In justice we trust: Exploring knowledge-sharing continuance intentions in virtual communities of practice

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**Abstract**

Knowledge has become the key to success in the global knowledge economy, not only for organizations, but also in virtual communities of practice (VCoPs). The major challenge in sustaining a VCoP is acquiring knowledge from members. This challenge leads to our research question: what encourages VCoP members to voluntarily and continuously help one another through continuous knowledge-sharing? In this study, we integrate three research streams—justice, trust, and organizational citizenship behaviors (OCB)—into one model in order to analyze the antecedents of knowledge-sharing continuance intentions in VCoPs. Our model theorizes that the four dimensions of justice (i.e., distributive, procedural, interpersonal, and informational justice) affect two different referents of trust (i.e., trust in members and trust in management). We further link these trust constructs to altruism (i.e., OCB directed to the individual) or conscientiousness (i.e., OCB directed to the organization), which in turn effect the knowledge-sharing continuance intentions in VCoPs. This hypothetical model is empirically validated using data collected from 142 members of an IT-oriented VCoP in Taiwan. Our integrated model has been helpful in VCoP research as it broadens our theoretical understanding of knowledge-sharing continuance intentions.

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**1. Introduction**

The proliferation of the Internet has facilitated knowledge exchange in ways that were never before imagined, as in the formation of virtual communities (VC). According to the 2008 article, "Top 100 Websites in Taiwan" published in Digital Era magazine,\textsuperscript{1} VC is the leading category of websites, accounting for 21 websites of the top 100 listed. The emergence of VC has enabled knowledge to be exchanged between like-minded individuals in geographically dispersed areas. A growing number of people are joining VCs, especially professional VCs, the so-called virtual communities of practice (VCoPs), for the purpose of acquiring knowledge to resolve problems encountered in the workplace (Chiu, Hsu, & Wang, 2006). Many organizations (e.g., Ford, IBM, Hewlett Packard, Xerox) (Pavlín, 2006) have identified knowledge as a valuable intangible resource which helps them to sustain their competitive advantage (Bock, Zmud, Kim, & Lee, 2005). This identification has subsequently encouraged organizations to develop VCoPs in order to meet their business needs and objectives, and to share previously unavailable knowledge within the organizations themselves.

However, the value of VCoPs is limited without rich knowledge (Bagozzi & Dholakia, 2002). The sharing of knowledge and practice is of vital importance to VCoPs because it enables them to accumulate resources and to foster future growth. However, a challenge in sustaining a VCoP is to stimulate its members to spontaneously share knowledge. On the other hand, the bigger challenge in fostering a VC is the need to continuously supply knowledge, i.e., the willingness to continue knowledge-sharing. Accordingly, this begs our research question: what encourages VCoP members to voluntarily and continuously help one another through continuous knowledge-sharing? In this current study, we regard knowledge-sharing continuance intention as the dependent variable. Most scholars dealing with this issue in relation to VCs have focused on the diverse perspectives of motivation theory (Bock et al., 2005), social exchange theory (Kankanhalli, Tan, & Wei, 2005; Wasko & Faraj, 2005), or social capital and social cognitive theories (Chiu et al., 2006). Our aim however, is to broaden our understanding of knowledge-sharing in VC through the lenses of OCB, trust and justice theories.

OCBs are critical determinants of an organization’s effectiveness, efficiency, and overall performance (e.g., Organ, 1988; Podsakoff, MacKenzie, Moorman, & Fetter, 1990). Knowledge resources and quality can be regarded as a performance of knowledge-sharing behavior in VC (Chiu et al., 2006; Wasko & Faraj, 2005). Although virtual communities are characterized with self-organization,
technology-mediated communication, weak-tie relationships among participants, and less formality, it is reasonable to assume that citizenship behaviors contribute to the performance of VCs. We investigate OCBs and their impacts on knowledge-sharing continuance intention in terms of behaviors directed to the individual (OCBI, i.e., altruism), and those directed to the organization (OCBO, i.e., conscientiousness) (Williams & Anderson, 1991) in the VC. Altruism denotes voluntary helping actions either for the direct benefit of other individuals or indirectly to the community, and as a motivation for information sharing (e.g., Palmer, 1991). Rather than only being concerned with individual benefits, a member may execute discretionary behaviors that go beyond the average for the benefit of the community that is conscientiousness. This distinction is noteworthy, because these two forms of OCBs can have different levels of antecedents (e.g., trust in members and trust in host/manager) in the community (Williams & Anderson, 1991).

Surprisingly, notwithstanding the fact that VCs are by their nature sustained by such altruism and pro-community behaviors (conscientiousness) from its members, there is a void in our knowledge about such roles in VCs. Hence, in this study we endeavor to fill this gap by exploring the consequence of OCBs (i.e., continuance intention) as well as its possible precursors (e.g., trust).

Trust has been shown to influence certain organizational outcomes such as OCB (Kownisky & Pugh, 1994). Trust creates a sense of unspecified obligation that may be displayed in citizenship behaviors. It seems reasonable to suggest that when trust exists between parties, one will be more willing to engage in OCB (Pillai, Schriesheim, & Williams, 1999). Besides, trust is vital for achieving an atmosphere of knowledge-sharing in teams and organizations (Nonaka, 1994) and is also important to online settings (Collier & Bienstock, 2006; Ridings, Gefen, & Arinze, 2002). More specifically, trust is a key enabler in relations between spatially and temporally dispersed people when information asymmetry, uncertainty, and fear of opportunism threaten to inhibit the VC (Gefen, Karahanna, & Straub, 2003; McKnight & Chervany, 2002; Swan & Nolan, 1985). Past studies have examined trust in virtual contexts in terms of the diverse stages of trust (cf. Hsu, Ju, Yen, & Chang, 2007) and the types of trust (cf. Kanawattanachai & Yoo, 2002). However, little research has studied trust in the VC setting with regard to referents of trust (e.g., trust in manager and trust in members), and their association with members’ citizenship behaviors. The current study hopes to address this gap.

If trust is indeed a crucial component of VCs, then the antecedents of trust need to be examined as well. Justice is considered to be a key facilitator of trust (Colquitt, Colon, Wesson, Porter, & Ng, 2001). Justice, regarded as the fundamental basis for relationship maintainability in a social exchange (Lind, Kulkil, Ambrose, & De Vera Park, 1993), is an effective and readily available mechanism for dealing with diverse uncertain circumstances (Van den Bos & Lind, 2002) such as the virtual context. Recent research has shown that justice can be broken down into four empirically separate dimensions: distributive justice (fairness of outcomes), procedural justice (fairness of decision-making procedures), interpersonal justice (fairness of interpersonal treatment), and informational justice (adequacy of information about decision-making procedures and outcome distribution) (Colquitt, 2001). The relationship between justice and trust includes the notion that fair outcomes, procedural, and interpersonal treatments involve the trustworthiness of the engaged parties (Brockner, Siegel, Daly, Martin, & Tyler, 1997). However, these relationships have not been addressed in VC-related research. The final goal of this research is to investigate the relative importance of each of the justice dimensions in terms of trust in management or trust in members of VCoPs.

To the best of our knowledge, no study has empirically verified the relationships between justice and trust and their effects on members’ citizenship behaviors and continuance intentions in VCoPs. Consequently, we seek to integrate multiple theories of justice, trust, and OCB in VCoPs into one research model which is expected to shed light on the intentions of VCoP members to continue sharing knowledge (i.e., continuance intention) and their antecedents. The contributions of this study include: (1) an exploration of the roles of four dimensions of justice and different referents of trust played in VCoPs, (2) an understanding of their specific associations on continuance intentions, (3) validating the mediators of altruism and conscientiousness between trust and continuance intention in the VCoP context, and (4) the provision of empirical support for the proposed relationships.

2. Theoretical framework and research hypotheses

2.1. Knowledge-sharing in virtual communities

In the global knowledge economy, knowledge has become the key to success, not only for organizations, but also in VCoPs. The ways in which companies manage their knowledge resources and create and execute innovative ideas by cultivating VCoPs in strategic areas (Wenger, McDermont, & Snyder, 2002) is noteworthy. Given their roles in helping maintain companies’ competitive advantage, VCoPs are destined to enter the spotlight of both practitioners and management information system (MIS) scholars.

The term communities of practice was first utilized by Brown and Duguid (1991) and by Lave and Wenger (1991), and was later popularized by Wenger and his colleagues (Wenger & Snyder, 2000; Wenger et al., 2002). According to Wenger et al. (2002), communities of practice are “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis”. Following the emergence of Internet technologies, VCoPs refer to the self-organizing, open activity system—the online social network groups that focus around shared practices, information, and knowledge that exists for them through mainly electronic means such as online forums, bulletin boards, and email (Wasko & Faraj, 2005). The VCoP features three crucial components: knowledge, people, and social network (Chiu, Chiu, & Chang, 2007). Of these three, knowledge is the key to sustaining the VCoP as well as being the most valuable resource to its members. Knowledge resources and quality have been demonstrated as a performance or outcome of knowledge-sharing behavior in a VC (Chiu et al., 2006; Wasko & Faraj, 2005). Knowledge-sharing/exchange has long been regarded as a motivation for using virtual communities (Wasko & Faraj, 2000). Thus, knowledge-sharing continuance intention, specifically the subjective probability that an individual will continue sharing knowledge in the future, is considered to be a key dependent variable in the present study. The identification of that which enhances the VCoP members’ willingness to share their knowledge, which in turn affects the successful operation of the VCoP is a worthwhile endeavor.

A growing body of literature is concentrated on issues concerning knowledge-sharing in virtual communities from a variety of social-psychological perspectives. For example, some studies have explored the triggers of knowledge-sharing in technology-mediated contexts from the perspective of motivations, including intrinsic and extrinsic motivations (e.g., Kankanhalli et al., 2005; Lee, Cheung, Lim, & Sia, 2006; Lin, 2007). Wasko and Faraj (2005) have examined the knowledge contribution in studies of electronic networks of practice from the social capital perspective. They have identified reputation, altruism, general reciprocity, and community interest as significant motivators of knowledge contribution. Ye, Chen, and Jin (2006) have reviewed several aspects of knowledge-sharing in the VC including individual, knowledge, and environmental aspects. They have concluded that trust, system usability, enjoyment of helping others, self-image, and knowledge
self-efficacy are critical drivers underlying member knowledge-sharing. Various indications of the specific interventions of knowledge-sharing in terms of public–good dilemmas (Cabrera & Cabrera, 2002), or the general cooperation norm and the norm of proportionality (Cress & Kimmerle, 2008) have been considered. Others have investigated the factors that facilitate knowledge-sharing through the mediating effects of either a sense of belonging (Yoo, Suh, & Lee, 2002), sense of community (Teo, Chana, Wei, & Zhang, 2003), or organizational processes (Jian & Jeffres, 2006). Many empirical studies have been conducted which look at the motivations for knowledge-sharing in the VC, but few have empirically examined knowledge-sharing with a theory-based framework related to the nature of VCoPs. Hence, we seek to fill these gaps.

2.2. Organizational citizenship behaviors and knowledge-sharing in virtual communities

Characterized by technology-mediated communication, weak-tie relationships between participants (Kang, Lee, Lee, & Choi, 2007), and the absence of a formal reward system, VCoPs are self-organizing in that they are composed of people who choose to participate of their own volition. The significance of voluntary behavior has contributed to the effective and efficient functioning of virtual communities (Kim, Choi, & Han, 2004; Yu & Chu, 2007) and has been extensively discussed in organizational literature in the area of organizational citizenship behaviors (OCB) (e.g., Organ, 1988; Podsakoff et al., 1990). On the other hand, to the best of our knowledge, little research has been done exploring the role of such behaviors (i.e., OCB) in VCoPs.

Although consistent findings and empirical support connecting OCBs with knowledge-sharing in the literature is lacking, the rationale for including OCBs in the current study is twofold. The first reason concerns the extension of previous research in the VC setting, and the exploration of the relationship between OCBs and other forms of withdrawal behaviors (Podsakoff, MacKenzie, Painie, & Bachrach, 2000). Withdrawal in organizational settings refers to the behaviors that employees utilize to remove themselves from their jobs or evade work tasks (Koslowsky, Sagie, Krausz, & Singer, 1997), behaviors which can be predicted via withdrawal intentions (e.g., turnover intention, or intention to quit). Based on the literature of OCB theory, OCBs are negatively related to withdrawal intentions, such as the turnover intentions of IT personnel (Paré, Tremblay, & Lalonde, 2000), and voluntary turnover (Lee, Mitchell, Sablinsky, Burton, & Holton, 2004). However, the VC withdrawal reflects discontinuous participation and is difficult to trace. The current study places its emphasis on the behavior opposite to withdrawal intention, namely continuance intention, and its relationship with OCBs in VC.

The second reason stems from on the content of social exchange theory since both knowledge-sharing (Bock & Kim, 2002) and the OCB construct have roots in social exchange (Organ, 1988). According to social exchange theory, people feel obligated to reciprocate when they benefit from the actions of some entity. Within this framework, OCB is a reciprocation that individuals provide in the social exchange relationship (Lester, Meglino, & Korsgaard, 2008). When a VC member feels satisfied with the abilities, benevolence, and integrity of other members and mangers of the VC, he/she displays OCB to reciprocate the trustworthy relationships. Since the practice of OCB is optional, good citizens can be considered as all-around contributors and active behavioral participants when they manifest high levels of conscientiousness or altruistic behaviors (Khalid et al., 2009). Knowledge-sharing can be conceived as a form of citizenship behavior (Yu & Chu, 2007). That is to say, active VC members who perform one type of citizenship behavior will likely perform other citizenship behaviors such as knowledge-sharing. Past research has found that high levels of OCB signal one's high organizational involvement (Chen, Hui, & Sego, 1998) and thus lead to the willingness to reciprocate, e.g., knowledge-sharing activities in electronic networks of practice (Wasko & Teigland, 2004). Therefore, it is reasonable to posit that an individual with stronger OCB is more willing to continue knowledge-sharing in the VC.

Hunt and Morgan (1994) suggest that “OCBs may not be a homogenous set of actions”. Altruism may be some of these cooperative, helpful actions, OCB (Williams & Anderson, 1991), which may benefit individuals directly and their organization indirectly. Conscientiousness may be another aspect of OCBs, OCBO (Williams & Anderson, 1991), which may be directed at the organization. In the present study we further investigate the relation of both altruism and conscientiousness with knowledge-sharing continuance intention in VCs.

2.2.1. Altruism, conscientiousness and knowledge-sharing in virtual communities

Altruism, as a form of OCB, refers to the voluntary helping actions where one attempts to improve the welfare of others at some cost to oneself. From the perspective of game theory, altruistic behaviors are influenced by the consequentialist standpoint of utilitarianism, and are performed in the hope of a return favor when needed. This perception of altruism can be appropriately applied to such discretionary behaviors in VC settings. VC members contribute their knowledge and experience to helping others at their own expense (e.g., time, effort, costs) in case they need a favor in the future. Some scholars have regarded altruism as a driver for knowledge-sharing (Ba, Stallaert, & Whinston, 2001; Davenport & Prusak, 1998) and for participating in electronic communities of practice (Wasko & Faraj, 2000). For example, Palmer (1991) verified that altruism is positively associated with information sharing. Hars and Ou (2002) found that altruism motivated hobby programmers to engage in open-source projects. Kwok and Gao (2004) highlighted altruism as one motivator for knowledge contribution in peer-to-peer (P2P) communities.

Conscientiousness, as one dimension of OCBs, denotes discretionary actions beyond the norm (Organ, 1988). Conscientiousness in our study refers to the voluntary actions that include effort or time spent beyond the average, self-improvement to enhance the quality of knowledge-sharing, and obedience to regulations. Prior studies show that high levels of OCB reflect those individuals’ strong willingness to be involved in (Chen et al., 1998), and to participate in organization activities (Pasmor & Fagans, 1992). Accordingly, more conscientious individuals are more likely to share knowledge and are more willing to participate in the VC.

In addition to the rationale noted earlier, some scholars have examined the motivation for voluntarily engaging in knowledge-sharing through the lens of OCB. For example, Lin (2008) confirmed the positive association between altruism, conscientiousness, and knowledge-sharing in the context of the workplace via OCB theory. Consequently, we propose that VC members who have performed altruistic or conscientiousness behaviors will also be more likely to continue engaging in knowledge-sharing behaviors:

H1: VC members’ altruism is positively associated with knowledge-sharing continuance intentions.
H2: VC members’ conscientiousness is positively associated with their knowledge-sharing continuance intentions.

2.3. Trust in virtual communities

Trust in organizational settings, can be regarded as the belief in, and willingness to depend on, the other party (Mayer, Davis, & Schoorman, 1995) as the center of knowledge exchange...
(Davenport & Prusak, 1998), and is important to successful relationships (Wilson & Jantrania, 1993). Generally, trust is conceptualized as a set of specific beliefs dealing primarily with the benevolence, competence, and integrity of another party (Mayer et al., 1995). Benevolence is the willingness of a party to benefit another. Competence is the belief in the trustee's ability or skills to fulfill its obligations as expected by the trustor. Integrity is a party's expectation that another consistently relies on socially accepted principles of behavior. When trust exits between people, they tend to be involved in cooperative interaction (Nahapiet & Ghoshal, 1998), which in turn is imperative to knowledge-sharing (Levin & Cross, 2004; Szulanski, Cappetta, & Jensen, 2004). According to Blau (1964), trust shapes and maintains social exchange relationships, which may lead to knowledge-sharing activities afterward. In addition, trust is also vital for reducing the risk involved in disclosure to opportunistic behavior by partners (Kimmerle, Cress, & Hesse, 2007), uncertainty (Luhmann, 1989), ambiguity and incomplete information, which typify VC scenarios.

The importance of trust in community building has been clearly stated by Nichani and Hung (2002): "trust is the glue that binds the members of a community to act in sharing and adapting manner. Without trust, members would hoard their knowledge and experience and would not go through the trouble of sharing with or learning from others (p. 51)". Trust relationships are critical to effective communication (Dodgson, 1993); trust improves the quality of dialogue and would not go through the trouble of sharing with or learning from others. According to Blau (1964), trust shapes and maintains social exchange relationships, which may lead to knowledge-sharing activities afterward. In addition, trust is also vital for reducing the risk involved in disclosure to opportunistic behavior by partners (Kimmerle, Cress, & Hesse, 2007), uncertainty (Luhmann, 1989), ambiguity and incomplete information, which typify VC scenarios.

The body of research related to organizational and psychological literature proposes that individual considerations regarding trust in individuals and trust in collectives or systems of authority do differ (Colquitt et al., 2001). Indeed, some scholars suggest that the relative importance of trust in leadership or other referents, such as peers, and different associations should be further examined (Dirks & Ferrin, 2002). Accordingly, a clearer depiction and a distinction of trust referents would facilitate our understanding of the association between trust and other virtual community phenomena (e.g., altruism, conscientiousness, and justice).

2.3.1. Trust in management and conscientiousness

As Paulsen (1995) defined, the VC manager's (also called moderator) functions involve keeping the forum on track, acting as a system manager, adding and guiding new members, archiving messages, supplying administrative support, acting as a mediator, prohibiting or responding to improper online behavior, and generally providing aid and encouragement as required by the forum's members. Given the text-based structure of the VC where the visual and verbal cues that smooth face-to-face communication are lacking, one effective way to create successful and sustainable VC is to place facilitative managers/moderators to execute managers' functions (Petta, 1998; Williams & Cothrel, 2000). In our study, trust in management refers to a member's belief in the capability (ability to manage the community), benevolence (showing concern for the needs of members), and integrity (not taking advantage of others) of the managers of the VC (Chiu et al., 2006; Cook & Wall, 1980; Mayer et al., 1995; Ridings et al., 2002). Although some scholars have suggested that trust in leaders/supervisors has a significant effect on OCBs in organizational settings, relatively little research has been done to examine the trust–OCB relationships in VCs. Extensive evidence in the literature across disciplines emphasizes that trust in management/leadership is needed to elicit OCB (Kwonosky & Pugh, 1994). A body of literature exists which concerns the perception of the leader's character and its influence on the follower's sense of vulnerability. Followers endeavor to draw inferences about the leader's characteristics (such as integrity, dependability, fairness, and ability) and these inferences have consequences on followers' performance behaviors (e.g., OCB) and attitudes (Dirks & Ferrin, 2002). The leader–member relationship is based on the ideology of social exchange and is strongly related to OCB (Podsakoff et al., 2000). Accordingly, it is worthwhile to investigate whether trust in management, which is critical to organizational settings, might also be influential in the VC setting and to explore further its relationship to OCBs.

Conversely, instead of investigating all the different elements of OCBs, in the current study we focus on conscientiousness in association with trust in VC management based on the literature. According to the theories of social exchange (Knonovsky & Pugh, 1994) and reciprocity (Dirks & Ferrin, 2002), individuals who believe that management has consideration and cares about their rights and needs will reciprocate with the desired actions. In other words, such individuals are more willing to spend time and effort on tasks (e.g., knowledge-sharing in VC) and to behave above normal/average voluntarily (i.e., conscientiousness). Theoretically, trust in management inspires individual conscientiousness in organizational settings (e.g., Deluga, 1995; Wat & Shaffer, 2005), as well as in the VC context. Their positive relationships have also been supported by the general OCB literature (e.g., Knonovsky & Pugh, 1994; Pillai et al., 1999; Podsakoff et al., 1990). Therefore, the following hypothesis is proposed:

H3: Trust in management is positively associated with VC members' conscientiousness.

2.3.2. Trust in members and altruism

On the other hand, in any organization it is possible that an individual may trust one particular referent, but distrust another. This happens because of the multiple foci and referents of trust (McCaulay & Kuhnert, 1992). This study explores whether trust between peers is more important than trust in leadership in a self-directed situation such as in a VC, where an individual may be more reliant on peers than on a leader.

In our study, trust in members denotes the VC members' belief in other members' benevolence (helping others within their capacity), integrity (not taking advantage of others and not purposely disrupting conversations between members), and abilities (adequate knowledge about the issue under discussion) (Chiu et al., 2006; Cook & Wall, 1980; Mayer et al., 1995; Ridings et al., 2002). The demands in VC are less clear than those in traditional communities and organizations, thus behaviors are more likely to be influenced by observing the behavior of others/peers. Extended from Bandura's (1977), social learning theory, whether a VC member is willing to contribute his/her knowledge helping others (i.e., altruism) depends on the assessment of the behavior of other members. This idea is consistent with the altruism and “free-rider” issues of game theory. For example, the VC member is more willing to make a sacrifice to help others if those others pitch in, but is not willing if he/she considers the others as free-riders—those who...
those who obtain knowledge from other VC members yet contribute little. One solution to the free-rider problem is to convert the free-rider to a cooperator or contributor, i.e., the trustworthy partner. A trusting person is more willing to provide useful knowledge to help others, so trust relationships lead to greater knowledge exchange (Dirks & Ferrin, 2001). In other words, despite a lack of such characteristics as face-to-face contact, visual cues, and workable rules, trust in the VC may serve as a proxy for such rules, helping to shape the environment necessary for making smoother engagements with others (Butler & Cantrell, 1994). Hence, the following hypothesis is proposed:

**H4:** Trust in members in the VC is positively associated with altruism.

### 2.4. Justice and trust in virtual communities

Justice reflects perceptions of fairness and assessment concerning the appropriateness of performance outcomes or processes (Croom & Greenberg, 1997), and has been the subject of much organizational research. Recent theory regarding justice has focused on expanding conceptualizations of justice to incorporate distributive justice, procedural justice, interpersonal justice, and informational justice. Distributive justice focuses on evaluations of the fairness of outcomes (Adams, 1965), while procedural justice emphasizes the fairness of the process by which outcomes are settled (Lind & Tyler, 1988). Interpersonal justice reflects the degree to which individuals are treated by others with politeness, dignity, friendliness, and respect. Informational justice refers to the extent to which individuals are provided with information or rationale as to how decisions are made and how outcomes are distributed.

Justice is essential for understanding social behavior. According to uncertainty management theory, justice is imperative for people because justice judgments are an effective and readily available mechanism for managing the diverse uncertain circumstances (Van den Bos & Lind, 2002) which typify the virtual context. As with traditional organizations, VC managers have the power to perform their functions (as previously listed in the trust in management and conscientiousness section) and have better information regarding their decision-making than any members in the forum; i.e., power and information asymmetry. Justice evaluations are inclined to be stimulated in such asymmetrical power relationships (Greenberg, 2001).

The justice perception has been studied in relation to trust and is considered a vital antecedent of trust relationships in the management literature. For example, Bock et al. (2005) have stated that fairness not only builds trust between members, but also serves to conquer the dilemma of public good in relation to knowledge-sharing. Research done in organizational and psychological studies suggests that a positive association exists between justice variables and trust in management (Kernan & Hanges, 2002), and results have consistently been found that indicate procedural justice as the most critical predictor of employee attitude (e.g., trust) (Colquitt et al., 2001). Moreover, Balasubramanian, Konana, and Menon (2003) treat fairness as one component of trust measurement in virtual environments.

In addition, from a relationship-building perspective, when individuals in a VC perceive fairness of outcome (i.e., distributive justice) and fairness of interpersonal treatment (i.e., interpersonal justice), they are more likely to reciprocate by knowledge-sharing, which in turn reinforces trust in members. From the leader–member exchange perspective, when individuals perceive that decision-making procedures are fair (i.e., procedural justice) and the information regarding decision-making procedures and outcome distribution is adequate (i.e., informational justice), they tend to feel more comfortable with the outcomes and have faith in the ability, integrity, and benevolence of the management. However, it is currently unclear whether different types of justice in the VC context—such as distributive justice, procedural justice, interpersonal justice, and informational justice—are related to separate trust referents in unique ways. This study speaks to this discrepancy and intends to fill this gap.

#### 2.4.1. Distributive justice and trust in members

Distributive justice denotes the perceived fairness of outcome distributions based on the principle of equity. For example, a VC member may evaluate the equity of what he/she has received (e.g., the action and speed at which responses and knowledge are received) in relation to what he/she has contributed in terms of time spent, effort made, and help provided. If such a person considers a particular outcome to be unfair, this perception will likely have an influence on that member’s reaction (e.g., distrust in others) to the VC, and ultimately his/her behaviors. In the context of the VC, the interaction and reliance between members is self-directed. Therefore, it is reasonable to assume that the role of distributive justice may affect trust in members in VC settings. This assumption is confirmed by Pillai, Williams, and Tan (2001), who state that high levels of trust are likely to arise when outcome distributions are perceived as fair. Past studies have also suggested that distributive justice has a significant impact on trust (Ambrose & Schminke, 2003; Hubbell & Chory-Assad, 2005).

Blau (1964) has noted that social exchange relationships, rooted in trust, are built through reciprocation between exchange partners (VC members) in order to balance the exchange and complete the perceived obligation, and then strengthen the trustworthiness of exchange partners (i.e., trust in members). In general, the exchange partners in VC are other VC members rather than a specific partner. Therefore, the following hypothesis is proposed:

**H5:** Distributive justice is positively related to trust in members of the VC.

#### 2.4.2. Procedural justice and trust in management

Despite the perception that distributive justice is crucial to social behavior, this insight only partially assesses justice. A second aspect of justice, procedural justice, first introduced by Thibaut and Walker (1975), refers to the perceived fairness of policies and procedures. Past research has demonstrated that procedural justice might reduce the effects of unsatisfactory outcomes (Brockner & Wiesenfeld, 1996), especially unequal outcomes. The process by which outcomes are settled may be more important to an individual than the final decisions (Folger & Greenberg, 1985). In the VC, members may feel better when VC hosts/managers carefully handle (based on fair policies and procedures) problems or conflicts occurring in the posting process. According to Knonsvky & Pugh, 1994, procedural justice is a vital antecedent of trust, which in turn is found to be a driver of higher-order citizenship behaviors (i.e., voluntary cooperation). Furthermore, past research has indicated that procedural justice is strongly associated with trust in management (Brockner et al., 1997; Cohen-Charash & Spector, 2001). Consequently, the following hypothesis is proposed:

**H6:** Procedural justice is positively related to trust in management in the VC.

#### 2.4.3. Interpersonal justice and trust in members

Bies and Moag (1986) note that to a great degree, people make justice evaluations based upon the quality of the interpersonal treatment they have received. They propose a third type of justice, interactional justice, which is different from procedural justice, and covers the two dimensions of sensitivity and explanations, which have been shown to have independent effects. Interactional justice
can be separated into two subsets: interpersonal justice and informational justice (Greenberg, 1993).

Interpersonal justice in the VC means that members are treated with politeness, dignity, friendliness, and respect. As noted by Lind (2001) individuals utilize holistic impressions of fair treatment as a proxy for interpersonal trust. The treatment of individuals with dignity and respect reinforces the perception of justice (Bies & Moag, 1986), and is difficult to ignore during the holistic judgment of justice. In the VC, members who are treated rudely or insulted by another may consider such behavior unfair and undesirable.

Interpersonal justice is an aspect of interactional justice. Organizational research indicates that interactional justice has a significant impact on employee attitudes and behaviors (e.g., OCBI, OCBO) through the trust foci mediation of both supervisors and organizations (Aryee, Budhwar, & Chen, 2002). From the social exchange perspective, interpersonal justice leads to the development of trust (Folger & Konovsky, 1989), which in turn encourages further reciprocation, results in the stabilization of exchange relationships, and ultimately induces positive behaviors such as citizenship behavior (Koonvsky & Pugh, 1994). Some studies have identified a positive association between interpersonal justice and trust (Kernan & Hanges, 2002; Neves & Caetano, 2006). This leads to the following hypothesis:

H7: Interpersonal justice is positively related to trust in members in the VC.

2.4.4. Informational justice and trust in management

Informational justice is the other aspect of interactional justice related to the rationale provided to individual members whereby procedures used in the VC are explained thoroughly and on a timely basis (e.g., the deletion of inappropriate postings). According to Kernan and Hanges (2002), informational justice is positively related to trust in management. Colquitt et al. (2001) also pointed out in their study related to trust in system-level authority figures that both procedural and informational justice are significant predictors of trust in management. The application of this notion to the VC scenario relieves the confusion members may feel if managers of the VC can clarify how decisions are made. This encourages the members' belief in the integrity, ability, and benevolence of the managers, and makes them more willing to be involved in knowledge-sharing activities. Therefore, the following hypothesis is proposed:

H8: Informational justice is positively related to trust in management of the VC.

In summary, we integrate theories of justice, trust and OCB into the research model shown in Fig. 1. We propose four dimensions of justice: distributive justice, procedural justice, interpersonal justice, and informational justice. All of these affect trust in members or trust in management, which then ultimately influence knowledge-sharing continuance intentions through either their altruism or conscientiousness.

3. Research methodology

3.1. Measurement development

Measurement items have been adapted from the literature wherever possible. A pretest of the questionnaire to assess for logical consistencies, ease of understanding, sequence of items, and contextual relevance was performed drawing on the experience of two IS researchers who had experience in VCoP. The comments collected from these researchers led to several minor modifications of the questionnaire wording. Furthermore, an online pilot study was conducted involving twenty VC members from various VCoPs in the IT field. Comments and suggestions on item content and the structure of the instrument were solicited.

Survey items are provided in Appendix. Items for measuring distributive justice, procedural justice, interpersonal justice, and informational justice were adapted from Colquitt (2001), Folger and Konovsky (1989), and Simons and Roberson (2003) to fit the context of knowledge-sharing in VCoPs. Trust in management and trust in members were measured with items adapted from Chiu et al. (2006), Cook and Wall (1980), and Ridings et al. (2002). Items related to altruism and conscientiousness were adopted from Podsakoff et al. (1990) and were altered to fit the context of VCoPs. Continuance intention was assessed with items adapted to reflect the likelihood that an individual will continue sharing knowledge in the future, following Bhattacherjee (2001).
A seven-point Likert scale was adopted for all measures with anchors ranging from (1) strongly disagree to (7) strongly agree.

### 3.2. Survey administration

The research model was tested using data from members of JavaWorld@TW, a well-known IT-oriented VCoP in Taiwan. The objective of this community is to exchange knowledge about Java programming and database related issues. All members voluntarily participate and have access to resources such as discussion forums, newsletters, open-source projects, and recommended articles. A banner with a hyperlink connected to our Web survey was posted on the homepage of JavaWorld@TW and members with knowledge-sharing experience were cordially invited to participate in this survey. Thirty randomly selected respondents were offered an incentive in the form of a gift valued at about US$10. The first page of the questionnaire gave an explanation of the purpose of the incentive.

### 3.3. Data analysis

Both graphical analyses (e.g., Kurtosis and skewness) and statistical tests (e.g., the Shapiro–Wilks test and the Kolmogorov–Smirnov test) (Hair, Black, Babin, Anderson, & Tatham, 2006) are used to assess the normality. We did identify nonnormality in our data, which may due to the less-formed distribution of small sample sizes (Hair et al., 2006). Therefore, the partial least square (PLS) procedure is useful when the assumptions underlying a theoretical sampling distribution will not hold. Furthermore, PLS is more appropriate for explaining complex relationships as it avoids two problems: inadmissible solutions and factor indeterminacy (Forrell & Bookstein, 1982). Finally, PLS allows for the analysis of both a measurement model and a structural model.

According to the recommendation of Anderson and Gerbing’s (1988), a two-step approach should be applied for data analysis, the first step being the analysis of the measurement model and the second step the testing of structural relationships among latent constructs. The two-step approach is aimed at evaluating the reliability and validity of the measures before their use in the full model.

### 3.3.1. Measurement model

To validate the measurement model, reliability, convergent validity and discriminant validity were assessed. In PLS, reliability is evaluated using the composite reliability values. Acceptable values of the composite reliability values should be above 0.7 (Fornell & Larcker, 1981). Table 2 shows that all the values ranged from 0.82 to 0.96 and were all above the commonly accepted threshold 0.7. In addition, the convergent validity of the scales can be verified using two criteria suggested by Fornell and Larcker (1981): (1) all indicator loadings should be significant and exceed 0.7; and (2) the average variance extracted (AVE) by each construct should exceed the variance due to measurement error for that construct (i.e., AVE should exceed 0.50). For the current measurement model, all loadings were above the 0.7 threshold (see Table 3). AVE ranged from 0.60 to 0.90 (see Table 2). Hence, both conditions for convergent validity were met. Discriminant validity can be verified by examining both cross-loadings and the relationship between correlations among constructs and the square root of AVEs (Fornell & Larcker, 1981). An examination of cross-factor loadings (Table 3) indicates good discriminant validity, when the loading of each measurement item for its assigned latent variable is larger than its loading on any other constructs. The other criterion is that the square root of the AVE from the construct should be greater than the correlations among the construct and the square root of AVEs (Fornell & Larcker, 1981).

Table 1 shows that the means of all constructs vary from 4.05 to 5.87. The highest mean of 5.87 was for Continuance intentions (CI), which is followed by Interpersonal justice (IJ). The lowest mean of 4.05 was for Trust in members (TM). The AVE for each construct should be greater than the correlations among the construct and the square root of AVEs (Fornell & Larcker, 1981). Table 2 shows that all the values ranged from 0.82 to 0.96 and were all above the commonly accepted threshold 0.7. In addition, the convergent validity of the scales can be verified using two criteria suggested by Fornell and Larcker (1981): (1) all indicator loadings should be significant and exceed 0.7; and (2) the average variance extracted (AVE) by each construct should exceed the variance due to measurement error for that construct (i.e., AVE should exceed 0.50). For the current measurement model, all loadings were above the 0.7 threshold (see Table 3). AVE ranged from 0.60 to 0.90 (see Table 2). Hence, both conditions for convergent validity were met. Discriminant validity can be verified by examining both cross-loadings and the relationship between correlations among constructs and the square root of AVEs (Fornell & Larcker, 1981). An examination of cross-factor loadings (Table 3) indicates good discriminant validity, when the loading of each measurement item for its assigned latent variable is larger than its loading on any other constructs. The other criterion is that the square root of the AVE from the construct should be greater than the correlations among the construct and the square root of AVEs (Fornell & Larcker, 1981).
shared between the construct and other constructs in the model (Fornell & Larcker, 1981). Table 4 lists the correlations among the constructs, with the square root of the AVE on the diagonal. The diagonal values all exceed the inter-construct correlations, a condition which indicates the satisfactory discriminant validity of all constructs (Table 4).

3.3.2. Structural model

After the outline of an adequate measurement model, we proceed to test the proposed hypotheses with PLS. In the PLS analysis, the structural paths and the $R^2$ scores of endogenous variables are examined to assess the explanatory power of the structural model. The results of the structural path analysis are depicted in Fig. 2. All paths exhibited a $P$-value of less than 0.05. Tests of the significance of all paths were performed using the bootstrap resampling procedure. Overall, the research model accounted for 41% of the variance of continuance intention. Thus, the fit of the overall model is acceptable.

4. Discussion and implications

4.1. Key findings

In conducting this study, we sought to understand what triggers VCoPs members to spontaneously contribute knowledge and effort either to help another in need or to benefit the community. Overall, the findings provided support for our proposed model. Empirical analysis led to several findings. (see Table 5)

First, altruism and conscientiousness have significant effects on the members’ knowledge-sharing continuance intentions. As extended from social exchange theory and the OCB literature, the results indicate that participants showing conscientiousness or altruistic behaviors are more willing to share knowledge in VCoPs. This finding demonstrates that both altruism and conscientiousness are important facilitators of continuance intentions not only in traditional organizations, but also in VCoPs, even though they lack workable rules and face-to-face contact.

Our results confirm notions of social learning theory and altruism from game theory by demonstrating the positive impact of trust in members on altruism. Altruism can be encouraged in knowledge contributors by the conduct of other potential contributors. In VCoPs, the individuals’ beliefs in other members’ abilities (expertise and skills), integrity, and benevolence increase the individuals helping behaviors (Dirks & Ferrin, 2001), which in turn determines the extent of knowledge contribution.

Our results are consistent with Deluga (1995) and Wat and Shaffer (2005) who find that trust in management has a significant

Table 4
AVE and correlation among constructs.

<table>
<thead>
<tr>
<th></th>
<th>ALT</th>
<th>CI</th>
<th>Cons</th>
<th>DJ</th>
<th>IfJ</th>
<th>IpJ</th>
<th>PJ</th>
<th>TL</th>
<th>TM</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALT</td>
<td>0.86</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>CI</td>
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<td>0.95</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cons</td>
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<td>0.78</td>
<td></td>
<td></td>
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<tr>
<td>DJ</td>
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<td>0.51</td>
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</tr>
<tr>
<td>IfJ</td>
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<td>0.42</td>
<td>0.93</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IpJ</td>
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<td>0.45</td>
<td>0.61</td>
<td>0.74</td>
<td>0.91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PJ</td>
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<td>0.46</td>
<td>0.49</td>
<td>0.76</td>
<td>0.73</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>0.20</td>
<td>0.36</td>
<td>0.46</td>
<td>0.49</td>
<td>0.77</td>
<td>0.70</td>
<td>0.71</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>TM</td>
<td>0.35</td>
<td>0.41</td>
<td>0.44</td>
<td>0.66</td>
<td>0.59</td>
<td>0.62</td>
<td>0.54</td>
<td>0.69</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Note: The diagonal elements (in bold) represent the square root of the AVE.

Fig. 2. PLS analysis of research model.

Table 5
Results of hypothesis testing.

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: VC members’ altruism is positively associated with knowledge-sharing continuance intentions</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: VC members’ conscientiousness is positively associated with knowledge-sharing continuance intentions</td>
<td>Supported</td>
</tr>
<tr>
<td>H3: Trust in management is positively associated with VC members’ conscientiousness</td>
<td>Supported</td>
</tr>
<tr>
<td>H4: Trust in members is positively associated with VC members’ altruism</td>
<td>Supported</td>
</tr>
<tr>
<td>H5: Distributive justice is positively related to trust in members</td>
<td>Supported</td>
</tr>
<tr>
<td>H6: Procedural justice is positively related to trust in management</td>
<td>Supported</td>
</tr>
<tr>
<td>H7: Interpersonal justice is positively related to trust in members</td>
<td>Supported</td>
</tr>
<tr>
<td>H8: Informational justice is positively related to trust in management</td>
<td>Supported</td>
</tr>
</tbody>
</table>
effect on conscientiousness. As a partial solution to the lack of understanding of such relationship in online settings, our findings provide empirical evidence supporting the links between trust in management and conscientiousness in VCoPs.

Lastly, our findings also indicate that distributive justice and interpersonal justice have a positive impact on trust in members, whereas procedural justice and informational justice have a positive impact on trust in management in the VCoP context. These results can be seen in the R-square values in Fig. 2 which shows 51% for trust in members and 63% for trust in management. These data indicate that both of the different justice antecedents can explain considerable proportions of the variance. Our findings are inconsistent with past research regarding the relative power of procedural and informational justice in predicting managerial trust (Kernan & Hanges, 2002) in that our findings show that informational justice (β = .31) has a stronger predictive power for managerial trust than does procedural justice (β = .31). These contradictory findings may be due to some of the inherent restrictions of VCoPs, such as lack of visual cues and workable rules. Compared with informational justice which is delivered primarily by information and communications from management, the perception of procedural justice may be too abstract to be captured by individuals in VCoPs. Overall, our findings give support to the linkages between the four dimensions of justice and trust referents. This study is the first empirical examination of these relationships in VCoPs, and broadens the application of justice theory from offline contexts to virtual contexts.

4.2. Implications

Our study makes contributions to the research literature as well as to practice. First, justice represents an additional key element of member–member and member–host/manager relationships in VCoPs that the literature to date has overlooked. The integration of the four distinct dimensions of justice results in a more descriptive model that can better explain individuals’ knowledge-sharing continuance intention in VCoPs. In addition, the extent of explained variances in trust implies that the four dimensions of justice are possibly among the most important antecedents for the individual’s trust in fellow members and trust in management. In this study we extend the justice literature from employee–manager and employee–organization relationships to member–member and member–host/manager relationships, shedding light on the trust-building potential of the four dimensions of justice.

Second, as an extension of prior research, our study clearly demonstrates that not only does trust in fellow members have an influence on knowledge-sharing in VCoPs; trust in management also has such an influence. The current study is, to the best of our knowledge, the first empirical examination of these relationships. Due to the complicated nature of trust, prior research has not clearly specified how the relationship between referents of trust and knowledge-sharing works, especially in the context of VCs. Furthermore, our study contributes to the field by providing empirical evidence of how altruism and conscientiousness play mediating roles between distinct referents of trust and continuance intention in VCoPs.

To be more specific, very few researchers have quantified the relationship between trust in management and conscientiousness and then investigated this relationship in online settings. Our study, based on theories of social exchange and reciprocity, provides an empirical examination of this relationship and sheds light on its impact on knowledge-sharing in VCoPs. We also extend the concept of altruism from game theory to VCoPs, providing empirical evidence confirming that trust is indeed a precursor of altruism (Piliavin & Charng, 1990). Finally, we integrate social learning theory and altruism from game theory to identify their theoretical influence on knowledge-sharing in VCoPs.

Our study has practical implications in that it indicates guidance for managing of VCoPs. First, the positive association between trust in management and conscientiousness suggests the critical role of managers of VCoPs in enhancing trust. Trust in management is influenced by past manager–member interactions and managers’ abilities, integrity, and benevolence. In the case of JavaWorld@TW, a host is selected for each forum from the list of top knowledge contributors. The idea is to convince members of the host’s professional capability and integrity and concern for members. Moreover, since social exchange in VCoPs stems from the trust of individuals in the manager, in order to enable conscientiousness over the long-term (Knonvsky & Pugh, 1994), the manager of VCoPs needs to be encouraged to take further action in order to convince members of his/her trustworthiness by preserving integrity, enriching abilities, and showing benevolence to members whenever possible. Such managerial efforts may help build member trust and encourage reciprocity of knowledge-sharing.

In addition, a finding of potential interest to VCoP managers is the remarkable role that distributive and interpersonal justice play in building trust between members. Managers of VCoPs can practice distributive justice by providing a contribution-reward mechanism for knowledge-sharing (Kwok & Gao, 2004). For example, BlueShop, an IT-oriented VCoP in Taiwan, provides a 4P mechanism including value-added points (VP), question points (QP), expert points (EP), and health points (HP) for identifying members’ active- and contribution-levels. Members can earn 4P points by the number of responses posted, the degree of their contribution quality, the number of useful files uploaded, and the frequency of participation in the VCoP; they pay for receiving knowledge as a return of favors. The amount of 4P points individuals receive denotes the degree of knowledge contribution. This method exemplifies a practical way to inspire individuals to return the benefits they have received from others. From the interpersonal justice perspective, managers of VCoPs can take an active role in controlling impolite or unfriendly online conversations by forming clear policies for the maintenance of harmonious interactions between members (Preece & Maloney-Krichmar, 2003). Managers can forbid inappropriate postings and the discussion of illegal activities in the forum by clearly disclosing the handling procedures and then deleting such comments and blocking offending members from further posting.

Our study indicates that VCoP participants with the ability to contribute knowledge may evaluate how others behave and whether they can be trusted, which influences their decisions as to whether to help other individuals by sharing their knowledge. In terms of the member-to-member help in VCoPs, managers can create a mechanism and maintain an environment within which voluntary contributions are effectively promoted. For example, Programming Club, an IT-oriented VCoP in Taiwan, provides a peer recommendation mechanism to help identify the quality of member contributions and assist in recognizing trustworthy members in the VCoP. Members can rate the postings of other members by giving rating points. This method in turn confirms and encourages the contributions of members.

Furthermore, the significant relationship between justice and trust in management suggests that managers of VCoPs need to be aware that both procedural and informational injustice may drive potential knowledge contributors away from the community. Individual members may observe the fairness of problem-handling procedures and related information provided by management. Therefore, in order to increase conscientious behaviors among members in VCoPs, management should determine ways to handle problems carefully with fair policies and procedures and provide sufficient information regarding decision-making process and the distribution of outcomes. Beyond the general information provided by the VC for all members, management/hosts can strengthen members’ perceptions of informational justice by providing timely
and relevant information to meet the individual members’ specific needs.

4.3. Limitations and future research

Although we provide empirical evidence regarding the effects of diverse factors on continuance intentions of VCoP members, the results should be interpreted with caution due to several limitations. First, a self-selection bias exists because our sample is composed of current and active VCoP members. We were unable to reach individuals who have ceased participating in the community. However, further investigation of the issue is worthwhile because the former members might have different thoughts on the impacts of the distinct facets of justice and trust. For instance, future research could explore the factors which influenced such individuals to discontinue their VCoP participation. Secondly, whether or not the key findings of this study can be generalized to other types of VCoPs is unclear because inherent differences exist between them (e.g., characteristics of affect-oriented, profession-oriented, and hobby-oriented VCs). Further verification of the generalizability of our finding is highly encouraged.

Thirdly, according to Anderson andGerbing (1988), “temporal order is not an infallible guide to causal relations”. The cross-sectional nature of the current study does not allow the inference of causality occurring in the underlying variables, but only the correlations between them. Future research could include longitudinal or experimental studies not only to validate, complement, and extend the findings in our model, but also to reveal how these underlying variables develop over time in VCoPs. As stated by Baumgartner and Homburg (1996) “The only legitimate conclusion is that the proposed model is one possible plausible account of the data”. However, there is reason to believe that while same time correlation may be true, nonetheless theory indicates that, for instance, procedural and informational justice build trust in management (Colquitt et al., 2001), while distributive justice and interpersonal justice build trust in members (Aryee et al., 2002). Lastly, it should be noted that other factors may also affect the relationship between justice, trust, and behavioral intentions (e.g., satisfaction, Chiu et al., 2007) or such factors may be the possible antecedents of trust (e.g., risk, Gefen, Benbasat, & Pavlou, 2008). Further exploration could be done to extend our proposed model to embrace additional suitable components.

5. Conclusions

Knowledge-sharing is essential to sustain VCoPs. In the present study the aim is to decipher knowledge-sharing phenomena by resolving the challenge in maintaining the VCoP: specifically how to retain members and facilitate their knowledge-sharing continuance intention. Our study contributes to the VC literature by integrating three research streams—justice, trust, and OCBS—from different disciplines into one research model to help understand the knowledge-sharing phenomena in the VCoP context. Given the critical function of VCoPs in facilitating knowledge-sharing in the knowledge economy and the new digital economy, we hope that the proposed model will offer empirical evidence as well as a theoretically grounded picture of the facilitators of the members’ continuance intentions in VCoPs for both practitioners and academics.

Acknowledgements

We thank the anonymous reviewer for insightful comments on the original version of this article, and Kerr-hsin Lu for her valuable suggestions on our earlier draft.

Appendix A. Questionnaire items

Distributive (DJ)
In JavaWorld@TW,

1. I think what I get is fair compared to my help to other members.
2. I think what I get is fair compared to the activeness of my responses to other members’ questions or problems.
3. I think what I get is fair compared to the speed of my responses to other members’ questions or problems.
4. I think what I get is fair compared to the effort and time that I spent in contributing knowledge to JavaWorld@TW.

Procedural justice (PJ)
The following items refer to the procedures used to arrive at the decision/outcome about the JavaWorld@TW management:

1. All decisions are applied consistently across all members at JavaWorld@TW.
2. JavaWorld@TW members are able to express their views about decisions.
3. Members are able to appeal the decision arrived at by those procedures at JavaWorld@TW.
4. The procedures are based on accurate information at JavaWorld@TW.

Interpersonal justice (IpJ)
1. I am treated with respect at JavaWorld@TW.
2. I am treated with friendliness at JavaWorld@TW.
3. I am treated with politeness at JavaWorld@TW.
4. I think what I get is fair compared to the activeness of my responses to other members.

Informational justice (IfJ)
When managers/hosts at JavaWorld@TW enact the procedure for managing the VC:

1. Managers/Hosts explain the procedures thoroughly.
2. Managers/Hosts are candid in communications with members regarding the VC management.
3. Managers/Hosts communicate details in a timely manner.

Trust in management (TL)
1. Management at JavaWorld@TW shows concern for members’ needs.
2. Management at JavaWorld@TW do not take advantage of members when the opportunity arises.
3. Management at JavaWorld@TW is very capable of performing tasks in managing the community.

Trust in members (TM)
The members at JavaWorld@TW do everything within their capacity to help others.

1. Members at JavaWorld@TW do not take advantage of others members when the opportunity arises.
2. The other members at JavaWorld@TW would not knowingly do anything to disrupt conversation/interactions.
3. The other members at JavaWorld@TW have adequate knowledge about the subject we discuss.
Altruism (ALT)
1. When I have the opportunity, I help members solve their posting questions.
2. When I have the opportunity, I orient new members even though it is not required.
3. When I have the opportunity, I give my time to help members when needed.

Conscientiousness (Cons)
1. I follow the JavaWorld@TW rules, regulations and procedures for participating and sharing knowledge.
2. I engage in self-improvement to enhance my performance for participating and knowledge-sharing in JavaWorld@TW.
3. I spend much time participating and knowledge-sharing at JavaWorld@TW.

Continuance intention (CI)
1. If I can, I would like to continue sharing knowledge with others at JavaWorld@TW in the future.
2. It is likely that I will continue sharing knowledge with others at JavaWorld@TW in the future.
3. I expect to continue sharing knowledge with others at JavaWorld@TW in the future.

References


