore, rely on internal motivation for their performance. Thus, it is reasonable to argue that a sense of community is a driver of these activities.

H2: Customer's level of sense of virtual community has a positive effect on customer citizenship performance including a) voluntary participation, b) voluntary cooperation, and c) loyalty intention to the host firm.

MEDIATING ROLE OF TRUST

TRUST AND CUSTOMER CITIZENSHIP PERFORMANCES

The current study presumes that a community member perceiving the efforts that a community supporter undertakes to enhance member's interaction and to reward member's contribution in virtual communities will reciprocate by exercising their voluntary performances to support the firm.

Prior online studies suggest that trust affects loyalty intentions, Web site traffic and visits (Shankar, Urban, and Sultan 2002; Yoon 2002). VC studies also found that trust is the most important antecedents to customers' loyalty (Kim et al., 2004). In relationship building, customer trust plays a role as a mediator between relationship investments and customer loyalty intentions (Geyskens, Steenkamp, and Kumar, 1998). The firm's investment of time, money and effort in VC building has a positive effect on the future loyalty intentions of highly relational VC members (Garbarino & Johnson, 1999; Mathwick, 2002).

Thus, it is expected that a community member would be willing to grant loyalty to a trusted community supporter in an attempt to reciprocate the firm efforts to support his or her relationship in the virtual community. The more marketers can provide virtual community of consumption members with the meaning, connection, inspiration, aspiration, and even mystery and sense of purpose that is related to their shared consumption identities, the more those customers will become and remain loyal (Kozinets, 1999).

Indeed, reciprocity literature suggests that the host firm's efforts of giving things away to customers create in them a sense of obligation to return the gift of trust to the firm (De Wulf et al., 2001) and allows the firm to make their margins on what is difficult for other competitors to copy (Kozinets, 1999). The presence of trust also increases the customer's attitude and reduces risk perception of negative outcomes associated with being loyal to the firm (Mayer et al. 1995; Morgan and Hunt 1994; Schlosser et al., 2006).

There is also empirical evidence of the relationship between customer trust and loyalty. Garbino and Johnson (1999) found that customer trust mediates the relationship between attitude and to the willingness of the customer to engage in future interactions. Furthermore, trust is significantly related to customer loyalty (Sirdeshmukh et al. 2002).

Some features of social organization such as norms of reciprocity and social trust facilitate coordination and cooperation for mutual benefit (Putnam, 1995). Trust eases cooperation, and the more that parties trust the other and the more they feel that other trust them, then the greater the likelihood of cooperation among these parties. According to Putnam, there is a belief that "good acts" or pro-social behavior will be reciprocated at a later point.

Furthermore, the gift-giving theory has shown that a sense of indebtedness of rewards and assistance gifted to a VC member will generate trust of those who provide those rewards and assistances (Dorsch & Kelley, 1994). Thus, the customer is motivated to engage in promotion (i.e. eWOM, help-giving) and cooperation (i.e. innovation, communal program) to give the firm "something in return" for its supports and rewards (Hennig-Thurau et al., 2004; Jeppesen & Frederiksen, 2006; Rosenbaum et al., 2005).

McAllister (1995) showed that parties who develop trust based on voluntary performance express a significant amount of reciprocal voluntary performance toward the trusted party. A member of a virtual community is likely to perceive cooperation and coordination efforts as extra-role performance since it requires efforts beyond that of the traditional customer-firm exchange. It is posited here that a customer's willingness to participate in cooperative and coordinative efforts such as product design, feedback or improvement is representative of reciprocal voluntary performance toward a trusted community supporter (see Zand's 1972 discussion of the trust spiral). Empirically, Morgan and Hunt (1994) found that trust encourages cooperation among trading partners. Other VC researchers also conceptualize trust as a relational effect on voluntary performances (Ba, 2001; Chiu et al., 2006; Hsu et al., 2007).

H3: Customer's level of trust has a positive effect on customer citizenship performances including a) voluntary participation, b) voluntary cooperation, and c) loyalty intention to the host firm.

TRUST AND SOVC

Previous studies have addressed the impact of online community feature on trust (Bart et al., 2005; Muniz & O'Guinn, 2001; Shankar et al., 2002; Bhattacharya & Sen, 2003). Shankar, Urban, and Sultan (2002) provide a broad conceptual overview and framework of antecedents and consequences of online trust from multiple stakeholder perspectives. They identify a wide range of Web site characteristics including community features as potential drivers of online trust. Muniz and O'Guinn (2001) suggest that a successful online community with a structured set of social interactions based on a shared consciousness, rituals and traditions, and a sense of moral responsibility can enhance the customer's level of trust in the online firm. These community features promote information exchange and consumption knowledge sharing that offer a supportive environment for the customer, reduce asymmetric information bias and thus increase customer trust (Bart et al., 2005).

Organizational behavior literature also found the relationship between SoC "camaraderie", the degree to which staff feels like a team or a family, and trust in the organization. Fostering feelings of hospitality and intimacy contributes to employees' developing relationships, cooperating with others, enjoying work, and increasing company's morale (Marrewijk, 2004). Similarly, staff members experiencing a strong sense of community in schools report a higher belief in the success of school reform than their counterparts (Royal & Rossi, 1996). Leading Internet firms also understand the import of customer's trust and sense of community relationship, as Podavano, director of Internet and e-business at Compaq, says, "When a customer is part of a community, there

is even more reason to build trust; in private e-marketplaces you have to have absolute trust or risk banishment." (Sultan & Mooraj, 2001).

The effect of SoVC on Trust is also in compliance with social cognitive theory (SCT). While SCT advocates the relationship of triadic reciprocity among the three determinants: personal factors (sense of VC belonging) and environment (trust) on individual behavior (customer voluntary performance in VC) (Wood and Bandura, 1989), this study, as presented in previous sections, more concerns with the effects of personal factor and environment on individual behavior. In this study, VC value is viewed as an object that can be accessed and retrieved by members of VCs (Gruen, 2005). Trust and SoVC are seen as predictors of voluntary performances since both of them are considered as main influences at cognitive level (Wood and Bandura, 1989). Furthermore, with trust, organizations could form their collective characteristics, such as predictability, reliability, and fairness (Gefen, 2000). Thus, supports by firm are predictors of trust and also of SoVC. On the other hand, because people are both products and producers of their environment (Wood and Bandura, 1989) and VC member is the main source of knowledge generation, it is reasonable to assume that sense of virtual community should have influence on trust and voluntary performances.

Similar to the notion of SoVC, research in social identity theory suggests that when members identify with the VC, they perceive themselves as an actual or symbolic part of the VC and are more likely to develop identification with and trust in the VC (Ashforth & Mael, 1989; Porter, 2004). Identification-based trust consists of the emotional bonds between a member and the VC (Hsu et al., 2007). Beliefs about the trustworthiness of a

group influence the perception of trustworthiness of the individual members of that group (Williams, 2001). Such perceptions are based on the similarity, proximity, and common fate of the VC. Since having a sense of membership, VC members are more likely to develop ties (i.e. business, connection) with the whole VC, their trusted target, and thus have more chance to perceive the connection and similarity between the firm and its subunit, the VC. Perceived interaction and similarity between the VC, trusted target, and the firm, less trusted target, is the premise for member' trusting beliefs in the host firm (Stewart, 2003). In such case, VC members use a third party's definition of another as a basis for defining that other as trustworthy and transfer from their trusted "proof source", the VC, to the host firm with which VC members has little or no direct experience (Doney & Cannon, 1997).

Social capital is positively related to a sense of membership because it is perceived by members of a community as a membership's benefits including socialization, altruistic behavior, trust, and confidence in mankind (Fraering & Minor, 2006; Pooley et al., 2005). Thus, in a VC where SoVC is observed, VC members incline to reproduce weak ties because these ties contribute more to social capital through a flatter or more horizontal network. Since flatter or more horizontal networks provide the mechanism through which information about the firm's trustworthiness travels to a wider variety of groups (Blanchard & Horan, 2000), VC members with strong SoVC are more likely develop higher trust in the firm.

H4: Customer' level of SoVC has a positive effect on customer' trust in the host firm

VIRTUAL COMMUNITY LOYALTY

Virtual communities tend to be characterized by a low entry and exit barriers. If a member does not agree with the group norms, the easiest option is to leave the virtual community and join another that is more similar in beliefs and behavior. In traditional groups, this option to leave and withdraw from group pressure to conform to norms is less available. Thus, VC loyalty is conceptualized as a community member's willingness to continue his or her membership and to promote the VC to other nonmembers.

TRUST AND VC LOYALTY

An alternative to explain why customers continue their membership of a certain VC is their belief in the trustworthiness of the firm supporting the VC. In marketing literature, trust has been found to affect on customer membership continuity in various contexts such as professional association (Gruen et al., 2000), paid membership (Bhattacharya, 1998), nonprofit organization (Bhattacharya et al., 1995), university alumni (Mael & Ashforth, 1992) and managing group (McAllister, 1995). For example, Bhattacharya (1998) reported that art museum members depending on their beliefs of the organization's ability to provide various membership benefits may decide to change their membership level (i.e., upgrade or downgrade) to the organization. Similarly, Mael & Ashforth (1992) found that emotional trust or identification-based trust encourages alumnus to strengthen their membership of the alma mater.

In the context of online marketing, trust makes consumers comfortable sharing personal information, making purchases, and acting on Web vendor advice (McKnight et al., 2002). Its consequences also include reduction of risk perception and behavioral

opportunism (Porter, 2004; Shankar et al., 2002). Trust is also found to mediate the affect of website design investment on website loyalty and purchase intentions (Schlosser etal., 2006; Wang et al., 2006). Since trusting beliefs will relate positively to trusting intentions (McKnight et al., 2002), a consumer with high trusting beliefs perceives the host firm to provide its community service that enable the consumer to depend on the firm to inquire information about the firm's products or services (Gefen, 2000). In addition, perceptions that the firm is trustworthy and willing to support member interaction, invest in VC content and reward VC contributors encourage the consumer to continue their membership of the VC. Theory of reasoned action research also supports the same result in which beliefs strongly predict corresponding intentions (Davis et al. 1989; Hsu & Lu, 2005). In other words, a community member with high trusting beliefs in the host firm is more likely to continue his or her membership of the VC. Thus, it is hypothesized that

H5: Customer trust in the host firm has a positive effect on customer's loyalty to the virtual community

SENSE OF VC AND VC LOYALTY

The feeling of community membership may be the most important motivator for sustained VC members' loyalty. Although the community is an open environment, individuals' participation is typically affected by other users' opinion (Schlosser, 2005). The perception of acceptance by other members will encourage customers to further participate in VC (Hsu & Lu, 2005). Moreover, in the process of satisfying individuals' needs as well as achieving a common interest and building relationships, users are likely to develop members' attraction to the community and vice versa. The collective sense would develop cohesion and consequently form a positive attitude toward the community. Finally, member's preference will influence member's loyalty to the online community (Hsu & Lu, 2005; Kang et al., 2007). Social identification theory has also found that perceived oneness with or belongingness to an organization, where the individual defines him or herself in terms of the organization of which he or she is a member consequently leads to loyalty to that organization, in this case, the virtual community (Mael and Ashforth, 1992; Bhattacharya & Sen, 2003). Perceived oneness whereby individuals see themselves as one with another person or group of people refers to an individual's sense of belonging and positive attitude toward a virtual community, which is similar to emotional commitment proposed by Ellemers et al. (1999). Emotional commitment fosters loyalty and citizenship performances in the group setting (Bergami & Bagozzi, 2000), and is useful in explaining individuals' willingness to maintain committed relationships with virtual communities (Bagozzi & Dholakia, 2002; Dholakia et al., 2004).

H6: Customer's level of sense of virtual community has a positive effect on customer's loyalty to the virtual community

SENSE OF VIRTUAL COMMUNITY

SOVC AND PERCEIVED VC MEMBER'S SUPPORT

Although researchers have suggested various types of customer-customer supportive values that members exchange, the majority of taxonomies conclude that two types – social support, and instrumental support – are essential to member's feelings in a VC (Bagozzi and Dholakia, 2002; Gruen et al., 2005; McAlexander et al., 2002). Social support provides people with a partner for activities, discussing their feelings and expressing their concerns and worries. Instrumental support provides members with practical help, assistance or financial aid to accomplish specific tasks.

Dunham et al. (1998) study presented evidence that an on-line community can provide meaningful social support. They found that a higher communication through e-mail messages were classified as supportive and that more frequent on-line participation related to lower feelings of isolation and higher unity and togetherness. Similarly, higher perceived supports from other members also remedy some of the negative effects associated with social exclusion (Baumeister et al., 2002; Maner et al., 2007) as well as enhance the connection to online groups (McKenna et al., 2002). Moreover, a qualitative study by McAlexander et al. (2002) evidenced that people attend events and meetings organized by firms because of the desire to get in touch with customers they already met in previous meetings.

Self-report data from other studies also suggest that information exchange contributed to the belief that membership in the community was useful for meeting members' needs. When having both public and private social-emotional support, VC members are considered as accepted and valued members in the community (Blanchard & Markus,

2004). By receiving social-emotional and instrumental support, VC members can fulfill their needs (e.g. professional development), be more congruent with group norms and perceive cohesiveness (Bagozzi & Dholakia, 2002), influence on and be influenced by other members (Schlosser, 2005), create identities for themselves and make identifications of others (Blanchard & Markus, 2004), and increase feelings of attachment to the whole VC (Dholakia et al., 2004). Thus, it is hypothesized that:

H7: Perceived member's supports have a positive effect on VC member's level of sense of virtual community.

SOVC AND LEVEL OF VC COMMUNICATION

Researchers have found that level of communication in community activities, such as meetings, related to the participants' sense of community (Kruger et al., 2001). McMillan and Chavis (1986) proposed that level of involvement within a community helps build an emotional connection among its members. Results of the Dunham et al. (1998) study support the importance of level of involvement in an on-line setting. They found that consistency of involvement (i.e., connections to the computer network) related positively to sense of community. Level of VC communication derived from information system perspective is conceptualized as the consistency of connecting to a VC and amount of shared information (measured by numbers of posts and replies) a VC member exchanges with others.

H8: a VC member's level of VC communication has a positive effect on his or her level of sense of virtual community

FIRM SUPPORTS AS MODERATORS & ANTECEDENTS

TRUST AND SOVC RELATIONSHIP

Previous studies has showed that firm's support for member communication stimulates more active communication, enhance the opportunity for members to develop close relationship with each other and with the host firm, and lead to the increased level of relationships with both the community and the firm (Kang et al., 2007; Rowley, 2001). Similarly, research in brand building context has suggested that firm may take indirect role in establishing the shared rituals, traditions, and meanings that foster consciousness of kind and have incentives to exercise moral responsibility to community (Muniz & O'guinn, 2001; Porter, 2004). Since it is harder to develop beliefs in an entity's abilities, benevolence and integrity when there is little interaction with it, a better communication system helps customers who are more attached with and integrated to the community build a stronger trusting belief toward the host firm.

Focusing on sociability and usability, information system researchers suggest that a VC with supports by the firm may strengthen the impact of sense of belonging on trust in the host firm. According to them, communication support and content enhancement promotes this impact in the sense that they increase ease of use and usefulness and makes customers more confident to expect that the firm will perform in according to customers' interests. Since usefulness and ease of use will promote stronger desire to participate in and interact with other members in the community, customers may have more chance to understand firm's products and policies. This makes them feel more comfortable and less risky when participating in the community or dealing with the firm's online services. Therefore, communication support and content enhancement should speed up the transfer

process from a perception toward the community to a belief toward the firm's ability, benevolence and integrity.

Like other supports by firm, firm's recognition for contribution such as formal rankings, privilege to access firm's resources, and participation in VC-related decisions may be expected to enhance the relationship between member's sense of community and trust in the firm. Since high attached customers have greater investments in and responsibility for the VC, tangible or intangible benefits of recognition signal the firm's efforts to value these contribution and, in turn, VC members will be motivated by further developing their trust toward the firm. Thus, it is hypothesized that:

H9: When a VC member's perception of a) support for member communication; b) content enhancement; and c) recognition for contribution increases, the relationship between his or her sense of virtual community and trust in the host firm will be strengthened.

CCP AND VC LOYALTY RELATIONSHIP

Although VC loyalty is posited to have an effect on CCP, not all VC loyal members exhibit consumer citizenship performances. Only those who are motivated and have opportunities to do so are likely to behave as organizational citizens. On the other hand, CCP is the ultimate goal the firm aims to when it invests in the virtual community and provides supports for its customers. Therefore, the valuable distinction of firm supports perceived by VC members will facilitate the impact of VC loyalty on CCP. Specifically, support for communication facilitates CCP in the way that members can help others, express WOM and involve in suggestion boxes more easily. On the other side, communication facilitates easier comparison of alternatives and makes it faster any negative word-of-mouth when the firm is unintentionally offering an inferior product or when the firm has involved in deceptive activities. This increases the chances for competing products to lure existing customers, and loss of loyalty to the focal service. Therefore, relationship between VC loyalty and loyalty intention depends on how firm deals with these issues. An appropriate response by providing credible & timely information and a positive communication mechanism not only reduces negative effects, but also shows that the firm really cares about its customer's benefits.

Also, content enhancement may create more relevant information for customers while they choose the service provider. The easier access to information typically reinforces the tendency to go back to a preferred service provider. Moreover, since these community-committed members are customers or potential customers of the host firm, who primarily visit the community to satisfy their information need, efforts of the firm to provide valuable content will increase customers' perception about firm's obligations and

reciprocate by sharing their valuable information. Thus, perceived content enhancement may also have an impact on the relationship between an individual's loyalty to the online community and voluntary contributions to the host firm. Likewise, the firm may motivate loyal members by offering them various feedback or rewards for contribution to involve in CCP. An inappropriate or poor reward system will erode enthusiasts' intrinsic motivation for contribution (Moon & Sproull, 2001). Since incentives are valued by customers under different degree and perspectives, it is likely that higher perception of recognition will promote a stronger relationship between VC member loyalty and CCP. Thus, it is hypothesized that:

H10: When a VC member's perception of a) support for member communication; b) content enhancement; and c) recognition for contribution increases, the relationship between his or her VC loyalty and CCP will be strengthened.

TRUST AND FIRM SUPPORTS

Perceived support for member communication is conceptualized as the extent to which the organization provides its members with the motivation, opportunity, and ability to exchange value with one another (Gruen et al., 2000). Empirical service marketing studies suggest that perceived firm's responses to service atmospherics may enhance the quality of customer interactions as well as customer compatibility and subsequently create a positive feeling about the service provider (Bettencourt, 1997; Bitner, 1990; Moore et al., 2005). Also, since perceived support by the firm strengthens a customer's belief that firm truly cares about them and values them as a valuable customer, it is expected that customer trust and perceived support for member communication will be positively related.

H11a: Perceived support for member communication has a positive effect on customer trust in the host firm

Perceived VC content enhancement is conceptualized as a community member's belief that a host firm makes efforts to provide members with access to quality information. Quality information refers to the credibility, accessibility, relevancy and timeliness of the information provided by the firm. The trust-building process requires that online firm clearly define the community's focus and provide update, reliable and useful content (Rothaermel and Sugiyama 2001; Williams and Cothrell, 2000). There is evidence that suggests a positive relationship between content enhancement and customer's belief in the firm's efforts. In general online context, website design investment is hypothesized to enhance customer trusting beliefs and intentions (Schlosser et al., 2006). Members are likely to trust of and stay at a VC not only if they had a successful experience with the

VC, but also if they think that the VC has something new to offer (Rowley, 2001). It is expected, therefore, that the customer's perception that the host firm is providing access to quality content in a virtual community will result in a positive customer's belief of the firm.

H11b: Perceived VC content enhancement has a positive effect on customer trust in the host firm

Perceived recognition for contributions is conceptualized as the extent to which the firm demonstrates to the coproducing members that it values their contributions (Gruen et al., 2000). Notice that both suggestions for improvement and complaints are considered contributions. There are evidences that when the firm properly recognizes and provides positive feedback and reward for VC members' contribution, this motivates VC members to undertake the firm's domain (Jeppesen & Frederiksen, 2006; Preece, 2001). Specifically, consumers are willingness to provide feedback to firms regarding product or service issues in the hope of ultimately receiving product or service enhancements (Mathwick, 2002). They also incline to donate their efforts to the firm when receiving exclusive visibility of membership as categorized in the group they want to belong to (Bhattacharya et al., 1995). Since recognition for contributions reflects the organization's commitment to its contributing members (Gruen et al., 2000), given the findings that people tend to feel more favorable toward the firm that provide positive feedback, recognition for contributions should also have positive, direct effects on customer trust.

H11c: Perceived recognition for contribution has a positive effect on customer trust in the host firm

CHAPTER IV

RESEARCH DESIGN AND METHOD

This chapter describes the research design used to test the proposed model and hypotheses. The first section describes the research procedures used to conduct the study and the following sections describe the sampling plan, measures and data collection that were used in this study.

RESEARCH DESIGN

As mentioned in the previous section, the objective of this dissertation is to investigate factors such as consumers' feelings (sense of community, trust) and the host firm's supports that motivate consumers to exhibit their voluntary contributions and continue their membership in a firm-hosted online community. There are several research questions. First, whether social outcomes of customer-to-customer interactions have positive effects on relational outcomes of business-to-customer relationship? More specifically, how trust in the VC-host firm and sense of virtual community mediate the impacts of firm-related supports and VC members-related supports on the community-expected and the firm-expected outcomes. Second, how firm-related variables – support for member communication, content enhancement and recognition for contribution – foster consumer trust in the VC-host firm and consumer sense of virtual community? And, how VC member-related variables – perceived member's support and level of VC communication – contribution to the creation of sense of virtual community? Finally, how firm-related variables – support for member communication, content enhancement and recognition for contribution – moderate the relationship between customer-customer social outcomes and customer-business relational outcomes? Along with these purposes,

the methodology used to test the research model is a cross-sectional survey of members of firm-hosted virtual communities. Thus, it could produce quantitative data that aligns with the objectives of the study.

```
                    ┌─────────────────┐
                    │    Research     │
                    │    Purposes     │
                    └────────┬────────┘
                             ↓
┌────────────────────────────────────────────────────────┐
│                  Exploratory Study                     │
│  • Literature review                                    │
│  • Comments & advices from dissertation committee       │
│  • Observation of firm-hosted online communities        │
└───────────────────────────┬────────────────────────────┘
                             ↓
          ┌──────────────────────────────────────┐
          │              Pretest                 │
          │  • Test of research instrument        │
          │  • Questionnaire revision             │
          │  • Test of reliability                │
          │  • Test of possibility of survey      │
          └─────────────────┬────────────────────┘
                            ↓
┌────────────────────────────────────────────────────────┐
│                  Data Collection                       │
│  • Contact management board of online communities       │
│  • Advertisement in general bulletin board              │
│  • Seven-point Likert scale                             │
│  • Follow-up and remind after two weeks                 │
└───────────────────────────┬────────────────────────────┘
                            ↓
              ┌──────────────────────────────┐
              │         Data Analysis        │
              │  • Response rate              │
              │  • Nonresponse test           │
              │  • CFA                        │
              │  • SEM                        │
              │  • AMOS software              │
              └───────────────┬──────────────┘
                             ↓
                    ┌─────────────────┐
                    │     Survey      │
                    │     Results     │
                    └─────────────────┘
```

Figure 2: Research procedure

Exploratory Study

In the exploratory study, the author conducted a rigorous literature review combined with

observations in firm-hosted virtual communities to construct hypotheses and the proposed

model. The dissertation supervisors provided feedback concerning this qualitative study.

Firm-hosted online communities (e.g. Campbell's community, Nike+ community) were

observed and taken into account during the model development stage.

Since the research settings has a unique characteristic (i.e. online and collective), the

author used unobtrusive observation and direct interaction with VC members to observe

some major concepts such as sense of virtual community, perceived member support,

virtual community loyalty, etc in target online communities. Figure 3 and 4 are messages

that reflect some major concepts of the study.

Figure 3: Sense of Community

Figure 4: Sense of Community and Voluntary Participation

Figure 5: VC Member Support

Observation in and interaction with an online community has several advantages over the traditional qualitative methods in offline settings, such as focus groups and personal interviews. First, member interactions can be observed in a context that is real and not created or manipulated by the researcher.

Second, the community can be studied without any invasion of privacy or interference with its activity, while focus groups and personal interviews cannot be conducted unobtrusively. For example, the author was able to open a threat for discussion about studied constructs without collecting participants' personal information or interrupting their activities in the community. See Figure 6 and 7.

> Do these senses/feelings play important role in your participation and/or contribution to this forum and to the Campbell's as a whole?
> I LOVE THE CAMPBELL'S PRODUCTS AND ALSO LOVE PARTICIPATING IN THE EXCHANGING OF RECIPES. SOME PEOPLE POST RECIPES I'VE NEVER HEARD OF OR MAY HAVE HEARD OF IT BUT NEVER TRIED IT BEFORE. MAYBE WANTED TO TRY, BUT WANTED "A REVIEW FIRST".
> Candie><((">Jesus<")))><

Figure 6: Sense of Community and Contribution Relationship

> Do you feel a sense that you matter, or can make a difference, in a community and that the community matters to you? How?
> I CAN ONLY HOPE THAT I MATTER ON HERE, AND THAT MY RECIPES, HINTS AND FRIENDLINESS MAKES A DIFFERENCE TO SOMEONE, "EVEN IF JUST ONE".
> THE COMMUNITY OF GALS AND GUYS ON CAMPBELL'S FORUMS DO MATTER TO ME...WHEN THEY ARE SICK, I HURT FOR THEM AND KEEP THEM IN MY PRAYERS.
> I WANT TO MAKE A DIFFERENCE, NOT ONLY IN MY HOMETOWN BUT REACH OUT TO OTHERS. THIS (AS WELL AS OTHER INTERNET COMMUNITY) IS A GOOD WAY I CAN REACH AROUND THE WORLD, WHILE JUST SITTING IN "MY OWN LITTLE WORLD".

Figure 7: Discussions about Sense of Community

Finally, online communities can be accessible 24/7 and at any place. Thus, in contrast to traditional qualitative methods, online community research is less time consuming, less costly, and real-time, because of continuous access to informants (Kozinets 2002).

QUESTIONNAIRE DESIGN

Although web-based questionnaire approach have to overcome several challenges such as inaccurate response rate and response bias due to passive sampling, compared with the emailing questionnaire approach it was preferred to conduct the survey since the web-based approach is more efficient to control responses from respondents, to avoid junk email problem and to reduce data entry errors. On the basis of some evidence from qualitative research and relevant literature, respondents were asked to focus on the VC they are currently a member of.

The questionnaire starts with an introduction about the study and was structured into seven Web pages of questions that address perception-based measures related to the hypothesized constructs, and information about the respondents' psychographics and

demographics (see Appendix A). Specifically, introduction page presents the purpose of the study, how data would be used and asked target respondents for their voluntary participation. The second and third pages contain questions related to VC members' perceptions about the community, including sense of virtual community, loyalty toward the community and perceived supports from other VC members. The next three pages devotes to questions asking respondents about the host firm, including customer citizenship performance, trust in the host firm and perceived supports by the firm. The last pages cover respondents' psychographics and demographics. Questions in this section are optional. Responses are collected via a close-ended questionnaire. Seven-point Likert scale from 1 'strongly disagree' to 7 'strongly agree' is anchored for each item. The questionnaire was designed using Inquisite 8.0 and to reduce measurement errors, the software provides some techniques as follows: 1) Measurement items were automatically randomized within each set of construct items; 2) Items for one construct were placed in one table question; 3) The scale anchors (e.g. strongly agree, strongly disagree) were labeled continuously; 4) A continuously visible bar chart shows the real-time percentage of the survey completed by the respondent; and 5) Automatic prompts appears to inform a respondent that he/she has not provided an answer to a survey question

Note that the questionnaire used for pretest in ODU is slightly modified to conform to student pool. The screening questions assess whether a student has VC experience and is eligible for the survey, based on current or past membership in a virtual community. Eligible students are allowed to respond to all questions, while students without VC experience only answer demographic questions.

PRETEST

The pretest step focused on questionnaire clarity, question wording, questionnaire applicability (e.g. time to complete, web-based questionnaire designed to run in Internet browsers such as Internet Explorer or Mozilla Firefox) and construct reliability. In this procedure, respondents who are currently ODU students or staffs[3] and have some experience about firm-hosted online communities were invited to comments on the questionnaire. Their comments were considered a basis for questionnaire revisions. Then, the revised questionnaire was again published on the ODU website. Undergraduate students who were studying at CBPA were asked to participate in the research. The sample for pretest was comprised of 32 respondents[4]. The sample size was sufficient for testing construct reliability for major variables, given the number of items of each construct. Regarding measurement reliability, the Cronbach's alpha for all measures exceeded the minimum standard of .70 (Nunnally, 1978), with a half of scales having alphas exceeding 0.90. Table 10 presents the measurement reliability of the studied scales.

Table 10: Measurement Reliability of the Scales

Construct	Alpha
Trust in the host-firm (Tru)	0.95
Sense of virtual community (SoC)	0.86
Voluntary participation (Par)	0.95
Loyalty to the firm (Loy)	0.93
Voluntary cooperation (Cop)	0.88
Virtual community loyalty (Com)	0.89

---

[3] Dissertation committee, one ODU staff and two graduate students.
[4] 32 out of 254 students were qualified to take the survey.

SAMPLING

Since this research addresses the inter-effects of social and relational variables in VCs, the population of interest includes members of firm-hosted virtual communities on the Internet. Survey respondents are current members of virtual communities that are sponsored by consumer-product firms.

There are some reasons for selecting an online survey as opposed to traditional postal mail to conduct the research. First, online survey is consistent with the context of this study and target sample would be familiar with online survey techniques since respondents are Internet users. Second, the survey was designed and conducted in established online communities. So, it was able to identify and reach target respondents effectively. Finally, an online self-administered questionnaire can help to reduce survey cost and time, and to eliminate geographical limit (Dillman, 2000).

On the other hand, experiments in laboratory settings, in nature, have some disadvantages that are difficult to avoid such that the external validity is problematic, the sample size is often small and it is difficult in manipulating the experimental conditions to study perceptional constructs such as sense of community (Blanchard & Markus, 2004). Therefore, it is reasonable to study established virtual communities where observed SoVC is greater and, thus, maximizes external validity.

In general, there are two approaches to conduct a survey in an online community. The first one uses online consumer panels in which respondents are not requested to answer about any given online community instead they themselves specify the name of an online community they are participating in (Porter, 2004). Although this method can provide

data with a high variance of responses to test the proposed model, it may incur a high measurement error on respondents who have to recall their activities in their online community or who have participated in several online communities at the same time. Furthermore, the survey can be very costly since it is hard to reach a qualified respondent among a number of Internet users.

In the second approach, the survey is conducted in established virtual communities. Members of these VCs are requested to answer questions about the given VC they are currently participating in (Nambisan, 2005). The advantages of this method are measurement error and cost reductions.

In accordance with recent studies (Nambisan, 2005; Ridings et al., 2002), this study conducted the survey in selected online communities. To increase variance of responses, a number of different VCs were selected as a tentative pool of respondents. Moreover, to select a qualify online community in which not only sense of community should be observed among VC members, but also the number of postings and discussions is large enough to measure the level of interested variables, this paper suggests the following criteria:

(a) the community is run by or is directly connected to and supported by a firm that makes the product or provides the services (which members are buyers of or potential buyers of).

(b) the community must have at least (i) 10 postings per day; (ii) 15 different individuals posting over each 3 day period and (iii) 80% of postings receiving reply (Ridings et al., 2002).

Since the list of existing firm-hosted online communities is not available, this paper used Marketing Science Institute (MSI) member companies as a starting point to search for target firm-hosted online communities. After passing the above criteria, 28 qualified communities were selected. See Appendix B for the list of 28 communities.

A letter of research invitation describing goal of the study, survey plan, research sponsor etc. was sent to management boards of the 28 selected virtual communities to ask for participation in the study. Twelve communities did not reply, other ten refused to cooperate, and six communities agreed to participate. However, two communities were dropped out since their requirements do not meet the purpose of the study. Table 11 presents a summary of characteristics of the four studied communities.

Table 11: Summary of Four Studied Communities

Type or Name	Goal	Characteristics	Rewards System	Managing Board
Nike+	The community is a place to get answers, ask questions and openly discuss Nike+ with other runners	Nike+ Discussion Forums provide Nike members several sub-forums for funs and discussions, such as Challenges, Run Together, Facts & Funs, Questions & Answers, Products & Technology, Nike+ Coach. Nikeplus Module gives Nike+ runners (members) powerful tools for their training and community connection. These tools include My Runs (Run, Training, Goals, My Nike+ Mini, Map It, Widgets), Challenges (My Challenge, Gallery, Create A Challenge), Community (Teams, Events, Distance Club, World Runs), and Gear & Music (Gear, Power Song, Workout, Sport iMixes) Nike+ Discussion Forums and Nikeplus Module strongly tie in an innovative method in term of technology and management. Nike partners with Apple to allow its members to upload their running data to the community database.	The question author will have the option to mark any response as either "helpful" or "answered", both of which will add points to the answerer's account. For example, 6 points for a helpful post and 10 points for correct post.	Nike staffs involve in the community under screen names such as Nike+ Pro 1, Nike+ Pro 4, Nike+ Pro 16, and Nike+ Pro 30
myNBC	The community provides NBC fans a place to discuss about their idols and NBC favorite programs.	myNBC is a hierarchical message board with two levels. The myNBC board is organized for normal myNBC users, while the moderator forum is reserved for myNBC moderating team. A moderator can view messages posted in both levels, while messages created in the moderator forum is invisible to a normal member. myNBC is the biggest among studied communities. The community provides a number of communicating tools for its members, such as myNBC Home to personalize member account including myProfile, myMedia and myNetwork; People to enhance personal relationships; Boards (main message boards) for discussions; Groups to join various groups and thus enhance social networking; and Videos to share user's video.	There are two reward systems in myNBC: topic and member ratings from one to five stars. myNBC members can upgrade their rank by posting new messages and collecting stars.	NBCSkampy is the chief root admin (manager) of the community. The moderating team consists of different groups such as user moderator, administrator, root admin etc.

Type or Name	Goal	Characteristics	Rewards System	Managing Board
Cambell's Soup Community	A community for people to share recipe ideas, to swap cooking tips and to make new friends with other cooks at the community.	Members can send and receive private email-like messages among themselves. Like regular email, but only for messages sent within the community. A list of friends can be created in personal profile.	Ratings: a particular content can be rated with 1-5 stars. Reward points are assigned to a post (usually a question) by its author. The author then awards part or all of those assigned points to other members whose replies are helpful in answering the question.	Community mentors are Cambell's members who are expertise in their specific area. Kitchen Table Host is the only staff moderately participating in the community
Kraft Foods Community	The community is the members' place to connect with other cooks and share ideas about dinner, kitchen tips, entertaining, and healthy living.	The community includes two parts: message boards for sharing ideas and recipe exchange for exchanging or publishing recipes. Posts are list from newest to oldest.	Members may elect to rate a member or particular content with 1-5 stars. Food and Family Magazines are sent to members who have valuable contribution to the community. They can also access to a variety of new simple, delicious and relevant food solutions	The only moderator (Pam) is a Kraft's staff. Kraft recently introduced three more moderators to help its members in different areas.

KEY CONSTRUCT MEASURES

The current study develops measures following standard psychometric scale development procedures (Anderson and Gerbing 1988; Bagozzi and Phillips 1982). Multi-item scales are generated on the basis of previous measures, a review of the relevant literature, and interviews with people who are currently members of online forums directly sponsored by ecommerce firms.

CONSUMER CITIZENSHIP PERFORMANCE

Conceptually, customer citizenship performance measures all voluntary and relevant behaviors of community members that directly or indirectly contribute to the community's and the firm's performance. Specifically, customer citizenship performance as recommended by previous marketing researchers can be categorized into three dimensions including loyalty (the customer acts as promoter of the firm), cooperation (the customer acts as human resource), and participation (the customer acts as organizational consultant) (Bettencourt, 1997).

A pool of CCP-related measures from Bhattacharya & Sen's (2003) consumer loyalty scale; Bettencourt's (1997) service scales; Gruen et al.'s (2000) coproduction scale; Koh & Kim's (2004) community participation scale; Podsakoff et al.'s (2000) helping behavior and organizational compliance scales; Porter's (2004) community scale; Rosenbaum & Massiah's (2007) cooperation scale; Sirdeshmukh et al.'s (2002) retail and service loyalty scale and Zeithaml, Berry, & Parasuraman's (1996) organizational loyalty scale are reviewed and summarized. Consumer citizenship performance items are, then, adapted from three scales: Bettencourt (1997) for participation; Rosenbaum & Massiah

(2007) for cooperation and Zeithaml, Berry, & Parasuraman (1996) for loyalty intention. Since most of these scales were developed in contexts that are different from virtual community, items of the three citizenship dimensions are selected and modified to fit in the virtual community context.

First, loyalty intention scale measures a customer's future actions regarding doing business with and engaging in positive word of mouth about the VC-host firm. The scale items that reflect loyalty dimension are adapted from Zeithaml, Berry, and Parasuraman's (1996) organizational loyalty scale (reported reliability of .93). The 3-item scale captures how VC members intent to continue their business with the firm and how they are willing to recruit new customers. Second, voluntary participation scale measures a VC member's willingness to participate actively in extra roles such as consultancy and governance that are beyond generally expected levels. The scale items that reflect the participation dimension are adapted from Bettencourt's (1997) participation scale (reliability of .85) and Rosenbaum & Massiah's (2007) participation scale (reliability of .90) in service context. The 5-item scale focuses on the extent to which VC members contribute to community contents and programs, monitor community and firm-related problems, and play as helpful consultants. Finally, voluntary cooperation scale measures a VC member's willingness to cooperate with the VC-host firm. The scale items that reflect the cooperation dimension are adapted from Rosenbaum & Massiah's (2007) cooperation scale (reliability of .77) since Rosenbaum & Massiah's measures are also derived from Bettencourt's. The 4-item scale centralizes on to what extent VC members involve in helping other members, co-produce with employees and follow rules and policies of community and the firm.

VIRTUAL COMMUNITY LOYALTY

Essentially, loyalty to a virtual community is similar to loyalty intention to the firm in the sense that it indicates a deep and lasting bond between the two parties. However, while loyalty to a virtual community is come from social interactions among members sharing values, the foundation of loyalty to a firm derives from relational interactions between a customer and the firm.

Virtual community loyalty items are adapted from scales developed and recommended in Algesheimer et al. (2005). These items are selected and modified so that they represent VC member' future intentions in the context of online direct marketing to consumers. Specifically, the scale items that reflect VC member loyalty are mainly based on items from Algesheimer et al.'s (2005) membership continuance and recommendation intentions scales (reliabilities of .84 and .78, respectively) although Koh & Kim's (2004) community promotion scale (reliability of .78) and Van Dyne et al.'s (1994) organizational loyalty scale (reliability of .91) are also reviewed and summarized. The 3-item scale captures the degree of VC members' intentions to continue their membership, willingness to spend more time and effort for their community and desire to recommend the community to nonmembers.

TRUST IN THE HOST FIRM

Trust in the host firm measures a customer' trusting belief in the firm's benevolence, integrity and competence that are relied on the willingness of the customer to be vulnerable to the actions of the firm based on the expectation that the firm will perform a particular action important to the customer, irrespective of the ability to monitor or control the firm's behaviors (Hsu et al., 2007). Although various trusting beliefs have been studied in the literature, the majority can be conceptually clustered into three dimensions: benevolence, integrity and competence (McKnight et al., 2002). Trust in the host firm is conceptualized as a second-order construct and operationalized as competence (ability of the firm to do what a customer needs), benevolence (the firm's caring and motivation to act in the customer's interests), and integrity or credibility (the firm's honesty and promise keeping).

First, measures of trust from Doney & Cannon' (1997) interorganizational scale; Mayer & David's (1999) scale; McKnight et al. (2002) trusting belief scale; Porter's (2004) sponsor-trusting scale; Roberts et al.'s (2003) relationship quality scale; and Schlosser et al.' (2006) identification-based trust scale are reviewed and compared. Then, McKnight et al.'s (2002) most relevant scale is selected from this pool. Finally, trusting beliefs items are adapted and modified so that these scale items can capture the aspects of the belief that are most appropriate to the virtual community context. Specifically, for benevolence, the scale items are based on McKnight et al.'s (2002) benevolence belief scale (reliability of .91). The 4-item scale focuses on the firm acting in the customer's best interest, being genuinely concerned about customer's needs and desires, trying to help customers and considering customer's welfare when making decisions. For integrity,

the scale items that reflect this dimension are based on items from McKnight et al.'s (2002) integrity belief scale (reliability of .92). The 4 integrity items capture perceptions of the VC-host firm's honesty, truthfulness, fairness, and keeping promises (reliability /dependability). Finally, for competence, McKnight et al.'s (2002) competence belief scale (reliability of .95) are most relevance to adapt items for the competence scale. Although Porter's (2004) trust scale was developed in the virtual community context, the scale is inappropriate for this dimension since it focuses on judgment of firm's future actions rather than expertness or competence. The 4-item competence scale measures perceptions of how well the firm did its job in providing services and products, how capable the firm is to support online community and how much knowledge the firm has (expertness/competence) to fulfill customers' needs.

SENSE OF VIRTUAL COMMUNITY

Although earlier research conducted exploratory factor analyses which resulted in the development of a number of scales to measure sense of community or closely related constructs (Bardo, 1976; Doolittle & McDonald, 1978; Glynn, 1981; Naser & Julian, 1995; Skjaeveland, Garling, & Maeland, 1996), the four dimensional theory of McMillan and Chavis (1986) is still the only comprehensive theory of SoC that exists to date. This theory has indicated the validity and usefulness in understanding SoC across a diversity of communities from neighborhoods (Plas & Lewis, 1996), workplaces (Pretty & McCarthy, 1991), and online communities of interest (Obst et al., 2002). Moreover, Obst & White's (2004) study has shown that a four-factor model is consistent with the dimensions proposed by McMillan and Chavis (1986). However, they also indicate that additional research of SoC is still needed to improve measurement, especially in the

context of online community directly supported by the firm. A recent study conducted by Peterson and his colleges provided a consistent result with Obst & White's (2004). Thus, a brief sense of community scale (BSCS) suggested by Peterson et al. (2008), and principles offered by McMillan and Chavis (1986) are used as a foundation to create the measurement for this study. Conceptually, the four factors of membership, reciprocal influence, integration and fulfillment of need, and shared emotional connection are found to be associated with a sense of virtual community. A review of the current literature shows that sense of community scale has been widely operationalized in offline environment (Dunham et al., 1998; Lounsbury & DeNeui, 1996; Obst & White, 2004; and Rosenbaum et al., 2005). However, the usage of this scale in the online context is still rare and controversial (Kim et al., 2004). While Kim et al. (2004); Obst & White (2004) and Rosenbaum et al. (2005) studies presented SoC scales with four distinct factors, Dunham et al. (1998) and Lounsbury & DeNeui (1996) provided one large, first order-factor scales. Since the items in these scales still reflect the key meanings traditionally associated with four dimensional sense of community (Lounsbury & DeNeui, 1996), it is reasonable to include them into the study. Based on a sample of undergraduate students, Lounsbury & DeNeui (1996) proposed a 14-item scale (reliability of .92) to measure student experience of university life. Dunham et al. (1998) used a 7-item scale to capture sense of community of a single-mother sample in the context of computer-mediated social support. Cronbach alpha for the scale in this study is .84. A recent study by Obst & White (2004) tested the four-factor structure across multiple communities including neighborhood, students and interest group. The internal consistency for the 10-item scale was high with Cronbach alpha levels ranging from alpha =.80 in the student data to alpha

= .84 in the interest group data. In the context of service marketing, Rosenbaum et al. (2005) proposed a 9-item index with alpha coefficient of .93. Likewise, Kim et al. (2004) also introduced sixteen variables to cover the four dimensions. However, Cronbach's alpha coefficients for each of the factors were acceptable with alpha levels ranging from .64 to .77. In short, eight scale items used to operationalize the four dimensions of SoVC come from Peterson et al.'s (2008) scale with alpha coefficient of .92.

EXOGENOUS VARIABLES

The five exogenous variables are adapted and operationalized from existing scales such as Porter's (2004) perceived effort to encourage community interaction scales for perceived support for member communication, Kang et al.'s (2007) recognition for contribution scale (reliability of .93) for perceived recognition for contribution, Lin's (2007) information quality scale (reliability of .91) for perceived content enhancement, Dunham et al.'s (1998) social support scale (reliability of .90) for perceived members' support and Kruger et al.'s (2001) level of message exchange and consistency of connecting to community scales for level of VC communication.

Table 12: Summary of constructs

Constructs	Conceptualization	Sources	No. of Items
Customer Citizenship Performance	Customer willingly spreads positive WOM about the firm's offerings, acts as the firm's partial employee, and cooperates with the firm's employees in the context of virtual community	Bettencourt (1997); Rosenbaum & Massiah (2007); Zeithaml, Berry, and Parasuraman (1996)	12
Virtual Community Loyalty	Community member's willingness to continue his or her membership and to promote the VC to other nonmembers	Koh & Kim (2004)	3
Customer Trusting Belief	The willingness of the customer to be vulnerable to the actions of the firm based on the expectation that the firm will perform a particular action important to the customer, irrespective of the ability to monitor or control the firm's behaviors	McKnight et al. (2002)	11
Sense of virtual Community	A feeling that members [of a group] have of belonging, a feeling that members matter to one another and to the group, and a shared faith the members' needs will be met through their commitment to be together	Peterson et al. (2008)	8
Perceived Member's Support	Social support provides people with a partner for activities, discussing their feelings and expressing their concerns and worries. Instrumental support provides members with practical help, assistance or financial aid to accomplish specific tasks	Dunham et al. (1998)	3
Level of VC Communication	The consistency of connecting to a VC and amount of shared information a VC member exchanges with others	Kruger et al. (2001)	2
Support for Member Communication	The extent to which the organization provides its members with the motivation, opportunity, and ability to exchange value with one another	Porter (2004)	3
Content Enhancement	Community member's belief that a VC-host firm makes efforts to provide members with access to quality information	Lin (2007)	4
Recognition for Contribution	The extent to which the firm demonstrates to the coproducing members that it values their contributions	Kang et al. (2007)	3
			49

DATA COLLECTION

Data collection was conducted in four different communities including Nike+ Community, myNBC Community, Campbell's Community, and Kraft Community.

Since the list of personal email of the online community members is unavailable, a link to the web-based questionnaire was posted in a thread titled 'Survey Announcement' in a general bulletin board[5] of the forum, in which the author was introduced as independent researchers, explained the purpose of the study, and invited online community members to participate. This method also helped to reach lurkers who rarely post in the community. Figure 8 shows an example of survey announcement in myNBC community.

In order to avoid double entries, date and time of completion, as well as the unique key for each survey were captured. In addition, respondents were asked to voluntarily indicate their community user name or email addresses so that spam survey can be reduced by being cross-checked with the existing registration profiles.

The beginning date and time of each questionnaire was also collected. Those questionnaires have their time duration less than three minutes were eliminated from the data pool. The reversed scale items were also used to eliminate unqualified questionnaires.

Respondents in each online community were offered incentives in the form of a monetary award of a $5 Amazon gift card when taking the survey. VC members were assured that all information collected would be kept completely anonymous and confidential, and the

---

[5] Or in community blog.

results would be reported only in aggregate form. Two weeks after the survey was introduced, a follow-up threat was posted by a senior member to call VC members for participating in the study. See Appendix C for an example in Nike and Campbell's communities.

In total, 263 completed responses from the four surveyed online communities were received. Of the completed responses, 16 questionnaires were dropped out and 247 questionnaires were useable. The sample size of 247 acceptably meets the recommended minimum sample size requirement for stable parameter estimates using the SEM technique (Anderson and Gerbing, 1988).
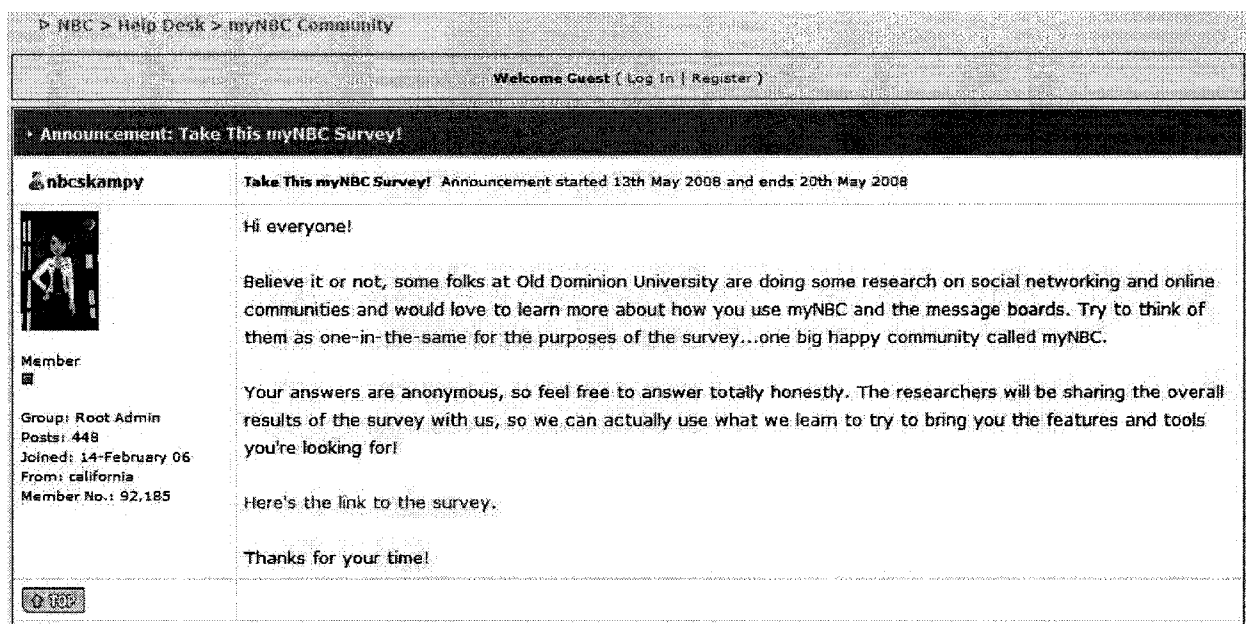
Figure 8: An Example of Survey Announcement

CHAPTER V

ANALYSES AND RESULTS

This chapter presents findings of the study. The first section summaries the profile of the sample across four studied communities. The next two sections – measurement model and structural model – describe the results of the main studies. While the first focuses on results of reliability and validity tests, the later shows results of hypothesis tests.

SAMPLE PROFILE

SUMMARY OF THE SAMPLE ACROSS FOUR COMMUNITIES

This part will summarize general statistics of the respondents. The sample includes 79 (32.0%) Nike members, 106 (42.9%) myNBC members, 19 (7.7%) Campbell members and 43 (17.4%) Kraft members (see Table 13). All respondents have been members of their respective online communities for a substantial period of time (35.6% for one year and 51.8% for two years).

Table 13: Number of Respondents from Target Communities

Target Community	Frequency	Percent
Nike+	79	32.0
myNBC	106	42.9
Campbell	19	7.7
Kraft	43	17.4
Total	247	100.0

The 247 respondents collected from the four online communities are dominated by female (71.0%), which reflects the three female-dominated communities: myNBC, Campbell and Kraft. The Nike+ sample is slightly dominated by male, while an overwhelming majority of Campbell, Kraft, and myNBC respondents are women.

These respondents age from under 21 to over 65. The age group of 31 to 40 has the highest percentage (32.1%), followed by 21 to 30 and 41 to 50 (22.0% &25.6%). Over 65 is the smallest group (1.2%). Nike sample has the same average age as myNBC sample, while Campbell and Kraft communities are more similar. Table 14 provides the demographic profile of the respondents.

Table 14: Demographic Information of Respondents

Target Community	Nike+	myNBC	Campbell	Kraft	Total
Gender					
Male	43 (54.4%)	22 (21.0%)	3 (15.8%)	3 (7.1%)	71 (29.0%)
Female	36 (45.6%)	83 (79.0%)	16 (84.2%)	39 (92.9%)	174 (71.0%)
Age					
Under 21	1 (1.3%)	13 (12.3%)			14 (5.7%)
21 to 30	17 (21.5%)	26 (24.5%)		11 (26.2%)	54 (22.0%)
31 to 40	38 (48.1%)	26 (24.5%)	5 (26.3%)	10 (23.8%)	79 (32.1%)
41 to 50	19 (24.1%)	25 (23.6%)	8 (42.1%)	11 (26.2%)	63 (25.6%)
51 to 65	4 (5.1%)	15 (14.2%)	6 (31.6%)	8 (19.0%)	33 (13.4%)
65 or over		1 (0.9%)		2 (4.8%)	3 (1.2%)
Computer Skill					
Beginner		3 (2.8%)	1 (5.3%)	10 (23.3%)	14 (5.7%)
Intermediate	22 (27.8%)	28 (26.4%)	5 (26.3%)	14 (32.6%)	69 (27.9%)
Skillful	45 (57.0%)	54 (50.9%)	5 (26.3%)	17 (39.5%)	121 (49.0%)
Professional	12 (15.2%)	21 (19.8%)	8 (42.1%)	2 (4.7%)	43 (17.4%)
Ranking					
Lowest	6 (7.7%)	11 (10.4%)	1 (5.3%)	7 (16.7%)	25 (10.2%)
Low	20 (25.6%)	24 (22.6%)	4 (21.1%)	14 (33.3%)	62 (25.3%)
Middle	25 (32.1%)	34 (32.1%)	3 (15.8%)	11 (26.2%)	73 (29.8%)
High	17 (21.8%)	20 (18.9%)	8 (42.1%)	4 (9.5%)	49 (20.0%)
Highest	6 (7.7%)	8 (7.5%)	1 (5.3%)	1 (2.4%)	16 (6.5%)
N/A	4 (5.1%)	9 (8.5%)	2 (10.5%)	5 (11.9%)	20 (8.2%)

Note: Due to missing values, the sum of numbers may be smaller than sample size. Percentage is calculated according to column total of each category.

Respondents' membership ranking from four communities is from lowest to highest following a normal curve and have significant computer skill (49.0% skillful and 17.4% professional). Nike+ and myNBC samples are more similar in terms of computer skill and ranking, while Campbell and Kraft are slightly different from the overall sample. Of the final sample of 247 cases, almost one-fourth of the respondents identified themselves

as high-ranking members of virtual communities while the remainder identified themselves as middle or low-ranking members (See Table 14).

The demographics of the sample are similar to the existing population of online communities in that the majority of respondents are more computer skillful and younger than the general population (i.e. age from 21 to 50).

Regarding online community usage behavior, the majority of respondents (78.6%) are frequent online community users (visit their community several times a week). Over half consider online communities a primary place to visit everyday (24.7% and 31.6%). See Table 15 for online community usage behavior of respondents.

Table 15: Summary of Virtual Community Usage Characteristics

Target Community	Nike+	myNBC	Campbell	Kraft	Total
Tenure (years)					
Less than 1 year	27 (34.2%)	46 (43.4%)	5 (26.3%)	10 (23.3%)	88 (35.6%)
1 to 2 years	50 (63.3%)	48 (45.3%)	7 (36.8%)	23 (53.5%)	128 (51.8%)
3 to 4 years	2 (2.5%)	8 (7.5%)	1 (5.3%)	6 (14.0%)	17 (6.9%)
4 to 5 years		3 (2.8%)	2 (10.5%)	3 (7.0%)	8 (3.2%)
More than 5 years		1 (0.9%)	4 (21.1%)	1 (2.3%)	6 (2.4%)
Visit					
Occasionally	1 (1.3%)	8 (7.5%)	2 (10.5%)	4 (9.3%)	15 (6.1%)
Once a month		2 (1.9%)		5 (11.6%)	7 (2.8%)
Several times a month		6 (5.7%)	2 (10.5%)	12 (27.9%)	20 (8.1%)
Once a week	1 (1.3%)	5 (4.7%)	1 (5.3%)	4 (9.3%)	11 (4.5%)
Several times a week	19 (24.1%)	21 (19.8%)	5 (26.3%)	10 (23.3%)	55 (22.3%)
Once a day	28 (35.4%)	26 (24.5%)	3 (15.8%)	4 (9.3%)	61 (24.7%)
Several times a day	30 (38.0%)	38 (35.8%)	6 (31.6%)	4 (9.3%)	78 (31.6%)
Hours					
Less than 1 hour	9 (11.4%)	23 (21.7%)	8 (42.1%)	16 (37.2%)	56 (22.7%)
1 to 4 hours	45 (57.0%)	53 (50.0%)	6 (31.6%)	24 (55.8%)	128 (51.8%)
5 to 10 hours	20 (25.3%)	14 (13.2%)	4 (21.1%)	3 (7.0%)	41 (16.6%)
More than 10 hours	5 (6.3%)	16 (15.1%)	1 (5.3%)		22 (8.9%)

The majority (77.3%) stay in their online community for more than one hour per week. More than 51% respondents spent on average 1-4 hours per week in their community and this category is also the highest across three out of four target communities. In addition,

more than 16% respondents said that they spend 5-10 hours in their community and nearly 9% stay there even longer.

In terms of membership tenure, visiting frequency and number of hours, there was sufficient variance among respondents. For example, regarding length of membership in the community, although the majority of respondents have been members for less than 5 years, approximately 51.8 percent of respondents have been a member from 1 to 2 years, 6.9 percent from 3 to 4 years and 35.6 percent reporting membership for less than 1 year. See Table 15 for a summary of virtual community usage characteristics of the sample.

Table 16 provides a crosstab summary of visiting frequency and number of hours per week. It is reasonable to state that VC members who visit their community several time a week or more are more likely to stay in the community longer than others (see the shadowed cells).

Table 16: A Crosstab Summary of Visiting Frequency vs. Number of Hours

Visit \ Hours/week	Less than 1 hour	1 to 4 hours	5 to 10 hours	More than 10 hours	Total
Occasionally	12 (4.9%)	1 (0.4%)	2 (0.8%)		15 (6.1%)
Once a month	3 (1.2%)	4 (1.6%)			7 (2.8%)
Several times a month	7 (2.8%)	12 (4.9%)	1 (0.4%)		20 (8.1%)
Once a week	3 (1.2%)	8 (3.2%)			11 (4.5%)
Several times a week	13 (5.3%)	40 (16.2%)	2 (0.8%)		55 (22.3%)
Once a day	13 (5.3%)	37 (15.0%)	10 (4.0%)	1 (0.4%)	61 (24.7%)
Several times a day	5 (2.0%)	26 (10.5%)	26 (10.5%)	21 (8.5%)	78 (31.6%)
Total	56 (22.7%)	128 (51.8%)	41 (16.6%)	22 (8.9%)	247 (100.0%)

Note: Percentage is calculated according to the sample total.

Furthermore, the survey achieved the desired variance in activity levels among respondents. In response to the Question "Compared to other members of the community, how often do you post messages on [Target Community]?" approximately 13 percent of respondents considered themselves "very frequently" while 7.7 percent and 23.9 percent

of respondents answered "never" or "seldom", respectively. 30.8 percent of respondents chose "sometimes" (see Question 12 in the survey questionnaire attached as Appendix A).

Finally, although a number of respondents (61 & 32) posted frequently in their community, this paper was able to not only capture very active participants in the sample, but also the so-called "lurkers", who only read the online community dialogue without contributing. Overall, 7.7% of respondents self-reported that they have not yet posted anything on the discussion boards, and nearly 24% of respondents indicated that they seldom post their messages during the time of data collection.

Table 17: Summary of VC Member's Posting Frequency

Target Community	Nike+	myNBC	Campbell	Kraft	Total
Never	2 (2.5%)	11 (10.4%)	1 (5.3%)	5 (11.6%)	19 (7.7%)
Seldom	21 (26.6%)	17 (16.0%)	4 (21.1%)	17 (39.5%)	59 (23.9%)
Sometimes	30 (38.0%)	32 (30.2%)	4 (21.1%)	10 (23.3%)	76 (30.8%)
Frequently	20 (25.3%)	23 (21.7%)	9 (47.4%)	9 (20.9%)	61 (24.7%)
Very frequently	6 (7.6%)	23 (21.7%)	1 (5.3%)	2 (4.7%)	32 (13.0%)

This demographic profile of respondents was expected because members of virtual communities are Internet users with pre-determined information searching and have stayed online to keep in touch with others as shown in Table 17.

RESPONSE RATE AND NONRESPONSE BIAS

The only possible measure of response rate is the number of completed surveys per number of unique clicks on the survey thread which contains the questionnaire link (Ridings et al. 2002). Table18 presents response rate of the four target communities and total response rate.

Table 18: Response rate of the Four Online Communities

Target Community	No. of Views[6] (Click)	No. of Responses	Response Rate (%)
Nike+	724	79	10.9
myNBC	1967	106	5.4
Kraft	567	43	7.6
Campbell	307	19	6.2
Total	**3565**	**247**	**6.9**

Following Armstrong & Overton (1977), nonresponse bias was assessed by verifying that early and late respondents were not significantly different. To examine potential nonresponse bias in the community survey, the means for the major variables and demographics of 25% early responses in each target community was used to compare with those of the 25% lately responses in each target community. Phi & Cramer's V test[7] were used for the demographic profiles including gender, age, computer skill and community tenure, and t-tests for sense of virtual community, trust in the host firm, loyalty intention and firm supports. At the $p < 0.05$ level, the only significantly different construct is sense of virtual community. This is reasonable since members with higher sense of virtual community tend to respond earlier. Table 19 shows the results of nonresponse bias test for demographic variables.

---

[6] No. of views may be slightly different from actual numbers since some members still view the survey threat after it was closed.

[7] Phi & Cramer's V test were used for nominal scales.

Table 19: Nonresponse Bias Test for Demographic Variables

Demographics	Value	P	Sig.
Gender			
Phi	0.09	0.39	ns
Cramer's V	0.09	0.39	ns
Age			
Phi	0.19	0.55	ns
Cramer's V	0.13	0.55	ns
Computer skill			
Phi	0.17	0.30	ns
Cramer's V	0.12	0.30	ns
Membership tenure			
Phi	0.18	0.40	ns
Cramer's V	0.13	0.40	ns

MEASUREMENT MODEL

RELIABILITY

To validate the measurement model, reliability, discriminant validity and convergent validity were assessed for the unobserved constructs. Table 20 shows the descriptive statistics of the ten major variables and Cronbach's alpha. Note that a VC member's level of communication including number of message exchanged and consistency of connecting to community are single-item measurements, and thus the assessment of alpha and factor analysis is not applicable. Cronbach's coefficient alpha for all constructs should exceed Nunnally's (1978) recommended minimum level of 0.70. Overall, the reliability of the measurement scales is good. All alphas are greater than 0.7 (0.85 – 0.95). Means for most variables are greater than neutral (4.22 – 5.45) and most of standard deviations are from 1.4 to 1.5 except for level of message exchange since it was measured by a 5 point scale.

Table 20: Descriptive Statistics and Measurement Reliability of the Scales

Construct	Mean	S.D.	Alpha
Trust in the host-firm (Tru)	4.65	1.34	0.95
Sense of virtual community (SoC)	4.79	1.43	0.94
Voluntary participation (Par)	4.73	1.41	0.88
Voluntary cooperation (Cop)	5.45	1.24	0.85
Loyalty to the firm (Loy)	5.41	1.48	0.95
Virtual community loyalty (Com)	5.40	1.41	0.89
Perceived member's support (Mem)	4.97	1.42	0.88
Content enhancement (Info)	5.22	1.36	0.94
Recognition for contribution (Rew)	4.22	1.52	0.94
Support for member communication (Inte)	4.75	1.51	0.91
Level of message exchange (Post)	3.11	1.14	NA
Consistency of connecting to community (Visit)	5.34	1.73	NA

Note: level of message exchange range from 1 to 5.

CONVERGENT AND DISCRIMINANT VALIDITY

The data collected from the sample of 247 online community members were first analyzed with a principal components factor analysis to examine the factorial validity of the scales. Table21 provides the rotated loadings of principal components factor analysis and the correlation & covariance matrix is shown in Appendix E. Because the underlying factors are expected to be correlated, a Promax rotation was utilized. Loadings from the Promax method were found very similar to a common Varimax rotation method (Ma & Agarwal, 2007). After inspection of the individual item loadings, one Par item (#1) and one Cop item (#1) with significant cross-loadings ($\geq$ 0.4) were deleted; and two Tru items (#1 & #9), two SoC items (#1 & #2) and one Par item (#3) with loadings lower than 0.65 were also deleted.

Table 21: A Summary of Goodness-of-Fit Indexes of Trust and Sense of Community Scales

Scale	χ^2	d.f	GFI	AGFI	CFI	RMSEA	Scale Items	Note
Trust	27.4	8	0.967	0.914	0.984	0.099	4, 5, 6, 7, 10, 11	Non-average
	0.00	0	1.000		1.000	0.783	4, 567, 1011	Average
Sense of	41.2	5	0.935	0.806	0.966	0.171	3, 4, 6, 7, 8	Non-average
community	0.00	0	1.000		1.000	0.786	34, 6, 78	Average

An individual CFA analysis was conducted on each of scales to purify them further. Except for Trust (Tru) and sense of virtual community (SoC), all other scales showed a very good fit index (CFI $\approx$ 0.99 $-$ 1.00). After deleting three Tru items (#2, #3, & #8) and one SoC item (#5), which have high error term correlations with other items, and averaging the remaining items, which have high correlation ($\geq$ 0.8), according to their underlying dimension (Tru4 for benevolence; Tru5, Tru6 & Tru7 for integrity; Tru10 & Tru11 for competence; SoC3 & SoC4 for membership; SoC6 for influence; SoC7 &

SoC8 for emotional connection), both sense of community and trust scales show a good fit index (See Table 21).

The final factor analysis indicated that there were 10 factors, extracting 83% of the variance. All the items of each construct loaded highly (≥ 0.70, except Tru10) on a single common factor and loaded with low coefficients (≤ 0.40) on all other factors, showing a good loading pattern (Hair et al. 1998).

Table 22: Result of Factor Analysis with a Promax Rotation

	SoC	Tru	Info	Rew	Par	Com	Loy	Cop	Mem	Inte
SoC3	0.86									
SoC4	0.87									
SoC6	0.81									
SoC7	0.88									
SoC8	0.79									
Tru4		0.82								
Tru5		0.81								
Tru6		0.80								
Tru7		0.78								
Tru10		0.64								
Tru11		0.87								
Info1			0.90							
Info2			0.85							
Info3			0.88							
Info4			0.80							
Rew1				0.93						
Rew2				0.89						
Rew3				0.82						
Par2					0.90					
Par4					0.85					
Par5					0.91					
Com1						0.76				
Com2						0.89				
Com3						0.82				
Loy1							0.75			
Loy2							0.80			
Loy3							0.98			
Cop2								0.80		
Cop3								0.76		
Cop4								0.98		
Mem1									0.78	
Mem2									0.92	
Mem3									0.75	
Inte1										0.73
Inte2										0.82
Inte3										0.80

Note. Tru = trust in the host firm; SoC = sense of community; Info = content enhancement; Rew = recognition for contribution; Par = participation; Cop = cooperation; Loy = loyalty to the firm; Com = virtual community loyalty; Mem = perceived member's support; Inte = support for member communication.
Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
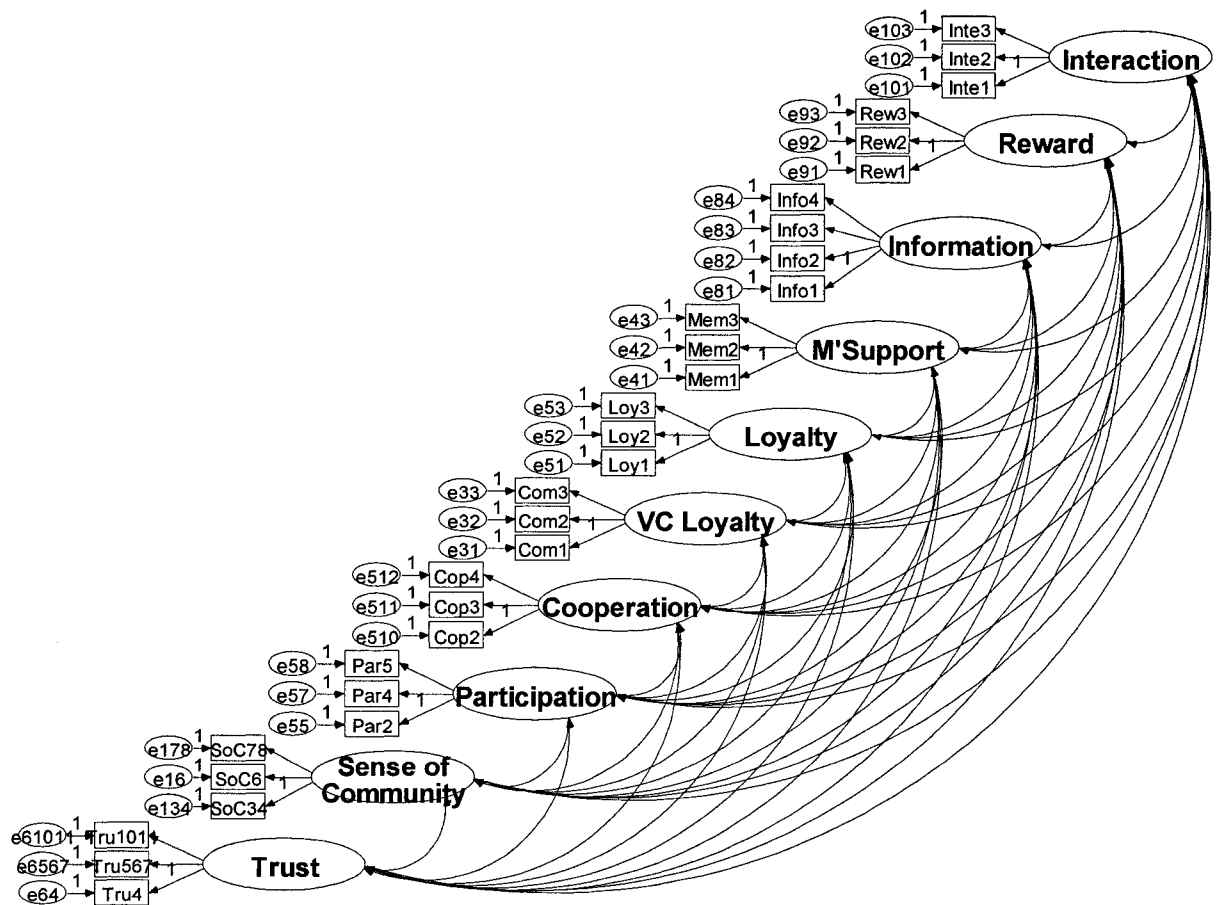
Figure 9: Confirmatory Factor Model in AMOS

The factor loading was then examined in an AMOS confirmatory factor analysis (CFA) (see Figure 9). The overall CFA of ten scales showed acceptable fit indexes (Byrne, 2001) with the $\chi^2_{338} = 629.4$, CFI = 0.965; RMSEA = 0.050; GFI = 0.858, AGFI = 0.818, NFI = 0.915. All items loaded significantly on their assigned latent constructs.

Second, convergent validity is achieved when items to measure a common underlying factor all have relatively high standardized loadings on the hypothesized factor (Kline, 2005). Specifically, three criteria were individual loadings greater than 0.70 (0.72 – 0.97), a significant (0.001 level) t statistic value for each path loading between 13.0 and 34.9,

and each loading greater than twice its standard error (0.028 – 0.085) (Anderson and Gerbing 1988).

Third, discriminant validity among the latent constructs is intuitively shown if the intercorrelations are less than 0.6 (McKnight et al., 2002). However, because this did not always hold, two additional analyses were conducted.

In the first procedure, consistent with Fornell and Larcker's (1981) test for discriminant validity, the average variance extracted (AVE) is greater than 0.50 for proposed constructs meaning that the latent construct captures more construct-related variance than error variance, and it was further verified that the square root of AVE of all constructs should be greater than the correlations for all constructs. Table 23 shows the correlations and covariances (above diagonal) between constructs, composite reliability, and the average variance extracted (AVE). To assess discriminant validity, square root of AVE should be larger than the correlations between constructs, i.e., the off-diagonal elements in Table 23 (Fornell and Larcker 1981). All constructs meet this requirement.

Table 23: Construct Correlations, Covariance, AVE square root, and Reliability

Construct	CR	Visit	Post	Par	Cop	Loy	Info	Rew	Inte	Tru	SoC	Com	Mem
Connecting (Visit)	na	**na**	0.91	0.41	0.41	0.32	0.10	-0.24	0.00	0.19	0.43	0.66	0.67
Message Ex. (Post)	na	0.46	**na**	0.69	0.48	0.29	0.08	-0.33	-0.10	0.01	0.64	0.53	0.41
Participation (par)	0.88	0.17	0.43	**0.84**	0.79	0.58	0.38	0.30	0.39	0.39	0.67	0.68	0.56
Cooperation (Cop)	0.85	0.19	0.34	0.45	**0.81**	0.83	0.71	0.46	0.66	0.75	0.87	0.80	0.91
Loyalty (Loy)	0.95	0.13	0.17	0.28	0.45	**0.93**	1.14	1.11	1.31	1.32	1.26	1.32	1.20
Information (Info)	0.94	0.04	0.05	0.20	0.42	0.57	**0.89**	1.05	1.28	1.21	0.94	0.92	0.98
Reward (Rew)	0.94	-0.09	-0.19	0.14	0.24	0.49	0.51	**0.91**	1.60	1.19	0.75	0.74	0.65
Interaction (Inte)	0.91	0.00	-0.06	0.18	0.35	0.59	0.63	0.70	**0.88**	1.31	1.02	1.07	0.98
Trust (tru)	0.90	0.08	0.01	0.21	0.45	0.68	0.67	0.59	0.65	**0.86**	1.07	1.04	1.04
SoVC (SoC)	0.90	0.17	0.39	0.33	0.49	0.60	0.48	0.34	0.47	0.56	**0.86**	1.36	1.28
VC Loyalty (Com)	0.90	0.27	0.33	0.34	0.46	0.63	0.48	0.34	0.50	0.55	0.67	**0.86**	1.18
Mem. Support (Mem)	0.89	0.27	0.25	0.28	0.52	0.57	0.51	0.30	0.46	0.55	0.63	0.59	**0.85**

Notes. Composite reliability = $(\Sigma\lambda_i)^2 /((\Sigma\lambda_i)^2 + \Sigma\varepsilon_i)$; AVE = $\Sigma\lambda^2_i/(\Sigma\lambda^2_i + \Sigma\varepsilon_i)$; $\varepsilon_i = 1 - \lambda^2_i$.
Correlation is significant at the 0.01 level (two-tailed);

In the second procedure, discriminant analysis was assessed by comparing the CFA of the original model including its ten latent constructs (unconstrained model) with all possible alternative CFAs (constrained model) in which the correlation of each pair of latent constructs were fixed to unity, as done by Bagozzi, Yi, and Phillips (1991), and then a chi-square difference test between the constrained and the unconstrained measurement models was conducted. Discriminant validity of the original model is established when the chi-square of any of the alternative CFA models with a pair of latent constructs constrained (the correlation is fixed to one) is significantly larger than that of the unconstrained original CFA.

This test created 45 different pairs of multi-item constructs. The analysis shows that the χ^2 between any of the 45-constrained CFA models with the correlation of a pair of latent constructs set to one is significantly larger than that of the original CFA with 10 distinct latent constructs. Thus, the results provid strong evidence for discriminant validity among all constructs in the hypothesized model (Kline, 1999). Table 24 shows the assessment of discriminant validity by comparing the original unconstrained model with other constrained models.

Table 24: Assessment of Discriminant Validity: Unconstrained vs. Constrained Models

Model	χ^2	d.f	χ^2/d.f	Δd.f	$\Delta\chi^2$	P
Unconstrained Model	629.4	388	1.62			
Model 1: Trust & Sense of Community	897.2	389	2.31	1	267.8	0.000
Model 2: Trust & Participation	1066.8	389	2.74	1	437.5	0.000
Model 3: Trust & Cooperation	863.0	389	2.22	1	233.6	0.000
Model 4: Trust & VC Loyalty	903.9	389	2.32	1	274.6	0.000
Model 5: Trust & Loyalty	846.1	389	2.18	1	216.7	0.000
Model 6: Trust & Member's Support	923.1	389	2.37	1	293.7	0.000
Model 7: Trust & Information	849.6	389	2.18	1	220.3	0.000
Model 8: Trust & Reward	910.7	389	2.34	1	281.4	0.000
Model 9: Trust & Interaction	836.6	389	2.15	1	207.2	0.000
Model 10: Sense of Community & Participation	1030.1	389	2.65	1	400.8	0.000
Model 11: Sense of Community & Cooperation	851.0	389	2.19	1	221.6	0.000
Model 12: Sense of Community & VC Loyalty	800.8	389	2.06	1	171.4	0.000
Model 13: Sense of Community & Loyalty	906.0	389	2.33	1	276.6	0.000
Model 14: Sense of Community & Member's Support	845.4	389	2.17	1	216.0	0.000
Model 15: Sense of Community & Information	974.4	389	2.51	1	345.0	0.000
Model 16: Sense of Community & Reward	1028.7	389	2.65	1	399.3	0.000
Model 17: Sense of Community & Interaction	963.5	389	2.48	1	334.1	0.000
Model 18: Participation & Cooperation	854.1	389	2.20	1	224.7	0.000
Model 19: Participation & VC Loyalty	1020.4	389	2.62	1	391.1	0.000
Model 20: Participation & Loyalty	992.6	389	2.55	1	363.2	0.000
Model 21: Participation & Member's Support	994.9	389	2.56	1	365.5	0.000
Model 22: Participation & Information	1004.8	389	2.58	1	375.4	0.000
Model 23: Participation & Reward	1014.2	389	2.61	1	384.9	0.000
Model 24: Participation & Interaction	1107.6	389	2.85	1	478.2	0.000
Model 25: Cooperation & VC Loyalty	864.6	389	2.22	1	235.2	0.000
Model 26: Cooperation & Loyalty	878.3	389	2.26	1	248.9	0.000
Model 27: Cooperation & Member's Support	841.5	389	2.16	1	212.1	0.000
Model 28: Cooperation & Information	887.0	389	2.28	1	257.6	0.000
Model 29: Cooperation & Reward	930.1	389	2.39	1	300.7	0.000
Model 30: Cooperation & Interaction	903.1	389	2.32	1	273.7	0.000
Model 31: VC Loyalty & Loyalty	885.3	389	2.28	1	256.0	0.000
Model 32: VC Loyalty & Member's Support	888.2	389	2.28	1	258.8	0.000
Model 33: VC Loyalty & Information	971.2	389	2.50	1	341.8	0.000
Model 34: VC Loyalty & Reward	1026.5	389	2.64	1	397.1	0.000
Model 35: VC Loyalty & Interaction	947.9	389	2.44	1	318.5	0.000
Model 36: Loyalty & Member's Support	927.5	389	2.38	1	298.1	0.000
Model 37: Loyalty & Information	1086.1	389	2.79	1	456.7	0.000
Model 38: Loyalty & Reward	1164.0	389	2.99	1	534.6	0.000
Model 39: Loyalty & Interaction	944.5	389	2.43	1	315.1	0.000
Model 40: Member's Support & Information	976.4	389	2.51	1	347.0	0.000
Model 41: Member's Support & Reward	1045.4	389	2.69	1	416.0	0.000
Model 42: Member's Support & Interaction	981.9	389	2.52	1	352.6	0.000
Model 43: Information & Reward	1140.6	389	2.93	1	511.2	0.000
Model 44: Information & Interaction	910.4	389	2.34	1	281.0	0.000
Model 45: Reward & Interaction	849.0	389	2.18	1	219.7	0.000

STRUCTURAL MODEL

Following the two-step approach (Anderson and Gerbing 1988), the paper uses structural equation modeling (SEM) to test all hypotheses and to estimate both direct and interaction effects in the proposed model.

This paper analyzed the research model using AMOS on the covariance matrix of the data. Like LISREL, AMOS examines all covariance values in the data when estimating coefficients. Thus, the software is able to provide modification indexes which show unhypothesized paths that may have been overlooked based on values of modification indexes, providing indications not only as to whether the relationships that were specified are significant, but also whether the model may be incomplete or made more parsimonious models[8] that are statistically more precise (Gerbing and Anderson 1988).

To test the effects and statistical significance of the parameters in the structural model, this paper used a maximum likelihood procedure and the fit saturated & independence models for the purpose of computing fit measures with incomplete data. Maximum likelihood estimation technique was chosen because all observed variables are interval scaled and they meet the multivariate normality assumption. As suggested by Kline (1998) and Schumacker & Lomax (2004), the paper employed a hierarchical approach including a series of nested models to test the proposed hypotheses, in which it first estimated the hypothesized model with the direct effects (model 1 with predictors) only, then included unhypothesized paths (model 2 with predictors and unhypothesized paths), finally added the interaction effects in model 3 with predictors and moderators.

---

[8] Non-significant paths were taken out and some additional paths which are supported by literature were included in the final model.

HYPOTHESIZED MODEL

In the hypothesized model, sense of virtual community (SoVC), trust in the host firm (Trust) and virtual community loyalty (VC Loyalty) were mapped as predictors of customer citizenship performance including loyalty to the firm (Loyalty), voluntary cooperation (Cooperation) and voluntary participation (Participation). Likewise, level of message exchange (Member's Post), consistency of connecting to community (Member's Visit), perceived member's support (Member Support) and perceived supports by the firm (Interaction, Information and Reward) were presented as predictors of sense of virtual community and trust in the host firm, respectively. Disturbance (residual) terms (d_i) were associated with each endogenous variable to indicate errors in the prediction of endogenous variables from exogenous variables, while errors (e_i) associated with indicators (observed variables) represents the measurement errors. Moreover, latent constructs (unobserved) were placed in ellipses, while observed variables in rectangulars. See Figure 10
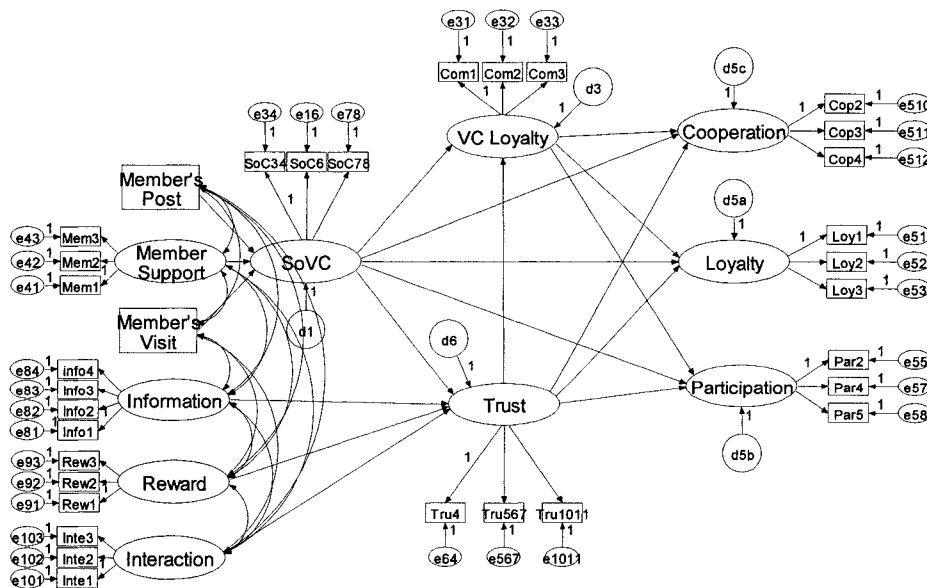
Figure 10: Hypothesized Model without Moderators in AMOS

The relationships among perceived member's support, level of message exchange and consistency of connecting to community and the three constructs of perceived support by firm (content enhancement, recognition for contribution, and support for member communication) were drawn in accordance with AMOS defaults as covariances among exogenous variables. Figure 10 represents the AMOS graphics of the hypothesized model without moderators.

Table 25: Regression Weights of the Hypothesized Model

Predictors		Dependents	Estimate	S.E.	C.R.	P
Member's Support	→	SoVC	.717	.058	12.404	***
Post	→	SoVC	.364	.066	5.518	***
Visit	→	SoVC	-.117	.043	-2.698	.007
Information	→	Trust	.324	.062	5.231	***
Interaction	→	Trust	.164	.071	2.296	.022
Reward	→	Trust	.210	.062	3.368	***
SoVC	→	Trust	.226	.042	5.323	***
SoVC	→	VC Loyalty	.600	.065	9.211	***
SoVC	→	Loyalty	.155	.076	2.040	.041
SoVC	→	Participation	.226	.094	2.406	.016
SoVC	→	Cooperation	.328	.090	3.622	***
Trust	→	VC Loyalty	.339	.076	4.470	***
Trust	→	Participation	-.063	.088	-.712	.476
Trust	→	Cooperation	.298	.087	3.444	***
Trust	→	Loyalty	.663	.081	8.178	***
VC Loyalty	→	Cooperation	.052	.095	.547	.584
VC Loyalty	→	Participation	.163	.100	1.638	.101
VC Loyalty	→	Loyalty	.257	.081	3.175	.002

Note. *** P < 0.001

The first row of Table 26 shows that CFI was close to 0.95 and RMSEA close to 0.05, indicating the hypothesized model was acceptable fit with the sample data. The results from Table 25 also showed that 1) the effect of Trust in the host firm on voluntary participation and that of virtual community loyalty on both voluntary participation and cooperation are not statistically significant; and 2) sense of virtual community and perceived support for member communication (interaction) have a slightly weak effect

(0.01 < p < 0.05) on loyalty, participation and trust, respectively. To construct a parsimonious model, nonsignificant paths (p > 0.1) will be eliminated sequentially, beginning with the worse nonsignificant path (biggest p-value), and the model is refit after each path is eliminated.

To see it is worthwhile to drop these weakly or non-significant paths, the hypothesized model was constrained to create four different nested models. Model 1 was formed when the three non-significant paths – VC Loyalty $\rightarrow$ Participation, VC Loyalty $\rightarrow$ Cooperation, and Trust $\rightarrow$ Participation – were constrained to zero. Model 2, 3, 4 were created by constraining three weakly significant paths of SoVC $\rightarrow$ Loyalty, SoVC $\rightarrow$ Participation, and Interaction $\rightarrow$ Trust to zero, respectively. Table 26 illustrates the fit index comparisons between each of four constrained models and the hypothesized model. The results from this table indicate that while the $\chi^2_{difference}(3)$ statistic between model 1 and the hypothesized model is not significant (p = 0.456) and RMSEA is 0.057 lower than 0.058, the $\chi^2_{difference}(1)$ statistics between model 2,3,4 and the hypothesized model are moderately significant (P = 0.025 & 0.056) and CFI is 0.947 lower than 0.948. Therefore, it is worthwhile to keep weakly significant paths and delete a set of three non-significant paths of the hypothesized model.

Table 26: Model Comparisons with Weakly or Non-significant Paths Taken Out

Model	CFI	GFI	AGFI	RMSEA	χ^2	d.f	χ^2/d.f	Δd.f	$\Delta\chi^2$	P
Hypothesized Model	.948	.825	.788	.058	840.2	462	1.819			
Model 1: Take Out non-significant Paths	.948	.825	.789	.057	842.8	465	1.812	3	2.608	.456
Model 2: Take Out Interaction $\rightarrow$ Trust	.947	.824	.787	.058	845.2	463	1.825	1	5.041	.025
Model 3: Take Out SoC $\rightarrow$ Loyalty	.947	.825	.788	.058	843.8	463	1.822	1	3.658	.056
Model 4: Take Out SoC $\rightarrow$ Participation	.947	.824	.787	.058	845.2	463	1.825	1	5.025	.025

Although the fit index CFI was above 0.90 and RMSEA was below 0.06 suggesting that

model fit was only marginally adequate, a review of the modification indexes revealed

that some causal paths initially assumed to be null should be added based on theoretically

justified. Results related to this *modification* topic are discussed in the parsimonious

research model section.

PARSIMONIOUS RESEARCH MODEL

In reviewing the information provided in Table 27, the maximum MI (14.1) is associated with the regression path flowing from member's level of message exchange to voluntary participation (Post → Participation). In a previous section, the member's level of message exchange measuring level of communication was reflected such that a high number of messages posted were indicative of an active participation in the community. From a substantive perspective, it would seem perfectly reasonable that online community members who more frequently post in their online community should concurrently display high levels of voluntary participation.

Given the meaningfulness of this influential flow, the model was reestimated with the path from member's level of message exchange to voluntary participation (Post → Participation) specified as a free parameter. This model is subsequently labeled as Model 1. Results related to this respecified model are shown in Table 27.

The estimation of Model 1 yielded an overall $\chi^2_{(464)}$ value of 822.7, a GFI of .825, a CFI of .950, and an RMSEA of .056; the AIC value was 1016.7. Although the improvement in model fit for Model 1, compared with the originally hypothesized model, would appear to be trivial on the basis of the GFI, CFI, and RMSEA values, the model difference nonetheless was statistically significant ($\Delta\chi^2_{(1)} = 20.03$; $p < 0.001$). Table 28 shows the comparison of fit indexes between model 1 and hypothesized model.

Likewise, the regression paths flowing from perceived support for member communication to sense of virtual community (Interaction → SoVC), from member's level of message exchange to voluntary cooperation (Post → Cooperation) and from

consistency of connecting to virtual community loyalty (Visit → VC Loyalty), which the paper did not hypothesize, are sequentially respecified in accordance with their largest values of modification indexes. Also, these models are subsequently labeled as Model 2, 3, and 4. Modification indexes related to the structural parameters for Model 1, 2, and 3 are shown in Table 27

Table 27: Modification Indexes of Regression Weights

Respecified Model	Respecified Path	Unspecified Path with Max MI	M.I.	ΔPar
Hypothesized Model		Post → Participation	14.107	.234
Model 1	Post → Participation	Interaction → SoVC	13.897	.172
Model 2	Interaction → SoVC	Post → Cooperation	8.751	.179
Model 3	Post → Cooperation	Visit → VC Loyalty	7.478	.106

Values of fit indexes for the model with the path added are, as expected, better than those of the hypothesized model. Table 27 shows the comparison of fit indexes between model 2, 3, 4 and hypothesized model.

Table 28: Fit Indexes of Respecified Models Compared with Hypothesized Model

Model/Added Paths	CFI	NFI	GFI	AGFI	RMSEA	AIC	χ^2	d.f	χ^2/d.f	$\Delta\chi^2$	Δd.f	P
Hypothesized Model	.948	.891	.825	.789	.057	1034.8	842.8	465	1.812			
Model 1: Post → Participation	.950	.894	.829	.794	.056	1016.7	822.7	464	1.773	20.030	1	0.000
Model 2: Interaction → SoVC	.954	.897	.833	.798	.054	993.9	797.9	463	1.723	24.792	1	0.000
Model 3: Post → Cooperation	.955	.899	.837	.802	.053	980.9	782.9	462	1.695	14.979	1	0.000
Model 4: Visit → VC Loyalty	.957	.900	.838	.803	.053	974.6	774.6	461	1.680	8.363	1	0.004

Note: model 4 with lowest AIC is the most parsimonious model

Overall, the data support the theoretical framework of the hypothesized model. Table 28 shows the results of the parsimonious research model estimated by AMOS 5.0 after justifying modification indexes and deleting nonsignificant paths. All loadings were significant. Fit indexes were all within the accepted threshold: $\chi^2_{461} = 774.6$ with a ratio of χ^2/d.f less than 3, goodness of fit index GFI = 0.838, adjusted goodness of fit index

AGFI = 0.803, normed fit index NFI = 0.90, comparative fit index CFI = 0.957, and root mean square error of approximation RMSEA = 0.053 (Kline, 2005). Moreover, the squared multiple correlations (SMCs) for the structural equations indicate that the research model explains 65.6 percent, 71.6 percent, 64.0 percent, 42.7 percent, 25.4 and 66.7 percent of the variance in sense of virtual community, trust in the host firm, virtual community loyalty, voluntary participation, voluntary cooperation, and loyalty intention to the host firm, respectively. As expected, based on standardized coefficients, trust in the host firm (β = 0.516) is empirically the strongest predictor of loyalty intention, while sense of virtual community is, overall, the strongest predictor of customer citizenship performance (β = 0.217; 0.224; and 0.161). Finally, based on parameter estimates and associated t-values (CR), the majority of hypotheses were supported with some notable exceptions that will be described below (see Table 29). The remainder of this section addresses the results of each hypothesis test as shown in Table 29.

Hypotheses 1a, 1b, and 1c: It was hypothesized that customer's level of loyalty to the VC has positive effects on customer citizenship performances: a) voluntary participation, b) voluntary cooperation and c) loyalty intention to the host firm. At a significance level (α) of 0.05 (one-tailed), the results reveal that VC loyalty does not have a significant effect on either voluntary participation or cooperation. Hence, the paper does not find support for hypotheses 1a and 1b. As expected, the paper does find a positive and significant effect for VC loyalty on loyalty intention (β = 0.239; P < 0.001), in support of hypotheses 1c.

Hypotheses 2a, 2b, and 2c: It was hypothesized that customer's level of sense of virtual community has a positive effect on customer citizenship performance including a) voluntary participation, b) voluntary cooperation, and c) loyalty intention to the host firm. As expected, sense of virtual community has a positively significant impact on all three constructs of customer citizenship performance (β = 0.217; 0.224; and 0.161). Hence, the paper does find support for hypotheses 2a at a significant level (α) of 0.01, 2b and 2c at a level of 0.05.

Table 29: Parameter Estimates for the Parsimonious Research Model

Predictor	Dependent	Std.	Unstd.	S.E.	C.R.	P	Hypotheses	Findings
VC Loyalty	→ Participation	na	na	na	na	na	H1a	Not supported
VC Loyalty	→ Cooperation	na	na	na	na	na	H1b	Not supported
VC Loyalty	→ Loyalty	.239	.251	.081	3.084	.002	H1c	Supported
SoVC	→ Participation	.217	.181	.058	3.132	.002	H2a	Supported
SoVC	→ Cooperation	.224	.199	.078	2.558	.011	H2b	Supported
SoVC	→ Loyalty	.161	.170	.081	2.099	.036	H2c	Supported
Trust	→ Participation	na	na	na	na	na	H3a	Not supported
Trust	→ Cooperation	.372	.397	.086	4.643	***	H3b	Supported
Trust	→ Loyalty	.516	.651	.083	7.837	***	H3c	Supported
SoVC	→ Trust	.270	.225	.047	4.789	***	H4	Supported
Trust	→ VC Loyalty	.258	.310	.079	3.912	***	H5	Supported
SoVC	→ VC Loyalty	.579	.582	.070	8.345	***	H6	Supported
Member's Support	→ SoVC	.522	.530	.065	8.126	***	H7	Supported
Post	→ SoVC	.330	.416	.066	6.320	***	H8a	Supported
Visit	→ SoVC	-.128	-.107	.043	-2.504	.012	H8b	Sig., NS
Interaction	→ Trust	.178	.148	.076	1.945	.052	H11a	Supported
Information	→ Trust	.348	.330	.062	5.336	***	H11b	Supported
Reward	→ Trust	.242	.210	.063	3.336	***	H11c	Supported
Post	→ Participation	.375	.395	.072	5.500	***	na	Supported
Interaction	→ SoVC	.297	.296	.058	5.061	***	na	Supported
Post	→ Cooperation	.267	.299	.071	4.190	***	na	Supported
Visit	→ VC Loyalty	.138	.115	.039	2.945	.003	na	Supported

Note. *** P < 0.001. NS: not supported.

Hypotheses 3a, 3b, and 3c: It was hypothesized that customer's level of trust has a positive effect on customer citizenship performances including a) voluntary participation, b) voluntary cooperation, and c) loyalty intention to the host firm. Unexpectedly, there is no significant relationship between customer' trust in the host firm and customer's

voluntary participation. Thus, the hypothesis 3a is not supported. Although trust did not have a significant impact on participation, it was found as the strongest predictor of voluntary cooperation and loyalty intention. Therefore, the paper does find strong support for hypotheses 3b and 3c.

Hypotheses 4, 5, and 6: It was hypothesized that customer' level of sense of virtual community has a positive effect on both customer trust in the host firm and customer's loyalty to the virtual community. Furthermore, it was also hypothesized that customer trust in the host firm has a positive effect on customer's loyalty to the virtual community. As shown in Table 29, sense of virtual community has a positive and significant effect on both trust in the host firm and loyalty to the virtual community. Moreover, SoVC is the strongest predictor of virtual community loyalty. Trust in the host firm is, also, found to have a positive and significant impact on loyalty to the virtual community. Therefore, all three hypotheses 4, 5 and 6 are supported.

Hypotheses 7 and 8: It was hypothesized that a VC member's level of VC communication and her/his perception of supports have a positive effect on her or his level of sense of virtual community. As expected, a member's level of message exchange and her/his perception of supports are positively associated with her or his level of sense of virtual community. Surprisingly, a VC member's consistency of connecting to community has a relatively weak but significant negative impact on her or his sense of community ($\beta = -0.128$; $p = 0.012$). So while the effect for hypothesis 8b is significant, the direction of the effect does not correspond with the hypothesis. In addition, hypotheses 7 and 8a are supported.

One of the explanations is that member's consistency of connecting to community has a negative impact on sense of community because many lurkers have visited the page frequently but they never post or participate in the community. Thus, their sense of community may be very low compared with other members who have largely involved in the community.

Hypotheses 11a, 11b, and 11c: It was hypothesized that a) perceived support for member communication, b) perceived VC content enhancement, and c) perceived recognition for contribution has a positive effect on customer trust in the host firm. There is evidence of a significant and positive relationship between perceived support for member communication, perceived VC content enhancement, and perceived recognition for contribution and customer trust in the host firm. Nevertheless, while perceived VC content enhancement has the highest impact on customer trust ($\beta = 0.348$; $p < 0.001$), perceived support for member communication has a moderately acceptable effect on customer trust ($\beta = 0.178$; $P \approx 0.05$). Overall, hypotheses 11a, 11b and 11c are all supported.
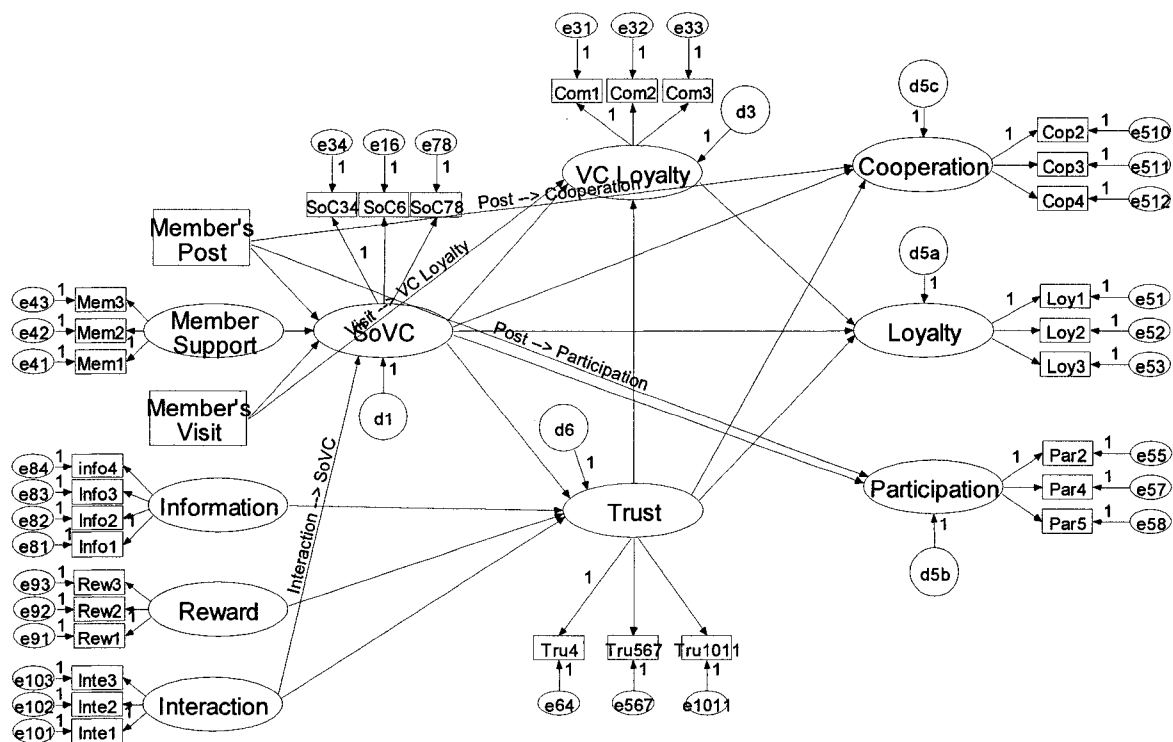
Figure 11: Parsimonious Research Model

Table 30: Results for Hierarchical Models

Model	CFI	NFI	GFI	AGFI	RMSEA	AIC	χ^2	d.f	χ^2/d.f
Measurement Model	.965	.915	.858	.818	.050	845.4	629.4	338	1.622
Hypothesized Model	.948	.891	.825	.789	.057	1034.8	842.8	465	1.812
Parsimonious Research Model	.957	.900	.838	.803	.053	974.6	774.6	461	1.680

TESTING MODERATORS

To test the 6 moderating hypotheses, the paper resorts to two different approaches. The first employed a multi-group or categorical-variable analysis (Kline, 1998). In the categorical-variable approach, the different samples were defined by the different levels of the interaction variable. The basic logic is that if interaction effects are present, then certain parameters should have different values in different samples (Schumacker & Lomax, 2004). The second adopted the continuous-variable or product-indicator method for measuring simultaneous interaction effects of the moderators (Chin et al., 2003). This method enables a researcher to test for a multiple interaction effects in SEM while simultaneously correcting for measurement error (Chin et al. 2003). Results from the two approaches were, then, compared and discussed.

In the first procedure, moderating hypotheses (H9 and H10) were assessed using multi-group analysis with respect to each of three moderators (perceived support for communication, perceived content enhancement and perceived recognition for contribution). Each of three moderators was analyzed separately since AMOS is only designed to examine a single moderator of an effect at a time. A common tactic in a multigroup path analysis is to impose cross-group equality constraints on the path coefficients. The chi-square of the model with its path coefficient constrained to equality was then contrasted against that of the unconstrained model. If the relative fit of the constrained model is much worse than that of the unconstrained model, one concludes that the direct effects differ across the group. Table 31 shows a summary of multi-group goodness-of-fit statistics with respect to each moderator: perceived support for

communication, perceived content enhancement and perceived recognition for contribution.

Table 31: A Summary of Multi-group Goodness-of-Fit Statistics

Model Description	Groups	χ^2	d.f	$\Delta\chi^2$	Δd.f	P	Hypotheses	Findings
Research model (model 1)		1479.6	923					
VC Loyalty → Loyalty constrained equal		1479.7	924	.114	1	.736	H10a	Not supported
VC Loyalty → Participation constrained equal	High interaction / Low interaction	1480.2	924	.640	1	.424	H10a	Not supported
VC Loyalty → Cooperation constrained equal		1479.9	924	.249	1	.618	H10a	Not supported
SoVC → Trust constrained equal		1479.8	924	.205	1	.651	H9a	Not supported
Research model (model 1)		1409.2	923					
VC Loyalty → Loyalty constrained equal		1411.8	924	2.551	1	.110	H10b	Not supported
VC Loyalty → Participation constrained equal	High information / Low information	1414.6	924	5.359	1	.021	H10b	Sig., NS
VC Loyalty → Cooperation constrained equal		1409.4	924	.182	1	.670	H10b	Not supported
SoVC → Trust constrained equal		1409.2	924	.029	1	.865	H9b	Not supported
Research model (model 1)		1315.2	923					
VC Loyalty → Loyalty constrained equal		1316.1	924	.858	1	.354	H10c	Not supported
VC Loyalty → Participation constrained equal	High reward / Low reward	1315.5	924	.295	1	.587	H10c	Not supported
VC Loyalty → Cooperation constrained equal		1315.4	924	.221	1	.638	H10c	Not supported
SoVC → Trust constrained equal		1315.7	924	.517	1	.472	H9c	Not supported

Note: Information = content enhancement; Reward = recognition for contribution; Interaction = support for communication.

The results from Table 31 indicate that only perceived content enhancement, at a significant level (α) of 0.05, has a light moderation on the posited link between loyalty to virtual community and voluntary participation. However, the path coefficient for low content enhancement group is higher than that for high content enhancement group. This

means that content enhancement undermines the relationship rather than strengthen it. Thus, hypotheses 9 and 10 are not supported.

In the second procedure, predictor (X), moderator (Z), and dependent (Y) variables are viewed as latent variables or constructs. Product indicators reflecting the latent interaction variable (XZ) are then created by multiplying the indicators from the predictor and the moderator variables as shown in Figure 12
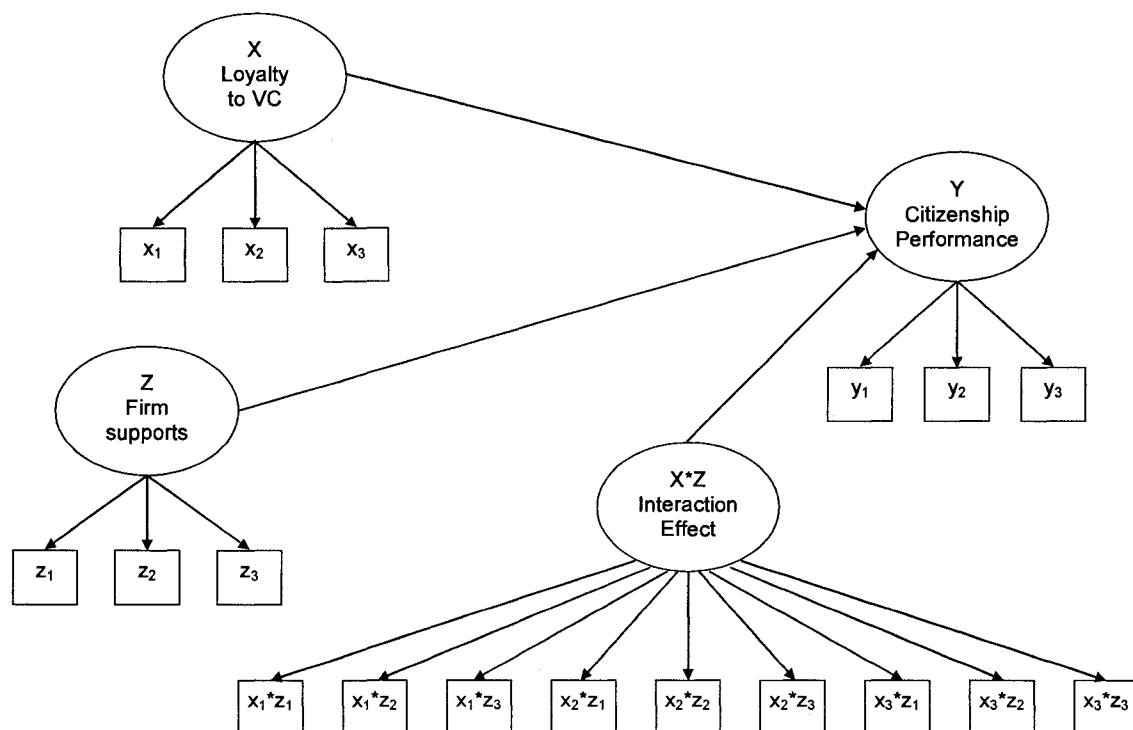
Figure 12: A Model with Produce Indicators for Interaction Constructs

The technique is outlined as follows. First, since the number of indicators of the latent interaction variable will grow quickly when the number of indicators of either predictor or moderator variables increase and that makes the model more affected by sample size, both predictor and moderator were transformed to composite scale format before performing any calculation. Second, to minimize the multicolinearity between the interaction variable and its corresponding predictor and moderator variables, it is

necessary to minimize the variance of the interaction variable by subtracting each indicator values from the predictor and moderator variables with the corresponding threshold values of those predictor and moderator (see Smith & Sasaki, 1979 for more information). Finally, produce indicators of the interaction variable were calculated and included in the model.

$$Var(\varepsilon_{xz}) = (1 - \alpha_{xz})*Var(XZ) = (1 - \alpha_x*\alpha_z)*Var(XZ)$$
Where
$$\alpha_{xz} = \lambda^2_{xz} = \lambda^2_x * \lambda^2_z = \alpha_x*\alpha_z$$
α: Composite reliability

Table 32: Parameter Estimates for the Model with Moderators of Trust & SoVC Relationship

Moderator & Interaction		Dependent	Std.	Unstd.	S.E.	C.R.	P	Hypotheses	Findings
SoVC	→	Trust	.261	.216	.045	4.822	***	H4	Supported
Interaction	→	Trust	.220	.179	.075	2.388	.017	H11a	Supported
Information	→	Trust	.351	.328	.063	5.227	***	H11b	Supported
Reward	→	Trust	.239	.205	.064	3.194	.001	H11c	Supported
SoVC_& Interaction	→	Trust	-.152	-.083	.113	-.730	.466	H9a	NS
SoVC_& Information	→	Trust	.010	.006	.052	.112	.911	H9b	NS
SoVC_& Reward	→	Trust	.115	.061	.086	.703	.482	H9c	NS

Note: Information = content enhancement; Reward = recognition for contribution; Interaction = support for communication.

Hypotheses 9a, 9b, and 9c: It was hypothesized that when a VC member's perception of a) support for member communication; b) content enhancement; and c) recognition for contribution increases, the relationship between his or her sense of virtual community and trust in the host firm will be strengthened. As expected, the results from Table 32 indicate that the main effects of perceived support for communication, perceived content enhancement and perceived recognition for contribution on the relationship between trust and sense of virtual community, as shown in parsimonious research model section, are statistically positive and significant. However, similar to the results from the first procedure of multi-group analysis, there are no statistical evidences to conclude about the

moderation effects of these three moderators on the relationship between trust and sense of virtual community. Therefore, hypotheses 9a, 9b, and 9c are not supported.

Table 33: Parameter Estimates for the Model with Moderators of CCP & VC Loyalty Relationship

Moderator & Interaction	Dependent	Std.	Unstd.	S.E.	C.R.	P	Hypotheses	Findings
VC Loyalty	→ Loyalty	.219	.227	.079	2.858	.004	H1c	Supported
Interaction	→ Participation	.107	.089	.123	.727	.467		
Interaction	→ Cooperation	.093	.082	.114	.722	.470		
Interaction	→ Loyalty	.114	.116	.095	1.225	.221		
VC Loyalty & Interaction	→ Participation	.573	.329	.158	2.088	.037	H10a	Supported
VC Loyalty & Interaction	→ Cooperation	.271	.165	.141	1.167	.243	H10a	NS
VC Loyalty & Interaction	→ Loyalty	.070	.050	.115	.434	.664	H10a	NS
Information	→ Participation	-.050	-.048	.103	-.461	.645		
Information	→ Cooperation	.073	.074	.102	.722	.470		
Information	→ Loyalty	.006	.007	.086	.085	.932		
VC Loyalty & Information	→ Participation	-.313	-.184	.083	-2.231	.026	H10b	Sig., NS
VC Loyalty & Information	→ Cooperation	-.167	-.104	.075	-1.401	.161	H10b	NS
VC Loyalty & Information	→ Loyalty	-.066	-.048	.061	-.784	.433	H10b	NS
Reward	→ Participation	-.086	-.076	.104	-.728	.467		
Reward	→ Cooperation	-.148	-.137	.099	-1.387	.165		
Reward	→ Loyalty	.051	.055	.082	.670	.503		
VC Loyalty & Reward	→ Participation	-.362	-.217	.124	-1.749	.080	H10c	Sig., NS
VC Loyalty & Reward	→ Cooperation	-.037	-.024	.112	-.212	.832	H10c	NS
VC Loyalty & Reward	→ Loyalty	-.120	-.089	.091	-.976	.329	H10c	NS

Note: Information = content enhancement; Reward = recognition for contribution; Interaction = support for communication.

Hypotheses 10a, 10b, and 10c: It was hypothesized that when a VC member's perception of a) support for member communication; b) content enhancement; and c) recognition for contribution increases, the relationship between his or her VC loyalty and CCP will be strengthened. Similar to the first procedure of multi-group analysis, perceived support for communication, perceived content enhancement and perceived recognition for contribution do not have direct effects on customer citizenship performance ($p > 0.1$). However, the relationship between loyalty to a virtual community and customer citizenship performance does not seem to be moderated by perceived support for communication, perceived content enhancement and perceived recognition for

contribution, except for the relationship between virtual community loyalty and voluntary participation. See Table 33.

Furthermore, contrary to the hypotheses 10b and 10c, the relationship between virtual community loyalty and voluntary participation is unexpectedly attenuated for higher levels of perceived content enhancement and perceived recognition for contribution (β = -.184 and β = -.217). Finally, the paper also find – conformable to the hypothesis 10a – that perceived support for communication acts as a moderator and strengthens the positive direct effect of virtual community loyalty on voluntary participation (β = .392). Therefore, with regard to the moderating hypotheses, the paper finds that hypothesis 10a is partially supported, while hypotheses 10b and 10c are not supported.

CHAPTER VI

DISCUSSION

As the rapid growth of firm-hosted online communities and the important contribution of online community to the firm, an increasing number of scholars have found more interest in studying online communities. Although researchers have addressed the issue of sense of community and customer citizenship performance in online communities, much of the extant research is either qualitative or single perspective in nature (e.g., Porter, 2004), or is research in which a marketing perspective has not been a central concern. This study represents one of the first attempts to quantitatively measure the impact of sense of virtual community and the host firm support in social networking environment.

The purpose of this paper was to investigate relationship between sense of community and consumer loyalty, and to gain insight into specifically how companies provide online communities with supports that motivate community members to exhibit their voluntary contributions and continue their membership in a firm-hosted online community. To that end, the author developed a social relational model combining existing community-related theories. Given the research context of online community, the author focused the hypothesized model on the relationship between C2C social constructs (sense of virtual community and loyalty to virtual community) and B2C relational constructs (trust in the host firm and loyalty intention to the host firm), and then investigated the moderating effects of firm supports (content enhancement, support for communication and recognition for contribution) on these relationships. Surveys were conducted in four firm-hosted online communities (one sport-related, one entertainment-related and two food-related communities) to provide empirical support for the proposed model.

Overall, the findings provide strong empirical support for the hypothesized relationships. They also clearly shows that a social sense and commitment to the collective developed during the course of online communication can lead to the increase in trust and loyalty to the host firm. The first important finding is that sense of virtual community is a powerful predictor of customer citizenship performance. This means that a customer with more emotional connection, more sense of belonging (attachment with), and more influence to the community as a whole will inspire her or his to exhibit higher commitment to the host firm, closer cooperation with the firm staff, and stronger participation in the firm programs.

Another aspect of the findings that is consistent with previous research on e-business is that online trust plays the most crucial role to build long-term relationship between the host firm and its customer and between the collective and its members, especially in an online environment where lack of physical cues.

Furthermore, contrary to Chiu et al.'s (2006) and Hsu et al.'s (2007) findings, an unexpected finding is that data from four communities does not support the hypotheses on the relationship between VC loyalty and both participation and cooperation. Customers who are committed to the firm-hosted online community are not necessary to contribute their efforts to the host firm.

Other un-hypothesized results are the direct links between level of message exchange and voluntary participation and cooperation, between connecting to community and VC loyalty, and between perceived support for communication and sense of virtual

community. Thus, a customer level of communication not only has an indirect effect via sense of virtual community but also a direct effect on VC loyalty and customer citizenship performance.

Furthermore, contrary to Kruger et al.'s (2001) findings, consistency of connecting to community negatively affects sense of virtual community. This finding is surprising, given a significant positive bivariate correlation between consistency of connecting to community and sense of virtual community.

A possible explanation for this unexpected finding is the fact that many lurkers have visited the page frequently but they never exchange message (post) with others or participate in the community. Thus, their sense of community may be very low compared with other members who have largely involved in the community. To verify this statement, the author carried out an additional analysis on the relationship between consistency of connecting to community (independent) and sense of virtual community (dependent) for two group members with high message exchange (frequently or very frequently posting) vs. low message exchange (never or seldom posting).

Table 34: The Impact of Visit on SoVC with High Post vs. Low Post

Model	Std.	Unstd.	S.E.	C.R.	P	χ^2	d.f	χ^2/d.f	CFI	RMSEA
Model 1: High message exchange	.021	.019	.102	.188	.851	5.975	2	2.99	0.975	.147
Model 2: Low message exchange	-.116	-.078	.081	-.967	.334	.072	2	.036	1.000	.000

The results from Table 34 show that path coefficients are different between the two groups. While the coefficient of the first group is positive, that of the second group is negative and the low message exchange model has a better fit index than that of the high

message exchange[9]. Therefore, the impact of connecting to community on sense of virtual community depends on message exchange behavior[10].

Finally, the author had also expected moderating effects of perceived content enhancement, support for communication and recognition for contribution on the relationships between sense of virtual community and trust to the host firm and between virtual community loyalty and loyalty intention, based on the argument that the more valuable supports a customer receives from the firm, the stronger will be her/his feeling toward the firm and hence obligation to perform her or his customer citizenship. However, the author only found a moderation effect of perceived support for communication on the relationship between virtual community loyalty and voluntary participation, while this relationship is actually weaken for higher levels of perceived content enhancement and perceived recognition for contribution. This finding highlights the importance of supportive instruments targeted to a specific group of customers to engage them to the host firm activities.

Regarding the first unexpected finding, according to loyalty-expectation theory, a customer who is highly committed to the firm-hosted community might expect 'better treatment' than other VC members, and in fact expects a higher quality of service (information content) provided by the firm. As a result, s/he may be less willing to make an effort in the firm-supported activities compared with other VC members when s/he perceives the same quality of information content as lower committed members perceive.

---

[9] Evaluation was based on CFI and RMSEA values.
[10] Moderating effect is significant at $p < 0.001$

Therefore, the more expectation the customer looks for from the firm, the weaker perceived content enhancement turns out.

With the second, according to the cognitive evaluation theory (CET), the recipients' interpretations of the rewards are in relation to their own feelings of self-determination and perceived competence (Deci et al., 1999).

In line with this theory, rewards can be interpreted by VC members primarily as controllers of their behavior or, alternatively, as indicators of their competence. In the former case, rewards are predicted to thwart satisfaction of the need for autonomy in the community, lead to more undermine intrinsic motivation of voluntary participation. For example, the host firm, generally, offers two types of rewards: engagement rewards, people have to engage in the task to get the reward, and performance rewards, people have to meet some standard in order to maximize rewards. In this case, if the reward provided by the host firm does not convey enough positive information that signifies a VC member's excellent performance or competence, a way to promote her or his identity, there is little or nothing to counteract the negative effects of the control. So the reward is likely to be experienced as controlling the task behavior. Therefore, rewards may even more undermine VC members' intrinsic motivation of voluntary participation, a free-choice behavior.

LIMITATIONS AND FUTURE RESEARCH

Prior to discussing the implications of findings, the author acknowledges the limitations of this study.

First, although the sample size of the study is adequate for testing the theoretical model, the survey was conducted in only four communities. Hence, some of the findings reported here may not extend to other community settings. Additional investigation with other types of online communities such as brand community, problem-solving or technical support community is necessary to generate findings that are more robust and generalizable. Furthermore, since the number of responses from the studied communities is asymmetric, it may not be possible to test path coefficients and significance across the four sites studied. An application of hierarchical linear model on a sample containing a wide range of online communities (e.g. 20 online communities and 30 respondents each) would be useful to evaluate typical characteristics of a firm-hosted online community.

Second, because of the cross-sectional design of this study, the significant paths between constructs can only be interpreted as correlation. The causal inferences are actually based on theoretical argumentation. The author acknowledges the possibility of non-recursive relationships between the studied constructs. For instance, sense of virtual community may be an effective predictor of customer citizenship performance and level of communication may be an effective mean to increase sense of virtual community. However, it is also possible that individuals may develop a positive sense toward the firm-hosted community while participating in events supported by the firm or their excitement about the community may urge them to communicate to other members even more. Further studies employing longitudinal or experimental designs would help clarify

the causal relationship between constructs. A longitudinal study that relates sense of virtual community and customer citizenship performance to longer-term member activity and behavior would enrich the findings further.

Finally, even though the study clearly emphasized the importance of studying moderating effects, the paper did not find a consistent pattern between predictor and moderator variables. The exact nature of the influence of C2C social constructs (i.e. sense of virtual community and VC loyalty) and firm supports on B2C relational constructs (i.e., trust and customer citizenship performance should therefore be investigated in future research. For example, an external experiment would be helpful to explore the moderating effect more deeply.

CONTRIBUTIONS AND IMPLICATIONS

The paper makes four theoretical and managerial contributions. First, the paper presents an interdisciplinary review of extant literature on firm-hosted virtual communities and builds on it to develop a conceptualization of relationships between customer-customer social outcomes and customer-business relational outcomes. Second, while previous research has predominantly focused on firm support as an antecedent of trust in customer-business dyadic relationships (Porter, 2004), this research investigates the role of firm support as a moderator of social relational relationships. Third, the study extends the notion of relationship marketing to include customer-customer relationships which has been forgotten in the marketing literature (Clark & Martin, 1994). The implication is that the host firm can use customers themselves to build long-term customer relationships, and based on it to maintain and increase the firm's market share. Finally, from a managerial perspective, this study proposes a general framework that can enable companies to better understand some of the key aspects that define and drive loyalty in online communities. Since sense of community is unique to a specific community, this dissertation also illustrates that a virtual community is an inimitable asset which can be used as a strategic tool to build competitive advantage by a firm in an online environment.

In conclusion, the author have studied the influence of social C2C outcomes on relational B2C outcomes with a particular attention to the potential moderating effects of firm supports in firm-hosted online communities. The overall finding that emerges from the dissertation is that customer citizenship performance is strongly impacted by a

customer's sense of virtual community, loyalty to the community, and trusting beliefs to

the host firm.

REFERENCE

Algesheimer, René, Utpal M. Dholakia, & Andreas Herrmann. 2005. The Social Influence of Brand Community: Evidence from European Car Clubs. Journal of Marketing. Vol. 69 (July), 19–34

Anderson, C. (1996). Computer as audience: Mediated interactive messages. In E. Forrest & M. Richard (Eds.), Interactive marketing: The present and future. Chicago, IL: NTC Publishing Group.

Armstrong, Arthur and John Hagel III (1995), "Real Profits from Virtual Communities," The McKinsey Quarterly, 3, 126-141.

Ashforth, B. E., & Mael, F. A. (1989). Social identity theory and the organization. Academy of Management Review, 14, 20–39.

Ajzen, I., Fishbein, M., 1980. Understanding Attitudes and Predicting Behavior. Prentice-Hall Inc., Englewood Cliffs, NJ.

Astley, W. G. (1985). The two ecologies: population and community perspectives on organizational evolution. Administrative Science Quarterly, 30, 224–241.

Ba, S., 2001. Establishing online trust through a community responsibility system. Decision Support Systems 31 (4), 323–336.

Bagozzi, R.P. (1995), Reflections on relationship marketing in consumer markets, Journal of the Academy of Marketing Science, Vol. 23 No. 1, pp. 272-7.

Bagozzi. Richard P. and Utpal M. Dholakia (2002), "Intentional Social Action in Virtual Communities," Journal of Interactive Marketing, 16 (2), 2-21.

Bart, Yakov, Venkatesh Shankar, Fareena Sultan, & Glen L. Urban. Are the Drivers and Role of Online Trust the Same for All Web Sites and Consumers? A Large-Scale Exploratory Empirical Study. Journal of Marketing. Vol. 69 (October), 133–152

Baumeister, Roy F., Jean M. Twenge, and Christopher K. Nuss. 2002. Effects of Social Exclusion on Cognitive Processes: Anticipated Aloneness Reduces Intelligent Thought. Journal of Personality and, Vol. 83, No. 4, 817–827

Bettencourt, Lance (1997), "Customer Voluntary Performance: Customers as Partners in Service Delivery," Journal of Retailing, 73 (3), 383-406.

Bhattacharya , C.B and Sankar Sen (2003), "Consumer-Company Identification: A Framework for Understanding Consumers' Relationships with Companies," Journal of Marketing ,67(2) 76-88.

Bhattacharya, C.B., Hayagreeva Rao, and Mary A. Glynn (1995), "Understanding the Bond of Identification: An Investigation of its Correlates Among Art Museum Members," Journal of Marketing, 59 (October) 46-57.

Bickart, Barbara and Robert M. Schindler (2001), "Internet Forums as Influential Sources of Consumer Information," Journal of Interactive Marketing, 15 (3), 31-40.

Blanchard, Anita (2004), "Virtual Behavior Settings: An Application of Behavior Setting Theories to Virtual Communities," Journal of Computer Mediated Communication, 9 (2), hnrrJ/www.ascusc.org/icmc/voI9/issue2/blanchard.html

Blanchard, Anita and Tom Horan (1998), "Virtual Communities and Social Capital," Social Science Computer Review, 16 (3), 293-307.

Blanchard, Anita L., and M Lynne Markus. 2004. The Experienced "Sense" of a Virtual Community: Characteristics and Processes. Database for Advances in Information Systems. New York: Winter Vol.35, Iss. 1; pg. 65, 15 pgs

Bishop, Jonathan. 2006. Increasing participation in online communities: A framework for human–computer interaction. Computers in Human Behavior. Forthcoming.

Blau, P.M. 1964. Exchange and Power in Social life, John Wiley and Sons, New York.

Brown, Stephen, Robert V. Kozinets, and John F. Sherry Jr. (2003), "Teaching Old Brands New Tricks: Retro Branding and the Revival of Brand Meaning," Journal of Marketing, 67 (July), 19–33.
Cameron, J. (2004). A three factor model of social identity. Self and Identity, 3, 239–262.

Brunel, Frederic, Cathleen M. Collins, Anthony G. Greenwald, and Brian C. Tietje (2002), "Making the Private Public, Accessing the Inaccessible: Marketing Applications of the Implicit Association Test," working paper, Marketing Department, School of Management, Boston University

Campbell, Matthew and Philip Uys. 2007. Identifying success factors of ICT in developing a learning community. Campus-Wide Information Systems Vol. 24 No. 1, pp. 17-26

Chavis, D., & Wandersman, A. (1990). Sense of community in the urban environment. A catalyst for participation and community involvement. American Journal of Community Psychology, 18, 55–81.

Chin, Wynne W., Barbara L Marcolin, Peter R Newsted. 2003. A partial least squares latent variable modeling approach for measuring. Information Systems Research, 14, 2, 189-217

Chiu, Chao-Min, Meng-Hsiang Hsu, Eric T.G. Wang. 2006. Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. Decision Support Systems 42, 1872–1888

Clark, Terry and Charles L. Martin (1994), "Customer-to-Customer: The Forgotten Relationship in Relationship Marketing," in Relationship Marketing: Theory, Methods, and Applications, Jagdish N. Sheth and Atul Parvatiyar, eds. Atlanta, GA: Center for Relationship Marketing, 1-8.

Coleman,J.S. 1988. Social capital in the creation of human capital, American Journal of Sociology 94 95–120.

Compeau, D.R., Higgins, C.A., 1999. Social cognitive theory and individual reactions to computing technology: a longitudinal study. MIS Quarterly 23 (2), 145–158.

Cothrel, Joseph P. Measuring the success of an online community. (2000). Strategy & Leadership. Chicago: Mar/Apr.Vol.28, Iss. 2; pg. 17

Cothrel, Joseph and Ruth L. Williams. 1999. On-line communities: helping them form and grow. Journal of Knowledge Management Volume 3 Number 1 pp. 54–60

Davis, F.F., Bagozzi, R.P., Warshaw, P.R., 1989. User acceptance of computer technology: a comparison of two theoretical models. Management Science 35 (8), 982–1003.

Davidson, W. B., & Cotter, P. R. (1993). Psychological sense of community and support for public school taxes. American Journal of Community Psychology, 21, 59–66.

Deci, E. L., Richard M. Ryan and Richard Koestner. 1999. A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation. Psychological Bulletin Vol. 125, No. 6, 627-668

Dholakia, Uptal. M., Richard Bagozzi and Lisa Klein Pearo (2004) "A Social Influence ~Iodel of Consumer Participation in Network- and Small-group-based Virtual Communities," International Journal of Research in Marketing, forthcoming

Doney, P.M., Canon, J.P., 1997. An examination of the nature of trust in buyer–seller relationships. Journal of Marketing 61, 35–51.

Duncan, Tom, Sandra E Moriarty. 1998. A communication-based marketing model for managing relationships. Journal of Marketing. Chicago: Apr.Vol.62, Iss. 2; pg. 1, 13 pgs.

Dunham, P. J., Hurshman, A., & Litwin, E. (1998). Computer-mediated social support: Single young mothers as a model system. American Journal of Community Psychology, 26, 281-306.

Dutton, Jane M. and Janet M. Dukerich (1991), Keeping an Eye on the Mirror: The Role of Image and Identity in Organizational Adaptation. Academy of Management Journal, 34, 517-54.

Dwyer, Robert F., Paul H. Schurr, and Sejo Oh (1987), "Developing Buyer–Seller Relationships," Journal of Marketing, 51 (April), 11–27.

Farquhar, Jillian and Jennifer Rowley. 2006. Relationships and online consumer communities. Business Process Management. Journal Vol. 12 No. 2, pp. 162-177

Faust, Katherine (1997), "Centrality in Affiliation Networks," Social Networks, 19 (2), 157–91.

Fernback, J., & Thompson, B. (1999). Virtual communities: Abort, retry, failure? (http://www.well.com/user/hlr/texts/vccivil.html).

Fisher, R. J. and Ackerman, D., The effects of recognition and group need on volunteerism: A social norm perspective, Journal of Consumer Research, 25(3), 262-275, 1998.

Flanagin, A. J., & Metzger, M. J. (2001). Internet use in the contemporary media environment. Human Communication Research, 27(1), 153– 181.

Fraering, Martin and Michael S. Minor. 2006. Sense of community: an exploratory study of US consumers of financial services. International Journal of Bank Marketing Vol. 24 No. 5, pp. 284-306

Füller, Johann, Gregor Jawecki 1, Hans Mühlbacher. (2007). Innovation creation by online basketball communities. Journal of Business Research 60 60–71

Garbino. Ellen and Mark S. Johnson. 1999. The Different Roles of Satisfaction, Trust, and Commitment in Customer Relationships, Journal of Marketing, 58 (2), 1-19.

Granitz, Neil A., and James C. Ward. 1996. Virtual Community: A Sociocognitive Analysis, Advances in Consumer Research Volume 23.

Gefen, D., 2000. E-commerce: the role of familiarity and trust. Omega 28 (6), 725–737.

Geyskens, I., Steenkamp, J.-B.E.M., Kumar, N., 1998. Generalizations about trust in marketing channel relationship using meta-analysis. International Journal of Research in Marketing 15, 223–248.

Gruen, T. W., Summers, J. O., & Acito, F. (2000). Relationship marketing activities, commitment, and membership behaviors in professional associations. Journal of Marketing, 34(July), 34–49.

Gruen, T W., Osmonbekov, T and Czaplewski, A. J. 2005. How e-communities extend the concept of exchange in marketing: An application of the motivation, opportunity, ability (MOA) theory

Gusfield, Joseph (1978), Community: A Critical Response, New York: Harper & Row.

Hagel III, J., Armstrong, A.G. (1997). Net Gain: Expanding Markets through Virtual Communities. Boston, MA, Harvard Business School Press.

Hagel III, J. (1999). "Net Gain: Expanding Markets Through Virtual Communities". Journal of Interactive Marketing 13 (1): 55-65.

Harris, Kim and Steve Baron (2004), "Consumer-to-Consumer Conversations in Service Settings," Journal of Service Research, 6 (3), 287–303.

Heerema, Douglas L., and Robert Giannini. 1991. Business organizations and the sense of community. Business Horizons, July-August v34 n4 p87(5)

Hennig-Thurau, T., Gwinner, K.P., Walsh, G., Gremler, D.D. (2004). "Electronic Word-of-Mouth Via Consumer-Opinion Platforms: What Motivates Consumers to Articulate Themselves on the Internet?" Journal of Interactive Marketing 18 (1): 38-52.

Hill, J. L. (1996). Psychological sense of community: Suggestions for future research. Journal of Community Psychology, 24, 431-438.

Hillery, George A. (1955), "Definitions of Community: Areas of Agreement," Rural Sociology. 20 (2),111-123.

Hsu, Meng-Hsiang, Teresa L. Ju, Chia-Hui Yen, Chun-Ming Chang. 2007. Knowledge sharing behavior in virtual communities: The relationship between trust, self-efficacy, and outcome expectations. Int. J. Human-Computer Studies 65 153–169

Hsu, Chin-Lung, Hsi-Peng Lu. 2005. Consumer behavior in online game communities: A motivational factor perspective. Computers in Human Behavior. Forthcoming.

Hwang, P., Burgers, W., 1997. Properties of trust: an analytical view. Organizational Behavior and Human Decision Processes 69 (1), 67–73.

Jarvenpaa, S.L., Leidner, D.E., 1999. Communication and trust in global virtual teams. Organization Science 10 (6), 791–815.

Jeppesen, Lars Bo, and Lars Frederiksen. (2006). Why Do Users Contribute to Firm-Hosted User Communities? The Case of Computer-Controlled Music Instruments. OrganizationScience Vol. 17, No. 1, January–February, pp. 45–63

Jones, Q. (1997). "Virtual Communities, Virtual Settlements & Cyberarcheology: a Theoretical Outline." Journal of Computer-Mediated Communication 3 (3). Available online: http://www.ascusc.org/jcmc

Kang, Inwon, Kun Chang Lee, Sangjae Lee, Jiho Choi. 2007. Investigation of online community voluntary behavior using cognitive map. Computers in Human Behavior 23 111–126

Kelley, H.H. and Thibaut, J.W. 1978. Interpersonal Relations: A Theory of Interdependence, Wiley, New York.

Kim, A. J. (2000). Community building on the Web: Secret strategies for successful online communities. Berkeley, CA: Peachpit Press.

Kim, Woo Gon, Chang Lee, and Stephen J. Hiemstra. 2004. Effects of an online virtual community on customer loyalty and travel product purchases. Tourism Management 25 343–355

Kock, N. (2004), "The psychobiological model: towards a new theory of computer-mediated communication based on Darwinian evolution", Organization Science, Vol. 15 No. 3, pp. 327-48.

Koh, J., Y.G. Kim. (2004). Knowledge sharing in virtual communities: an e-business perspective. Expert Systems with Applications 26 155–166

Kozinets, R.V. (1999). "E-Tribalized Marketing?: The Strategic Implications of Virtual Communities of Consumption." European Management Journal 17 (3): 252-264.

Kruger, Louis J. et al. 2001. Sense of Community Among School Psychologists on an Internet Site. Professional Psychology: Research and Practice, Vol. 32, No. 6, 642-649

Langerak, Fred, Peter C. Verhoef, Peeter W. Verlegh, and Kristine de Valck (2003), "The Effect of Members' Satisfaction with a Virtual Community on Member Participation," ERIM Report Series Research in Management, 2003-004-MKT, Erasmus Research Institute of Management, Erasmus University Rotterdam.

Lawrence, T. B. (1995). Power and resources in an organizational community. Proceedings of the Academy of Management (pp. 251–255).

Liker, J. K., & Sindi, A. A. (1997). User acceptance of expert systems: a test of the theory of reasoned action. Journal of Engineering and Technology Management, 14, 147–173.

Lin, J. C.-C., & Lu, H. (2000). Toward an understanding of the behavioural intention to use a web site. International Journal of Information Management, 20, 197–208.

Lu, H., & Lin, J. C. (2002). Predicting customer behavior in the marketspace: A study of Rayport and Sviokla's framework. Information and Management, 40(1), 1–10.

Mael. Fred and Blake E. Ashforth (1992), "Alumni and Their Alma Mater: A Partial Test of the Reformulated Model of Organizational Identification," Journal of Organizational Behavior, 13 (2), 103-123.

Maner, Jon K., C. Nathan DeWall, Roy F. Baumeister, and Mark Schaller. 2007. Does Social Exclusion Motivate Interpersonal Reconnection? Resolving the "Porcupine Problem". Journal of Personality and Social Psychology, Vol. 92, No. 1, 42–55

Mathwick, Charla (2002), Understanding the Online Consumer: A Typology of Online Relational Norms and Behavior, Journal of Interactive Marketing, 16(1),40-55.

Marrewijk, Marcel van. 2004. The Social Dimension of Organizations: Recent experiences with Great Place to Work assessment practices. Journal of Business Ethics 55: 135–146.

Mayer, R.C., Davis, J.H., Schoorman, F.D., 1995. An integrative model of organizational trust. Academy of Management Review 20, 709–734.

McAlexander, J.H., Schouten, J.W., Koenig, H.F. (2002). Building Brand Community. Journal of Marketing 66 (January): 38-54.

McAlexander, James H, Harold F Koenig. 2002. Intercustomer relationships, service experiences, and loyalty: An empirical exploration. American Marketing Association. Conference Proceedings. Chicago: 2002.Vol.13 pg. 84

McKenna, Katelyn Y. A. and Amie S. Green. 2002. Virtual Group Dynamics. Group Dynamics: Theory, Research, and Practice, Vol. 6, No. 1, 116–127

McKnight, D.H., Cummings, L.L., Chervany, N.L., 1998. Initial trust formation in new organizational relationships. Academy of Management Review 23, 473–490.

McKnight, D. Harrison, Vivek Choudhury and Charles Kacmar. 2002. Developing and Validating Trust Measures for e-Commerce: An Integrative Typology, Information Systems Research, 13 (3), 334-359.

McMillan, D. W. (1996). Sense of community. Journal of Community Psychology, 24(4), 315–325.

McMillan, D., & Chavis, D. (1986). Sense of community: A definition and theory. Journal of Community Psychology, 14, 6–23.

McWilliam, G. (2000). "Building Stronger Brands through Online Communities." Sloan Management Review (Spring): 43-54.

Mitra, A. (1999). "Characteristics of the WWW Text: Tracing Discursive Strategies." Journal of Computer-Mediated Communication 5 (1). Available online: http://www.ascusc.org/jcmc

Moon, J. Y., L. Sproull. 2001. Turning love into money: How some firms may profit from voluntary electronic customer communities. Working paper.

Moore, Robert and Melissa L. Moore. 2005. The impact of customer-to-customer interactions in a high personal contact service setting. Journal of Services Marketing. 19/7 482–491

Moorman, Christine, Gerald Zaltman, and Rohit Deshpandé (1992), "Relationships Between Providers and Users of Market Research: The Dynamics of Trust Within and Between Organizations," Journal of Marketing Research, 29 (August), 314–29.

Morgan, Robert M. and Shelby D. Hunt (1994), "The Commitment–Trust Theory of Relationship Marketing," Journal of Marketing, 58 (July), 20–38.

Muniz. Albert M. Jr. and Thomas C. O'Guinn (2001), "Brand Community," Journal of Consumer Research, 27, 412- 432.

Nahapiet, J. and S. Ghoshal. 1998 Social capital, intellectual capital, and the organizational advantage, The Academy of Management Review 23 (2) 242–266.

Nonnecke, Blair, Dorine Andrews, Jenny Preece. 2006. Non-public and public online community participation: Needs, attitudes and behavior. Electron Commerce Research 6: 7-20

Organ, D. W. (1988). Organizational citizenship behavior: The "Good Soldier" syndrome. Lexington, MA: Lexington Books.

Orman, L. V. 2006. Optimum design of electronic communities as economic entities. Information System Front, 8:179–194

Obst, Patricia L. and Katherine M. White. 2007. Choosing to belong: The influence of choice On social identification And psychological sense of community. Journal of Community Psychology, Vol. 35, No. 1, 77–90

Pooley, Julie Ann, Lynne Cohen, Lisbeth T. Pike. 2005. Can sense of community inform social capital? The Social Science Journal 42 71–79

Porter, Constance Elise (2004). Achieving Relationship Marketing Outcomes in Virtual Communities. Dissertation Research. Georgia State University.

Preece, J. (2000). Online communities: designing usability, support sociability. Chichester, UK: Wiley.

Price, Linda L., and Eric L. Arnould. 1999. Commercial Friendships. Service Provider-Client Relationships in Context. Journal of Marketing; Oct 1999; 63, 4.

Putnam, R. D. 1995. Bowling alone: America's declining social capital, Journal of Democracy 6 (1) 65–78.

Putnam, R. 2000. Bowling Alone: The Collapse and Revival of American Community, Touchstone, New York.

Reinartz, W., & Kumar, V. (2002). The mismanagement of customer loyalty. Harvard Business Review, 80(7), 86–94.

Rheingold, Howard (1993), The Virtual Community: Homesteading on the Electronic Frontier, Reading, MA: Addison-Wesley.

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

Rothaermel, F. T., & Sugiyama, S. (2000). Virtual Internet communities and individual transactions: an empirical study of TimeZone.com. Working Paper, The Eli Broad Graduate School of Management, Michigan State University, East Lansing, MI.

Rothaermel, F. T., & Sugiyama, S. (2001). Virtual internet communities and commercial success: individual and community-level theory grounded in the atypical case of TimeZone.com. Journal of Management 27 297–312

Rosenbaum, Mark S., Amy L. Ostrom, and Ronald Kuntze. 2005. Loyalty programs and a sense of community. Journal of Services Marketing 19/4 222–233.

Rosenbaum, M. S. and Carolyn A. Massiah. 2007. When Customers Receive Support From Other Customers. Journal of Service Research, Volume 9, No. 3, February 257-270

Rotter, Julian B. (1967), "A New Scale for the Measurement of Interpersonal Trust," Journal of Personality, 35 (4), 651-665.

Schlosser, Ann E. 2005. Posting versus Lurking: Communicating in a Multiple Audience Context. Journal of Consumer Research. Gainesville: Sep 2005.Vol.32, Iss. 2; pg. 260, 6 pgs

Schlosser, Ann E., Tiffany Barnett White and Susan M. Lloyd. 2006. Converting Web Site Visitors into Buyers: How Web Site Investment Increases Consumer Trusting Beliefs and Online Purchase Intentions

Shankar, Venkatesh, Glen L. Urban, and Fareena Sultan (2002), "Online Trust: A Stakeholder Perspective, Concepts, Implications and Future Directions," Journal of Strategic Information Systems, 11 (December), 325–44.

Sheth, J.N. and Parvatiyar, A. (1995), Relationship marketing in consumer markets, Journal of the Academy of Marketing Science, Vol. 23 No. 4, pp. 255-71.

Singh, J., Sirdeshmukh, D., 2000. Agency and trust mechanisms in consumer satisfaction and loyalty judgments. Journal of Academy of Marketing Science 28 (1), 150–167.

Sirdeshmukh, Deepak, Jagdip Singh and Barry Sabol (2002), Consumer Trust, Value, and Loyalty in Relational Exchanges, Journal of Marketing, 66(1), 15-37.

Smith, K. W., M. S. Sasaki. 1979. Decreasing multicolinearity: A Method for Models with Multiplicative Functions. Sociological Methods Research. 8, 35-56.

Song J, Zahedi FM. Web-design in E-commerce: A theory and empirical analysis, 22nd International Conference on Information Systems: New Orleans: LA, 2001;205-219.

Song, Jaeki and Yong Jin Kim. (2006). Social influence process in the acceptance of a virtual community service. Information System Frontier. 8, 241-252.

Spears, R., & Lea, M. (1994). Panacea or panopticon? The hidden power in computer-mediated communication. Communication Research, 21, 427–459.

Srinivasan, S. S., Anderson, R., & Kishore, P. (2002). Customer loyalty in e-commerce: An exploration of its antecedents and consequences. Journal of Retailing, 78(1), 41–50.

Sultan, Fareena, Hussain A Mooraj. 2001. Design a trust-based e-business strategy trust. Marketing Management; Nov/Dec; 10, 4;

Szmigin, Isabelle, and Marylyn Carrigan. 2006. Consumption and community: choices for women over forty. Journal of Consumer Behavior. London: Jul/Aug.Vol.5, Iss. 4; pg. 292, 12 pgs

Tajfel, H. (1978). Interindividual behavior and intergroup behavior. In H. Tajfel (Ed.), Differentiation between groups: Studies in the social psychology of intergroup relations (pp. 27– 60). London Academic Press.

TajfeL Henri and John C. Turner (1985), The Social Identity Theory of Intergroup Behavior, in Psychology of Intergroup Relations, Steven Worchel and William G. Austin, eds. Chicago: Nelson-Hall.

Teo, Hock-Hai, Hock-Chuan Chan, Kwok-Kee Wei, Zhongju Zhang. 2003. Evaluating information accessibility and community adaptivity features for sustaining virtual learning communities. Int. J. Human-Computer Studies 59, 671–697

Terrion, Jenepher Lennox and Blake E. Ashforth. 2002. From 'I' to 'we': The role of putdown humor and identity in the development of a temporary group. Human Relations, Volume 55(1): 55–88

Uslaner, E.M. 2000. Social capital and the Net, Communications of the ACM 43 (12) 60–65.

Valck, Kristine de. 2005. Virtual Communities of Consumption Networks of Consumer Knowledge and Companionship. Dissertation Research.

Van Dyne, L., Graham, J. W., & Dienesch, R. M. (1994). Organizational citizenship behavior: Construct redefinition, measurement, and validation. Academy of Management Journal, 37(4), 785–802.

Walther, J.B. (1992). "Interpersonal Effects in Computer-Mediated Interaction: a Relational Perspective." Communication Research 19 (1): 52-90.

Walther, J.B. (1995). "Relational Aspects of Computer-Mediated Communication: Experimental Observations Over Time." Organization Science 6: 186-203.

Wang, Y., Yu, Q., Fessenmaier, D.R. (2002). "Defining the Virtual Tourist Community: Implications for Tourism Marketing." Tourism Management 23: 407-417.

Wagner, Sue Ellen. 2006. Staff Retention: from "satisfied" to"engaged". Nursing Management. March

Warisse Turner, J., Grube, J.A., Meyers, J. (2001). "Developing an Optimal Match Within Online Communities: An Exploration of CMC Support Communities and Traditional Support." Journal of Communication (June): 231-251.

Watson, N. (1997). "Why We Argue About Virtual Community: a Case Study of the Phish.Net Fan Community." In: Virtual Culture: Identity & Communication in Cybersociety. Jones, S.G. (Ed.). Thousand Oaks/London/New Delhi, SAGE Publications: 102-133.
Wellman, Barry; Salaff, Janet; Dimitrova, Dimitrina; Garton, Laura. (1996). Computer networks as social networks: Collaborative work, telework, and virtual community. Annual Review of Sociology 22, pg. 213

Wellman, Barry, Anabel Quan Haase, James Witte and Keith Hampton (2001), "Does the Internet Increase, Decrease, or Supplement Social Capital? Social Networks, Participation, and Community Commitment," The American Behavioral Scientist, 45 (3), .B6-455.

Wicker, A. W, and Mehler A. 1971. Assimilation of New Members in a Large and a Small Church. Journal of Applied Psychology. Vol 55 No 2, 151-156.

Williams, Michele. 2001. In whom we trust: Group membership as an effective context for trust development. Academy of Management. The Academy of Management Review. Briarcliff Manor: Jul .Vol.26, Iss. 3; pg. 377, 20 pgs

Williams, R. L., Cothrel, J. (2000). "Four Smart Ways to Run Online Communities." Sloan Management Review (Summer).

Wood, R., Bandura, A., 1989. Social cognitive theory of organizational management. Academy of management. The Academy of Management Review 14 (3), 361–384.

Wunder, K. M. (1998). Empowerment and professional community: Keys to teacher efficacy, motivation, and morale? Dissertation Abstracts International, 55(12), 4522A.

Yoon, Sung-Joon (2002), "The Antecedents and Consequences of Trust in Online Purchase Decisions," Journal of Interactive Marketing, 16 (2), 47–63.

Zucker, L. G. 1986. Production of trust: Institutional sources of economic structure, 1840-1920. B. M. Staw and L. L. Cummings, eds. Research in Organizational Behavior, vol. 8. JAI Press, Greenwich, CT, 53-111.

APPENDIX

A: VIRTUAL COMMUNITY QUESTIONNAIRE

Research Survey of Online Community

Directions: Each response in the following questions is a seven-point scale ranging from strongly disagree to strongly agree. Please carefully read and answer the following questions to the best of your knowledge.

Q1. Regarding your participation in [Target Community], please indicate whether you agree or disagree with the following statements

	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Somewhat Agree	6 Agree	7 Strongly Agree
I can get what I need in [Target Community]	( )	( )	( )	( )	( )	( )	( )
[Target Community] helps me fulfill my needs	( )	( )	( )	( )	( )	( )	( )
I see myself as part of [Target Community]	( )	( )	( )	( )	( )	( )	( )
I feel that I belong in [Target Community]	( )	( )	( )	( )	( )	( )	( )
I have a good bond with others in [Target Community]	( )	( )	( )	( )	( )	( )	( )
I feel socially connected to [Target Community]	( )	( )	( )	( )	( )	( )	( )
I have a say about what goes on in [Target Community]	( )	( )	( )	( )	( )	( )	( )
People in [Target Community] are good at influencing each other	( )	( )	( )	( )	( )	( )	( )

Sense of community is defined to include needs fulfillment (a perception that members' needs will be met by the community), group membership (a feeling of belonging or a sense of interpersonal relatedness), influence (a sense that one matters, or can make a difference, in a community and that the community matters to its members), and emotional connection (a feeling of attachment or bonding rooted in members' shared history, place or experience).

Q2. When you are online in [Target Community], to what extent do you feel a sense of community?

Very Week	Week	Slightly Week	Neutral	Slightly Strong	Strong	Very Strong
( )	( )	( )	( )	( )	( )	( )

Q3. As a member of [Target Community], I am willing to

	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Somewhat Agree	6 Agee	7 Strongly Agree
recommend [Target Community] to nonmembers.	( )	( )	( )	( )	( )	( )	( )
continue my membership in [Target Community].	( )	( )	( )	( )	( )	( )	( )
devote more time and effort to [Target Community] than to other communities.	( )	( )	( )	( )	( )	( )	( )

Q4. When I need help, members in [Target Community] are willing to

	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Somewhat Agree	6 Agree	7 Strongly Agree
give me appropriate information or guidance.	( )	( )	( )	( )	( )	( )	( )
offer concrete financial/material assistance relevant to my inquiries	( )	( )	( )	( )	( )	( )	( )
show their positively emotional supports (cheering, understanding, sympathizing, etc.)	( )	( )	( )	( )	( )	( )	( )

Q5. Please indicate whether you agree or disagree with the following statements about [Target Firm]

	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Somewhat Agree	6 Agree	7 Strongly Agree
I talk favorably about [Target Firm] and its products/services to other members and nonmembers.	()	()	()	()	()	()	()
I would recommend [Target Firm]'s products/services to other members and nonmembers.	()	()	()	()	()	()	()
I intend to continue buying and using [Target Firm]'s products/services.	()	()	()	()	()	()	()
I am willing to participate in programs and events sponsored by [Target Firm]	()	()	()	()	()	()	()
I make constructive suggestions to [Target Firm] on how to improve its products/services.	()	()	()	()	()	()	()
If I notice a problem at [Target Firm], I inform the community board, or other members, even if it doesn't affect me	()	()	()	()	()	()	()
I let [Target Firm]'s employees know of ways that they can better serve my needs.	()	()	()	()	()	()	()
I have shared useful information/ideas with [Target Firm] on how to improve [Target Community].	()	()	()	()	()	()	()
I help [Target Firm]'s employees take care of [Target Community].	()	()	()	()	()	()	()
I give [Target Firm]'s employees my full cooperation.	()	()	()	()	()	()	()
I consider helping other members (i.e. replying posts, giving advice, sharing knowledge, etc.) as my responsibility.	()	()	()	()	()	()	()
I carefully observe the rules and policies announced by [Target Firm]	()	()	()	()	()	()	()

Q6. Regarding the business relationship between [Target Firm] and me, I believe that [Target Firm]

	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Somewhat Agree	6 Agree	7 Strongly Agree
would act in my best interest.	( )	( )	( )	( )	( )	( )	( )
would do its best to help me, when I need supports.	( )	( )	( )	( )	( )	( )	( )
considers my welfare, not just its own, to make its decisions.	( )	( )	( )	( )	( )	( )	( )
does NOT consider my interests when problems arise.	( )	( )	( )	( )	( )	( )	( )
is honest in its dealings with me.	( )	( )	( )	( )	( )	( )	( )
keeps promises it makes to me.	( )	( )	( )	( )	( )	( )	( )
has high integrity.	( )	( )	( )	( )	( )	( )	( )
is competent and effective in providing products/services.	( )	( )	( )	( )	( )	( )	( )
is a capable and proficient online community supporter.	( )	( )	( )	( )	( )	( )	( )
performs its role to fulfill my needs very well.	( )	( )	( )	( )	( )	( )	( )
is NOT knowledgeable about its specialized business.	( )	( )	( )	( )	( )	( )	( )

Q7. Regarding [Target Firm]'s efforts to support [Target Community], I believe that [Target Firm]

	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Somewhat Agree	6 Agree	7 Strongly Agree
provides up to date information.	( )	( )	( )	( )	( )	( )	( )
provides accurate information.	( )	( )	( )	( )	( )	( )	( )
provides a complete set of information for its members.	( )	( )	( )	( )	( )	( )	( )
provides well formatted information.	( )	( )	( )	( )	( )	( )	( )
provides proper rewards to active members for their efforts.	( )	( )	( )	( )	( )	( )	( )
shows proper gratitude to actively participating members.	( )	( )	( )	( )	( )	( )	( )
recognizes members' contribution to its well-being.	( )	( )	( )	( )	( )	( )	( )
encourages different members to share feedback.	( )	( )	( )	( )	( )	( )	( )
provides various tools to encourage interaction among members.	( )	( )	( )	( )	( )	( )	( )
sponsors events/programs to encourage friendship among members.	( )	( )	( )	( )	( )	( )	( )

How long have you been using [Target Community]?
( ) Less than 1` year   ( ) 1 to 2 years   ( ) 3 to 4 years   ( ) 4 to 5 years   ( ) More than 5 years

On average, how often do you visit [Target Community]?
( ) Several times a day
( ) Once a day
( ) Several times a week
( ) Once a week
( ) Several times a month
( ) Once a month
( ) Occasionally

How many hours per week do you spend on [Target Community]?
( ) Less than 1   ( ) 1 to 4 hours   ( ) 5 to 10 hours   ( ) More than 10 hours

Which of the following choices best describes your membership rank in [Target Community]?
( ) Lowest   ( ) Low   ( ) Middle   ( ) High   ( ) Highest   ( ) N/A

Compared to other members of the community, how often do you post messages on [Target Community]?
( ) Never   ( ) Seldom   ( ) Sometimes   ( ) Frequently   ( ) Very frequently

What is your gender?
( ) Male   ( ) Female

Which of the following choices best describes your computer skill?
( ) Professional   ( ) Skillful   ( ) Intermediate   ( ) Beginner

What is your age range?
( ) Under 21   ( ) 21 to 30   ( ) 31 to 40   ( ) 41 to 50   ( ) 51 to 65   ( ) 65 or over

Thank you very much!

B: LIST OF ONLINE COMMUNITIES

No.	Forum	Website	Accept
1	Apple Discussions	http://discussions.apple.com/index.jspa	No
2	Askville - Amazon	http://askville.amazon.com/Index.do	NR
3	AT&T Wireless Forum	http://forums.wireless.att.com/	No
4	BabyCenter Community	http://www.babycenter.com/community	No
5	Cambell's Soup Community	http://kitchentable-campbells.forums.liveworld.com/index.jspa	Yes
6	Cisco Netpro Forum	http://www.cisco.com/go/netpro	NR
7	Dell Community Forum	http://www.dellcommunity.com/supportforums/	No
8	Digital Video Forums	http://forum.digital-digest.com/	NR
9	Ford Forum	http://www.fordforums.com/forum.php	NR
10	Fourtitude Forums	http://forums.fourtitude.com/	NR
11	Harley Owners Group	http://members.hog.com/	NR
12	HP-Compaq Forum	http://forums1.itrc.hp.com/service/forums/home.do	NR
13	iVillage Message Board	http://www.ivillage.com/messageboards	No
14	Kraft Foods Message Boards	http://www.kraftfoods.com/kf/Community/	Yes
15	Lego MessageBoard	http://messageboards.lego.com/default.aspx	No
16	ManhattanGMAT Forum	http://www.manhattangmat.com/forums/	No
17	NBC Message Boards	http://boards.nbc.com/nbc/	Yes
18	Nike Discussions	http://forums.nike.com/index.jspa	Yes
19	Palm Forum	http://forums.palm.com/	Yes
20	PASH Wedding Forums	http://www.pashweddings.com/weddingforums/	Yes
21	Sims Community	http://thesims2.ea.com/community/	NR
22	Sony Playstation	http://www.station.sony.com/community.vm	NR
23	The Amex Network Insiders	http://www.amexnetwork.com/goinside/	NR
24	Theknot.com Weddings	http://community.theknot.com/cs/ks/community/default.aspx	No
25	Tide Message Board	http://www.tide.com/en_US/messageboard/index.jsp	No
26	Wedding Channel Message Boards	http://boards.weddingchannel.com	No
27	Xbox Forums	http://forums.xbox.com/	NR
28	Wedding Bee	http://boards.weddingbee.com/	NR

Note. NR: Not response

C: CALLS FOR PARTICIPATING IN THE SURVEY

An Example of Survey Announcement

LadyAudrey ○

Posts: 1,515
Registered: 5/13/07

Re: BUDS/GALS - allnighter Boston bound, where will he sleep before the rac
Posted: Apr 14, 2008 9:23 PM   in response to: odu2008

Hey everyone! odu2008 is a grad student. He has developed a survey pertaining to Nike, the Nike+ community (that's us!) and the ensuing relationship. Some of us have already responded to his survey but he needs lots more participation to make the research meaningful. The survey is short and only takes about 5 minutes.

Go on! You know you want to! Click on the blue link below. It's painless!

LadyAudrey

A senior member of Nike+ called for participating in the survey

C (P) S

Posts: 2,181
From:
Arkansas Tag
using 'cin'
Registered:
10/17/07

I'm Calling on all you "COOKS TO HELP"   (1 of 14)

Apr 18, 2008 8:18 PM   Rate this thread ☆ ☆ ☆ ☆ ☆

Reply to Topic | Report Abuse

Fill out a short survey and help-out one of our "Table Student"!

Here is the new survey for you ... Please click below

http://periwinkle.ts.odu.edu/cgs-bb/qwebcorporate.dll?idx=67BEUO

—Cin(NN)

A senior member of Campbell's called for participating in the survey

D: SCALE ITEMS

Constructs	Measurement items	Sources	Conceptualization
	Customer Citizenship Performances		
Participation	1. I am willing to participate in community programs and events sponsored by [target firm]. 2. I make constructive suggestions to [target firm] on how to improve its products/services. 3. If I notice a problem at [target community] or [target firm], I inform the community board, or other members, even if it doesn't affect me. 4. I let [target firm] employees know of ways that they can better serve my needs. 5. I have shared useful information/ideas on how to improve [target community] with [target firm].	Rosenbaum & Massiah (2007)	Member's willingness to participate actively in extra roles such as consultancy and governance that are beyond generally expected levels
Cooperation	1. I help [target firm] employees take care of this community. 2. I give [target firm] employees my full cooperation. 3. I consider helping other members (i.e. replying posts, giving advice, sharing knowledge, etc.) as my responsibility. 4. I carefully observe the rules and policies of this community.	Rosenbaum & Massiah (2007)	Member's willingness to undertake the coproduction of the firm's offerings and/or marketing
Loyalty	1. I say favorable things about [target firm] and its products/services to other members and nonmembers 2. I recommend [target firm] products/services to other members and nonmembers. 3. I intent to continue buying and using [target firm] products/services.	Zeithaml, Berry, and Parasuraman (1996)	Customer's future actions regarding doing business with and engaging in positive word of mouth about the firm
	Virtual Community Loyalty		
VC loyalty	1. I recommend [target community] to nonmembers 2. I intend to continue my membership in [target community] 3. I devote more time and efforts to [target community] than to other communities	Koh & Kim (2004)	Community member's willingness to continue his or her membership and to promote the VC to other nonmembers
	Customer Trusting Belief		
Benevolence	1. I believe [Target firm] would act in my best interest. 2. [Target firm] would do its best to help me, when I need supports. 3. [Target firm] considers my welfare, not just its own, to make decisions. 4. [Target firm] does not consider my interests when problems arise. (R)	McKnight et al. (2002)	Extent to which the firm is concerned for the customer's welfare and has intentions and motives beneficial to the customer when new conditions arise for which a commitment has not been made
Integrity/ Credibility	1. [Target firm] is honest in its dealings with me. 2. [Target firm] keeps promises it makes to me. 3. [Target firm] has high integrity.	McKnight et al. (2002)	Customer belief that their needs will be fulfilled by the firm in the future. Requires a judgment as to the integrity and reliability of an exchange

Construct	Source	Definition	Items
Competence /Judgment	McKnight et al. (2002)	Customer confidence that the firm has the skills necessary to perform the job	1. [Target firm] is competent and effective in providing products/services. 2. [Target firm] is a capable and proficient online community supporter. 3. [Target firm] performs its role to fulfill my needs very well. 4. [Target firm] is not knowledgeable about its specialized business. (R)
Sense of Virtual Community			
Membership	Peterson et al. (2008)	A feeling of belonging or a sense of interpersonal relatedness	1. I see myself as part of [target community]. 2. I feel that I belong in [target community].
Needs Fulfillment	Peterson et al. (2008)	A perception that members' needs will be met by the community	1. I can get what I need in [target community]. 2. [Target community] helps me fulfill my needs.
Influence	Peterson et al. (2008)	A sense that one matters, or can make a difference, in a community and that the community matters to its members	1. I have a say about what goes on in [target community]. 2. People in [target community] are good at influencing each other.
Emotional Connection	Peterson et al. (2008)	A feeling of attachment or bonding rooted in members' shared history, place or experience	1. I have a good bond with others in [target community]. 2. I feel socially connected to [target community].
Firm Support			
Support for Member Communication	Porter (2004)	Extent to which the host firm provides its customers with the means, capability, and opportunity to communicate	1. [Target firm] provides various means/tools to encourage interaction among members. 2. [Target firm] sponsors events/programs to encourage friendship among members. 3. [Target firm] encourages different members to share feedback.
Content Enhancement	Lin (2007)	The quality of the information provided by the online services.	1. [Target firm] provides accurate information. 2. [Target firm] provides a complete set of information for its members. 3. [Target firm] provides up to date information. 4. [Target firm] provides well formatted information.
Recognition for Contributions	Kang et al. (2007)	Extent to which the host firm recognizes a VC members' contribution.	1. [Target firm] provides proper rewards to active members for their efforts. 2. [Target firm] shows proper gratitude to actively participating members. 3. [Target firm] recognizes members' contribution to its well-being.
VC Member Support			
Member's Support	Dunham et al. (1998)	Extent to which a VC member receives support from others.	1. Members in [target community] give me appropriate information or guidance. 2. Members in [target community] offer concrete financial/material assistance relevant to my inquiries. 3. Members in [target community] show their positively emotional supports (cheering, understanding, sympathizing, etc.).

E: COVARIANCE AND CORRELATION MATRIX OF SCALE ITEMS

Items	SoC1	SoC2	SoC3	SoC4	SoC5	SoC6	SoC7	SoC8	Com1	Com2	Com3	Mem1	Mem2	Mem3	Loy1	Loy2	Loy3	Par1	Par2	Par3	Par4	Par5	Cop1	Cop2	Cop3
SoC1	2.35	2.13	1.75	1.79	1.38	1.52	1.51	1.47	1.48	1.15	1.24	1.12	0.74	1.03	1.45	1.39	1.13	1.33	0.36	0.55	0.28	0.27	0.48	0.77	0.66
SoC2	0.88	2.51	1.91	2.00	1.54	1.70	1.54	1.58	1.63	1.29	1.40	1.18	0.82	1.13	1.57	1.45	1.26	1.41	0.45	0.57	0.38	0.45	0.55	0.88	0.80
SoC3	0.71	0.75	2.60	2.39	2.11	2.09	1.73	1.68	1.63	1.35	1.55	1.40	0.84	1.49	1.48	1.40	1.08	1.35	0.61	0.86	0.59	0.69	1.00	0.89	0.93
SoC4	0.72	0.78	0.91	2.65	2.13	2.11	1.84	1.78	1.65	1.34	1.50	1.46	0.96	1.55	1.54	1.43	1.14	1.38	0.53	0.69	0.53	0.56	0.94	0.96	0.92
SoC5	0.54	0.58	0.78	0.79	2.78	2.48	1.57	1.72	1.29	1.15	1.46	1.40	0.96	1.62	1.31	1.17	0.96	1.14	0.85	0.92	0.93	1.08	1.22	1.22	1.21
SoC6	0.59	0.63	0.77	0.77	0.88	2.86	1.72	1.67	1.46	1.25	1.60	1.41	1.07	1.65	1.32	1.18	0.97	1.16	0.84	1.04	0.91	1.02	1.17	1.22	1.09
SoC7	0.61	0.61	0.67	0.71	0.59	0.64	2.56	1.75	1.38	1.00	1.11	1.20	0.77	1.24	1.43	1.32	1.04	1.21	0.53	0.66	0.62	0.60	0.94	0.84	0.73
SoC8	0.61	0.64	0.66	0.70	0.66	0.63	0.70	2.47	1.31	0.96	1.15	1.37	1.04	1.50	1.44	1.36	1.15	1.28	0.43	0.42	0.40	0.46	0.74	0.90	0.73
Com1	0.59	0.63	0.62	0.62	0.47	0.53	0.53	0.51	2.65	1.73	1.98	1.36	1.02	1.39	1.61	1.55	1.26	1.44	0.55	0.84	0.70	0.71	0.85	0.96	0.83
Com2	0.56	0.61	0.62	0.61	0.52	0.55	0.47	0.45	0.79	1.80	1.64	1.10	0.77	1.15	1.25	1.16	0.99	1.10	0.33	0.70	0.48	0.53	0.66	0.69	0.64
Com3	0.48	0.52	0.57	0.55	0.52	0.56	0.41	0.43	0.72	0.72	2.87	1.35	1.07	1.38	1.50	1.34	1.17	1.26	0.87	1.15	0.88	1.11	1.25	1.15	1.09
Mem1	0.47	0.48	0.56	0.58	0.54	0.54	0.48	0.56	0.54	0.53	0.51	2.41	1.59	2.14	1.47	1.35	1.06	1.22	0.45	0.62	0.49	0.55	0.98	0.97	1.00
Mem2	0.31	0.33	0.33	0.37	0.36	0.40	0.30	0.42	0.40	0.37	0.40	0.65	2.49	1.59	1.03	0.98	0.74	0.79	0.62	0.41	0.69	0.73	0.97	0.91	0.85
Mem3	0.41	0.44	0.57	0.59	0.60	0.60	0.48	0.59	0.52	0.50	0.50	0.85	0.62	2.64	1.58	1.43	1.15	1.28	0.46	0.56	0.45	0.62	0.98	1.14	1.04
Loy1	0.59	0.62	0.57	0.59	0.49	0.49	0.56	0.57	0.62	0.58	0.55	0.59	0.41	0.61	2.56	2.26	1.97	1.88	0.63	0.60	0.52	0.67	0.94	1.12	0.71
Loy2	0.59	0.60	0.56	0.57	0.46	0.46	0.54	0.57	0.62	0.57	0.52	0.57	0.41	0.58	0.92	2.35	1.96	1.83	0.58	0.59	0.39	0.66	0.83	1.00	0.66
Loy3	0.49	0.52	0.44	0.46	0.38	0.38	0.43	0.48	0.51	0.49	0.46	0.45	0.31	0.47	0.81	0.85	2.29	1.69	0.63	0.40	0.52	0.65	0.73	0.91	0.57
Par1	0.56	0.58	0.54	0.55	0.44	0.44	0.49	0.53	0.57	0.53	0.48	0.51	0.32	0.51	0.76	0.77	0.72	2.38	0.69	0.65	0.53	0.68	0.65	0.93	0.70
Par2	0.15	0.19	0.25	0.21	0.33	0.33	0.22	0.18	0.22	0.16	0.34	0.19	0.26	0.18	0.26	0.25	0.27	0.29	2.32	1.23	1.54	1.81	1.38	0.79	0.81
Par3	0.24	0.24	0.35	0.28	0.37	0.41	0.28	0.18	0.34	0.35	0.45	0.27	0.17	0.23	0.25	0.26	0.26	0.28	0.54	2.24	1.37	1.33	1.29	0.87	1.04
Par4	0.12	0.16	0.23	0.21	0.36	0.35	0.25	0.16	0.28	0.23	0.33	0.20	0.28	0.18	0.19	0.22	0.17	0.22	0.65	0.59	2.41	1.92	1.64	0.89	0.91
Par5	0.11	0.17	0.26	0.21	0.39	0.36	0.22	0.18	0.26	0.24	0.40	0.21	0.28	0.23	0.25	0.26	0.26	0.26	0.72	0.53	0.75	2.75	2.06	1.00	1.05
Cop1	0.19	0.21	0.37	0.34	0.44	0.41	0.35	0.28	0.31	0.35	0.44	0.38	0.36	0.36	0.35	0.32	0.29	0.25	0.54	0.51	0.63	0.74	2.83	1.17	1.10
Cop2	0.35	0.38	0.38	0.41	0.51	0.50	0.37	0.40	0.41	0.34	0.47	0.43	0.40	0.49	0.48	0.45	0.42	0.42	0.36	0.40	0.40	0.42	0.48	2.08	1.36
Cop3	0.30	0.36	0.41	0.40	0.52	0.46	0.33	0.33	0.36	0.34	0.46	0.46	0.38	0.45	0.31	0.31	0.27	0.32	0.38	0.49	0.42	0.45	0.46	0.67	1.99
Cop4	0.32	0.36	0.28	0.29	0.23	0.30	0.31	0.32	0.35	0.21	0.30	0.37	0.35	0.35	0.40	0.40	0.36	0.32	0.26	0.27	0.28	0.23	0.24	0.70	0.60
Tru1	0.59	0.58	0.53	0.56	0.47	0.35	0.57	0.55	0.59	0.47	0.52	0.47	0.42	0.46	0.64	0.61	0.53	0.56	0.32	0.28	0.39	0.31	0.37	0.51	0.41
Tru2	0.59	0.58	0.52	0.52	0.45	0.50	0.57	0.53	0.55	0.45	0.48	0.53	0.44	0.52	0.64	0.63	0.51	0.59	0.28	0.24	0.31	0.26	0.30	0.49	0.38
Tru3	0.55	0.54	0.51	0.46	0.41	0.45	0.49	0.51	0.52	0.41	0.46	0.45	0.41	0.42	0.57	0.57	0.47	0.53	0.31	0.25	0.33	0.27	0.33	0.49	0.40
Tru4	0.44	0.44	0.38	0.39	0.33	0.43	0.54	0.43	0.44	0.35	0.39	0.43	0.39	0.43	0.53	0.52	0.42	0.46	0.19	0.18	0.19	0.18	0.21	0.40	0.25
Tru5	0.53	0.53	0.50	0.52	0.39	0.43	0.46	0.47	0.49	0.44	0.42	0.50	0.37	0.47	0.62	0.63	0.52	0.56	0.24	0.14	0.22	0.17	0.30	0.45	0.34
Tru7	0.62	0.60	0.41	0.45	0.34	0.36	0.45	0.48	0.44	0.36	0.40	0.42	0.34	0.43	0.57	0.56	0.47	0.57	0.21	0.19	0.17	0.19	0.26	0.41	0.32
Tru8	0.65	0.64	0.52	0.53	0.41	0.44	0.49	0.50	0.55	0.46	0.46	0.52	0.39	0.46	0.69	0.67	0.58	0.58	0.24	0.09	0.19	0.14	0.28	0.46	0.34
Tru9	0.65	0.62	0.51	0.57	0.38	0.41	0.50	0.52	0.55	0.50	0.43	0.49	0.31	0.45	0.72	0.70	0.62	0.65	0.16	0.17	0.13	0.15	0.21	0.37	0.28
Tru10	0.67	0.65	0.54	0.59	0.43	0.46	0.52	0.51	0.56	0.50	0.45	0.52	0.39	0.50	0.68	0.66	0.59	0.66	0.19	0.13	0.19	0.20	0.21	0.39	0.33
Tru11	0.53	0.49	0.53	0.42	0.42	0.46	0.37	0.52	0.57	0.50	0.48	0.52	0.41	0.50	0.72	0.70	0.60	0.66	0.24	0.10	0.21	-0.01	0.07	0.43	0.37
Info1	0.50	0.44	0.37	0.39	0.23	0.30	0.42	0.38	0.44	0.43	0.31	0.46	0.29	0.41	0.52	0.52	0.41	0.46	0.00	0.04	0.00	0.17	0.21	0.29	0.18
Info2	0.51	0.47	0.38	0.40	0.32	0.35	0.36	0.39	0.44	0.37	0.32	0.41	0.39	0.46	0.50	0.49	0.43	0.50	0.15	0.17	0.18	0.15	0.17	0.39	0.31
Info3	0.54	0.46	0.39	0.42	0.34	0.37	0.43	0.38	0.44	0.40	0.35	0.44	0.43	0.40	0.54	0.53	0.47	0.51	0.12	0.09	0.12	0.16	0.19	0.38	0.31
Info4	0.53	0.49	0.43	0.41	0.34	0.36	0.43	0.42	0.50	0.37	0.35	0.39	0.38	0.45	0.52	0.51	0.45	0.53	0.16	0.15	0.18	0.17	0.21	0.36	0.29
Rew1	0.36	0.30	0.22	0.25	0.36	0.38	0.35	0.32	0.30	0.19	0.21	0.22	0.21	0.21	0.38	0.40	0.34	0.40	0.16	0.21	0.22	0.06	0.17	0.39	0.35
Rew2	0.40	0.39	0.30	0.34	0.13	0.17	0.37	0.33	0.36	0.28	0.27	0.30	0.20	0.28	0.49	0.52	0.42	0.48	0.13	0.13	0.13	0.05	0.14	0.21	0.14
Rew3	0.46	0.43	0.33	0.36	0.17	0.20	0.42	0.36	0.40	0.32	0.31	0.33	0.24	0.31	0.50	0.51	0.41	0.50	0.14	0.10	0.16	0.08	0.14	0.23	0.14
Inte1	0.48	0.45	0.41	0.46	0.18	0.22	0.47	0.36	0.40	0.32	0.31	0.33	0.24	0.31	0.50	0.51	0.41	0.50	0.19	0.12	0.18	0.13	0.24	0.29	0.19
Inte2	0.48	0.48	0.42	0.45	0.27	0.28	0.42	0.42	0.48	0.40	0.39	0.42	0.30	0.40	0.57	0.56	0.45	0.52	0.14	0.19	0.13	0.16	0.25	0.31	0.25
Inte3	0.44	0.39	0.38	0.40	0.30	0.34	0.42	0.43	0.48	0.44	0.40	0.43	0.30	0.41	0.57	0.54	0.44	0.52	0.16	0.17	0.15	0.13	0.23	0.34	0.25
Visit	0.04	0.10	0.18	0.13	0.28	0.30	0.03	0.08	0.16	0.25	0.33	0.41	0.17	0.32	0.15	0.10	0.11	0.11	0.09	0.22	0.14	0.21	0.17	0.35	0.23
Post	0.14	0.21	0.38	0.32	0.53	0.48	0.19	0.18	0.21	0.30	0.39	0.25	0.13	0.30	0.18	0.15	0.16	0.18	0.38	0.49	0.32	0.44	0.37	0.32	0.41

Note. Variances are on diagonal, correlations below diagonal, and covariances above diagonal.

Items	Cop4	Tru1	Tru2	Tru3	Tru4	Tru5	Tru6	Tru7	Tru8	Tru9	Tru10	Tru11	Info1	Info2	Info3	Info4	Rew1	Rew2	Rew3	Inte1	Inte2	Inte3	Visit	Post
SoC1	0.68	1.48	1.46	1.37	1.05	1.14	1.11	1.48	1.61	1.62	1.58	1.38	1.13	1.05	1.26	1.26	0.89	1.00	1.11	1.20	1.17	1.14	0.11	0.25
SoC2	0.79	1.52	1.37	1.36	1.10	1.19	1.06	1.47	1.63	1.59	1.60	1.30	1.02	1.00	1.12	1.20	0.76	1.00	1.07	1.16	1.22	1.04	0.26	0.39
SoC3	0.63	1.41	1.36	1.26	0.97	1.12	0.91	1.29	1.34	1.42	1.33	0.97	0.88	0.82	0.96	1.09	0.58	0.80	0.85	1.06	1.08	1.03	0.49	0.70
SoC4	0.66	1.49	1.38	1.22	1.01	1.19	1.00	1.34	1.49	1.55	1.44	1.17	0.94	0.88	1.03	1.04	0.67	0.91	0.92	1.20	1.18	1.09	0.38	0.60
SoC5	0.77	1.28	1.22	1.13	0.85	0.91	0.76	1.06	1.04	1.17	1.08	0.65	0.79	0.75	0.86	0.93	0.36	0.47	0.48	0.73	0.81	0.78	0.70	1.01
SoC6	0.70	1.39	1.22	1.20	0.95	1.02	0.83	1.16	1.12	1.27	1.20	0.87	0.88	0.84	0.92	1.02	0.48	0.56	0.58	0.77	0.91	0.84	0.71	0.93
SoC7	0.68	1.49	1.27	1.40	0.99	1.03	0.97	1.22	1.28	1.35	1.26	1.00	0.99	0.77	1.04	1.07	0.91	0.99	1.06	1.22	1.07	1.12	0.07	0.35
SoC8	0.70	1.42	1.34	1.32	1.06	1.03	1.03	1.22	1.33	1.30	1.28	1.01	0.89	0.80	1.01	1.03	0.82	0.85	0.89	1.06	1.07	1.15	0.21	0.33
Com1	0.80	1.57	1.44	1.39	1.12	1.12	0.97	1.39	1.46	1.47	1.45	1.21	1.06	0.95	1.23	1.22	0.79	0.96	1.02	1.26	1.26	1.26	0.44	0.38
Com2	0.39	1.04	0.98	0.90	0.74	0.83	0.65	0.96	1.08	1.10	1.04	0.97	0.73	0.71	0.76	0.88	0.41	0.61	0.67	0.88	0.94	0.81	0.57	0.45
Com3	0.71	1.44	1.31	1.29	1.03	0.99	0.91	1.21	1.17	1.23	1.25	0.90	0.79	0.78	0.89	0.97	0.57	0.76	0.83	1.07	1.09	1.01	0.96	0.75
Mem1	0.79	1.19	1.33	1.16	1.06	1.08	0.89	1.25	1.22	1.30	1.24	1.20	0.94	0.92	0.91	1.08	0.54	0.77	0.82	1.06	1.07	1.08	0.66	0.45
Mem2	0.76	1.10	1.11	1.06	0.96	0.82	0.73	0.95	0.80	0.99	0.99	0.78	0.91	0.90	0.92	1.02	0.53	0.53	0.60	0.76	0.76	0.83	0.46	0.23
Mem3	0.78	1.22	1.36	1.12	1.10	1.06	0.95	1.17	1.18	1.31	1.26	1.14	0.98	1.00	0.99	1.14	0.56	0.74	0.78	1.04	1.07	1.15	0.91	0.56
Loy1	0.89	1.67	1.66	1.49	1.33	1.40	1.25	1.71	1.88	1.76	1.78	1.41	1.19	1.15	1.27	1.35	0.98	1.30	1.27	1.48	1.45	1.50	0.41	0.32
Loy2	0.84	1.54	1.57	1.43	1.26	1.35	1.17	1.60	1.74	1.63	1.67	1.34	1.11	1.08	1.20	1.31	1.00	1.30	1.24	1.39	1.32	1.42	0.26	0.26
Loy3	0.75	1.33	1.24	1.17	1.00	1.10	0.98	1.36	1.51	1.44	1.42	1.06	0.97	0.95	1.04	1.09	0.84	1.05	0.99	1.11	1.06	1.10	0.29	0.28
Par1	0.70	1.43	1.48	1.34	1.12	1.21	1.20	1.39	1.63	1.65	1.58	1.21	1.13	1.05	1.23	1.32	1.00	1.23	1.21	1.30	1.28	1.31	0.30	0.32
Par2	0.54	0.81	0.68	0.78	0.45	0.51	0.44	0.56	0.38	0.48	0.57	0.01	0.33	0.24	0.37	0.39	0.28	0.33	0.35	0.46	0.34	0.40	0.24	0.66
Par3	0.57	0.69	0.58	0.61	0.22	0.38	0.29	0.43	0.23	0.41	0.42	0.10	0.38	0.18	0.34	0.48	0.31	0.25	0.29	0.46	0.41	0.37	0.57	0.83
Par4	0.59	0.99	0.78	0.84	0.47	0.48	0.37	0.47	0.32	0.47	0.51	-0.01	0.42	0.26	0.43	0.54	0.45	0.33	0.40	0.45	0.33	0.41	0.39	0.56
Par5	0.53	0.83	0.59	0.74	0.46	0.40	0.41	0.48	0.37	0.40	0.51	-0.03	0.42	0.34	0.41	0.45	0.17	0.15	0.21	0.34	0.42	0.36	0.60	0.84
Cop1	0.57	1.02	0.81	0.92	0.56	0.70	0.60	0.72	0.57	0.58	0.64	0.21	0.51	0.39	0.48	0.54	0.46	0.40	0.37	0.65	0.66	0.66	0.50	0.71
Cop2	1.39	1.22	1.15	1.16	0.90	0.90	0.80	1.02	0.86	0.91	0.97	0.71	0.83	0.73	0.78	0.88	0.49	0.55	0.65	0.71	0.79	0.84	0.52	0.53
Cop3	1.18	0.96	0.87	0.92	0.55	0.66	0.61	0.75	0.65	0.75	0.81	0.43	0.64	0.58	0.62	0.78	0.32	0.33	0.42	0.58	0.57	0.50	0.55	0.67
Cop4	1.91	1.04	0.91	0.97	0.77	0.68	0.60	0.95	0.71	0.83	0.81	0.63	0.68	0.59	0.65	0.80	0.37	0.46	0.53	0.62	0.73	0.61	0.07	0.16
Tru1	0.46	2.69	2.05	2.31	1.75	1.64	1.54	1.98	1.84	1.86	1.88	1.48	1.35	1.23	1.46	1.50	1.40	1.43	1.42	1.55	1.47	1.49	0.04	0.06
Tru2	0.41	0.77	2.61	2.10	1.89	1.71	1.59	1.85	1.89	1.89	1.91	1.73	1.30	1.18	1.46	1.55	1.31	1.44	1.57	1.54	1.42	1.56	0.11	0.06
Tru3	0.43	0.86	0.79	2.68	1.89	1.60	1.60	1.96	1.76	1.71	1.90	1.45	1.22	1.11	1.38	1.46	1.31	1.40	1.51	1.50	1.31	1.47	0.08	0.05
Tru4	0.35	0.68	0.75	0.73	2.46	1.41	1.33	1.60	1.55	1.47	1.55	1.73	1.14	1.10	1.33	1.37	1.00	1.11	1.24	1.31	1.27	1.28	0.08	0.01
Tru5	0.35	0.72	0.76	0.70	0.64	1.96	1.46	1.79	1.68	1.54	1.58	1.45	1.00	1.06	1.08	1.16	1.09	1.25	1.22	1.25	1.20	1.27	0.05	0.02
Tru6	0.32	0.69	0.72	0.72	0.49	0.53	1.85	1.61	1.58	1.54	1.60	1.29	0.94	0.96	0.96	1.14	1.14	1.17	1.23	1.11	1.14	1.18	0.07	0.02
Tru7	0.44	0.78	0.74	0.77	0.53	0.57	0.76	2.40	2.11	1.99	1.97	1.72	1.17	1.20	1.17	1.32	1.24	1.41	1.40	1.38	1.37	1.31	0.07	0.04
Tru8	0.32	0.69	0.72	0.66	0.56	0.51	0.76	0.84	2.61	2.26	2.20	1.91	1.30	1.30	1.40	1.43	1.23	1.42	1.41	1.62	1.50	1.44	0.05	0.01
Tru9	0.37	0.70	0.72	0.64	0.56	0.53	0.72	0.79	0.86	2.63	2.21	1.85	1.41	1.41	1.56	1.68	1.38	1.40	1.39	1.57	1.48	1.33	0.08	0.09
Tru10	0.38	0.74	0.76	0.75	0.64	0.73	0.70	0.82	0.88	0.88	2.41	2.21	1.30	1.23	1.38	1.50	1.22	1.40	1.43	1.51	1.42	1.40	0.09	0.10
Tru11	0.27	0.53	0.63	0.52	0.65	0.61	0.56	0.66	0.70	0.67	0.67	2.87	1.19	1.15	1.25	1.31	0.97	1.04	1.19	1.35	1.36	1.27	0.05	-0.18
Info1	0.34	0.56	0.55	0.51	0.49	0.49	0.47	0.51	0.55	0.59	0.54	0.48	2.16	1.64	1.82	1.74	0.96	0.86	1.01	1.35	1.22	1.22	0.01	0.02
Info2	0.32	0.56	0.55	0.51	0.53	0.57	0.53	0.58	0.60	0.65	0.59	0.51	0.84	1.78	1.63	1.64	0.88	0.81	0.89	1.19	1.18	1.05	0.06	0.10
Info3	0.31	0.59	0.59	0.55	0.56	0.51	0.57	0.56	0.57	0.63	0.58	0.49	0.82	0.81	2.31	2.00	1.26	1.08	1.24	1.39	1.29	1.30	0.04	0.05
Info4	0.37	0.58	0.61	0.57	0.56	0.53	0.53	0.55	0.57	0.66	0.62	0.50	0.82	0.79	0.84	2.44	1.23	1.15	1.29	1.48	1.43	1.30	0.12	0.16
Rew1	0.16	0.53	0.50	0.49	0.39	0.48	0.52	0.49	0.47	0.53	0.49	0.35	0.40	0.41	0.51	0.49	2.63	2.18	2.03	1.46	1.43	1.55	-0.36	-0.42
Rew2	0.20	0.53	0.54	0.52	0.43	0.54	0.52	0.55	0.53	0.53	0.55	0.37	0.40	0.37	0.43	0.45	0.81	2.71	2.32	1.51	1.36	1.40	-0.31	-0.32
Rew3	0.24	0.55	0.62	0.58	0.50	0.55	0.57	0.57	0.55	0.54	0.58	0.44	0.44	0.42	0.52	0.52	0.79	0.89	2.51	1.35	1.51	1.72	-0.05	-0.26
Inte1	0.28	0.58	0.59	0.56	0.51	0.55	0.51	0.55	0.62	0.60	0.57	0.49	0.57	0.55	0.57	0.57	0.56	0.57	0.53	2.62	2.04	1.78	-0.08	-0.05
Inte2	0.33	0.56	0.57	0.50	0.51	0.53	0.52	0.50	0.58	0.57	0.53	0.50	0.52	0.55	0.53	0.49	0.55	0.52	0.59	0.79	2.57	2.08	0.05	-0.03
Inte3	0.26	0.54	0.55	0.53	0.48	0.54	0.51	0.50	0.53	0.49	0.53	0.44	0.49	0.46	0.51	0.49	0.57	0.50	0.64	0.76	0.77	2.86	0.02	-0.21
Visit	0.07	0.04	0.11	0.08	0.08	0.05	0.07	0.07	0.05	0.08	0.09	0.05	0.01	0.06	0.04	0.04	-0.13	-0.11	-0.02	-0.03	0.02	0.01	3.00	0.91
Post	0.16	0.06	0.06	0.05	0.01	0.02	0.02	0.04	0.01	0.09	0.10	-0.09	0.01	0.07	0.03	0.09	-0.23	-0.17	-0.14	-0.03	-0.02	-0.11	0.46	1.30

THE END