

A Relational View of Individual Participation in Online Communities of Practice: An Integrative Literature Review

Completed Research Paper

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Abstract

This paper reviews prior research on individual participation in online communities of practice (CoPs). It examines how the concept of CoP has been applied in IS and what theories have been applied to explain knowledge sharing behaviours in online CoPs. To integrate findings in prior empirical IS studies, the paper drew on literature on relationship marketing to re-conceptualize participation in a CoP as a contractual relationship between a member and the online community. A conceptual framework was developed to revisit prior empirical findings in relation to key antecedents and outcomes of individuals' knowledge sharing in online CoPs. It suggests that the strength of a member-community relationship can evolve through different intermediate processes. There is a need to examine how an online member-community relationship can be formed, developed and sustained by different relational mediators and how individual, CoPs and contextual factors may jointly affect individuals' participation in online CoPs over time.

Keywords: online communities, knowledge sharing, community of practice

Introduction

With the rapid proliferation of online communities and networks, academics and practitioners have recognized that user-generated content and peer-to-peer production through an open IT-enabled virtual space can be valuable knowledge resources to facilitate organization learning and innovation (Brown and Duguid, 2000; Porter and Donthu, 2008). Many firms are increasingly turning to Web 2.0 applications and techniques as a means of facilitating a variety of knowledge management initiatives. Drawing on the concept of communities of practice (CoPs) (Lave and Wenger, 1991; Wenger, 1998), IS researchers have strived to understand what factors are impactful in enabling individuals of an online community to learn from, contribute to, and collectively build upon the online community's knowledge.

Although CoPs have been widely applied, findings in this research area remain largely inconclusive and controversial. Inconsistent empirical results can often lead to different explanations on why IS users may engage in online CoPs and sometimes opposite conclusions on whether a particular community or individual characteristic will influence community members' knowledge sharing behaviours. For example, some scholars have shown that members share their knowledge in attempts to enhance professional reputations without expectations of reciprocity from other members (Wasko and Faraj, 2005), whereas others have argued that factors such as norms of reciprocity and identification are important in fostering community members' knowledge sharing and other forms of participation (Bagozzi and Dholakia, 2006; Chiu et al., 2006). In relation to knowledge quality, Ransbotham and Kane (2011) have suggested that a mixture of new and experienced community participants contributes to relatively high quality knowledge, whereas Carillo and Okoli (2011) have noted that the heterogeneity of community member tenures has no direct effects on the quality of knowledge contribution. Moreover, some studies have implied that the sustainability of an online CoP depends upon each member's interactions with other community participants (Oh and Jeon, 2007), while others propose that such an online collective learning environment is mainly supported by a critical mass of active members and those who have developed strong ties with the community as a whole rather than interpersonal relationships (Wasko et al., 2009).

The remarkable divergent findings in online CoPs studies suggest the need for a systematic literature review to synthesize the abundance of existing empirical research and to develop a general conceptual model to integrate existing findings as well as to identify potential areas for future research. Such a review can help address three research issues. First, empirical studies guided by divergent theoretical perspectives may hold different basic premises on why people engage in online CoPs and what criteria should be used to assess the performance of an online community. A synthesis of different theoretical views applied in prior empirical studies can help integrate different explanations on participation in online CoPs and identify some boundary conditions under which a specific theory would be appropriate and justifiable in explaining online knowledge sharing behavior and its related community outcomes. Second, seemingly conflicting results from different studies can be partly explained by different contextual factors. In particular, prior studies imply that factors influencing individuals' participation in online CoPs may vary depending on the specific type of online communities or networks under study (e.g. an online discussion forum versus Wikipedia), the social context in which the online CoP is constructed (e.g. online communities for professionals versus for consumers) (Faraj and Johnson, 2011). In this sense, the inconsistency may be in part due to the diversity of substantive research contexts (Faraj and Johnson, 2011) and the divergence of what constitutes as participation in online CoPs. A comparison and contrast of those contextual factors may help provide a more generalizable explanation on individuals' knowledge sharing in online CoPs and reconcile some inconsistent empirical findings. Lastly, the research foci and methodological approaches may be also responsible for those inconclusive results. Specifically, most prior studies in relation to individual participation of online CoPs tend to treat knowledge sharing and other forms of participation as a series of discrete events rather than ongoing relational exchanges. While a broad range of relational factors such as commitment (Bateman et al., 2011) and interpersonal trust (Chen and Hung, 2010; Ridings et al., 2002) have been identified in the existing literature, most of them have been examined in cross-sectional studies as antecedents of participation. As a result, it becomes difficult to know how online CoP members' previous participation episodes may affect certain relational factors over time and whether there are other individual and/or situational factors which may attenuate or augment the effects of specific relational factors on the outcomes of CoPs among different members over time. A review of relational factors may help further understand the extent to which those factors can influence the stability of online CoPs.

To advance the understanding of why and how individuals may engage in various forms of online CoPs over time, this present paper offers an integrative review of current research state of online CoPs and identifies several new research directions. In particular, based on the relevant literature on CoPs and existing empirical IS studies of individuals' knowing sharing in online communities, the current paper provides an examination of how the core concept of CoPs has been applied in online environments and what theoretical underpinnings have been primarily employed in prior research in studying members' behaviours in online CoPs. Further, drawing upon literature on relationship marketing (Dwyer et al., 1987; Palmatier et al., 2006), a conceptual framework is developed to revisit prior empirical findings in relation to key antecedents and consequences of individual participation in online CoPs from a member-community relationship point of view. The proposed research framework provides a plausible explanation for some previous inconsistent findings and helps to address theoretical issues in relation to the research on online knowledge collaboration in general and online CoPs in particular. Moreover, the integrative literature review of the roles of individual, relational and contextual factors in online knowledge exchanges offers a different view of how varying online users' participation behaviours may account for the construction and evolution of online CoPs.

The remaining paper is organized as follows. In the research background section, a brief review of the seminal work of CoPs and relevant literature is presented. In the subsequent section, the formation and development processes of member-community relationships in online CoPs are explained and; a conceptual framework for analyzing and synthesizing previous studies of online CoPs is outlined and justified. In the Method section, the procedures of literature search and selection are described in detail. Next, an overview of existing empirical studies of individual participation in online CoPs is presented, with an emphasis on their focal research constructs and contexts as well as their main theoretical underpinnings. The different roles of the key constructs studied in prior research in each of the relationship development processes are also discussed. Lastly, the paper concludes with a brief discussion of implications and future research directions.

Research Background

In this section, the concept of CoPs is first reviewed, followed by a discussion of the issues associated with of the original conceptualization of CoPs and the emergence of alternative variants extended from the notion of CoPs. Next, a brief overview of the specific applications of CoPs in IS are provided.

Communities of Practice & Related Forms of Knowledge Sharing

The concept of communities of practice (CoPs) and its applications have evolved considerably since the term was first introduced in Lave and Wenger's (1991) situated learning theory (Cox 2005). Specifically, a community of practice initially referred to "a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practices" (Lave and Wenger 1991, p.98) The original notion of CoPs was proposed along with *legitimated peripheral participation* to directly challenge conventional cognitive theories of learning by suggesting that learning should be seen as situated social practice rather than internalization of abstract knowledge (cf. Lave and Wenger 1991). In organization research, Brown and Duguid (1991) have argued that in contrast to learning about practice, becoming a practitioner should be treated as the central issue to bridge the gap between working and innovating. Nevertheless, Wenger has explicitly stated in his later writings that the assumptions underlying CoPs are not necessarily incompatible with cognitive learning theories and some others learning theories in psychology and sociology (Wenger 1998, p.279). The same author has also further clarified that a CoP, as an analytical unit, falls into the "midlevel category", which encompasses neither specific activities and interactions nor high-order social or historical aggregates (Wenger 1998). Consequently, CoPs has been recently redefined as "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".(Wenger et al. 2002, p.4).

According to Wenger (1998), a CoP entails three dimensions: *mutual engagement, a joint enterprise, and a shared repertoire of resources accumulated over time*. More specifically, mutual engagement relates to membership in a CoP. It manifests a sense of belonging, a unique identity, the diversity of participants who jointly engage in shared practices and the complexity of political and social relations among members of the CoP. Second, the joint enterprise of a CoP reflects the result of members' collective negotiation to

resolve their disagreements and/or conflicts in the course of participation in the CoP. It not only entails specific social contexts and constraints in which the particular CoP has been developed, but also encompasses the communal regime of mutual accountability among involved participants. Lastly, the shared repertoire of a CoP consists of the resources created by participants through the mutual engagement. It includes artifacts, tools, routines, ways of doing things or concepts that have been adopted by members of the CoP as shared practice, and involves stories, historical events, symbols and discourses that have been created and shared by the members to reflect their identities.

While the notion of CoPs has received growing attention among academics and practitioners and gained a particular interest in knowledge management research, a number of scholars have criticized the Wenger (1998)'s conceptualization of CoPs and pointed out several limitations of using CoPs as a means of managing knowledge. Specifically, one of the most notable criticisms is the usage of "community". Cox (2005) has suggested that Wenger (1998)'s notion of a community contradicts most of the common assumptions that people hold about the term. In particular, a CoP is characterized as a changing entity with a specific purpose and structure and consist of heterogeneous participants, whereas the term community generally implies a non-purposive, static entity with high similarity among those involved and without particular structures (Cox 2005). Moreover, some scholars have pointed out that the use of "community" in CoPs may be somewhat problematic in contemporary organizational settings, because the connotations of the term reflect both affect-laden social relationships and coherence in its practices, which often emerge over a long period of time (Contu and Willmott 2003; Handley et al. 2006; Lindkvist 2005). In this sense, CoPs may be difficult to develop and sustain in rapidly changing business and work environments (Roberts 2006). Further, some scholars have suggested that issues associated with power dynamics, interpersonal trust as well as individual members' preferences and dispositions may also affect the creation and/or absorption of new knowledge in CoPs (for a review, see Roberts 2006). Lastly, it has been suggested that the success of CoPs as a tool of knowledge management may be largely dependent upon broad social-cultural factors and the specific context in which the CoP is embedded (Handley et al. 2006; Roberts 2006). In particular, at the individual level of analysis, an understanding of situated learning and knowledge transfer may require an examination of a person's engagement within and between multiple communities (Handley et al. 2006).

To extend the original concept of CoPs, two alternative forms of knowledge sharing and transfer have been proposed. Lindkvist (2005) has used the term "*collectivities of practice*" to denote product-based groups or project teams whose knowledge is distributed among individual members. Distinct from CoPs, members in collectivities of practice may be well-connected without shared values or a common knowledge base. Rather, collective competence is dependent upon whether members may have good understandings of what others know and new knowledge is created through members' goal-direct interactions (Lindkvist 2005). Secondly, Brown and Duguid (2000) have coined the term "*networks of practice*" to refer to groups of people who work on similar practices but may never engage in direct interactions with each other. In this sense, CoPs can be regarded as subsets of larger networks of practices, as the former involves tight-knit groups of people who hold strong norms of reciprocity and usually engage in face-to-face communications, whereas the latter also encompasses loosely-connected groups of which members have little expectation of reciprocity and generally communicate and/or coordinate indirectly through third parties (Brown and Duguid 2000).

Defining online communities of practice

In prior IS research, the terms of communities, networks, communities of practice and networks of practice are generally considered as interchangeable. In line with the original notion of CoPs and networks of practice, most definitions in prior IS research characterize an online CoP with three core elements: 1) groups of people with shared interests or goals; 2) with voluntary participation in knowledge exchange; 3) through open computer-mediated communication channels. In addition, some scholars have implied that social connections (Geng et al. 2004; Moon and Sproull 2008) and the regularity and duration of participation (Ridings et al. 2002) should be considered, when defining an online CoP. The table 1 presents a summary of different terms and definitions used in online CoPs literature.

Although most scholars have agreed that individuals' active participation is vital to sustain online CoPs and maintain adequate knowledge resources to fulfill members' needs (Moon and Sproull 2008; Wasko and Faraj 2005), prior research has implied that the nature and dynamics of online CoPs may be

considerably different from what is suggested in the conventional notion of CoPs. Frist, unlike traditional CoPs in which “new comers” are assumed to be motivated to develop their knowledge and learn from “old timers” in order to move from the periphery to a position of full participation (Wenger 1998), members of online CoPs may not necessarily hold such motivations. Instead, participation in online knowledge exchanges may be perceived to be instrumental among different community members (Wasko and Faraj 2000). In addition, as suggested by Brown and Duguid (2000), knowledge sharing and collaboration in loosely-coupled networks is often mediated by third parties. In other words, membership in online CoPs may not always reflect mutual engagement, as participants may develop their practices in online communities through social learning or experimentation (Brown and Duguid 2000).

Term	Definition	Source
Electronic Communities of Practice	Electronic communities provide “access to a group of peers dealing with similar knowledge issues”.	(Wasko and Faraj 2000, p.161)
Electronic Community	“a social aggregation of people whose member interact principally via electronic communication channels”	(Geng et al. 2004, p.84)
Electronic Network of Practice	“a self-organizing, open activity system focused on a shared practice that exists primarily through computer-mediated communication”	(Wasko and Faraj 2005; Wasko et al. 2009, p.37)
Online Communities	“social collectives of people with a common interest or group interacting and performing the information work over the internet ”	(Moon and Sproull 2008, p.494)
Virtual Communities	“groups of people with common interests and practices that communicate regularly and for some duration in an organized way over Internet through a common location and mechanisms.”	(Ridings et al. 2002, p.273)
Virtual communities of Interest	“affinitive groups whose online interactions are based upon shared enthusiasms for, and knowledge of a specific activity or related group activity”	(Kozinets, 1999, cited in de Valck et al. 2007, p.241)

Table 1. Conceptual Definitions of Online CoP and Its Synonyms

The shared repertoire of an online CoP may be also different from that of a traditional CoP. In some cases, communal resources of an online CoP may not necessarily reflect coherence and consensus in the community, as members can often choose to disengage from the online CoP if they are not able or motivated to resolve disagreements and/or conflicts in interactions with other participants. Moreover, the content of those resources may be in part determined by member diversity and the forms of knowledge sharing. For example, narrative stories, ways of doing things and historical events may be dominant in the knowledge repository of online CoPs in which participants are well-connected with a set of common understandings and shared values or norms of conduct. This type of online CoP is generally supported by online discussion forums or newsgroups. On the other hand, explicit knowledge and/or knowledge artifacts may be more likely to become communal resources in online communities whose members may engage in a shared activity but are diverse in their skills and/or interests. Open source communities or Wikipedia may fall into this form of online CoPs. It is noteworthy that knowledge sharing in the latter form of online CoPs may be distinct from the notion of “*collectivities of practice*” (Lindkvist, 2005), because participants do not necessarily have good representations of other members’ knowledge to start collaboration and interactions. To some extent, members may only be able to infer others’ skills, abilities and/or motives based on the processes and outcomes of online knowledge sharing and exchanges.

In sum, despite the fact that the general definitions of online CoPs largely coincide with the traditional definition of CoPs (Wenger et al. 2002), it is suggested that the conceptualization and realization of online CoPs appears to be substantially divergent from the original notion of CoPs, especially in the knowledge sharing and collaboration domain. Empirical findings have shown that although some online CoPs tend to maintain a relatively stable structure and consistent knowledge exchange patterns over time, the member turnover rates of these online CoPs are high (Faraj and Johnson 2011; Wasko et al. 2009). In

other words, the sustainability observed at the community level is not the result of individual members' consistent participation in the online community. For the purpose of the present paper, an online CoP

A Conceptual Framework for Reviewing Research on Individual Participation in Online CoPs

The extant literature has largely focused on identifying diverse motivations that may drive individuals engage in knowledge exchanges in online CoPs and to some extent, overlooked the effects of community-specific differences on online communication patterns (Faraj and Johnson 2011). In addition, it remains unclear what factors may drive members to engage in online knowledge exchanges on an on-going basis and what factors may lead them to discontinue the participation in online CoPs. To advance the understanding of a member's life cycle in an online CoP, it is worthwhile to scrutinize the interplay of individual and online community characteristics and its impacts on members' knowledge exchange behaviours over time. To do so, the present paper draws on literature in relationship marketing to help development a framework. Specifically, it is proposed that similar to buyer-seller relationships, participation in an online community can be conceptualized as a contractual relationship between a member and the community with various degrees of subjectivity and continuity (MacNeil, 1985; Rousseau, 1989). The formation and development of such member-community relationships may entail different transition phases (Dwyer et al., 1987). For each phase, different relational properties may have different effects on members' evaluations of the given online community and in turn on their subsequent online participation. In addition, the proposed framework suggests that key individual and contextual factors that have been identified in prior research may not necessarily affect individuals' online participation via the same underlying mechanism. Rather, a given factor may have different effects on online community members' behaviours through different intermediate processes.

Reconceptualization of knowledge exchanges in online CoPs

As noted earlier, the present paper proposes to conceptualize participation in online CoPs as a contractual relationship between a member and the community. Consistent with the past conceptualizations of online knowledge sharing as computer-mediated communications (Wasko and Faraj 2005), the proposed conceptualization suggests that a member's participation in an online CoP involves direct as well as indirect interactions with other online social actors. However, as a contractual relationship may vary by its subjectivity and continuity (MacNeil 1985; Rousseau 1989), the proposed conceptualization suggests that under some conditions, online knowledge sharing can be understood as discretely transactional exchanges, whereas under others, the same action can be seen as part of enduring relational exchanges.

The proposed conceptualization implies that an ongoing member-community relationship evolves through different stages (Dwyer et al. 1987) and at each stage, the member of an online CoP may value his or her participation experiences and/or outcomes based on different sets of criteria. For example, research in relationship marketing has shown that for consumers with a transactional or functional orientation, their attitudes towards specific service components affect overall satisfaction with the firm which in turn affect future purchase intentions, whereas for those with a partnering orientation, the effects of the same attitudinal factors on purchase intentions are mediated by trust and commitment but not necessarily by satisfaction (Garbarino and Johnson 1999). In line with this finding, individuals' online knowledge exchange patterns may be in part influenced by their relational orientations. In particular, individuals with a weak member-community relationship may engage in online knowledge exchanges sporadically and their positive online participation experiences may not contribute to high levels of commitment to the online CoP. In contrast, members who have developed a strong relationship with the online community are more likely to participate in the online CoP regularly and such knowledge sharing behaviours may reflect members' desires to maintain their associations with the online CoP but not necessarily relate to their overall satisfaction with the online community.

It should be noted although the present paper focuses on examining participation in online CoPs from a member-community relationship standpoint, it does not mean that interpersonal interactions among members of online CoPs are unimportant in determining individuals' online knowledge sharing. It is suggested that such online interactions along with other factors may directly or indirectly influence the strength and quality of member-community relationships, which in turn results in members' different

knowledge exchange patterns. For example, Ren et al. (2007) have suggested that individuals may participate in online community activities due to high levels of identification with the community as a whole or strong attachments to individual community members. In this sense, one may expect that group identification may be responsible for the formation and/or development of a member-community relationship, whereas interpersonal bonds may have little effects on the relationship. Moreover, a member-community relationship view of online knowledge exchanges does not imply that the social structure of an online CoP in which an individual is embedded is irrelevant to his or her online knowledge exchange behaviours. Rather, it is proposed that different types of social resources as identified in social capital theory (Nahapiet and Ghoshal 1998) may have different influences on individuals' knowledge sharing behaviours when members have different relational orientations to the online CoP. In other words, members with a strong relational orientation may use a different base for evaluating the benefits of maintaining the association with an online CoP and the costs of switching to potential alternatives, as compared with those with a weak relationship orientation (Dwyer et al. 1987).

The development process of online member-community relationships

Similar with most social relationships, the formation and development of an online member-community relationship tend to change over time. In particular, an online member-community relationship can evolve through five unique phases. They are (1) awareness, (2) exploration, (3) expansion, (4) commitment, and (5) dissolution (Scanzoni 1979, cited in Dwyer et al. 1987). In each of the relational phase, online community members may use different criteria or attend to different outcomes when assessing their participation experiences.

Awareness refers to a person's recognition of the existence of a specific online community. In this phase, an individual may make an initial assessment of the online community to examine whether it relates to his or her interest.

In the exploration phase, individuals may participate in the online community on a trial basis. Members in this phase may engage in a period of evaluations of the online community but invest minimal efforts and time to actively participate in knowledge exchanges. In this sense, the exploratory member-community relationship is relatively weak and "*fragile*" (Dwyer et al. 1987). In the context of open online CoPs, it means that members in the exploratory phase may often make unilateral considerations on whether to increase his or her knowledge exchanges and collaboration with other members. More specifically, an overall evaluation of potential rewards and costs of participating in the online CoP as compared to alternative options may lead to attraction in the initiating process of the exploration phase (Dwyer et al. 1987). For a member, potential rewards of engaging in online CoPs may include tangible and intangible returns, such as getting valuable information, enhancing reputation, value or group identity expression and other social benefits (Bagozzi and Dholakia 2006; Wasko and Faraj 2005). Costs may entail economic costs such as time, efforts, future behavioural investments as well as related social costs (Dwyer et al. 1987). In some cases, members may also evaluate the governance of an online CoP and form perceptions of whether the methods and procedures used in the online CoP are reasonable, acceptable, or justifiable in facilitating knowledge sharing and collaboration (Fang and Chiu 2010). Through the initial interactions with other community members, an individual may learn the norms and standards used in an online CoP. In the end of the exploration phase, an individual will develop specific relational expectations that relate to the exchange party's integrity and capability as well as concerns potential conflicts of interest, prospects of unity and future trouble (Dwyer et al. 1987). In other words, a member will make an overall judgment on whether other social actors in the online community are able and trustworthy to fulfill their expected "*roles*".

Expansion is defined as "*the continual increase in benefits obtained by exchange partners and to their increasing interdependence*" (Dwyer et al. 1987, p. 18). While the five sub-processes involved in the exploration phase also operate in this phase, the main difference between the two phases is that now an individual trusts his or her exchange party to a greater extent and has a strong motive to maintain the relationship, as perceived interdependence increases (Dwyer et al. 1987). In this sense, it is expected that when a CoP member consistently obtains his or her expected outcomes in relation to online collaboration, he or she may form more favorable perceptions of other social actors in the online community in terms of their cooperativeness, competence and goal compatibility. As a result, he or she will be more inclined to

make more efforts to preserve his or her association with the online CoP. In other words, the member may engage in knowledge sharing through the online community more frequently.

Commitment is considered as the most desirable phase in relational exchange, as it indicates that an individual not only holds a strong desire to maintain an on-going relationship with his or her current exchange party, but also excludes most alternative parties that could offer comparable benefits (Dwyer et al. 1987). In this sense, an individual may not be considered as to be committed to a certain online CoP if he or she participates in multiple similar online communities on a regular basis. In addition, commitment is established on the basis of three critical criteria: 1) there is a high level of economic and social resources having been exchanged in the past (i.e. inputs); 2) two parties hold a common expectation of obtaining similar benefits from future exchanges (i.e. durability); and 3) the levels of both parties' inputs remain steady over time (i.e. consistency) (Dwyer et al. 1987). Based the above criteria, one may infer that in a given online CoP, the frequency of knowledge exchanges in the past and the length of the membership tenure can be considered two critical antecedents of commitment rather than outcomes.

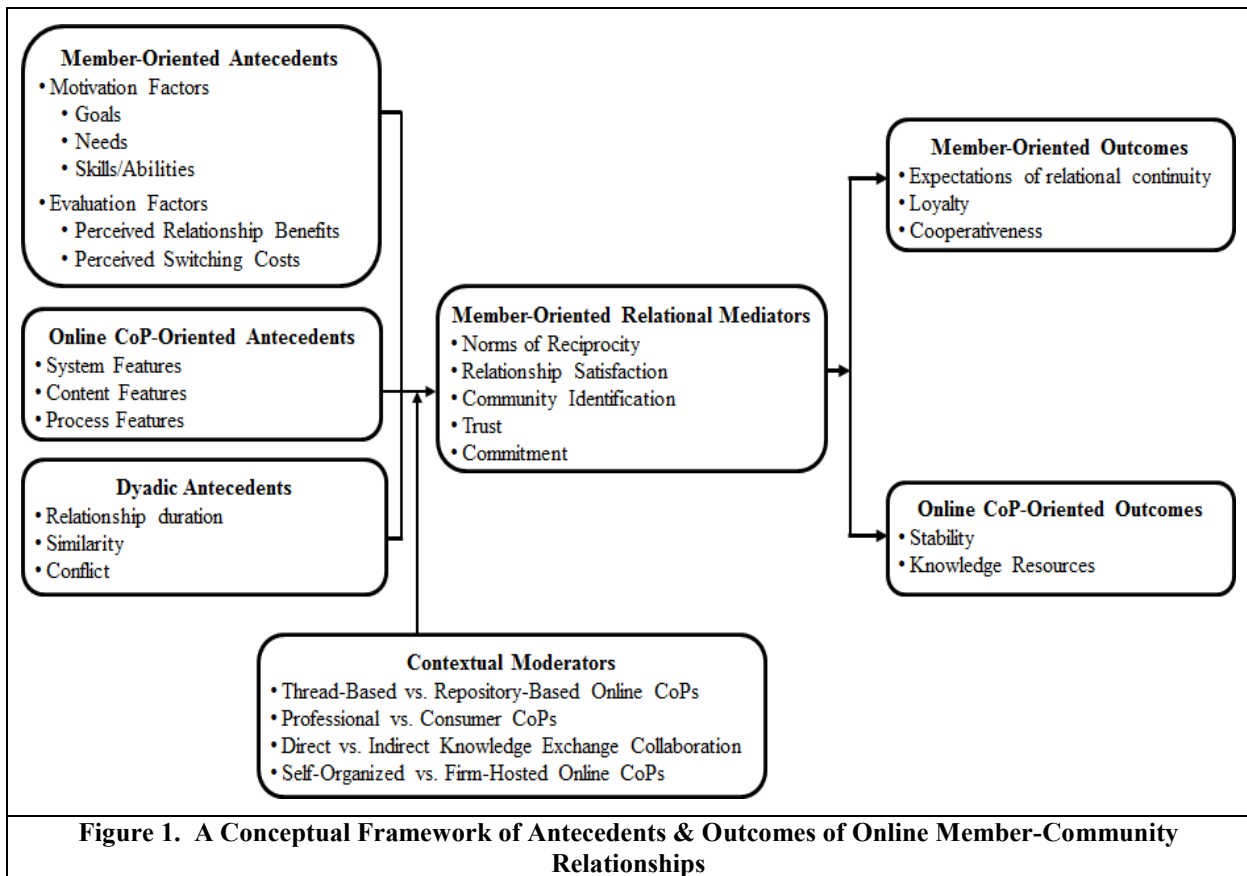
Although disengagement may be seen as the reverse of relationship development, some scholars have pointed out that the trajectories of withdrawing from a relationship can vary to a great extent under different circumstances (Dwyer et al. 1987). In particular, when interdependence is perceived to be low, dissolution may be relatively simple and the resulting impact be negligible. In contrast, the termination of an association from interdependent phase of expansion and commitment can be much complex and costly (Dwyer et al., 1987). For example, organizational behaviour research has shown while continuance, affective and normative (moral) commitment have negative effects on employees' withdraw cognition, turnover intention and turnover (Meyer and Allen 1991; Meyer et al. 2002), the three types of commitment involves different withdrawal processes and result in different behavioural outcomes (Meyer et al. 2002; Somers 1995). Likewise, literature in relationship marketing has also suggested that consumer churn is more strongly associated with levels of continuance commitment than affective commitment (Gustafsson et al. 2005). In line with this reasoning, it is expected that reasons underlying member turnover of an online CoP may largely differ by the nature and strength of member-community relationships. Specifically, a new member may stop engaging in knowledge sharing and collaboration in the online CoP due to the increased accessibility of alternative knowledge resources, even he or she holds positive evaluations of the online community. On the other hand, a member with strong commitment may decide to terminate the participation in an online CoP, if he or she considers that exchanging knowledge with other members of the given online community is no longer congruent with his or her goals or values.

In short, it is proposed that individual participation in online CoPs may evolve through a number of transitions, each of which can be triggered by different sets of key antecedents. The reconceptualization of online CoP participation as the development of member-community relationship implies that members' knowledge sharing behaviours can be considered as a series of discrete exchange activities. Although exchange activities may appear to be similar with each other, the relational view suggests that members in different transitional phases can have substantially different reasons and/or motivations for actively participating in the online CoP. Specifically, members' participation in the early phases of relationship development tend to be largely driven by relatively rational cost-benefit concerns. Over an extended period of evaluations and social interactions, online knowledge sharing activities tends to entail specific social meanings and reflect a member's strong willingness of maintaining an on-going relationship with the online CoP.

A Conceptual Framework for Studying Online Member-Community Relationships

To identify the different processes underlying individuals' online knowledge exchange patterns, a conceptual framework is proposed to systematically review and analyze the existing IS literature in online CoPs and to identify potential research avenues (Figure 1). The framework is based on Dwyer et al. (1987)'s seminal work and Palmatier et al. (2006)'s meta-analytic study in relationship marketing. In particular, the framework consists of six main categories of constructs that have been extensively studied in the relationship marketing research. Those categories are member-oriented antecedents, online CoP-oriented antecedents, dyadic antecedents, member-oriented relational mediators, member-oriented outcomes, online CoP-oriented outcomes and contextual moderators. Although the specific constructs in each of the categories are different from those studied in the relationship marketing literature, the underlying conceptual dimensions and relationships between constructs in different categories are largely

consistent with the relationship marketing perspective. Specifically, the proposed framework suggests that factors categorized as the antecedents may affect an individual's perceptions on knowledge sharing and exchanges in interactions with other social actors in the online CoP through an indirect route. In other words, the distal effects of those antecedents on the development and maintenance of an online member-community relationship tend to be mediated by five key relational mediators. Moreover, a relational view of online CoP participation implies that the effects of the five relational mediators on the two types of outcomes can significantly vary when a member-community relationship transits from one phase to another. In the early phases of relationship development, member-oriented and CoP-oriented outcomes tend to be largely associated with relationship satisfaction, norms of reciprocity and trust, whereas in the later phases of relationship development, community identification and commitment tend to be more important than the other three mediators in determining the outcomes of online CoP participation. In addition, scholars have noted that specific context in which an online CoP is embedded may affect knowledge exchange patterns and online community structures (Faraj and Johnson 2011). To address this issue, the proposed conceptual framework identifies four contextual factors, such as community sponsors and topics that may potentially moderate the effects of different antecedents on member-oriented relational perceptions and decisions.



Method

To provide a general picture of the existing studies on individual participation in online CoPs, a systematical literature search was conducted. The review was primarily focused on key constructs identified in the proposed conceptual framework that relates to online member-community relationships.

Selection of articles

The literature search were conducted within four online academic literature databases: AIS Electronic Library, Web of Science, Academic Search Complete, and ABI/Inform Global. The selection of articles involved three steps. The four databases were firstly scanned for relevant articles by using the key words: *communit* of practice; network* of practice; online (virtual/electronic/digital) communit* or online (virtual/electronic/digital) network**. Next, the selection of articles was limited to peer-reviewed journal publications. Third, the final set of articles for review was determined based on the following selection criteria: 1) the article explicitly used “*online community of practice*” or its synonyms to refer to a specific IS application under study; 2) the article explicitly discussed individuals’ participation in online CoP in terms of knowledge sharing or content creation; 3) key constructs studied in the article were conceptually equivalent to or similar with those in the proposed framework; 4) research findings of the article were derived from empirical observations; 5) data about participation in online CoPs were primarily gathered and analyzed at the individual level.

Review of articles

As a result, a total of 38 articles were chosen and reviewed. The chosen articles were published in the years 2000-2015. For each article, the theoretical underpinnings of the empirical study were first reviewed in details. Findings reported in each study were then classified into an effect matrix which was conceptually mapped onto the proposed framework. In the matrix, the reviewed articles were compared with each other in terms of their studied constructs and the observed inter-relationships between those constructs.

Theoretical Underpinnings & Related Findings

In this sections, an overview of main theoretical underpinnings of reviewed articles is first presented. Next, empirical findings on individual participation in online CoPs are summarized to demonstrate direct and/or indirect support for the proposed framework. Lastly, potential research avenues are discussed.

Four theories have been explicitly applied in the extant empirical studies to examine individual-level knowledge sharing behaviours in online CoPs, with two which were originally developed to explain macro-organizational phenomena and to understand the sociological views of social exchange processes. The Table 2 presents a summary of the four main theories and related IS studies.

Social capital theory (Nahapiet and Ghoshal 1998) holds that an organization’s social networks of relationships, consisting of structural, cognitive and relational dimensions, contribute to the creation and development of new intellectual capital for the organization. Draw on this theory, existing findings have shown that the quantity and quality of knowledge contributed by a member positively relates to factors such as interpersonal trust and social interaction ties (Chiu et al. 2006; Wasko and Faraj 2005). However, the effects on community identification and its correlates (e.g. commitment) on individuals’ participation of online CoPs remain equivocal among the empirical studies that have adapted social capital theory to the individual level (e.g. Chiu et al. 2006; Wasko and Faraj 2005; Wiertz and de Ruyter 2007).

In addition, Blau’s social exchange theory (1964) has been applied to understand individual motivations underlying online knowledge contribution from a sociological perspective. Distinct from of a psychological view of social exchanges in which individuals evaluate relational dependence based on “comparison levels” and “comparison levels of alternatives” (Thibaut and Kelley 1959), Blau (1964)’s theory focuses on explaining how unspecific reciprocal obligations recurrently incur in social interaction and how the imbalance of obligations generates differences in social status. Research based on this theory has suggested that an individual may engage in knowledge exchanges in a professional online community to enhance his or her reputation among his or her peers (Wasko and Faraj 2005; Wasko et al. 2009).

Drawn on Bandura’s social cognitive theory and its precursor, social learning theory, several studies have examined the impacts of perceived knowledge sharing self-efficacy and outcome expectations on individuals’ knowledge sharing behaviours on online CoPs (Chiu et al. 2006; Lin et al. 2009). As a motivational theory, social cognitive theory explains how people acquire certain behavioural patterns through vicarious learning and modeling (Bandura 1989). The original theory emphasizes on the triadic inter-relationships between environmental factors, personal factors and behaviours. Nevertheless, only

one study examines the reciprocal causation between external factors in relation to system features and individuals' knowledge exchange patterns in online CoPs (Moon and Sproull 2008).

Social identity theory suggests that a collective self-construal leads to the conformity to in-group norms and values (Hogg 2006). In the context of online CoPs, two studies have directly applied this theoretical lens to explain different participation intentions (Bagozzi and Dholakia 2006) and online knowledge sharing behaviours (Moon and Sproull 2008). It should be noted that a number of studies have conceptualized individual knowledge sharing as a type of organizational behaviours and examined how attitudinal commitment (Bateman et al. 2011; Kang et al. 2007; Wiertz and de Ruyter 2007) and perceived equity (Fang and Chiu 2010) relates to individuals' participation activities in online CoPs. Results from those studies are compatible with the explanations derived from a social identity analysis.

Theory	Brief Description	Examples
Social Capital Theory (Nahapiet and Ghoshal 1998)	An organization's networks of relationships (i.e. social capital) generate a valuable resource which enhances the capabilities of the organization for creating and sharing knowledge (i.e. intellectual capital). The development of high levels of social capital is perceived to be advantageous to organizations, as institutions, since organizational advantage is supported by the coevolution of social capital and intellectual capital.	(Chiu et al. 2006; Tiwana and Bush 2005; Wasko and Faraj 2005; Wasko et al. 2009; Wiertz and de Ruyter 2007)
Blau's Social Exchange Theory (Blau 1964)	Social interaction and interpersonal relations can be conceptualized in terms of exchange processes. Unspecified reciprocal obligation distinguishes social exchanges from strictly economic transactions, as the recurrent and expanding nature of the former's processes generates mutual trust, gratitude and social rewards (e.g. social approval, status, reputation).	(Chang and Chuang 2011; Phang et al. 2009; Wasko and Faraj 2005; Wasko et al. 2009)
Social Cognitive Theory (Bandura 1989; Bandura 2001)	From an agentic perspective, people's actions are guided through cognitive, vicarious, self-reflective and self-regulatory processes. An individual's beliefs of their abilities to exercise control over events serves as proximal determinants of his or her motivation, affect and action and reflections of physical and social environmental conditions.	(Chen and Hung 2010; Chiu et al. 2006; Lin et al. 2009; Moon and Sproull 2008)
Social Identity Theory (Hogg 2006; Tajfel and Turner 1986)	As a meta-theory (Abrams et al. 2008), social identity theory provides a general social psychological approach to explaining how people's self-conception as group members plays a role in their social perception and behaviour in a particular context as well as in group processes and intergroup relations.	(Bagozzi and Dholakia 2006; Moon and Sproull 2008)

A Relational Analysis of Individual Participation in Online CoPs

To assess the extent to which prior empirical studies have provided direct or indirect support for the conceptual framework proposed in the paper, all the reviewed articles were compared and contrasted in terms their substantive research contexts, key constructs and interrelationships between the constructs. In particular, the review centered on examining the following research areas: 1) what specific types of antecedents and relational mediators have studied in the past research; 2) how those antecedents and relational mediators have been hypothesized and tested to have any effects on member-oriented or online CoP-oriented outcomes and 3) how the dynamics and transitions in forming and developing an online member-community relationship can be inferred from existing empirical research.

Relational Antecedents and Mediators

This sub-section focuses on the different types of relational antecedents. To provide an overview of the review findings, the key categories of antecedents were firstly described. Each chosen article was then

analyzed in terms of how those relational antecedents have been operationalized in the empirical study. Next, the article was placed into an effect matrix (see Table 3) based on their empirical findings. The review results reported below were organized according to the hypothesized effects of each antecedent on relational mediators and outcomes.

As depicted in the conceptual framework, member-oriented antecedents can be categorized into two main factors, individual motivations and specific evaluations of member-community relationships. In particular, the former reflects the factors that initiate an individual to engage in knowledge exchange or collaboration in online CoPs in the exploration phase, whereas the latter indicates the reasons that may trigger the formation and development of an on-going member-community relationship. In other words, motivational factors may initiate the development processes of member-community relationships but not necessarily warrant the consistency and frequency of members' participation in a given online CoP over time.

Table 3. Studies on Factors influencing the Member-Community Relationship			
Direct effects on relational mediators		Direct effects on intentions/behaviours	No direct effects on intentions/behaviours
Member-oriented Antecedents			
Goals	(Xu et al. 2012)	(Wasko and Faraj 2000)	(Yang and Lai 2010)
Needs	(Tsai and Pai 2014)	(Chang and Chuang 2011; Cho et al. 2010; Wasko and Faraj 2000)	(Wasko and Faraj 2005)
Abilities	(Tsai and Pai 2014)	(Chen and Hung 2010; Cho et al. 2010; Lin et al. 2009; Tseng and Kuo 2010; Wasko et al. 2009; Yoon and Rollandb, 2012)	(Wasko and Faraj 2005)
Perceived relationship benefits	(Kang et al. 2007; Ma and Agarwal 2007; Ridings et al. 2002)	(Chang and Chuang 2011; Lin et al. 2009; Tonteri et al. 2011; Wasko and Faraj 2005; Zhao et al. 2013)	(Yang and Lai 2010)
Perceived switching costs	---	---	---
Online CoP-oriented Antecedents			
System features	(Leimeister et al. 2005; Ma and Agarwal 2007)	(Ma and Agarwal 2007; Moon and Sproull 2008)	---
Content features	(Ridings et al. 2002)	(Jones et al. 2004)	---
Process features	(Bock et al. 2008; Kang et al. 2007; Porter and Donthu 2008; Xu et al. 2009)	(Carillo and Okoli 2011)	---
Dyadic Antecedents			
Relationship duration	---	(Bateman et al. 2011; Tiwana and Bush 2005)	---
Similarity	(Cress et al. 2014; Ren et al. 2012; Xu et al. 2009)	(Carillo and Okoli 2011; Chang and Chuang 2011; Chen and Hung 2010; Lin et al. 2009; Yu et al. 2010)	---
Conflict	---	---	---

Effects of Member-oriented Antecedents

Member-oriented motivation factors associated with participation in online CoPs includes were mainly conceptualized as perceived knowledge sharing self-efficacy (Chen and Hung 2010; Lin et al. 2009; Tseng and Kuo 2010), altruism (Cho et al. 2010; Wasko and Faraj 2000) and expertise (Wasko et al. 2009). However, the mechanisms underlying the direct effects of those motivation factors on online knowledge sharing remains unclear. For example, some studies have shown that concerns for the welfare of others (i.e. altruism) may lead to individuals' knowledge sharing behaviours in online CoPs (e.g. Cho et al. 2010), whereas other studies have suggested that such concerns may not be adequate to influence individuals' online knowledge collaboration (e.g. Wasko and Faraj 2005). Moreover, while findings in relation to the influence of self-efficacy beliefs on online knowledge sharing behaviours are relatively consistent across several studies (Chen and Hung 2010; Chen et al. 2010; Tseng and Kuo 2010), it remains equivocal the extent to which online CoP members' expertise (Wasko and Faraj 2005; Wasko et al. 2009) would have direct effects on their knowledge sharing behaviours. To some extent, it provide some indirect support that the influence of these factors on individual participation in online CoPs may tend to be indirect and fully mediated by other psychological factors.

In terms of member-oriented evaluation factors, two studies provided direct support for the mediating effects of trust (Ridings et al. 2002) and commitment (Lin et al. 2009) on relations of perceived member-community relationship benefits and knowledge sharing through online CoPs. In particular, Ridings et al. (2002) have argued that as a key drive of knowledge sharing in online CoPs, an individual's evaluation of the trustworthiness of peer members in the online community is partially based on how others respond to his or her posts. Further, Kang et al. (2007) have shown that recognition for knowledge contribution and perceived community value increases an individual's commitment to the online community. Moreover, although a number of studies have implied that members' perceived advantage such as enhancing reputation may directly lead to knowledge exchanges through thread-based online CoPs (Chang and Chuang 2011; Lin et al. 2009; Wasko and Faraj 2005), such effects have not been found in an empirical study of Wikipedia (Yang and Lai 2010). Lastly, while not explicitly tested, one study has suggested that individuals' satisfaction with an online CoP is in part directly explained by the extent to which the online community fulfill his or her information needs (Ma and Agarwal 2007).

Effects of Online CoP-oriented Antecedents

Certain system features provided in an online CoP may directly contribute to the development of trust (Leimeister et al. 2005) or indirectly increase satisfaction (Ma and Agarwal 2007). For example, Leimeister et al. (2005) have suggested that the provision of features that support transparency contributes to an individual's evaluations of the trustworthiness of the operator of an online community. Ma and Agarwal (2007) have contended that the use of certain IT features facilitates individuals to confirm online self-identity which in turn leads participants reporting more favorable experiences with the online community and more active online knowledge exchanges. In their study, Moon and Sproull (2008) have shown that systematic feedback mechanisms are more likely to lead to higher levels of knowledge contribution and longer participation durations in online communities as compared to ad-hoc feedback mechanisms, indirectly suggesting that the former feedback mechanisms tends to result in members' behavioural commitment to the online CoP.

Prior findings have shown that the presence of others' confiding personal information results in an increase in interpersonal trust within an online CoP (Ridings et al. 2002), whereas the complexity of message content and the volume of online interactions may directly influence members' online knowledge sharing behaviour (Jones et al. 2004). Further, a number of studies have incorporated factors that indirectly affect online knowledge exchanges by facilitating or hindering the processes and/or coordination of participants' interactions through online CoPs. In the context of self-organizing online CoPs, members' evaluations of the facilitator or organizer of an online community, in terms of leadership styles (Bock et al. 2008) and leadership effectiveness (Xu et al. 2009), have been found to increase online community members' commitment and personal relevance. In addition, members' assessments of general online community support have been found to have both direct effects on online knowledge sharing behaviours (Kang et al. 2007) and indirect effects mediated by commitment (Carillo and Okoli 2011). In the context of firm-hosted online CoPs, consumers' trust in the community sponsor and their perceptions of shared values are largely influenced by their assessments of the online community sponsor's effort to encourage interaction and foster member embeddedness (Porter and Donthu 2008).

Effects of Dyadic Antecedents

In terms of dyadic antecedents, while two studies have used the membership duration as control variables in their research models (Bateman et al. 2011; Tiwana and Bush 2005), results have indirectly suggested that the duration of a member-community relationship significantly relates to their online knowledge sharing behaviours and behavioural intentions. In particular, it has been shown that a member's tenure in an online CoP is positively associated with the likelihood of reading other members' posts but negatively related to the tendency of posting replies (Bateman et al. 2011). Tiwana and Bush (2005)'s study has implied that there is a positive relationship between duration of the membership and the member's intention to continue to remain in the online CoP.

The similarity between an individual and other members' of an online CoP as a whole has been studied with respect to the evaluations of shared values (Xu et al. 2009) and language (Chang and Chuang 2011), perceived compatibility (Chen and Hung 2010; Lin et al. 2009), perceived knowledge sharing culture in an online CoP (Yu et al. 2010) and past shared experience associated with knowledge collaboration with other online community members (Carillo and Okoli 2011). Most of the studies have suggested that this factor has a direct effect on knowledge sharing behaviours in online CoPs, with one expectation proposing that shared values increase member's perceived importance and personal relevance to a particular knowledge collaboration activity in the online CoP and consequently more actively engage in the online community (Xu et al. 2009).

In sum, extant research has shown some direct and indirect evidence that the nature and dynamic of an online member-community relationship may substantially vary across different conditions. Despite that past literature has highlighted the significant impact of perceived switching costs and conflict on sustaining relational exchanges (Dwyer et al. 1987), there are no empirical studies in the present review that have examined the effects of these two factors on the proposed relational mediators. Further, it should be noted that as the majority of the studies are cross-sectional, more research is required to directly test the causality suggested in the present framework.

Relational Mediators and Outcomes

This sub-section centers on further examining potential effects of the five relational mediators. Similar with the previous sub-section, each selected article was analyzed and classified into an effect matrix (see Table 4). In the matrix, empirical findings in relation to the effects of a specific relational mediator on the other relational mediators and outcomes were summarized.

Four studies have provided direct evidence that member-oriented relational factors may potentially reduce member turnover in an online CoP. More specifically, a member's intention of continuously participating in expertise-sharing networks has been found to be positively related to members' satisfaction with the network systems (Tiwana and Bush 2005). Sustained participation is directly related to members' identification with the online CoP (Fang and Neufeld 2009). Further, members' attitudinal and behavioural commitment leads to higher loyalty behaviour toward the online community. In particular, it has shown that members' with strong relational orientations are more likely to introduce and recommend the online community to others (Chen and Hung 2010; Kang et al. 2007). Lastly, there is a need to further examining the influence of reciprocity and trust on members' relational knowledge exchanges and collaboration through online CoPs.

Most studies have examined the direct effects of member-oriented relational mediators on behavioural intentions or behaviours (See Appendix). While a number of studies have consistently shown that members' satisfaction (Tseng and Kuo 2010), community identification (e.g. Bagozzi and Dholakia 2006) and trust (Chiu et al. 2006; Porter and Donthu 2008) accounts for their participation in online CoPs, the effects of norms of reciprocity and commitment on online knowledge sharing behaviours remain inconclusive. For example, Bateman et al. (2011) have suggested that different types of commitment may lead to different forms of participation in online CoPs, whereas Wasko and Faraj (2005)'s study has shown that there is no effect of commitment on online knowledge sharing. Further, existing findings imply that different relational mediators may contribute to different community-oriented outcomes. Specifically, it is suggested that a participant's interpersonal trust leads to the quality of knowledge contribution, whereas norms of reciprocity and identification contributes to the quantity but not quality of knowledge exchanges in the online professional CoP (Chiu et al. 2006). In the context of commercial firm-

hosted online CoPs, Porter and Donthu (2008) have shown that trust in the sponsor increases consumers' willingness to share knowledge with and co-produce new products with the sponsoring firm.

Table 4. Studies on Outcomes of Member-Community Relationship			
	Direct effects on relational outcomes	Direct effects on intentions/ behaviours	No direct effects on intentions/ behaviours
Member-oriented Outcomes			
Norms of Reciprocity	---	(Beck et al. 2014; Chiu et al. 2006; Wasko and Faraj 2000)	(Wasko and Faraj 2005; Wiertz and de Ruyter 2007)
Relationship Satisfaction	(Tiwana and Bush 2005)	(Lee et al., 2015; Ray et al. 2014; Tseng and Kuo 2010)	---
Community Identification	(Fang and Neufeld 2009)	(Bagozzi and Dholakia 2006; Chang and Chuang 2011; Chiu et al. 2006; Ma and Agarwal 2007; Tsai and Bagozzi 2014; . Tsai and Pai 2014; Zhao et al. 2013)	(Beck et al. 2014)
Trust	---	(Chang and Chuang 2011; Chiu et al. 2006; Porter and Donthu 2008; Ridings et al. 2002; Tseng and Kuo 2010; Xu et al. 2012)	---
Commitment	(Chen and Hung 2010; Kang et al. 2007)	(Bateman et al. 2011; Jin et al., 2011; Kang et al. 2007; Lin et al. 2010; Ren et al. 2012)	(Wasko and Faraj 2005; Wiertz and de Ruyter 2007)

Implications

The existing IS literature provides some direct and indirect support for the proposed framework in terms of conceptualizing individual participation in online CoPs as forming and/or developing an online member-community relationship. The implications of the present review are threefold. First, the relational perspective can help synthesize and integrate divergent theoretical views on online CoP participation into a coherent picture. It also can help identify some boundary conditions under which a specific theory would be appropriate and justifiable in explaining online knowledge sharing behavior and its related community outcomes. For example, Thibaut and Kelley (1959)'s social exchange theory may help explain why individuals may continue their knowledge exchange and collaboration in an online CoP, when enhancing reputation or altruism are not their main concerns, or when they report low levels of satisfaction with the online community. Further, while past research has shown community identification influences individual participants' online knowledge sharing behaviours, it remains unclear how online community members may conform to or enact group norms. Subtheories within social identity theory such as social-categorization, social comparison and social influence theories (for a review, see Hogg 2006) can enable researchers to explore how online community identification may elicit members' different patterns of knowledge exchange under different circumstances. In particular, social-categorization can be useful for examining relational mediators such as community identification and commitment, whereas social comparison and social influence can be helpful when the research focuses on studying dyadic antecedents such as perceived similarity and relationship conflict.

Second, the proposed framework can provide some plausible explanations on seemingly conflicting results in past studies and offer related theoretical justifications to resolve the inconsistencies in empirical findings. Specifically, inconsistent findings in terms of the impact of different individual motivations and social factors may be in part due to that these factors may serve as antecedents to trigger members' initial online knowledge sharing behaviours in different contexts and have different effects on member-oriented relational mediators. In other words, some of the individual-oriented, online CoP-oriented and dyadic antecedents may facilitate the formation and development of online member-community relationships at the different phases, but not necessarily sustain individuals' knowledge exchanges and collaboration in the online CoPs over time. The proposed framework can help differentiate the distal and proximal effects of different antecedents and explain how those effects may change over time. Moreover, while the majority of empirical studies in the review have examined the effects of those antecedents on online knowledge sharing intentions or behaviours, a few studies have shown that those factors could potentially change members' relational orientations toward the online CoP with respect to satisfaction, commitment, identification and so forth. Although it remains unknown when and how those different antecedents may facilitate or hinder members' on-going active participation in online CoPs, the proposed framework may potentially allow scholars to systematically examine the development process of member-community relationships over time as well as to compare and contrast to what extent the community-specific differences may lead to different online knowledge exchange patterns.

Lastly, as past research has shown that certain community features may facilitate the formation of strong member-community relationships by enhancing interpersonal trust and commitment or supporting group identities, the proposed framework may allow researchers to examine whether those effects on individuals' knowledge sharing behaviours may differ across different types of online communities or different community topics. In particular, the present review can inform future research in terms of how the contextual factors identified in the present framework tend to alter the influence of online CoP-oriented antecedents on the development process of member-community relationships.

Conclusion

This paper provides an overview of the current state of research on online CoP research. By comparing previous literature in conventional CoPs and its online counterparts, it is found that individual participation in online CoPs for knowledge sharing and exchange is substantially different from what was proposed in the original notion of CoPs. Thus, it may not be appropriate to treat core concepts in traditional CoPs such as *mutual engagement or shared repertoire of resources* as default properties of describing any computer-mediated communication channels that are intended for knowledge collaboration or exchange. Rather, it is critical for IS scholars to directly scrutinize to what extent individual participation in online CoPs resembles that observed in traditional or offline counterparts and to clarify what may contribute to the divergence in the conceptualization and realization of different online CoPs and their variants. Further, the paper conceptualizes individual participation in online CoPs as a contractual member-community relationship, of which the formation and development can be indirectly influenced by different member-oriented, system oriented or relational antecedents through their effects on different relational mediators. A conceptual framework was developed to systematically review prior empirical studies. Overall, the review implies that the nature and structure of online member-community relationships differ considerably, not only across different study settings but also among different members within a given online CoP. In particular, the proposed framework offers a plausible account for some inconsistent findings from prior empirical studies by suggesting that 1) different types of antecedents and contextual factors may jointly affect an individual's participation in online CoPs through different intermediate processes; and 2) the contiguity or frequency of participation is in part affected by different relational mediators that characterize the person's relational orientation to the given online CoP. As most reviewed studies were cross-sectional, more research is needed to further explore how online CoP members' participation behaviours change over time and what factors affect transitions in the development of member-community relationships. Results can potentially shed light on how collaboration and/or knowledge exchange in different online CoPs may sustain and evolve.

References

- Abrams, D., de Moura, G.R., Marques, J.M., and Hutchison, P. 2008. "Innovation Credit: When Can Leaders Oppose Their Group's Norms?," *Journal of Personality and Social Psychology* (95:3), pp. 662-678.
- Bagozzi, R.P., and Dholakia, U.M. 2006. "Open Source Software User Communities: A Study of Participation in Linux User Groups," *Management Science* (52:7), pp. 1099-1115.
- Bandura, A. 1989. "Human Agency in Social Cognitive Theory," *American Psychologist* (44:9), pp. 1175-1184.
- Bandura, A. 2001. "Social Cognitive Theory: An Agentic Perspective," *Annual Review of Psychology* (52), pp. 1-26.
- Bateman, P.J., Gray, P.H., and Butler, B.S. 2011. "The Impact of Community Commitment on Participation in Online Communities," *Information Systems Research* (22:4), pp. 841-854.
- Beck, R., Pahlke, I., Seebach, C., 2014.). "Knowledge Exchange And Symbolic Action In Social Media-Enabled Electronic Networks Of Practice: A Multilevel Perspective On Knowledge Seekers And Contributors1." *Management Information Systems Quarterly* (38:4), pp. 1245-1270.
- Blau, P.M. 1964. *Exchange and Power in Social Life*. Transaction Books.
- Bock, G.W., Ng, W.L., and Shin, Y.Y. 2008. "The Effect of a Perceived Leader's Influence on the Motivation of the Members of Nonwork-Related Virtual Communities," *Ieee Transactions on Engineering Management* (55:2), pp. 292-303.
- Brown, J.S., and Duguid, P. 2000. *The Social Life of Information*. Boston: Harvard Business School Press.
- Carillo, K., and Okoli, C. 2011. "Generating Quality Open Content: A Functional Group Perspective Based on the Time, Interaction, and Performance Theory," *Information & Management* (48:6), pp. 208-219.
- Chang, H.H., and Chuang, S.S. 2011. "Social Capital and Individual Motivations on Knowledge Sharing: Participant Involvement as a Moderator," *Information & Management* (48:1), pp. 9-18.
- Chen, C.J., and Hung, S.W. 2010. "To Give or to Receive? Factors Influencing Members' Knowledge Sharing and Community Promotion in Professional Virtual Communities," *Information & Management* (47:4), pp. 226-236.
- Chen, D.Q., Mocker, M., Preston, D.S., and Teubner, A. 2010. "Information Systems Strategy: Reconceptualization, Measurement, and Implications," *MIS Quarterly* (34:2), pp. 233-A238.
- Chiu, C.M., Hsu, M.H., and Wang, E.T.G. 2006. "Understanding Knowledge Sharing in Virtual Communities: An Integration of Social Capital and Social Cognitive Theories," *Decision Support Systems* (42:3), pp. 1872-1888.
- Cho, H.C., Chen, M.H., and Chung, S.Y. 2010. "Testing an Integrative Theoretical Model of Knowledge-Sharing Behavior in the Context of Wikipedia," *Journal of the American Society for Information Science and Technology* (61:6), pp. 1198-1212.
- Contu, A., and Willmott, H. 2003. "Re-Embedding Situatedness: The Importance of Power Relations in Learning Theory," *Organization Science* (14:3), pp. 283-296.
- Cox, A. 2005. "What Are Communities of Practice? A Comparative Review of Four Seminal Works," *Journal of Information Science* (31:6), pp. 527-540.
- Cress, U., Schwammlein, E., Wodzicki, K., Kimmerle, J., 2014. "Searching for the perfect fit: The interaction of community type and profile design in online communities." *Computers in Human Behavior*. (38), pp.313-321.
- de Valck, K., Langerak, F., Verhoef, P.C., and Verlegh, P.W.J. 2007. "Satisfaction with Virtual Communities of Interest: Effect on Members' Visit Frequency," *British Journal of Management* (18:3), pp. 241-256.
- Dwyer, F.R., Schurr, P.H., and Oh, S. 1987. "Developing Buyer-Seller Relationships," *Journal of Marketing* (51:2), p. 11.
- Fang, Y., and Neufeld, D. 2009. "Understanding Sustained Participation in Open Source Software Projects," *Journal of Management Information Systems* (25:4), pp. 9-50.
- Fang, Y.H., and Chiu, C.M. 2010. "In Justice We Trust: Exploring Knowledge-Sharing Continuance Intentions in Virtual Communities of Practice," *Computers in Human Behavior* (26:2), pp. 235-246.
- Faraj, S., and Johnson, S.L. 2011. "Network Exchange Patterns in Online Communities," *Organization Science* (22:6), pp. 1464-1480.

- Garbarino, E., and Johnson, M.S. 1999. "The Different Roles of Satisfaction, Trust, and Commitment in Customer Relationships," *Journal of Marketing* (63:2), pp. 70-87.
- Geng, X., Whinston, A.B., and Zhang, H. 2004. "Health of Electronic Communities: An Evolutionary Game Approach," *Journal of Management Information Systems* (21:3), pp. 83-110.
- Gustafsson, A., Johnson, M.D., and Roos, I. 2005. "The Effects of Customer Satisfaction, Relationship Commitment Dimensions, and Triggers on Customer Retention," *Journal of Marketing* (69:4), pp. 210-218.
- Handley, K., Sturdy, A., Fincham, R., and Clark, T. 2006. "Within and Beyond Communities of Practice: Making Sense of Learning through Participation, Identity and Practice," *Journal of Management Studies* (43:3), pp. 641-653.
- Hogg, M.A. 2006. "Social Identity Theory," in *Contemporary Social Psychological Theories*, P.J. Burke (ed.). Palo Alto, CA: Stanford University Press, pp. 111-136.
- Jones, Q., Ravid, G., and Rafaeli, S. 2004. "Information Overload and the Message Dynamics of Online Interaction Spaces: A Theoretical Model and Empirical Exploration," *Information Systems Research* (15:2), pp. 194-210.
- Kang, I., Lee, K.C., Lee, S., and Choi, J. 2007. "Investigation of Online Community Voluntary Behavior Using Cognitive Map," *Computers in Human Behavior* (23:1), pp. 111-126.
- Lave, J., and Wenger, E. 1991. *Situated Learning: Legitimate Peripheral Participation* Cambridge, England: Cambridge University Press.
- Lee, J., and A. Suh, 2015. "How do virtual community members develop psychological ownership and what are the effects of psychological ownership in virtual communities?" *Computers in Human Behavior* 45, pp. 382-391.
- Leimeister, J.M., Ebner, W., and Krcmar, H. 2005. "Design, Implementation, and Evaluation of Trust-Supporting Components in Virtual Communities for Patients," *Journal of Management Information Systems* (21:4), pp. 101-135.
- Lin, M.J.J., Hung, S.W., and Chen, C.J. 2009. "Fostering the Determinants of Knowledge Sharing in Professional Virtual Communities," *Computers in Human Behavior* (25:4), pp. 929-939.
- Lindkvist, L. 2005. "Knowledge Communities and Knowledge Collectivities: A Typology of Knowledge Work in Groups," *Journal of Management Studies* (42:6), pp. 1189-1210.
- Ma, M., and Agarwal, R. 2007. "Through a Glass Darkly: Information Technology Design, Identity Verification, and Knowledge Contribution in Online Communities," *Information Systems Research* (18:1), pp. 42-67.
- MacNeil, I.R. 1985. "Relational Contract: What We Do and Do Not Know," *Wisconsin Law Review*, pp. 483-525.
- Meyer, J.P., and Allen, N.J. 1991. "A Three-Component Conceptualization of Organizational Commitment," *Human Resource Management Review* (1:1), 91, p. 61.
- Meyer, J.P., Stanley, D.J., Herscovitch, L., and Topolnytsky, L. 2002. "Affective, Continuance, and Normative Commitment to the Organization: A Meta-Analysis of Antecedents, Correlates, and Consequences," *Journal of Vocational Behavior* (61:1), pp. 20-52.
- Moon, J.Y., and Sproull, L.S. 2008. "The Role of Feedback in Managing the Internet-Based Volunteer Work Force," *Information Systems Research* (19:4), pp. 494-515.
- Nahapiet, J., and Ghoshal, S. 1998. "Social Capital, Intellectual Capital, and the Organizational Advantage," *The Academy of Management Review* (23:2), pp. 242-266.
- Oh, W., and Jeon, S. 2007. "Membership Herding and Network Stability in the Open Source Community: The Ising Perspective," *Management Science* (53:7), pp. 1086-1101.
- Palmatier, R.W., Dant, R.P., Grewal, D., and Evans, K.R. 2006. "Factors Influencing the Effectiveness of Relationship Marketing: A Meta-Analysis," *Journal of Marketing* (70:4), pp. 136-153.
- Phang, C.W., Kankanhalli, A., and Sabherwal, R. 2009. "Usability and Sociability in Online Communities: A Comparative Study of Knowledge Seeking and Contribution," *Journal of the Association for Information Systems* (10:10), pp. 721-747.
- Porter, C.E., and Donthu, N. 2008. "Cultivating Trust and Harvesting Value in Virtual Communities," *Management Science* (54:1), pp. 113-128.
- Ray, S., Kim, S. S., and Morris, J. G., 2014. "The Central Role of Engagement in Online Communities." *Information Systems Research* (25:3), pp. 528-546.

- Ren, Y.Q., Harper, F.M., Drenner, S., Terveen, L., Kiesler, S., Riedl, J., and Kraut, R. 2012. "Building Member Attachment in Online Communities: Applying Theories of Group Identity and Interpersonal Bonds." *Management Information Systems Quarterly* (36:3), pp. 841-864
- Ridings, C.M., Gefen, D., and Arinze, B. 2002. "Some Antecedents and Effects of Trust in Virtual Communities," *Journal of Strategic Information Systems* (11:3-4), pp. 271-295.
- Roberts, J. 2006. "Limits to Communities of Practice," *Journal of Management Studies* (43:3), pp. 623-639.
- Rousseau, D.M. 1989. "Psychological and Implied Contracts in Organizations," *Employee Responsibilities & Rights Journal* (2:2), pp. 121-139.
- Scanzoni, J. 1979. "Social Exchange and Behavior Interdependence," in *Social Exchange in Developing Relationships*, R.L. Burgess and T.L. Huston (eds.). New York, NY.: Academic Press, Inc.
- Somers, M.J. 1995. "Organizational Commitment, Turnover and Absenteeism: An Examination of Direct and Interaction Effects," *Journal of Organizational Behavior* (16:1), pp. 49-58.
- Tajfel, H., and Turner, J.C. 1986. "The Social Identity Theory of Inter-Group Behavior," in *Psychology of Intergroup Relations*, S.W.L.W. Austin (ed.). Chicago: Nelson-Hall, pp. 7-23.
- Thibaut, J.W., and Kelley, H.H. 1959. *The Social Psychology of Groups*. New York: Wiley.
- Tiwana, A., and Bush, A.A. 2005. "Continuance in Expertise-Sharing Networks: A Social Perspective," *Ieee Transactions on Engineering Management* (52:1), pp. 85-101.
- Tsai, H.T., and Bagozzi, R.P. 2014. "Contribution Behavior in Virtual Communities: Cognitive, Emotional, and Social Influences." *Management Information Systems Quarterly*, (38:1), pp. 143-163
- Tsai, H. T., and P. Y. Pai. 2014. "Why do newcomers participate in virtual communities? An integration of self-determination and relationship management theories." *Decision Support Systems* (57), pp. 178-187.
- Tseng, F.C., and Kuo, F.Y. 2010. "The Way We Share and Learn: An Exploratory Study of the Self-Regulatory Mechanisms in the Professional Online Learning Community," *Computers in Human Behavior* (26:5), pp. 1043-1053.
- Wasko, M.M., and Faraj, S. 2000. "'It Is What One Does': Why People Participate and Help Others in Electronic Communities of Practice," *Journal of Strategic Information Systems* (9:2-3), pp. 155-173.
- Wasko, M.M., and Faraj, S. 2005. "Why Should I Share? Examining Social Capital and Knowledge Contribution in Electronic Networks of Practice," *MIS Quarterly* (29:1), pp. 35-57.
- Wasko, M.M., Teigland, R., and Faraj, S. 2009. "The Provision of Online Public Goods: Examining Social Structure in an Electronic Network of Practice," *Decision Support Systems* (47:3), pp. 254-265.
- Wenger, E. 1998. *Communities of Practice :Learning, Meaning, and Identity*. Cambridge, U.K.: Cambridge University Press.
- Wenger, E., McDermott, R.A.R.A., and Snyder, W. 2002. *Cultivating Communities of Practice : A Guide to Managing Knowledge*. Boston: Harvard Business School Press.
- Wiertz, C., and de Ruyter, K. 2007. "Beyond the Call of Duty: Why Customers Contribute to Firm-Hosted Commercial Online Communities," *Organization Studies* (28:3), pp. 347-376.
- Xu, B., Jones, D.R., and Shao, B.J. 2009. "Volunteers' Involvement in Online Community Based Software Development," *Information & Management* (46:3), pp. 151-158.
- Xu, B., Li, D. H., and Shao, B. J. 2012. "Knowledge Sharing in Virtual Communities: A Study of Citizenship Behavior and Its Social-Relational Antecedents." *International Journal of Human-Computer Interaction* 28(5): 347-359.
- Yang, H.L., and Lai, C.Y. 2010. "Motivations of Wikipedia Content Contributors," *Computers in Human Behavior* (26:6), pp. 1377-1383.
- Yoon, C., and E. Rolland, 2012. "Knowledge-sharing in virtual communities: familiarity, anonymity and self-determination theory." *Behaviour & Information Technology* (31:11), pp. 1133-1143.
- Yu, T.K., Lu, L.C., and Liu, T.F. 2010. "Exploring Factors That Influence Knowledge Sharing Behavior Via Weblogs," *Computers in Human Behavior* (26:1), pp. 32-41.
- Zhao, J., Abrahamson, K., Anderson, J.G., Ha, S., and Widdows, R., 2013. "Trust, empathy, social identity, and contribution of knowledge within patient online communities." *Behaviour & Information Technology* (32:10), pp. 1041-1048.
- Zhao, K. X., Stylianou, A. C., and Zheng, Y. M., 2013. "Predicting users' continuance intention in virtual communities: The dual intention-formation processes." *Decision Support Systems* (55:4) pp. 903-910.