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# UNDERSTANDING THE ROLE OF SOCIAL SITUATIONS ON CONTINUANCE PARTICIPATION INTENTION IN ONLINE COMMUNITIES: AN EMPIRICAL PERSPECTIVE

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## ABSTRACT

In recent years, the mushrooming development of Online Communities (OCs) has ushered a new paradigm of research for organizational sustainability in IS. In essence, the growth and survival of an online community relies predominantly on the continuous participation of its members. Given that the emergence of OCs may decay or even diminish due to the lack of consistent involvement of members, it is of paramount importance to fathom how to retain and entice members of OCs in terms of their continuous participation in the online platform. Extant studies have focused mostly on personal belief constructs and subjective norm constructs to study users' continuous behavior. However, the important role of social situations has not been sufficiently explored and investigated in IS, particularly in the emerging context of OCs. Drawing on the Triandis model, this study proposes a research model incorporating social situations as the moderator on the continuance participation intention in OCs. We collected data from two large OCs to examine whether congruence exists between situation perceptions and situation reactions. The empirical results show that social situations play an important role in determining the strength of the relationships between affect, social factors, and perceived consequences and the continuance intention in OCs.

Keywords: Online communities, social situations, continuance behavioral intention, Triandis model

## 1. Introduction

In recent years, the mushrooming development of online community (OC) has ushered a new paradigm of research in information systems (IS) [Basak and Calisir 2015; Phang et al. 2014; Porter et al. 2013; Ransbotham and Kane 2011; Wang et al. 2015; Wasko and Faraj 2005]. The study of OCs is one of a number of fast-developing research areas accompanying the exponential growth of Internet applications. The need for OC research is primarily due to the fact that this form of Internet application is being adopted in our society as increasing numbers of individuals with shared interests gather online to form and participate in various types of OCs; these can be either at an organizational level [Thomas and Noriko 2003; Xu et al. 2006] or indeed in their place of residence [Rheingold 2000]. OCs are commonplace in contexts such as education and learning [Blignaut and Stanley 2003; Fulker et al. 1997; Glenn and David 2002; Ligorio and Van der Meijden 2008; Lin et al. 2008; Wachter et al. 2000], healthcare [Demiris 2006; Im et al. 2008; Johnson and Ambrose 2006], social support [Kang et al. 2007; Mo and Coulson 2008], knowledge creation [Cohen and Prusak 1996; Davenport 1996; Ellis 2001; Haimila 2001], open software

development [Guimarães et al. 2013], travel and tourism [Wang and Fesenmaier 2004], in business for market expansion [Kozinets 1999; Pentina et al. 2008], customer service provision [Kim and Kim 2004], customer retention [Kim and Kim 2004], brand building [McWilliam 2000], business transaction support [Hagel and Armstrong 1997; Rothaermel and Sugiyama 2001], among others. Various studies have endeavored to investigate OCs to better understand participation behavior patterns within OCs [Li 2006; Wasko and Faraj 2005; Wiertz and de Ruyter 2007], the design and effective management of OCs [Barab 2003; Sasha et al. 2003], and the OC business model [Christopher 1998; Hagel 1999; Keng et al. 2015; Koh and Kim 2004]. At the same time, many issues arising from this research, for example, questions such as why people participate in OCs [Bagozzi and Dholakia 2002; Chen 2007; Hall and Graham 2004], sustainability of OC operations [Cheung and Lee 2009; Lin 2007], their influence in our work and lifestyle [Ma 2005], and opportunities brought by them [Armstrong and Hagel 1996].

As an emerging phenomenon, OC has piqued mounting interest amid IS researchers and practitioners. Among the studies that involve OC participation, many of them have employed theories, such as theory of reasoned action [Fishbein and Ajzen 1975; Song and Kim 2006], theory of planned behavior [Ajzen 1991; Casalo et al. 2010], motivation theory [Jeon et al. 2011], social capital theory [Xiao et al. 2012; Zhao et al. 2012], and the technology acceptance model [Casalo et al. 2010; Chung et al. 2010; Davis 1989; Jen 2010; Lee et al. 2007; Lin 2008], to investigate a variety of organizational or end-user issues. In essence, the preponderance of research has emphasized primarily two such sets of theoretical facets as personal beliefs and social-psychological variables. Notwithstanding, the findings of the extant studies in regard to OC participation are rather inconsistent and even conflicting. Difficulty in detecting consistent effects of critical determinants of OC participation, including perceived ease of use [Teo et al. 2003], perceived behavior control and group norms [Bagozzi and Dholakia 2002], subjective norms [Lin 2006], emotions [Song and Kim 2006], and sense of belonging and social identity [Zhao et al. 2012] may result from comparing studies that have overlooked the differential effect of their social situations or research contexts. Although participation intention has been investigated in different social context such as dangerous OC (Hong, 2015), no previous study attempts to compare the effects of social situations on participation intention. Individuals may perceive and interpret the same situation differently, and this differential effect may be magnified or attenuated based on the social situation across OC.

Social situations are inherent norms, roles and contractual expectations that guide the formation and operation of communities and can be extended to describe the characteristics of OCs. Different social situations have different effects on interpersonal behavior which, in turn, has different effects on the participation intention (Triandis,[1980]. More specifically, different social situations can increase the weight or probability of certain types of behavior while decreasing the weight or probability of other types of behavior, depending on the type of community in which the behavior takes place [Triandis 1977]. For example, formal communities such as churches tend to favor formal behavior and judge norms and consequences to be more important than their informal counterparts such as hobby clubs. Hence, research on OC participation need to consider the various social situations of OCs in explaining participation intention.

Specifically, we draw on and further extend the Triandis model to explore the effects of social situations on the strength of the relationship between the social-psychological behaviors of OC participants and their continuance participation intention (CPI). To advance this line of research, we propose that OC participants' CPI is determined not only by perceived and normative beliefs and psychological variables, as in the previous studies, but also by the social situation that guides the formation and operation of OCs. The contributions of our research are threefold. First, Triandis model has seldom been examined in the context of continuance intention. Findings from our research are thus critical for adding insights to the validity of Triandis model in researching continuance behavior. Second, OCs have been investigated either alone or through cross-country or cross-cultural comparisons [Posey et al. 2010]. There is no investigation that differentiates the effect of OC social situations on either the participation or CPI in OCs. Third, the core of Triandis model has been validated in many IS investigations. However, an important concept associated with Triandis model – social situation – has seldom been evaluated in these investigations. In other words, Triandis' model has been applied to study users' behavioral intention and actual behavior, but was evaluated independent of social situations. Our research will investigate CPI in OC from a holistic perspective, marrying Triandis model and social situations in one study. Results of our study will prove useful to explain the inconsistent findings of the existing studies.

## 2. Theoretical Background

### 2.1. The Importance of Social Situations for Personal Behavior

Social situations are relative and can be defined at different levels of abstraction. According to Smith (1945), a social situation is “a set of circumstances in which an agent is located in relation to a social environment, or is engaging in social activities” [p. 225]. Arasa [1982], on the other hand, argued that social situations can be defined

at the micro and macro levels, whereas Magnusson [1978] distinguished five levels of social situations: stimuli, episodes, situations, settings and environment. This definition is further elaborated by Reis [2008] to explain how a person will construct a situation based on his or her own perception to trigger certain rules that lead to specific types of behavior.

Social situations have been measured by various dimensions. For example, Magnusson [Magnusson 1971] proposed five dimensions of social situations: 'positive and rewarding', 'negative', 'passive', 'social interaction', and 'activity'. Based on the purpose of research, the social situation could be measured in different ways according to the features of the situation. For example, anxiety and stress are often used in the social psychological field to measure the social situation [Furnham and Argyle 1982]. While evaluating the English language learning effect, power distance and social distance are operated to measure different types of social situations [Lee 2013]. In behavioral research, Triandis [1980] concluded that social situations have two dimensions – formality-informality and constraining-unconstraining. In more formal social situations, social factors and perceived consequences are expected to have a relatively larger effect on behavioral intention, whereas in informal situations affect is presumed to be the most critical predictor.

Research on social situations, behavior, and their interactions has become a classic research topic and been undertaken by many social psychologists, thus nurturing different schools of thought along this line of research. One school of researchers insists that behavior is mainly caused by a person's inherent personality and tries to provide evidence and proof of the consistency of behavior across different social situations [Cattell 1965; Kashdan et al. 2013; Sterling 2010], whereas another school of researchers insists that behavior is mainly caused by social situations and tries to provide evidence of how behavior changes depending on the social setting and situation [Cervin 1955; Lee 2013]. A third school of researchers tries to combine these two extremes by arguing that the person and the situation interact, so that a person is simultaneously influenced by and adapts to the situation [Ekehammar 1974; Gecas 1986; Krueger 2009; Witt 1990].

Although the effect of social situations on behavior has been widely researched, it remains insufficiently explored in the IS literature. Among the few studies that discuss the role of social situations in IT, Ciborra and Willcocks [2006] raised the importance of situations in IT use. In addition, Oja and Galliers [2011] suggested that the adoption of enterprise systems should be an interactive process for individuals, depending on situational factors. Both studies argue that IT usage should be a holistic experience that intertwines situational facts and personal factors. Nonetheless, the literature still lacks empirically based social situation IS studies and the impact of social situations has yet to be examined in the online community context. As OC could provide features and sense like a real community [Blanchard and Markus 2004] and sometimes extends the life of the real community [Powers 2003], they actually possess characteristics of real communities, which could influence people's behavior. Consequently, it is critical to collect data to examine IT phenomena and technologies with the lens of social situations for a fuller understanding of their adoption and use. This is particularly critical for OCs, which are revolutionizing our daily life and business operation.

## 2.2. The Triandis Interpersonal Behavior Model

The Triandis model offers a holistic perspective for studying inter-personal behaviors and investigating these behaviors as influenced by different social situations, which are the two foci of our investigation. The Triandis model, as compared to other similar or competing model, is a better fit for studying the CPI of OC. First, the model considers a wider set of interpersonal behavioral constructs than other similar models. Second, the model integrates perspectives of the Theory of Planned Behavior (TPB) and the Theory of Reasoned Action (TRA) but modifies and redefines many of their concepts and constructs. As such, Triandis model is more comprehensive in its perspective. The Triandis interpersonal behavior model has an objective of building a synthesized model to include the core variables of attitudes, values and other acquired behavioral dispositions that can be used to describe interpersonal behavior. It complements the other models by not only considering the habit construct but also assessing the effect as influenced by different cultures and social situations.

The Triandis model has been adopted in many studies in a variety of fields and contexts with satisfactory results [Chang and Cheung 2001]. In the early 1990s, the model was adopted in the IS field to investigate IT-related phenomena, particularly in predicting users' intentions towards or behavior in adopting information technologies. For example, Triandis model has been applied to the use of personal computers [Al-Khaldi and Wallace 1999; Thompson et al. 1991], Internet at work [Cheung et al. 2000; Karaali et al. 2011; Moody and Siponen 2013; Pee et al. 2008], information and communication technology [Kaba and Osei-Bryson 2013], and OCs [Jeon et al. 2011; Limayem and Hirt 2003]. The model has also been applied to investigate the adoption of Executive Information Systems [Bergeron et al. 1995] and enterprise resources planning systems [Chang et al. 2008].

### 3. Research Models and Hypotheses

Our research model, depicted in Figure 1, is based on the behavioral intention equation of the Triandis model. Behavioral intention is believed to be one of the most important constructs in predicting actual behavior in several adoption and other social psychological theories, including the TAM [Davis 1989], TRA [Fishbein and Ajzen 1975], TPB [Ajzen 1991], and Triandis's attitude-behavior theory [Triandis 1977, 1980]. In these theories, it is proposed that the most immediate and important predictor of a person's behavior is his/her intention to perform it, which has been widely validated in an impressive range of social behaviors such as diet, physical activities, leisure decisions, academic activities and achievement, voting, occupational choice, driver behavior, etc [Sheeran 2002]. In IS field, the effect of behavioral intention on actual behavior has also been extensively validated in various technology-related environments such as word processing software [Davis et al. 1989], e-banking [Lai and Li 2005; Pikkarainen et al. 2004], Broadband [Oh et al. 2003], electronic commerce [Bhattacharjee 2001], e-shopping [Shih 2004], virtual stores [Chen et al. 2004], digital library [Hong et al. 2001-2002], wireless finance [Kleijnen et al. 2004], e-learning systems [Ong et al. 2004], healthcare technology [Chau and Hu 2002], Moderated Group Chat (MGC) [Dolen and Ruyter 2002], etc. The explanation power of behavioral intention is also significant. In a meta-analysis of intention-behavior relationship from several models including TRA and TPB, the average variance of behavior explained by intention is 28% based on 422 hypotheses and a total sample size of 82, 107 [Sheeran 2002]. Its prediction power is quite stable in IS adoption research, for example, 39% variance explained in adoption of WWW [Moon and Kim 2001] and 40% variance explained in the acceptance of word processing software [Davis et al. 1989]. It is for this reason, habit and other Triandis constructs are not investigated in this study as they are not constructs associated with Triandis' behavioral intention equation.

The Triandis model was chosen as the theoretical underpinning of our study for two reasons. First, this model has been validated in the IS field and offers a social-psychological perspective [Jeon et al. 2011; Limayem and Hirt 2003]. The construct of this model has been repeatedly validated in the studies of the intention and actual information system behaviors. Hence, adopting Triandis model to investigate OC's CPI – their post intention and actual behavior – is appropriate. Second, the Triandis model adopts a theoretical perspective not only to explain behavioral intention and actual behavior, but also clarify the effects of social situations on that participation intention. As such, we conjecture that employing Triandis model can provide a holistic perspective to evaluate the CPI of OC participants and examine the effects of the social situations inherent in different OCs on CPI.

In the proposed model, CPI is used as the dependent variable because researchers such as [Chen 2007; Cheung et al. 2013; Chou et al. 2010; Fang and Chiu 2010; Hsiao and Chiou 2012; Lee 2010; Lu and Lee 2012] find CPI to be a more accurate construct in measuring the intention to participate in OCs and the sustainability of OCs relies on members' continuous adoption of OCs.

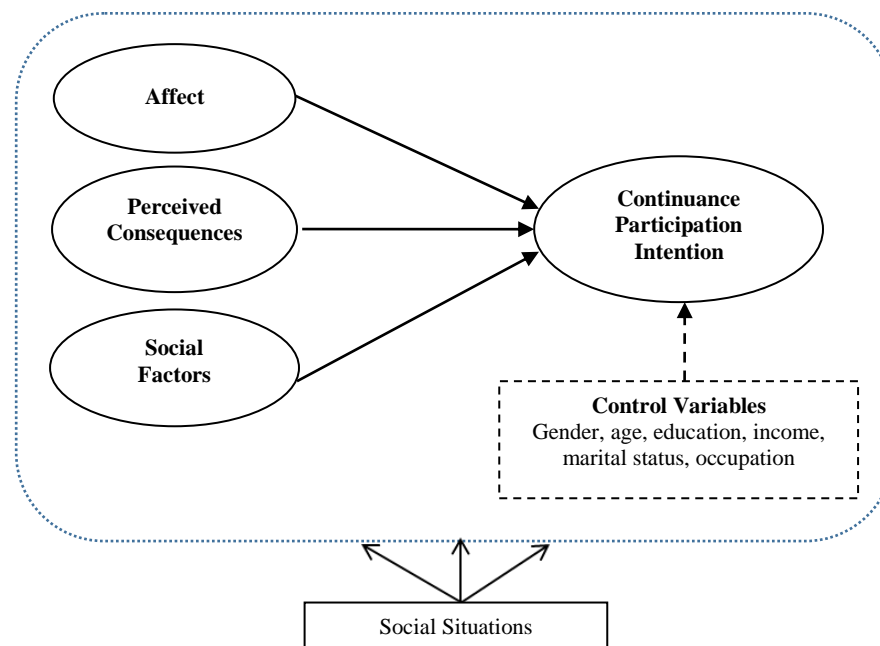


Figure 1: Research Model

According to our proposed research model, CPI is a function of affect, perceived consequences, and social factors. Following Triandis' classification, we propose that social situations of formality-informality and constraining-unconstraining are influential to the CPI in OCs. For example, in a formal OC situation, a person will receive a signal concerning the formality feature and encode it into his or her own perceptions. Ultimately, the person's CPI will be affected by this feature, leading to constrained formal behavior based on his or her perception of the OC situation. Hence, Triandis' social situation guidelines are used as the reference in selecting the formal-constraining and informal-unconstraining OCs for validating the situational factors in this study. The Triandis model indicates that behavioral intention is not only susceptible to the influence of social situations, but also to the differences in individual differences. Hence, our research model controls the effect of individual differences by designing gender, age, income, education, marital status, and occupation as our control variables. In this way, the effect of social situation on CPI would be measured more readily.

### 3.1. Affect

Affect is an individual's feelings of joy, elation, pleasure, depression, disgust, displeasure or hate with regard to a particular type of behavior [Triandis 1980]. These emotions have been widely investigated in a number of fields, ranging from consumer behavior [Andrade 2005] and social psychology [Boyd and Wandersman 1991; Triandis 1980] to IS [Bergeron et al. 1995; Cheng et al. 2002; Cheung et al. 2000; Limayem and Hirt 2003]. A key insight emerging from the congruence of the literature is that positive affect has a positive effect either on behavioral intention (BI) or on actual behavior, hence more positive affect leads to a stronger BI for action. In the context of OCs, affect can be partly attributed to the benefits and opportunities made available to their participants. The ability of OCs to cultivate relationships and a sense of social identity, which subsequently enhances an individual's sense of self-worth, belonging and happiness, has been found to be critical to their eventual acceptance [Blanchard and Markus 2004; Song and Kim 2006]. In addition, OCs offer varying levels of core services that promote stronger social ties, enhanced learning through collaboration [Scardamalia and Bereiter 1994], improved information and knowledge sharing [Teo et al. 2003] and easier interaction across time and space [Igarria 1999]. These benefits nurture positive affect, which may improve the CPI for OC. Hence, we propose the following hypothesis.

*H1: Affect has a positive effect on the continuance participation intention in OCs.*

Triandis [1980] proposed that the affect-intention relationship will be higher in private, hedonic, highly arousing and less-constrained social situations and weaker or non-existent in constrained and formal situations. This proposition has been well-supported in many studies that have examined the affect-intention relationship in various social situations. For example, in private, informal social situations, such as a mother exposing her infant to sunshine [Lulsegged and Deste 2002], affect was found to have a strong effect on BI. In more formal situations, such as PC usage at work, [Al-Khaldi and Wallace 1999; Thompson et al. 1991], Internet and Web usage at work [Cheung et al. 2000] and Web-based courseware usage [Limayem and Hirt 2003], affect was found to have a weaker, or no, relationship with BI.

The CPI of participants may also vary across OCs. In informal OCs, social situations tend to be more private, personal and informal and have no clear norms, thus making possible all types of relationships, including friendships, transactions, and love [Rheingold 2000]. Bakardjieva [2003] supported this perspective, confirming that the patterns of interactions among OC users followed the trail of their everyday lives and that users exchanged information ranging from hobbies, such as stamp collecting, to health information and marriage problems. In other words, the information discussed in informal OCs is mostly private and personal, and users can attain feelings of pleasure, enjoyment and comfort through participation. Formal OCs, in contrast, are expected to have clear norms and conventions that state clearly what members should post. Formal and constraining OCs may thus inhibit members' affect through these group norms. Based on the findings of these previous studies, the following hypothesis is proposed.

*H2: Affect has a stronger effect on the continuance participation intention in informal-unconstraining OCs than in formal-constraining OCs.*

### 3.2. Perceived Consequences

Perceived consequence is the probability that a given consequence will follow a particular behavior [Triandis 1980]. The performance of this behavior is perceived to lead to a potential outcome that can be either positive or negative. Perceived consequences have been reported to have a strong effect on BI in several studies, including research on EIS usage [Bergeron et al. 1995], employees' PC usage [Thompson et al. 1991], Internet and World Wide Web usage at work [Cheung et al. 2000] and Web-based courseware usage [Limayem and Hirt 2003]. Several

studies have tried to divide perceived consequences into short- and long-term consequences, but most have yet to test the significance of long-term consequences in the formation of BI [Al-Khaldi and Wallace 1999; Cheung et al. 2000; Thompson et al. 1991].

Researchers have also found that the more consistent the perceived consequences of an act and the goals of an individual, the greater the significance of the perceived consequences of that act. Lulseged and Deste [2002], for example, demonstrated that the perceived consequences of sunshine for a baby, such as growth, sounder sleep, strong bones and good health, are strong predictors of a mother's BI, as these consequences are consistent with the goals of the behaviour. In OC participation, these consequences may include improved communication with friends and family members, getting to know more people, obtaining useful information, sharing ideas with friends and improved work performance, which will bring positive effect to members. This leads us to propose the following hypothesis.

*H3: Perceived consequences have a positive effect on the continuance participation intention in OCs.*

Triandis postulated that in an informal and unconstraining social situation, perceived consequences will have a stronger influence on the BI to act, but only with the assumption that time is not a constraint on an actor's ability to evaluate the consequences. Triandis contended that informal social situations offer a relaxed and carefree environment that allows individuals sufficient time to search for the best path towards their goals. If the social situation is formal, however, then people may not have time to consider the consequences, and thus they may not place much weight on a given relationship. Hence, we propose the following hypothesis.

*H4: Perceived consequences have a stronger effect on the continuance participation intention in informal-unconstraining OCs than in formal-constraining OCs.*

### 3.3. Social Factors

Social factors are perceived social norms, learned through interactions with friends, peers, colleagues and relatives, that govern whether to perform (or not to perform) a particular type of behavior. Triandis explained that social factors are "an individual's internalization of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations" [1980, p.210]. IS research has shown that this perceived social pressure – in the form of norms, rules and restrictions on behavior – to exhibit or not exhibit a particular type of behavior influences BI. Cheng et al. [2002], for example, argued that social pressure may prompt many non-Internet users to adopt this technology so that they do not get left behind. They also found that social factors are critical in affecting Internet use in the manufacturing industry. Similar results were reported by Fulk et al. [1990], who argued that human behavior is always subject to social influence in the form of norms and pressure in the context of technology use. Other researchers have reported similar findings on the relationship between social factors and BI, for instance, in studies of Internet use [Cheng et al. 2002], Internet-based teaching [Limayem and Hirt 2003], EIS use [Ditsa 2003] and Internet abuse [Woon and Pee 2004].

In the context of OCs, the norms and values that are conveyed through interaction with friends, family members, colleagues and other peer groups are all examples of social factors. These communications, which take the form of comments, suggestions, appraisals and criticisms, create an atmosphere that can sway an individual's BI to participate in OCs. In a recent study, Song and Kim [2006] confirmed that the use of a OC service is affected by social factors such as subjective norms, social identity, and social comparison. They also unveiled the way in which these social factors can influence the CPI to use a specific OC service. Hence, we propose the following hypothesis.

*H5: Social factors have a positive effect on the continuance participation intention in OCs.*

The relationship between social factors and BI may differ greatly depending on the social situation in which the research is conducted. In circumstances in which the social situation is formal and constrained, this relationship may be positive; however, when the social situation is informal and relaxed, the relationship may be neutral or even negative. These propositions were later confirmed by a number of IS investigations [Al-Khaldi and Wallace 1999; Bergeron et al. 1995; Limayem and Hirt 2003]. In the context of OC participation, researchers such as [Bakardjieva 2003; Rheingold 2000] have reported that the social situations in OCs are private and relaxed, although others have disagreed [Burnett and Bonnici 2003], arguing that these communities have hidden social norms and rules to be followed. We believe these different perceptions about social situations of different OCs serve as the evidence that the social context of OCs plays an important role in moderating the relationship between social factors and behavioral intention. Following previous literature, we propose the following hypothesis.

*H6: Social factors have a stronger effect on the continuance participation intention in formal-constraining OCs, than in informal-unconstraining OCs.*

**4. Research Methodology**

**4.1. Online Community Selection**

There are no very specific criteria in guiding formal-informal and constraining-unconstraining situations. Triandis suggested that the physical arrangement or the appearance of place and specified norms will influence people’s perceptions on social situations. Here we would use the appearance of the community interface, rules of conduct of the OC, and contents displayed in the community interface as guidance of classifying these two OCs. The OCs of this study were selected in three phases. First, we identified a list of the most popular professional and non-professional OCs in China. Second, the identified OCs were categorized into two categories – formal-constraining and informal-unconstraining. Third, the two categories of OCs were cross-compared based on five situational characteristics – operation criteria, conduct codes, discussion topics, website design, and participation constraints. At the end of this three-phase process, Tencent community was selected to represent informal-unconstraining OC; whereas Microsoft Chinese community was selected to represent formal-constraining OC. The display of color of the two OCs are used as important guidance based on the computer interface design literature [Hausman and Siekpe 2009; MacDonald 1999] and consumer perceptions on colors [Grossman and Wisenblit 1999; Pelet and Papadopoulou 2012].

The Tencent community is an informal commercial community with a heterogeneous member profile. This OC focuses on leisure issues and allows its members to freely express their feelings on topics ranging from hobbies and cars to games and sport. Tencent’s layout that includes many pictures and provides more tools for members to express their emotions is also colorful and less restrictive in its code of conduct<sup>1</sup> and the posting of topics is relatively unrestricted. The Microsoft Chinese community, in contrast, is a value-added professional community that focuses on the discussion of topics related to the use of and developments in Microsoft products. Only topics related to Microsoft products such as Windows, Office and .NET are welcome in this community. The members of this OC are more homogeneous in their backgrounds, and their intention is to use the community as a platform for professional knowledge exchange. The website layout is quite simple without many tools for the expression of emotions and not very colorful. Its discussion threads are limited to technical questions and its code of conduct is also restrictive. Due to these inherent differences, these two communities were chosen to represent OCs in two different social situations, with Tencent representing an informal-unconstraining situation and Microsoft Chinese representing a formal-constraining scenario.

Table 1: Classification of OC Types

Criteria	Tencent (informal-unconstraining social situation)	Microsoft Chinese Community (formal-constraining social situation)
operation criteria	Mainly for communication on various topics and hobbies	Mainly for professional knowledge development and communication
conduct codes	Not restrictive, vague and general guidance	Formal, restrictive clear and specific guidance on code of conducts.
discussion topics	Anything, mainly leisure and free talk	Restrictive to technical topics related to Microsoft products
website design	Colorful, many pictures, many emotional expressions	Simple, not colorful, not many pictures, less emotional expressions
participation constraints	No specific participation constrains	Limited to technical questions

**4.2. Instrument Validation**

To ensure the validity and reliability of the questionnaire, a four-stage survey validation process was conducted. First, whenever possible, previously validated questions were used, and generally accepted online instrument

<sup>1</sup> <http://www.qq.com/privacy.htm>



construction guidelines [Ridings et al. 2002; Stanton and Rogelberg 2001; Wang and Fesenmaier 2003] were followed as closely as possible. Second, the questionnaire was originally constructed in English and then back-translated by a Chinese doctoral student to ensure the validity of its language usage. The feedback from this phase of instrument development resulted in a significant refinement of the survey, which improved its content validity. Third, the questionnaire was pre-tested by an MIS professor, seven business doctoral students, and two experienced OC webmasters. Their feedback was used to revise the wording and grammar to make the questionnaire more understandable and readable. As a result, many questions were rephrased and restructured to improve the validity and reliability of the survey instrument. Fourth, a pilot test was conducted on two small OCs, in which 21 respondents filled out the online questionnaire over a 10-day period. The responses from these respondents were analyzed to determine the reliability of the questionnaire. Cronbach's alpha was used to assess the scale reliability, and items with low correlations were dropped. This analysis showed that the Cronbach's alpha values for all of the constructs in the pilot test were above 0.80, thus suggesting the adequate reliability of the questionnaire, according to Nunnally and Bernstein's [1994] recommendations.

#### 4.3. Data collection

An online questionnaire hosted on a service provider's site was developed to collect data from members of the Tencent and Microsoft Chinese communities in China. The use of a service provider allowed us to deal with the problems of access control, authentication and multiple responses that are associated with a Web-based data collection approach [Stanton and Rogelberg 2001]. The management of the two participating OCs also provided rewards and incentives to their members to ensure a higher response rate. For example, the Microsoft Chinese community members who completed our survey were awarded 50 community gold cash units that could be used to buy real products from the Microsoft Chinese community shop, and also the opportunity to enter a lucky draw to win a Microsoft Chinese wireless keyboard, a Microsoft wireless mouse or both.

#### 4.4. Variable Operationalization and Control Variables

The variables in the Triandis model were operationalized according to the initial suggestions of Triandis. The CPI measure was adapted from Davis [1989], Davis et al. [1989], Moon and Kim [2001] and Teo et al. [1999]. The affect measure was adapted from Triandis. Perceived consequences were measured using the construct developed by Limayem and Hirt [2003]. Social factors were measured using two approaches. First, we adapted some of the items from previous studies [Baumann et al. 1993; Limayem and Hirt 2003]. Second, we used open questions to solicit additional information on social factors. This method was used with great success by Limayem and Hirt [2003] to develop environment-specific factors. The whole construct scales are attached in Appendix I.

The study also used control variables to eliminate the effects that may arise from profile variables such as gender, age, education, income, marital status, and occupation. The control variables were treated as single observable variables in the research model and coded as dummy variables according to Hayduk [Hayduk 1987]. The reason for us to code them as dummy variables rather than run multi-group analysis lies in the fact that the categorical variables such as age, education etc. have more than two categories and it is difficult to run the multiple-group analysis. The dummy variable approach has frequently been used in management studies [Hagedoorn and Schakenraad 1994].

#### 4.5. Data analysis

Structural equation modelling (SEM) was conducted to validate and test the proposed research model. SPSS 14.0 and LISREL 8.80 were used to analyze the data. The Cronbach's alpha for each scale was first calculated by SPSS 17.0, along with confirmatory factor analysis (CFA) to further check the levels of reliability and validity and the goodness-of-fit indices (GFI) of the research model. CFA was also used to check the fitness of the data for our research model, and LISREL 8.80 was used to validate the research model. While several other researchers have used correlation-based PLS approach for the Triandis model analysis, it's not appropriate here in our study for two reasons. Firstly, there are many discussions in our field and the most famous one might be the MISQ editorial paper by Gefen et al. [2011]. It's suggested that when the sample size is smaller and the measurement model is explorative, PLS is more appropriate due to its less restrictive requirements than SEM. Secondly, it's generally believed that if the purpose of the research model is for theory testing and confirmation, it's suggested to use the covariance-based SEM and if the purpose of the research model is for prediction and theory development, it's more appropriate for using the correlation-based SEM [Hair Jr et al. 2016]. In general, correlation-based SEM has less restrictive criteria for the data analysis, such as the smaller sample size, items less than 3 etc. Triandis model is a very established model with clear set of measurements and our sample size is quite large. It's more appropriate to use the covariance-based SEM rather than correlation-based SEM with PLS method in this study. As the previous studies [Limayem and Hirt 2003; Limayem et al. 2007] used the PLS rather than SEM because of its smaller sample size and non-normality of the data, our model does not have the problem and covariance-based SEM is more appropriate.

## 5. Results

A total of 1,075 responses were collected from the two participating communities. After checking for data integrity, we eliminated 51 multiple responses and 15 incomplete responses, thus resulting in 1,009 usable responses.

### 5.1. Profile of Respondents

As shown in Table 2, of the 1,009 valid responses received, 98% were from mainland China, Hong Kong, Macau, or Taiwan. Most respondents were male (80.38%) and single (78.7%). Their occupations varied from unemployed to professionals, with most being engineers, computer technicians or students. The respondents were predominately (70.27%) between the ages of 19 and 28, and more than 70% were college graduates. The profile of our respondents is highly compatible with the OC profiles announced on the official site of the CNNIC (the China iNternet Network Information Center), which suggests that our respondents are representative of Chinese OC users as a whole.

More specifically, the 474 respondents from the Tencent community were mostly male (63.71%), relatively young (87.55% less than 28 years old), single (85.86%) college graduates (54.85%) with a low income (40.08% below RMB500 per month). The 535 respondents from the Microsoft Chinese community, in contrast, exhibited very different profiles. Although the members of this community were also very young (82% below 28), there were more males (95.14%), more of them worked in computing/engineering (47.8%), they were better educated (85% college graduates) and more affluent (with more than 67% earning more than RMB1000 per month). The gender distribution in the Microsoft Chinese Community is highly skewed.

### 5.2. Analysis of Measurement Model

The reliability and validity of the measurement model were assessed using CFA, which was evaluated using the GFI and the reliability and validity analyses. In selecting the fit indices for the GFI evaluation, this study followed the recommendation of Hu and Bentler [1999] to combine the use of relative fit indices and noncentrality-based fit indices to minimize Type I and Type II errors. Consequently, we chose the GFI, the adjusted goodness-of-fit index (AGFI) and the root mean square residual (RMSR) from the absolute fit indices; the non-normalized fit index (NNFI) and the incremental fit index (IFI) from the relative fit indices; and the comparative fit index (CFI) and root mean square error of approximation (RMSEA) from the noncentrality fit indices. The NNFI and IFI were chosen because they are relatively unaffected by sample size [Gerbing and Anderson 1993; Hu and Bentler 1995; Marsh et al. 1988]. As this study had a large sample size, this combination is well suited to objectively reporting the research results. The cut-off criteria for the fit indices were based on Hu and Bentler [1998, 1999] who recommended that when sample size is equal or greater than 1000, a combination rules of TLI cutoff value  $<0.96$  and SRMR  $> .06$  (.07, .08, .09, .10, or .11) are preferable. We thus used the cutoff value of 0.90 for NNFI, CFI and IFI, 0.11 for SRMR, 0.80 for GFI and AGFI, and 0.10 for RMSEA as our cut-off combination as we have large sample size.

The GFIs for both the measurement model and the structural model are reported in Table 3. Overall, the measurement model shows a good fit. The NNFI and CFI are well above the acceptable level of 0.90, and also exceed the recently recommended threshold of 0.95. The GFI and AGFI are above 0.80, and the RMSR value is below the recommended 0.10. Although the RMSEA index fails to meet the recommended minimum value, this is still acceptable according to Gefen [2011], suggesting it is still reasonably adequate to assess the results of the structural model.

Table 2: Respondent Profile

		Combined	Tencent (informal- unconstraining)	Microsoft (formal- constraining)
		No. of cases (%)	No. of cases (%)	No. of cases (%)
Gender	Male	811 (80.38)	302 (63.71)	509 (95.14)
	Female	198 (19.62)	172 (36.29)	26 (4.86)
Age	Under 18	145 (14.37)	114 (24.05)	31 (5.79)
	19-28	709 (70.27)	301 (63.50)	408 (76.26)
	29-42	140 (13.87)	49 (10.33)	91 (17.01)
	Above 42	15 (1.49)	10 (2.11)	5 (0.93)
Education	Postgraduate/College	715 (70.86)	260 (54.85)	455 (85.05)
	High School	279 (27.65)	201 (42.40)	78 (14.58)
	Primary	15 (1.49)	13 (2.74)	2 (0.37)
Marital Status	Single	826 (81.86)	407 (85.86)	419 (78.32)
	Married	169 (16.75)	57 (12.03)	112 (20.93)
	Separated/Divorced	14 (1.39)	10 (2.10)	4 (0.75)
Monthly Income	Under RMB500	319 (31.62)	190 (40.08)	129 (24.11)
	RMB501-1000	150 (14.87)	104 (21.94)	46 (8.60)
	RMB1001-2000	242 (23.98)	107 (22.57)	135 (25.23)
	RMB2001-4000	169 (16.75)	44 (9.28)	125 (23.36)
	Above RMB4000	129 (12.78)	29 (6.12)	100 (18.70)
Occupation	Computer/Engineering	386 (38.26)	130 (27.43)	256 (47.85)
	Graduate/College Student	177 (17.54)	69 (14.56)	108 (20.19)
	Primary/High School Student	87 (8.62)	55 (11.60)	32 (5.98)
	Executive/Managerial	52 (5.15)	31 (6.54)	21 (3.93)
	Academic/Educator	48 (4.76)	22 (4.64)	26 (4.86)
	Professional (Doctor, Lawyer, etc.)	42 (4.16)	22 (4.64)	20 (3.74)
	Sales/Marketing	38 (3.77)	27 (5.70)	11 (2.06)
	Other	179 (17.74)	118 (24.89)	61 (11.39)

Table 3: Overall Goodness-of-Fit Indices

	$\chi^2$	df	NNFI	CFI	IFI	GFI	AGFI	RMSR	RMSEA
Recommended Value			$\geq 0.90$	$\geq 0.90$	$\geq 0.90$	$\geq 0.80$	$\geq 0.80$	$\leq 0.11$	$\leq 0.10$
Measurement Model	895.40	84	0.95	0.96	0.96	0.87	0.81	0.055	0.11
Structural Model	1134.39	150	0.94	0.96	0.96	0.88	0.82	0.045	0.090

The measurement model was further assessed for construct reliability and construct validity. The former was assessed at three levels: Cronbach's alpha, item reliability and composite reliability. Item reliability evaluates how much of the variance of the observed variable can be explained by the latent variable rather than by random error [Long 1983]. The purpose of composite reliability is similar to that of Cronbach's alpha, but the former takes the factor loadings into account rather than assuming that each item has an equal loading on the construct. As indicated in Table 4, the Cronbach's alpha values for all of our scales are above 0.80, which is significantly above the 0.70 level suggested for exploratory research [Nunnally and Bernstein 1994]. Table 3 also reveals that all of the item reliabilities surpass the acceptable level of 0.50. The composite reliability values are above the 0.70 threshold suggested by Fornell and Larcker [1981], thus supporting the reliability of our measurements for model testing.

Table 4: Summary of Measurement Scales

Construct	Mean	S.D.	Cronbach's Alpha	Factor Loading	Item Reliability	Composite Reliability	Average Variance Extracted
Continuance Participation Intention (CPI)							
CPI1	5.34	1.52		0.73	0.53		
CPI2	4.99	1.59	0.81	0.81	0.66	0.72	0.59
CPI3	4.91	1.59		0.76	0.58		
Affect (AFF)							
AFF1	5.18	1.47		0.76	0.58		
AFF2	5.24	1.47	0.84	0.82	0.67		
AFF3	4.74	1.56		0.72	0.52	0.76	0.58
AFF4	4.56	1.55		0.74	0.55		
Perceived Consequences (PC)							
PC1	4.20	1.76		0.75	0.56		
PC2	3.77	1.74		0.80	0.64		
PC3	3.43	1.64	0.88	0.80	0.64	0.83	0.61
PC4	3.43	1.61		0.84	0.71		
PC5	2.77	1.58		0.73	0.53		
Social Factors (SF)							
SF1	5.01	1.67		0.82	0.67		
SF2	4.74	1.62	0.90	0.88	0.77	0.87	0.75
SF3	4.82	1.73		0.89	0.79		

Construct validity was assessed using convergent validity and discriminant validity. Convergent validity can be assessed by examining the factor loading of the constructs and the average variance extracted (AVE) (greater than 0.50). A factor loading greater than 0.70 is considered to imply significant convergent validity. The AVE measures how much of the variance of the estimated covariance is due to the relationship between the observed variable and the latent variable, or whether it simply arises from measurement error [Fornell and Larcker 1981]. As shown in Table 3, all of the factor loadings are greater than 0.70, and the AVE of all of the constructs is greater than 0.50, thus demonstrating significant convergent validity.

Discriminant validity can be assessed by comparing the shared variance among the constructs with the AVE. Our test results, depicted in Table 5, show that all of the AVEs are above 0.50, thus surpassing the minimum recommended value. In addition, the shared variance among the variables is consistently lower than the square root of the diagonal AVE. Although the value of the shared variance of affect-perceived consequences exceeds the AVE, this violation is quite limited. These findings suggest that the measures are distinct and unidimensional, thereby ensuring discriminant validity at the construct level.

Table 5: Average Variance Extracted

	Behavioral Intention	Affect	Perceived Consequences	Social Factors
Behavioral Intention	0.59			
Affect	0.51	0.58		
Perceived Consequences	0.49	0.67	0.61	
Social Factors	0.18	0.19	0.17	0.75

Note: Values on the diagonal represent the average variance extracted. Values off the diagonal represent the shared variance.

### 5.3. Structural Model Testing Results

Using the sample covariance matrix in Appendix II, the research model was examined in terms of overall goodness of fit, overall explanatory power and social situation effect. The overall goodness of fit of the research model was examined using the same fit measures as those used for the measurement model. The results are all within acceptable levels, thus suggesting the adequacy of our research model for further statistical analysis including the causal link evaluation.

The overall explanatory power of the Triandis model was examined using the R-square and the individual path coefficients. The results in Table 7 indicate that our model explains 65% of the overall variance in CPI. If the individual OCs are examined separately, then our model explains 62% of the variance in CPI for Tencent and 70% for Microsoft Chinese. The general Triandis hypotheses (H1, H3 and H5) were validated using the combined data set, whereas the social situation hypotheses (H2, H4 and H6) were tested by comparing the individual OC data sets. Our findings on the Triandis hypotheses show that affect had the strongest influence on CPI, with an effect size of 0.58, followed by 0.16 for perceived consequences and 0.11 for social factors, thus supporting hypotheses H1, H3 and H5.

The research model was then tested across communities for the effect of social situations on CPI through the multiple group test in LISREL [Lai and Li 2005]. The results for the two groups are shown in Table 7 and Figure 2. For the multiple group test of the coefficient difference across communities, the model was first constrained to equate all coefficients across groups for the structural model and then free one coefficient each time to compare the Chi-square differences across the two groups. The Chi Square differences are used to test whether there is difference in coefficient across the group. For the detailed illustration and assumption for the multiple group test, please refer to [Cheung and Rensvold 1999]. The results in Table 5 demonstrate that all three path coefficients across the two groups are statistically different.

Table 6: Multiple Group Difference Test Across Groups

	$\chi^2$	df	$\Delta\chi^2$	$\frac{\Delta d}{f}$	NNFI	CFI	RMSEA
Fully constrained model	3632.04	377			0.86	0.86	.13
Fully unconstrained model	3465.54	374	166.5***	3	0.86	0.88	.13
Affect → CPI Freed	3467.18.53	376	164.86***	1	0.86	0.88	.13
Perceived Consequences → CPI Freed	3509.07	376	122.97***	1	0.86	0.88	.13
Social Factors → CPI Freed	3565.42	376	66.62***	1	0.86	0.87	.13

Note: \*\*\*Significant at the 0.001 level.

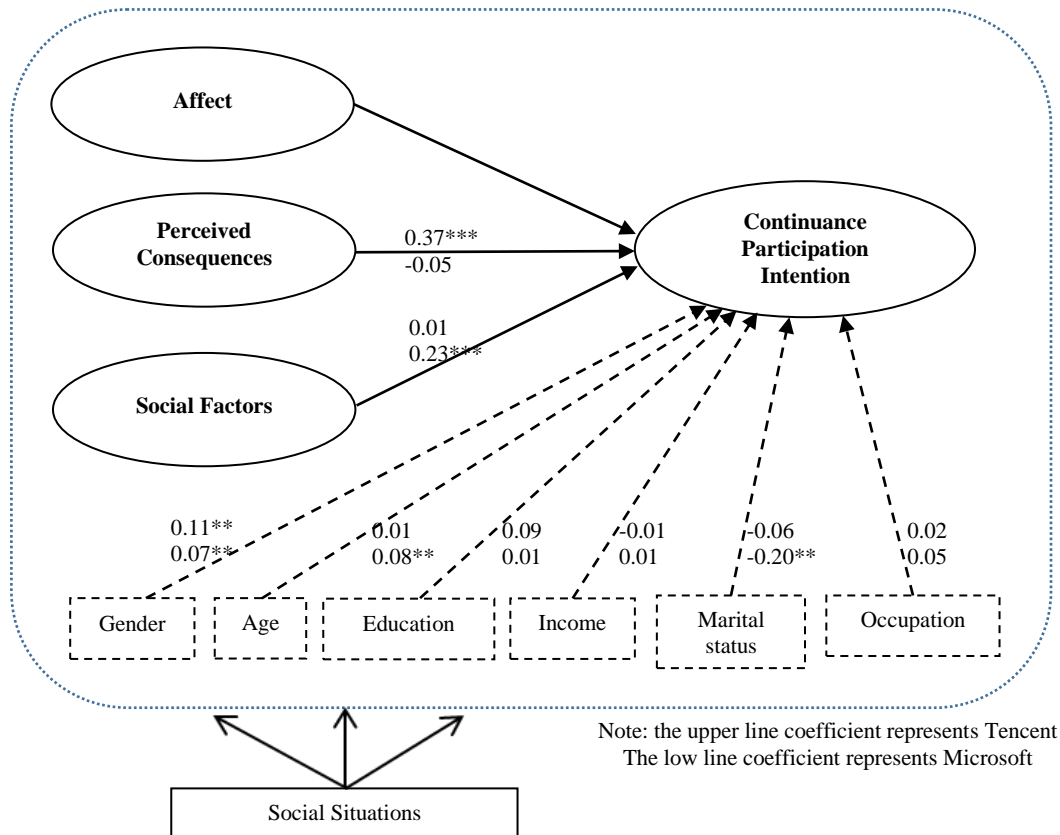


Figure 2. Research Model Analysis Results

Table 7: Results of Research Model

Hypothesis	Effect Size			Group Difference
	Combined	Tencent	Microsoft	
Main effect				
Affect→CPI	0.62***	0.44***	0.70***	0.26***
Perceived Consequences→CPI	0.16**	0.37***	-0.05	0.42***
Social Factors→CPI	0.10***	0.01	0.23***	0.22***
Control effect				
Gender→CPI	0.07**	0.11**	0.07**	
Age→CPI	0.06	0.01	0.08**	
Education→CPI	0.10**	0.09	0.01	
Income→CPI	0.01	-0.01	0.01	
Marital Status→CPI	-0.10**	-0.06	-0.20***	
Occupation→CPI	0.01	0.02	0.05	
R Square of CPI	65%	62%	70%	

Note: \*\*\*significant at the 0.001 level; \*\*significant at the 0.01 level; and \*significant at the 0.05 level.

It is interesting to note that the relationship between affect and CPI, as shown in Table 7 and Figure 2, is significant in both social contexts. Moreover, affect has a stronger influence on CPI in the formal-constraining Microsoft Chinese community than in the informal-unconstraining Tencent community, which is contrary to the relationship we postulated in H2. The effects of perceived consequences and social factors on CPI differed significantly between the Tencent and Microsoft communities, thus supporting H4 and H6. The CPI in Tencent was less influenced by perceived consequences and less by social factors, whereas the opposite was found for Microsoft. The tests of the control variables, as shown in Table 7 and Figure 2, also confirmed that CPI was significantly

influenced by gender, education and marital status. These results indicate that individuals who are female, single and better educated have a greater CPI in OCs than do their counterparts. The other control variables – age, income and occupation – did not have significant effects on CPI.

## 6. Discussions

The proposed research model for assessing CPI in OCs was effective in capturing the relationships between a set of CPI antecedents and CPI in specific social situations. Five of the six hypotheses were supported. The results of the hypothesis tests are reported in Table 8.

Table 8: Summary of Hypotheses Testing

Hypotheses	Results
H1: Affect has a positive effect on the CPI in OCs.	Supported
H2: Affect has a stronger effect on the CPI in informal-unconstraining OCs than in formal-constraining OCs.	Not Supported
H3: Perceived consequences have a positive effect on the CPI in OCs.	Supported
H4: Perceived consequences have a stronger effect on the CPI in informal-unconstraining OCs than in formal-constraining OCs.	Supported
H5: Social factors have a positive effect on the CPI in OCs.	Supported
H6: Social factors have a stronger effect on the CPI in formal-constraining OCs than in informal-unconstraining OCs.	Supported

### 6.1. Effect of Social Situations

The Triandis model postulates that the effects of affect, perceived consequences and social factors on CPI may vary across social situations. This interesting argument has, to a certain extent, been confirmed in our investigation. Through the use of two different OCs, we confirmed that the social situation can alter the effect of affect, social factors and perceived consequences on CPI.

The effect of the social situation on the relationship between affect and CPI was found to have an inverse relationship to that postulated in H2 despite it's not statistically significant. Instead of affect having a stronger effect on CPI in informal and less constrained OCs, it was found to be significantly stronger in the more formal and restricted Microsoft Chinese OC, which is contrary to the expectations of the Triandis model. This finding calls for a new explanation of the way in which emotional systems are aroused online. The social situation may not be the only variable that influences such systems. One possible reason might be attributed to the Chinese culture emphasizing on collectivism [Hofstede 2001], in which social capital is highly favored. A recent finding of social capital's positive effects on users' satisfaction in OCs [Magro et al. 2013] also supported that social capital would arouse positive emotions. Another possible reason might be that OC members in Microsoft who favor professionalism enjoy the process even more than other normal members in the Tencent community who post social and leisure topics. This probably explains why affect has a stronger influence on CPI in the formal-restricting Microsoft Chinese OC than in the informal-unconstraining Tencent OC.

As anticipated, perceived consequences and social factors had significant overall effects on BI, but these effects differed in the informal-unconstraining and formal-constraining OCs. Contrary to our expectation, the effect of perceived consequences on CPI in the formal-constraining OC and the effect of social factors on CPI in the informal-unrestricting OC were found to be insignificant. Although similar findings have been reported in other research on stand-alone social situations, we were nevertheless surprised by the marked difference in the results for our two OCs. A plausible explanation for the insignificance of perceived consequences in the formal-constraining OC is that our questionnaire lacked an emphasis on any specific OC or participant type in the measure of social-psychological behavior. Our measure of perceived consequences was based on a prior study that investigated the consequences of relationships and communication in a general context [Limayem and Hirt 2003]. As a result, the measurement items used may not be suitable for a Microsoft Chinese OC in which the participants are all IT professionals and there is a specific emphasis and consequences associated with issues related to problem solving and knowledge exchange on Microsoft products.

The finding that social factors have a significant stronger effect on CPI in the formal-constraining OC than in the informal-unconstraining OC is consistent with our hypothesis. This could be explained from two perspectives. On one hand, the perceptions of norms and social codes in the formal-constraining OC will be stronger than in the informal-unconstraining OC, where the social factors relationship will be strengthened. On the other hand, this result

may be due to the consequences of OC use on social factors. In informal-unconstraining OCs, OC participants bear all the consequences (both positive and negative) of their OC activities, which is in contrast to the situation in the Microsoft Chinese OC, where participants' OC activities may impact their work performance or the quality of their decisions. When the consequences of one's actions are limited to oneself, the restrictions imposed by social pressures and norms will be reduced, thus minimizing the impact of social factors on CPI in the informal-unconstraining OC examined in our study.

#### 6.2. Effect of the Triandis Variables

The results confirm the influence of affect on CPI in the OC context. This finding is consistent with Triandis' theory and many other CPI investigations. The significance of affect on CPI was anticipated, as OC participation can easily fulfil OC participants' affect in two ways: utilitarian and hedonic. In our research context, OC participation is analogous to attending a social activity and gives participants an opportunity to perform specific utilitarian-related tasks such as establishing social networks and sharing information. Achieving these task objectives not only satisfies OC participants' utilitarian affective needs, but also fulfils their hedonic desires for joy, fun and excitement in completing such tasks. For example, message reading and posting activities can represent utilitarian tasks to OC participants, who derive much hedonic pleasure from the participation process. As a result, affect is found to be a significant determinant of CPI in our study.

Of the three CPI antecedents investigated, affect had the largest effect size (0.62), followed by perceived consequences (0.16) and social factors (0.10). This finding suggests the relatively high importance of affect in our research context, although it differs quite considerably from those of other CPI investigations. Thompson et al. [Thompson et al. 1994], for example, found affect to be the least influential antecedent of CPI in their research on personal computer usage. Similar findings have also been reported in other CPI studies, including those of Limayem et al. [Limayem et al. 2004] on software privacy, Cheung et al. [Cheung et al. 2000] on Web usage, and Bergeron et al. [Bergeron et al. 1995] on EIS usage. We believe our inconsistent research finding is attributable to the nature of the technologies studied. The topics of those previous studies are no longer likely to evoke strong emotional responses in today's technology-laden world. Some of these technologies are becoming, or have become, standard data processing and communication tools in workplaces. In contrast, OCs are online societies created and made possible by a collection of Internet technologies. The attractiveness of an OC is based on its ability to create emotional attachment and fulfil people's fantasies, which are essential ingredients for evoking emotion and affect participants socially and psychologically. OC participants find it relatively easy to develop affective attachment to specific OCs, where they can meet their communal needs more readily without being constrained by the perceived consequences and social norms encountered in the real world. This probably explains our finding that affect is the most critical antecedent of CPI.

As anticipated, perceived consequences played a critical role in CPI in OCs. The significance of this relationship suggests the importance of value achievement and value alignment (between goals and results) in influencing CPI. This relationship is considered to be comparable to the relationship between perceived usefulness and CPI in the technology acceptance model, between relative advantage and adoption in Diffusion of Innovation theory, and between rewards and behavior in the expectancy theory of motivation [Vroom 1964]. Hence, the research findings based on these theories could be applied to the Triandis model to strengthen the theoretical completeness of the perceived consequences construct.

Social factors were also found to be a determinant of the CPI in OCs, implying that the messages received from peer groups and others have a critical influence on what individuals think they should do. This result is consistent with the findings both of the Triandis model and the theory of reasoned action. However, the effect of a reference group on the CPI in OCs may change once individuals have made the decision to participate. Some participants may start to build new relationships in the OCs that may supplement or actually replace their existing reference groups.

## 7. Implications for Research and Practice

### 7.1. Implications for IS Research

Our research findings indicate that social situations play an important role in influencing OC members' behavior across different communities, thus filling a gap in the empirical evidence on the role of social situations in IS studies. Our findings demonstrate that the effects of almost all of the variables – affect, social factors and perceived consequences – on CPI vary according to the social situation. This is consistent with previous IS studies on the role of social situations in IS adoption [Ciborra and Willcocks 2006; Oja and Galliers 2011] in which IS adoption is a situated phenomenon depending on the individual's experience and perception of the information technology. Our empirical findings confirm this for CPI. OC members' perceptions of their CPI are subtly influenced by the explicit and implicit cues and norms from the OCs they participate in, leading to different types of behavior across a variety of OCs. This conclusion also further supports the person-environment debate on human



behavior in the social psychological field, which suggests that behavior is an interactive process between the person and the environment, rather than being determined solely by either of them.

The specific relationship differences across different OC social situations, i.e., informal-unconstraining vs formal-constraining have raised a new horizon for OC researchers to explore. The technology acceptance and adoption have become a dynamic process involving many situational factors rather than a static one-off decision. The social cues emanating from different OCs played an important role in influencing the individual technology behavior. Social factors are stronger in influencing the CPI in the formal-constraining OCs where peers, social norms and experts are prevalent than in the informal-unconstraining OCs where the social capital and social status are not that salient. This calls for researchers to further explore social norms and experts' role in OCs and also in social media. Again, the relationship differences of the perceived consequences  $\rightarrow$ CPI and Affect  $\rightarrow$ PCI relationships also call for further investigations on reasons for this.

#### 7.2. Implications for OC Practice

Our findings suggest that social situations moderate the strengths of affect, social factors and perceived consequences on CPI, which implied that OC organizers thus need to be aware of the importance of social situations in OC management, particularly in the design of OCs to create the environment where social cues could influence members' behavior strategically. For example, that affect is stronger in the formal-constraining OCs can inspire the OC developers to design the OCs' rewarding systems to arouse the emotional attachments toward the related OCs. For example, Microsoft Community used Most Valuable Professional title to award those members who have posted helpful comments to other members and gather them together offline to further motivate them to contribute to the community development. The MVP title has given members great sense of achievements and satisfaction which lead to the emotional attachment toward the community. Other formal communities might not follow suit but can design their specific rewarding or recognition system to increase members' emotional attachment toward the community.

In the informal-unconstraining OC, members are more influenced by the perceived consequences, which implied that clear goals and purposes can motivate members to participate more in the community topics. Given the nature of the informal-unconstraining OCs are less focused than the formal-constraining OCs, it will be beneficial to set short-term activities with clear goals to motivate members to participate in the topics. For example, identify the most interesting topics of the month in the community will give members a purpose and feel focused. At the same time, sharing of senior members' successful stories in the community can also give new members a clear path and purpose for their community life.

The significance of social factors for CPI also has important implications for OC developers. If OC participants' peers influence their acceptance of OCs, then OC developers could use this in their favor by building target market awareness through magazine ads, online banner ads and/or targeted emails. Of course, these marketing strategies may be costly, particularly when the contribution margin of the lifetime value of new OC members is low. Given this consideration, OC developers may prefer to motivate their existing members to market the OC to their off-line peer groups through word-of-mouth. In return, these members could be rewarded through an award system. OC developers may also be able to 'seed' new OC members by attracting 'marketers' through traditional marketing channels to recruit new off-line members into the community.

### 8. Conclusions and Future Research

Our study was motivated by the lack of empirical research on the effect of social situations on the emerging phenomenon of OCs. In light of the growing importance of OCs and the increasing pressure placed on OC practitioners to improve their management practices, this study is both timely and significant. As our study is an early attempt to investigate CPI in OCs in different social contexts, it should be considered an attempt to set the stage for further work in this domain. Prior research has focused merely on technological characteristics, thus leaving social and psychological aspects relatively unexplored. Our research addresses this gap in the literature by offering a new social-psychological perspective that supplements prior research. We also provide evidence that CPI in OCs can be influenced by affect, perceived consequences, and social factors, each of which have unique effects on OCs operating in specific social situations.

This study advances our understanding of CPI in two different types of OC: formal-constraining and informal-unconstraining. Specifically, we found that CPI in these two OC types is subject to the positive influences of affect, perceived consequences and social factors, which together account for a total of 65% of variance in CPI. However, the effects of these CPI antecedents on OCs differ significantly, with perceived consequences having a stronger influence on informal-unconstraining OCs and social factors having a stronger influence on formal-constraining OCs.

This study is inevitably limited in terms of the self-selection of our samples. We posted our online questionnaire in two OCs and left it to the OC members to respond to our survey. We provided incentives to stimulate OC

members to respond to the survey. So it is likely that only those members who were interested in the study and those who were incentivized were inclined to participate. Despite the significant findings, this study has great potential for further investigations on the CPI in OCs. For example, we apply only a subset of the Triandis model by leaving out some of the critical variables (such as habit, culture and facilitating conditions) in the original model. In addition, our social-psychological model evaluates only the overt behavior of the CPI in OC and omits the more important aspect of covert behavior that occurs inside the minds of OC participants. Future research from both the academic and practical perspectives is required to improve our model by delineating overt and covert interpersonal behavior and how these forms of behavior interact with each other to influence the CPI in OC.

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**Appendix A**

Measurement Items

Continuance Participation Intention

I will continuously use online community on a regular basis in the future.  
 I will frequently use online community in the future.  
 I will strongly recommend others to use online community.

Perceived Consequences

Using online community

Allows me to access useful information.  
 Allows me to share ideas with friends.  
 Allows me to improve communication with my friends.  
 Allows me to improve my performance in work.  
 Allows me to have a feeling of attachment.

Social Factors

My friends think it is important to use online community.  
 My colleagues think it is important to use online community.  
 My classmates think it is important to use online community.

Affect

Using online community would be  
 Enjoyable 1 2 3 4 5 6 7 Disgusting  
 Dull 1 2 3 4 5 6 7 Exciting  
 Pleasant 1 2 3 4 5 6 7 Unpleasant  
 Interesting 1 2 3 4 5 6 7 Boring

**Appendix B**

Covariance Matrix

	ITO1	ITO2	ITO3	AFF1	AFF2	AFF3	AFF4	PC1	PC2	PC3	PC4	PC5	SF1	SF2	SF3
ITO1	2.31														
ITO2	1.46	2.53													
ITO3	1.25	1.58	2.53												
AFF1	1.17	1.18	1.06	2.15											
AFF2	1.23	1.21	1.15	1.47	2.15										
AFF3	0.92	0.94	0.98	1.12	1.40	2.43									
AFF4	0.89	1.02	1.11	1.26	1.24	1.35	2.41								
PC1	1.36	1.37	1.21	1.48	1.57	1.55	1.45	3.09							
PC2	1.18	1.39	1.39	1.20	1.48	1.55	1.40	2.04	3.01						
PC3	0.79	1.10	1.13	1.01	1.01	1.17	1.54	1.51	1.58	2.55					
PC4	0.90	1.16	1.19	0.97	1.11	1.27	1.33	1.67	1.76	1.89	2.60				
PC5	0.51	0.82	0.94	0.76	0.83	1.13	1.24	1.19	1.62	1.64	1.73	2.50			
SF1	0.70	0.85	0.81	0.85	0.75	0.60	0.86	0.82	0.82	0.87	0.75	0.62	2.78		
SF2	0.64	0.80	0.80	0.73	0.68	0.63	0.84	0.90	0.85	0.81	0.78	0.67	1.93	2.61	
SF3	0.67	0.80	0.76	0.79	0.69	0.62	0.83	0.88	0.82	0.86	0.70	0.61	2.12	2.20	3.01