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**ONLINE COMMUNITIES AS BASIS OF KNOWLEDGE
MANAGEMENT: AN ANALYSIS ON PARTICIPATION AND
COMMITMENT**

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In memory of Antonia

“ Where are Ella, Kate, Mag, Lizzie and Edith,
The tender heart, the simple soul, the loud, the
proud, the happy one?
All, all are sleeping on the hill.”

Edgar Lee Masters, The Hill.

Dedicated to Vanessa, Marzia and Mike,

“at least for once they did the right thing!”

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Abstract

I moderni sviluppi del mercato e l'evoluzione tecnologica stanno portando il livello della competizione tra imprese sugli asset immateriali piuttosto che su quelli tradizionali, in particolare la conoscenza sta divenendo il fattore chiave per ottenere un vantaggio competitivo. Per questo motivo sistemi e modelli di condivisione, conservazione e miglioramento della conoscenza risultano cruciali per mantenere la competitività di lungo periodo delle imprese moderne.

Molti modelli sono stati proposti per migliorare la gestione della conoscenza e per creare ambienti fecondi alla sua massimizzazione; la maggior parte di questi hanno però avuto, nella realtà, il loro limite pratico, nella partecipazione degli utenti.

La storia della rete e dei sistemi di gestione della conoscenza dimostra che, seppur siano presenti alcuni esempi di comunità molto attive e di successo (ad esempio, Wikipedia, Facebook), la maggior parte di queste hanno avuto una vita molto breve ed un degrado piuttosto rapido. Analogamente molte aziende hanno lanciato, con grandi sforzi ed a costi elevati, sistemi di gestione della conoscenza molto complessi e che tuttavia hanno mostrato di produrre miglioramenti marginali dei loro patrimoni immateriali.

Un prerequisito significativo al successo di tali iniziative risulta essere il tasso di partecipazione: si consideri infatti che le comunità condividono informazioni in maniera volontaria vi è quindi una costante necessità di attrarre nuovi membri e di mantenere quelli esistenti attivi.

Risulta quindi necessario esaminare quali meccanismi siano più efficienti per il reclutamento degli utenti e come massimizzare la loro interazione con gli altri membri della comunità.

L'obiettivo principale di questa ricerca è quindi quello di analizzare e testare le modalità di iscrizione alla comunità, i legami e le relazioni che gli utenti realizzano al suo interno.

L'obiettivo secondario è quello di analizzare il loro contributo non solo in termini quantitativi come numero di contributi ma anche qualitativi per la loro tipologia di interazione.

Questo lavoro di ricerca può essere quindi diviso in due parti logicamente interconnesse tra loro: nella prima vi è una panoramica della letteratura relativa al “passa parola” per analizzare come i metodi di adesione ad una comunità possano cambiare anche le interazioni tra i membri della stessa. La seconda parte si concentra sulle relazioni tra utenti ed il loro impatto sulla partecipazione.

Entrambi questi modelli sono stati testati utilizzando i dati da una grande comunità Italiana on-line.

Questo lavoro dimostra come il passa parola e l'impegno dei membri sia all'interno che all'esterno della comunità siano di importanza cruciale per la partecipazione e quindi il successo dell'iniziativa. Questo è stato dimostrato analizzando i dati reali relativi alle iscrizioni ed interazioni di una comunità online di grandi dimensioni.

In particolare si dimostra come i legami sociali, oltre a spingere all'iscrizione alla comunità possano essere importanti per la partecipazione nei primi momenti di vita della stessa.

Questa osservazione potrebbe contribuire a costruire comunità più forti e stabili ed a ridurre l'effetto “domino” spesso registrato in comunità che improvvisamente implodono.

In una seconda fase è necessario ottenere l'impegno dei membri per conseguire un successo a lungo termine e ne vengono quindi analizzati tre tipi in dettaglio (mantenimento, affettivo, normativo).

Abstract

The modern market developments and the technological evolution is leading the enterprises in competing with their intangible assets and in particular to consider their knowledge their most important value. Most of the main enterprises focus all their strategies and production on their know how. That is why sharing, storing and improving knowledge is a crucial issue for any modern enterprise.

Many models have been suggested to achieve knowledge management systems and environments, most of them found their limits in the users participation, even if the developing of the communication technologies led to a proliferation of tools and systems to share information and collaborate.

In this research we consider as a corner stone for knowledge management systems the successful establishment of an on line community and its participation rate.

History of the net and of knowledge systems proves that, even if there are some very active and successful on line communities and some very wealthy enterprises have been based on them (e.g. Wikipedia, Facebook) most of them have been recorded as living and decaying in a very short time. As well many companies launched with a great effort and a huge cost complex and technological knowledge systems that were in effect never producing any improvement in their intangible assets.

The main issue is participation: as communities share non compulsory information there is a constant need of attracting new members and keep the existing ones active as enthusiasm tend to be a very short boost for the average users.

The first logical step to be considered is to examine is how the users join the community, the second one is to consider their interaction within the community. The main aim of this research is to analyse and test the modalities of community joining and the relations and bonds that the users create in the community.

A secondary aim is to analyse their contributions to the community not just in terms of a quantitative contribution count but to measure them also considering the interaction types they have.

So this research work can be divided in two logical interconnected parts: in the first one there is an overview of word of mouth literature to analyse how joining methods can change also members interactions. The second part focuses on relationships and their impacts on participation

Both these models were tested using the data from a large, general purpose, Italian on line community.

This work proves that referral and commitment are crucial for participation. This rather intuitive result is proved analysing the actual data of this rather large community. In particular referring is found to be a strong bound to the community at the beginning of a member life. This remark could help building stronger and much more stable communities reducing the “domino” factor.

In a latter stage commitment is necessary to achieve a long term success and three commitment types are examined in detail (continuance, affective, normative).



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When I started my research I decided I was interested in the development of the intangible assets, the true revolution for this beginning of new millennium. Concentrating and focusing my efforts I realised that the crucial issue was in the field of knowledge management so I started working on knowledge and the systems that have been developed to achieve this task. The more I was looking into them the more I realised that the crucial issue usually was not the system nor the model, or to be more precise that they are crucial if a prerequisite is achieved: participation. Most of the systems and of the models proposed and implemented failed in the long run due to a lack of participation: no matter how smart and effective the model was.

That is why I decided to focus on users participation, as almost all the models in literature base their success or failure on users participation.

In this work I consider two aspects of user participation and I try to produce a few assumptions based on a study case on a rather popular Italian on line community (that won't be quoted for confidentiality reasons).

Once most net and professional users were simply consumers of information – however, this has changed. Compared to previous technologies that primarily stored and managed access to information, newer technologies have shifted their focus to facilitating connections, communication, and collaboration between individuals. The net now hosts an ever increasing collection of tools (e.g., newsgroups, chat rooms, bulletin boards, blogs, social networking sites, and discussion groups) that support these objectives. As a result, the possibility of one finding others who share a common interest, in an organisation or in a wider network, regardless of its obscurity, and interacting with them on a global scale has never been greater. In fact, of the estimated one billion people who use the Internet (Hof 2005, p. 7-8), more than 84% have used an online community (Horrigan 2001). This has led to the emergence of online communities as an important new organizational form (Lakhani and von Hippel 2003). In addition, the development and maintenance of these communities have begun to play an important part in assisting traditional business organizations achieving their larger strategic objectives (Kim 2000). In the process, these technologies have played a part in transforming the role of users from consumers of information to content producers.



1.1 On line communities

The development of the community oriented technological tools combined with the desire to capitalize on the collective efforts of like-minded individuals has led to the formation of groups, generally known as “online communities.”

1.1.1 Characteristics of on line communities

The meaning of the term online community, as well as what criteria and characteristics constitute one, is a frequent topic of discussion in the literature. Rheingold (1994, pp. 37-38), an early investigator of the phenomena, suggests that a virtual (i.e., online) community is “a group of people who may or may not meet one another face to face, and who exchange words and ideas through the mediation of computer bulletin boards and networks.” Focusing on aspects of the technical network and commonly held objectives, Carroll and colleagues (1996) define an online community to be “a group of people whose communication and collaboration over networks strengthen their shared goals and concerns.” Andrews and colleagues (2003) argue that shared needs, goals, or demographics alone do not constitute a community, but only an audience, in that people within an audience do not share existing social relationships and do not expect to form them. Rather they suggest that online communities are social networks that utilize computer support media as the basis of communication among members. Ridings and Gefen (2004a) define a virtual (i.e., online) community as “groups of people with common interests and practices that communicate regularly and for some duration in an organized way over the Internet through a common location or mechanism.” Finally, Preece (2000) suggests that an online community consists of four key components: 1) people, who interact socially as they strive to satisfy their own needs or perform special roles, 2) a shared purpose, such as an interest, need, information exchange, or service that provides a reason for the community, 3) policies, in the form of tacit assumptions, rituals, protocols, rules, and laws that guide people's interactions, and 4) computer systems, to support and mediate social interaction and facilitate a sense of togetherness. A summary of the various defining characteristics of online communities are presented in Table 1

Authors	Characteristics and criteria
Rheingold (1994)	<ul style="list-style-type: none">• Group of people • May or may not meet • Exchange words and ideas • Computer-Mediated-Communication
Carroll, Laughton, & Rosson (1996)	<ul style="list-style-type: none">• Group of people • Communication and collaboration over networks • Shared goals and concerns
Andrews, Nonnecke, & Preece (2003)	<ul style="list-style-type: none">• Social networks • Computer-Mediated-Communication
Ridings and Gefen (2004)	<ul style="list-style-type: none">• Group of people • Common interests • Common practices • Organized • Communicate regularly • Internet
Preece (2000)	<ul style="list-style-type: none">• People • Shared purpose • Policies • Computer systems

Table 1 Definitions of on line community

The intent of this dissertation is not to add to the past debates in the literature as to what constitutes an online community. Rather the objective of this discussion is to acknowledge these varied perspectives, and to draw on them to define an important aspect of the phenomena of interest. This dissertation adopts Preece's defining characteristics of online communities, as it is arguably the most complete and draws together many of the common characteristics identified in the literature.

1.1.2 Communities types and uses

In the universe of possible online communities there exists significant diversity. This diversity is a result of several factors. First, communities exist both external to and internal to traditional organizations (Armstrong and Hegel 1996).



Secondly, communities are created around their own unique purpose. Next, each has their own leaders, members, social structures, norms of interaction, which facilitate the organization of the community.

Finally, online communities provide their users with a variety of personal and economic benefits (Campbell 2001; Kollock and Smith 1996) from member generated resources. External to traditional organizations, online communities have been organized around a broad range of purposes and activities, such as developing new software applications (Lakhani and von Hippel 2003; Lee and Cole 2003; von Krogh et al. 2003), providing technical support (Smith et al. 1997), executing commerce transactions (Andrews 2001; Chang et al. 1999), communicating information about financial investments (Campbell 2001; Porak 2001), and discussing hobbies or health issues (Preece and Ghazali 1998). Online communities also represent a growing phenomenon within organizations.

Businesses are increasingly making significant investments in infrastructures to support online communities for their employees, customers, and other stakeholders. Within traditional organizations, online communities have been used to support knowledge management and organizational development efforts (Borgatti and Cross 2003; Goodman and Darr 1998; Lee and Cole 2003; Storck and Hill 2000), enable knowledge sharing between suppliers and customers (Hagel and Armstrong 1997), and facilitate brand focused communication amongst customers (e.g., Bagozzi and Dholakia 2006; Luedicke 2006; Watson 1997). With the purpose of online communities spanning from information gathering to social interaction and the management of communities being either internal or external to traditional organizations, one potential taxonomy of online communities is illustrated in Figure 1. The purpose of this high level typology is to provide the reader with an illustration of the diversity of communities that exists.

	<i>External</i>	<i>Internal</i>
<i>Informational</i>	Open Source Development (opensource.org) Wikipedia (Wikipedia.org) Technical Support (techsupportforum.com)	Product Development Communities of Practice (tomoye.com) Employee Management (taleo.com)
<i>Social</i>	 Health Support (mdjunction.com) Social Networking (myspace.com, facebook.com) Personal Interests (hdtaaking.com)	 Employee Networking (Nissan's "N-Square", mzinga.com)

Figure 1 Typology of on line communities

This typology is presented with a focus on parsimony, opposed to completeness and complexity, and it is not intended to be all inclusive. For example, another dimension that could be added to this typology is the technological platform on which the community runs. However, as with the definition of online communities, the development of a comprehensive typology is not the focus of this dissertation. The specific site studied in this dissertation is a non-organizational based, social interaction-focused, bulletin board based discussion community. However, the arguments are developed so that the findings from this research should generalize to other types of online communities.

1.1.3 Participation as core Challenge for Online Communities

Some community-oriented ventures, such as MySpace and Wikipedia, have been able to achieve extreme levels of notoriety, or success as determined by the number of active members engaged in persistent dialogue (Preece 2001). However this is not the norm as online communities typically struggle to remain sustainable (Butler 1999; Crowston and Scozzi 2002), unable to continue to provide benefits and resources to members over the long term (Butler 2001b). Regardless of the purpose or type, an online community's chance for sustainability is heavily dependent on one factor – *the participation of individuals*.



It is the social interactions associated with various forms of community participation (e.g., serving as a pool of resources, creating content, shaping of community norms) that lead to the development of community resources (Wasko and Faraj 2005b). In turn, it is the ability to develop these resources that influence a community's ability to attract and maintain a membership base (Butler 2001b), which ultimately impacts its viability (Butler et al. 2007). For this reason, obtaining a solid understanding of member participation, and the factors that influence it, remains an important issue in the area of online community research.

1.2 OVERVIEW ON PARTICIPATION

The prevalence and growth of the online communities, coupled with the particular challenges associated with these systems, has attracted the attention of practitioners and researchers from a broad range of disciplines. Due to its key role in influencing the success (or failure) of online communities, a primary focus of inquiry in the literature has been – “Why do individuals participate in an online community?”

Work associated with this question has tended to examine this issue from one of two perspectives. The first, and arguably larger body of work, equates participation with content contribution (i.e., sharing content resources). The focus of this stream has been identifying the motivational factors, both intrinsic and extrinsic, that affect individuals' decisions to contribute in online communities. The second stream of research seeks to understand the member community relationship.

1.2.1 Contribute motivations

Communities do not solely depend upon providing access to information, but rather both the access to and contribution of content (Armstrong and Hegel 1996). Created and maintained by a collection of individuals, the content of online communities is subject to a public goods dilemma (Kollock and Smith 1996). First, consumption of the public goods (i.e. content) by one individual does not decrease the accessibility or amount of resources available for use by others. Secondly, it is impractical, or undesirable, to prevent people from utilizing the goods, even if they do not contribute to them. While accessing and using the content resources of a community is a relatively costless transaction for individuals – contributing content is not.



Should an individual decide to contribute content to a community, one incurs costs in the form of time, effort, and energy and there may not be any readily apparent direct benefits for individual contributors (Connelly and Thorn 1990). Due to the open and freely accessible nature of the online community content, individuals can benefit from the communities resources, while avoiding the costs associated with contribution. Ultimately, this leads to an issue of free-riding, or under contribution, which poses problems for communities reliant on ongoing contributions.

However, while free-riding does occur, people do in fact contribute content to online communities. One reason for this is that aside from the informational benefits, such as access to others' beliefs and opinions (Herring 1996) and expert advice (Lampel and Bhalla 2007), associated with access to a community's resources (Lakhani and von Hippel 2003; Lee and Cole 2003), there are a variety of indirect benefits that individuals receive when contributing to online communities. For example, contribution has been found to provide individuals with an increased positive self-image (Constant et al. 1994), increased confidence in their knowledge (Wasko and Faraj 2000), and increased reputation and to create personal satisfaction from being perceived as a valuable community member (Lakhani and von Hippel 2003). Furthermore, online reputation benefits can also translate into offline benefits, such as new professional contacts (Christensen 2003) or improved professional status (Hall and Graham 2004; Lerner and Tirole 2002). The pursuit of these benefits intrinsically motivates members, leading them to willingly incur the costs associated with contributing content to the community.

Another sub-stream of research proposes that in addition to individual oriented factors driving (or hampering) contribution, a range of pro-social factors that reflect a desire to act for the greater good of others or the community have been identified by previous work. For example, individuals contribute content when they believe it helps the community reach its collective goals (Constant et al. 1994; Constant et al. 1996) or contributes to the community's continued existence (Wasko and Faraj 2000) or when they have feelings of reciprocity (Constant et al. 1994; Hall and Graham 2004; Wasko and Faraj 2005a), altruism (Lakhani and von Hippel 2003; Wasko and Faraj 2000), or empathy (Preece 1999; Preece and Ghazali 1998). Furthermore, community level benefits such as the positive feelings associated with openness, co-operation, loyalty, trust, and camaraderie have been associated with contribution behaviours (Hall and Graham 2004).



These factors and benefits associated with the community at large extrinsically motivate members, driving them to contribute content to the community.

This body of research has identified a variety of factors that help to motivate individuals to contribute to online communities. A summary of motivational factors that have been found to influence members' content contribution behaviours are presented in Table 2

PARTICIPATION	
Individual	Pro-social
• Free-riding (Kollock and Smith 1996)	• Reciprocity (Constant et al. 1994; Hall and Graham 2004; Wasko and Faraj 2005)
• Positive self-image (Constant et al. 1994)	• Altruism (Lakhani and von Hippel 2003; Wasko and Faraj 2000)
• Confidence in knowledge (Wasko and Faraj 2000)	• Empathy (Preece 1999; Preece and Ghazali 1998)
• Reputation (Lakhani and von Hippel 2003)	• Co-operation, loyalty, trust, and camaraderie (Hall and Graham 2004)
• New professional contacts (Christensen 2003)	• Collective goal (Constant et al. 1994; Constant et al 1996)
• Improved professional status (Hall and Graham 2004; Lerner and Tirole 2002)	• Community's continued existence (Wasko and Faraj 2000)

Table 2 Motivations to participation

1.2.2 Community relationships

Another stream of research that considers the nature of online community participation examines in terms of factors related to members' relationship with the community. Drawing on established work on group formation (e.g., Moreland and Levine 1982), the focus of this stream has been to understand the role of socialization processes that occur once an individual has become a member, which facilitate the development of a member-community relationship. The role of online socialization has been studied in various contexts, such as virtual groups (Ahuja and Galvin 2003), open source communities (von Krogh et al. 2003), and support groups (Galegher et al. 1998; Turner and Fisher 2006).



It has been argued that socialization processes are key to moving new members through the many stages of community member development (e.g., Kim 2000). Specifically roles, rules, norms, and values have been found to be important factors in the socialization process of new members (Burnett and Bonnici 2003; Chiu et al. 2006; Postmes et al. 2000). Additional research has sought to identify the different types of relationships an individual can develop with a community (Kim 2000; Ridings and Gefen 2004a), as well as to see if individuals develop a sense of community (Ballantine and Martin 2005; Blanchard and Markus 2004). A summary of factors influencing the member-community relationship are presented in Table 3.

Member-Community Relationship	
• Types of relationships (Kim 2000; Ridings and Gefen 2004)	
• Develop a sense of community (Ballantine and Martin 2005; Blanchard and Markus 2004)	
• How relationship develops (Moreland and Levine 1982, Galegher et al. 1998, , Kim 2000, Ahuja and Galvin 2003, von Krogh et al. 2003)	
• Role of rules, norms, and values (Burnett and Bonnici 2003; Chiu et al. 2006; Postmes et al. 2000)	

Table 3 Member-community relationship

This body of research has largely focused on understanding the processes that influence and shape the development of members' relationship with the community. Participation is seen as a means through which behaviours are modelled, norms and values are communicated, and as the basis for a relationship to be established and built; however, this stream of work has not examined how this member-community relationship, once established impacts members' participation activity within the community.

1.3 CRITICAL ISSUES

Previous research efforts have produced a body of literature aimed at understanding member participation in online communities, such as members' self-oriented or pro-social motivations, as well as their relationship with the community. While this work has contributed to our collective knowledge of the online community phenomena, there still remain unexamined aspects of community participation that require additional inquiry.



Focusing on existing gaps in the literature contributes to a more complete understanding of activity in online communities.

1.3.1 Participation

One key limitation of the online community participation literature is that it has largely focused on just one form of community participation – content contribution. However, it has been estimated that 90 percent of all individuals who utilize online communities infrequently, if ever, contribute content (Katz 1998; Nonnecke and Preece 2000; Nonnecke and Preece 2001; Nonnecke and Preece 2003). Additional estimates have suggested that 90% of the contributions in online communities are by little more than 5% of the members (Butler et al. 2007). As such, one limitation of a content contribution view of participation is that it does not reveal much, if anything, about why and how the overwhelming majority of online community users interact within the community.

Research into understanding participation in open source software communities has identified a variety of roles that individuals perform in order to sustain the open source initiative. For example, leaders that organize projects (Raymond 1999), developers that contribute code (Hertel et al. 2003; Mockus et al. 2000), users who report bugs (Crowston and Howison 2006), individuals that provide support or those that create documentation (Lakhani and von Hippel 2003). An important differentiation of participation in the open source context is the performances of various forms of participation have unofficial prerequisites associated with them. For example, in order to participate by contributing code, individuals must possess the appropriate knowledge or experience in order to do so (Sonnenstag 1995). As such, even if one desires to engage in this form of participation, they are not capable of doing so. Additionally, for many open source communities individuals must provide the community with evidence of their technical competence and dedication to a project before being allowed to engage in certain roles (von Krogh et al. 2003). Furthermore, it may not be desirable for open source community members to engage in a broad set of participatory behaviours or have too many individuals to be involved with the project (Wayner 2000), but rather have fewer that specialize (von Krogh et al. 2003) for the success of the community.



While this literature has identified a broad set of behaviours that constitute participation within open source communities, these perspectives still largely focus on participation as contribution – contribution of organization, of code, or assistance. This contribution focus is likely attributable to the nature of these communities, as they are related to the development of a clearly identifiable and definable project (Lerner and Tirole 2002), which are dependent on the creation and contribution of specific public goods (e.g., shared code). These aspects of open source communities represent potentially significant barriers to the ability of individuals to engage in a wider set of participatory roles, as not everyone has the ability to participate how they would like, even if they have the motivation to do so. Arguably, these boundaries to participation are not as immutable, or important, in social oriented communities, thus allowing, even encouraging, individuals to take on broader forms of participation needed for these types of communities to succeed.

While the creation of content is important, focusing exclusively on content contribution overlooks other aspects of community participation, which play an essential part in growing and maintaining a community (Butler 2001b; Hall 2001; Williams and Cothrel 2000). For example, solely equating participation with content contribution neglects members' roles as audience members (i.e. readers of content). If members do not regularly read the content that others provide the community will not remain viable (Butler et al. 2007). Audience members signal to others that the community has a critical mass of individuals who are prepared, and potentially willing, to answer questions, engage in conversations, and establish social bonds (Markus 1990). Furthermore, community identity and personal relationships are constructed through the messages that members send and read (Butler et al. 2007). Finally, a strict content oriented perspective on participation overlooks the crucial role of member created, communicated, and regulated norms in the success of an online community (Kim 2000; Preece 2004). Members communicate and illustrate the embodiment of these norms when they participate within the community, which help shape member interactions within the community. However, these forms of community participation are not well explained in a content contribution conceptualization of participation.

For these reasons, rather than understanding the diversity of activities that exists in communities, what is known about participation in online communities is limited due to the focus on only one form of participation, which is performed by a minority of members. This creates several potential limitations for both theory and practice.



For example, because participation has been conceptualized based on a single type of community participation (i.e. content contribution), ideal members are characterized as individuals with high resource sharing tendencies. Furthermore, content contribution alone is not sufficient to sustain online communities (Butler et al. 2007). Hence, selecting members purely on this

basis may not be sufficient to create a viable online community. However, before making recommendation to administrators as to what other types of individuals, or behaviours they should target, we need to determine what these behaviours are. For these reasons, a broader understanding of the complimentary forms of community participation that must exist in online communities is a necessary ingredient in the efforts to understand, develop, and maintain these increasingly valuable socio-technical systems.

1.3.2 Joining for participation

The number of members a community has affects its sustainability over time (Butler 2001b). In fact, member turnover is a measure commonly used by community administrators to assess the health of their community (Johnston 2007). One reason for this attention is that the high rate of member turnover is a frequent challenge to online communities in achieving their objectives. As such, online communities are heavily reliant on their ability to attract new members to neutralize the loss of members (Lampe and Johnston 2005). As with groups, for online communities to be successful and sustainable, they must be able to attract and retain members (McGrath 1984).

While current research has identified a variety of factors that influence participation, it largely tends to take the presence of these members and their awareness of the community as a given. While the point of formally joining a community is identified as the start of being socialized into a community (Kim 2000), a potential gap in the literature of online communities is how aspects associated with the process of community joining (i.e., how a member comes into the community) impact a member's participation in the community. Online communities can be conceptualized as virtual spaces embedded within networks of individuals (Garton et al. 1999). Using this perspective, one aspect of community life, member referrals, where existing members recommend the community to individuals with whom they have existing ties but are not already members of the community, becomes particularly salient.

The presence of a pre-existing connection can serve as a conduit for information and influence, which can impact how an individual becomes aware of, joins, and ultimately, participates in the community.

1.3.3 Impacts of Relationship on Participation

As discussed, an extensive stream of work has studied participation, specifically content contribution, in online communities. This stream has largely focused on individual-oriented motivational factors (e.g., free-riding, benefits, altruism) as the basis for understanding contribution. A separate stream in the literature has attempted to understand the factors related to the member-community relationship, without specifically looking at content-oriented forms of participation. However, there currently exists a gap in the literature between these two bodies of work, illustrated in Figure 2, as the influence of members' relationship with the community on their performance of various forms of participation has not been examined.

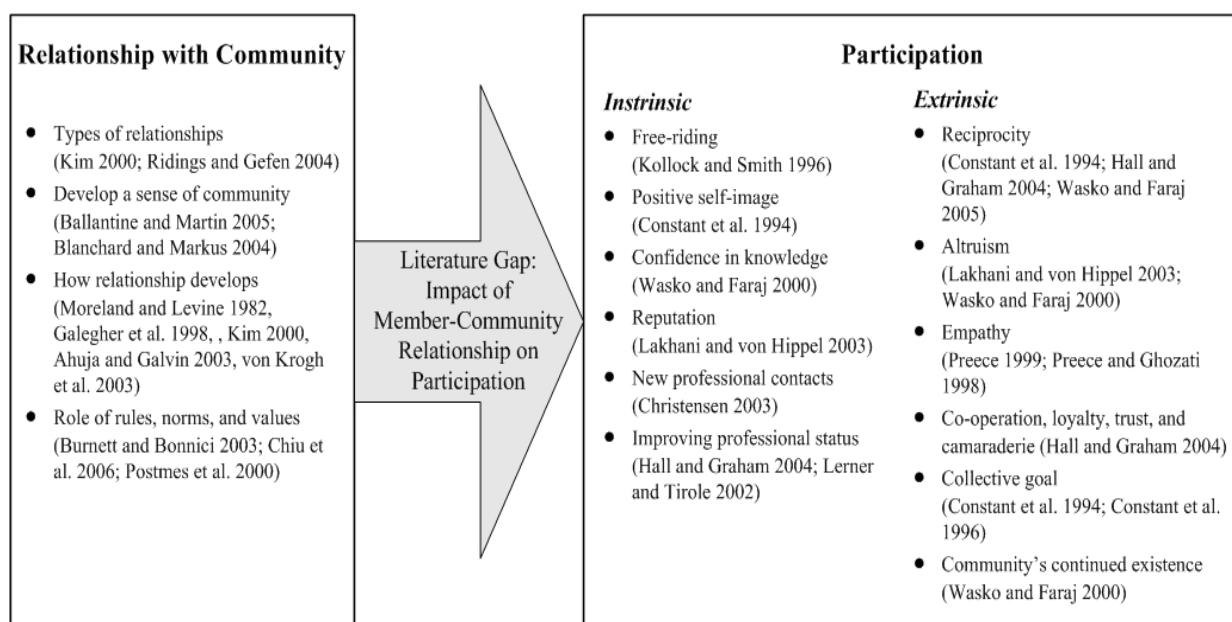


Figure 2 Relationships and community participation

The contributions of these two streams independently suggests that research aimed at filling this void, by studying how the member-community relationship impacts community participation, could make a contribution to both online community theory and practitioners.



1.4 Architecture of the research

The primary purpose of this dissertation research is to extend our understanding of factors underlying participation in online communities, and through this, reveal key processes that shape online communities. In particular, the research program associated with this dissertation is designed to specifically address each of the identified limitations and gaps in the literature previously discussed, including the examination of: a broader set of behaviours that constitute participation, the impact of joining processes and the community-member relationship on member participation. To accomplish this objective, this dissertation includes a two part empirical study of a range of participation behaviours (including content provision, content seeking, and community citizenship behaviours) in online communities. Each study extends existing research on online communities by examining a different previously unstudied aspect of participation: participation as joining (member referrals) and participation as an individual community relationship (commitment).

The theoretical background, hypotheses, methodology, and analyses related to each part are developed and presented in separate chapters (chapters 2 and 3). Data to test the research models in this study was collected at BroadForum¹, an online community which had, during its 22 months of operation prior to the start of the study had amassed approximately 50,000 registered members and 3.4 million posts. It is promoted as a “general discussion” community with the goal of supporting social conversation among a diverse group of members. Further details related to the procedures used and specific data collected from this research location is provided in the methodology sections in the related chapters. The dissertation concludes with a discussion of the overall findings of this research project (chapter 4), its implications for online communities’ research and practice, and directions for future work.

¹ Pseudonym



1.5 CONCLUSIONS

The overarching objective of this dissertation is to further extend the collective understanding of participation in online communities by conducting research that builds upon what is already known, while aiming to address existing limitations and gaps in this literature. Community sustainability ultimately depends on the continued participation of individual members (Wasko and Faraj 2000; Williams and Cothrel 2000); however, this participation must be more than just content contribution, as other forms of community participation also play a significant role in sustaining a community. Hence, it is necessary to understand how they, and the factors driving them, interact and interrelate. Furthermore, the understanding of participation in online communities can be further developed by adopting alternative perspectives to theorize participation, which highlight aspects of participation other than just resource oriented content contribution. Towards this end, this dissertation examines two aspects of online communities, joining and commitment, in developing a two part study to examine a broader range of community participation behaviours. It is expected that this work will expand our understanding of factors underlying participation in online communities, and through this, further reveal key processes that shape communities' members, content, and inner-workings. This new knowledge can provide community administrators with a new perspective on their members, which may help them to focus their efforts on strengthening their community. Specifically, administrators may be able to stimulate the performance of various types of participation by managing how members come into the community, especially through member referrals that impact joining or influencing the individual-community relationship commitment.

This new knowledge can be used to shape effective knowledge management models and systems and be a corner stone for intangible assets valorisation.



JOINING A COMMUNITY: HOW WOM² INFLUENCE PARTICIPATION

Communities are often faced with challenges associated with attracting and maintaining a membership base, which affects their ability to develop a pool of resources and ultimately impacts their sustainability (Butler 2001b, p. 34). A potential resolution to this challenge lies in the members of the community referring non-members to the community (i.e., member referrals). Drawing upon theories of WOM from marketing and organizational behaviour, the study presented in this chapter argues that several factors associated with referrals create benefits for the community. These factors include access to a pool of potential members that might be predisposed to like the community, the information flow supported by the pre-existing connection between the referrer and the referee, and the model behaviour that the referee is able to observe from the referrer. Using archival data from a large discussion based online community, it is found that, on average, referred members return to the community more frequently after they join, have longer tenures with the community, and more actively participate, engaging in content seeking and content contribution behaviours more heavily than non-referred members.

2.1 Introduction

The emergence of technologies aimed at helping people connect, communicate, and collaborate coupled with individuals' desire to interact with like-minded others has lead to the formation of a wide variety of online communities (Preece 2001). These communities support a broad range of activities, such as open source software (Lakhani and von Hippel 2003; Lee and Cole 2003; von Krogh et al. 2003), technical support (Smith et al. 1997), financial investing (Campbell 2001; Porak 2001), health issues and support, and hobbies (Preece and Ghazali 1998). These interests represent a minute sampling from the universe of available discussion topics found in online communities.

The popularity and prevalence of communities has led to the creation of competing communities that are organized around similar topics of interest and offer users comparable benefits (Wang et al. 2006).

² WOM (Word of Mouth)



Despite these similarities, communities are able to create their own uniqueness due in part to their specific members, leaders, social structures, and norms of interaction. At first blush, the abundance of available alternatives for potential members may be perceived as a favorable situation. As online communities have been used by over 84 percent of Internet users (Horrigan 2001), the possibility of one finding others who share even an obscure interest and interacting with is great. Given a population of users with diverse interests and a universe of accessible communities there is potentially a community for everyone.

However, finding the right community may be challenging if the high member turnover rates typical to online communities are any indication. While some community-oriented ventures have been able to achieve extreme levels of success (e.g., MySpace, Facebook, and Wikipedia) success is not the norm (Butler 1999; Crowston and Scozzi 2002). Rather, communities commonly confront challenges associated with maintaining a membership base (Butler 2001b). This is one reason why member turnover has become a key metric commonly used by community administrators to assess the health of their community (Johnston 2007). Due to the high turnover rates typical to online communities, they find themselves heavily reliant on their ability to attract new members to stave off the widespread loss of members (Lampe and Johnston 2005). While a reliance on attracting new members is one strategy for dealing with the issue of high member turnover, a complementary approach might be to focus on reducing attrition rates.

These challenges are not new to online communities; nor are they a particularly new area of inquiry for community researchers. In fact, over the past decade a rich body of research aimed at better understanding the dynamics of member activity and turnover within online communities has been developed. For example, work on member socialization (e.g., Ahuja and Galvin 2003; Burnett and Bonnici 2003; von Krogh et al. 2003) has sought to identify how members learn the rules and norms of the community. Work on content contribution has identified a variety of factors that lead members to contribute content (e.g., Andrews 2002; Barreto and Ellemers 2002; Constant et al. 1996; Hall and Graham 2004; Jeppesen and Frederiksen 2006; Preece 2001; Wasko and Faraj 2005b; Wiertz and de Ruyter 2007). Yet despite these efforts, continued participation and turnover remain core challenges to online communities (Johnston 2007).



One potential limitation of this body of work is that it has largely sought to understand participation by examining factors that influence an individual once one becomes a member. However, this work has overlooked the possibility of the influence of factors that are exerted prior to the moment of membership. For example, some sources of information about the community available to potential members could be more accurate, or influential, than others. As such, how a potential member becomes aware of the community might affect what one knows about the community prior to joining. Ultimately, when an individual decides to join, this may possibly influence their participation within the community. For this reason, a better understanding of pre-membership influences should be examined to determine their impact.

Online communities can be conceptualized as virtual spaces embedded within networks of individuals (Garton et al. 1999). While much attention has been paid to the development of behaviours and social networks *within* a specific online community, members also have preexisting ties with other individuals outside the boundaries of the community. Using this perspective, participation in a community may be influenced by members' contacts outside of the community. If accessible, these pre-existing ties could be an untapped resource for community administrators who are seeking to develop their communities. One such method for activating these ties is via member-based word-of-mouth, which can increase the awareness of the community among potential members. The word-of-mouth process can lead to member referrals, a process in which existing members recommend the community to individuals with whom they have contact outside the community. While the importance of referrals for online communities has been highlighted in practitioner-oriented work (e.g., Kim 2000), these discussions of recommendations and their implications have been based largely on anecdotal evidence. At a minimum, referrals are good for a community because they serve as an additional way of introducing more people to the community. While this may be true, it only suggests that referrals are useful for increasing community size.

On one hand, recommendations to tap into members' personal networks seem to run counter to the search oriented, wide open nature of the Internet. Generally, the content of online communities is freely accessible to anyone to view, regardless of membership status.



The availability of a community's archived activity, coupled with the ability to explore these resources with the use of a search engine, allows potential members to read content and make judgments about the community for themselves. This would seem to reduce the need to rely on members' external relationships.

On the other hand, there is reason to expect that referrals might be beneficial not just because they get additional members, but because of who and how they get them. The impersonal nature of search tools may leave open the opportunity that a personal referral can provide a significant channel for information and influence due to the nature of the referral relationship. The true impact of referrals on shaping online communities and member's participation remains largely unexamined. As such a better understanding of member referrals on participation is needed.

To obtain a better understanding of the impact referrals have on shaping online communities, several key aspects of community joining need to be examined. First, aspects of the community joining process needs to be conceptualized. Second, the potential impact of aspects associated with the joining process on participation must be theorized. Third, it is empirically necessary to determine if referred members are more active than non-referred members with respect to their participation in the community. In addition, due to the importance of member turnover, determining the association between referral and tenure is important to understand. Answering these empirical questions both tests the theoretical ideas and provides useful information for community managers that wrestle with attracting and maintaining active members (Butler 2001b; Hall 2001; Williams and Cothrel 2000).

To examine these research questions, this chapter first considers the nature of online community participation, highlighting two classes of essential community activity: content provision and content seeking. Next, a process model linking community joining and participation is developed. Then, drawing upon literatures from marketing and organizational recruiting, where referrals have been found to play an important role, several key mechanisms underlying member based word-of-mouth referrals are discussed. These discussions lead to the development of a set of propositions and hypotheses, which test specific predictions about how interpersonal referrals will significantly impact the performance of community behaviours in online communities.



The hypotheses are then tested with archival data from a well-established discussion-based online community. The chapter closes with a discussion of the results, implications for research and practice, and areas for future research.

2.2 ONLINE COMMUNITY PARTICIPATION

To describe the impact of referrals we must begin by considering a central aspect of online communities, member participation. Regardless of their specific purpose, all communities ultimately rely on individuals' continued participation in order to remain sustainable entities (Wasko and Faraj 2000; Williams and Cothrel 2000). For this reason, much of online community research has focused on understanding the factors that motivate participation, specifically, content contribution (e.g., Andrews 2002; Barreto and Ellemers 2002; Constant et al. 1996; Hall and Graham 2004; Jeppesen and Frederiksen 2006; Preece 2001; Wasko and Faraj 2005b; Wiertz and de Ruyter 2007). Prior work³ has identified several motivating factors, such as the belief that contributing content helps the community reach its collective goals (Constant et al. 1994; Constant et al. 1996) or contributes to the community's continued existence (Wasko and Faraj 2000).

2.2.1 Participation modalities

The focus on individual motivation and content contribution as the defining characteristic of community participation is not without its limitations. The resource based view of online communities (Butler 2001b) posits that having many sources of resources available alone is not sufficient to sustain a community. According to this view, it is also necessary for the pool of available resources to be transformed, through conversation, into benefits. Due to the need to convert contributions into resources instead of solely generating contributions, communities need people to contribute information, time, effort, and energy to transform the resources in the form of content contribution into benefits. In other words, there is more to participation than just content contribution as performing this transformation requires a broader set of behaviours (Kim 2000), such as partaking in persistent public discussions (Figallo 1998; Rheingold 1994) within the community.

³ For a review and summary of this work, refer to Chapter 1, Section 1.2

Conversations are not something that simply occurs within an online community – they are the mechanism by which the community is built and perpetuated (Bishop 2007; Bregman and Haythornthwaite 2003). New content emerges as long as members continue to communicate (Golder and Donath 2004), attracting new members who in turn provide more content to sustain the conversation (Hagel and Armstrong 1997) adding to a community's resources. Through these conversations benefits, such as providing members with social support and friendship (Ridings and Gefen 2004b), emotional support (Blanchard and Markus 2004), access to others' beliefs and opinions (Herring 1996), or expert advice (Lampel and Bhalla 2007), are able to be realized by members. In other words, it is members participation in a community's ongoing conversations through which community resources are created and benefits are able to be provided (Arguello et al. 2006).

Consistent with the idea that conversation is central to the functioning of online communities, online community researchers have described a range of conversational behaviours (e.g., Brush et al. 2005; Etzioni and Etzioni 1999; Turner et al. 2005; Williams and Cothrel 2000). Two key conversation oriented forms of participation frequently discussed in the literature as being important for the viability of online communities are content provision and content seeking, illustrated in Figure 3

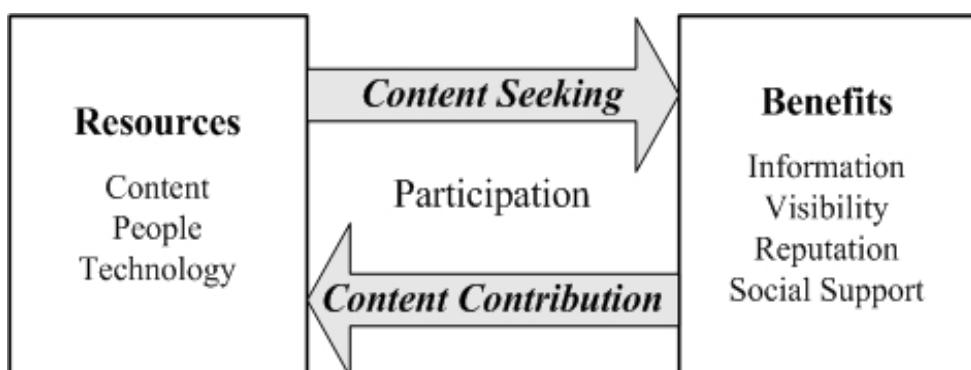


Figure 3 Participation analysis



2.2.1.1 Content Provision

While individuals are initially drawn to online communities by a desire to interact with like-minded others (Connelly and Thorn 1990; Wasko and Faraj 2000), whether they return is significantly influenced by the quality of the content available through a community (Armstrong and Hegel 1996; Lakhani and von Hippel 2003). Content provision is the behaviour by which a member contributes valuable resources in the form of posting information and/or knowledge for public consumption. As part of the resource-benefit creation cycle, content provision behaviours are arguably one of the most important behaviours performed by online community members. High-quality messages, discussions, and archives are crucial. Yet, because this content comes from individuals who stand to benefit from others' contributions but not necessarily their own (Connelly and Thorn 1990), the issue of under-contribution arises (Kollock and Smith 1996). Members' decisions to contribute timely, high-quality content are vital to an online community's success or failure (Lee and Cole 2003; von Krogh et al. 2003). Content provision can take a variety of forms, such as answering another member's questions, providing useful information, or adding comments to existing conversation threads.

2.2.1.2 Content Seeking

While the creation of content is essential to a community's success, it is only one side of the communication equation; communities would not exist without members who visit and spend time reading each others' contributions. Content seeking behaviours are the activities by which an individual consumes (i.e., reads) the content made available in a community. Having many members who frequently visit a site signals to others that the community is active and vibrant, with a critical mass of like-minded individuals (Markus 1990). It also suggests that others have implicitly affirmed the value of the community by investing their own time in consuming its resources, and that there is a population of others to engage in conversations and establish social bonds with. Although those who read without contributing are often perceived as a resource drain on a community, or free-riders, reading content is an important aspect of community life.

Members are unlikely to expend effort to contribute content if they do not believe it will be utilized (Hall 2001); an audience is therefore necessary to motivate individuals to contribute. Individuals also learn more about others as they consume their content, which can stimulate interactions, build social bonds, and make future conversations more interesting and sustained (Bagozzi and Dholakia 2002). Because content seeking behaviours act as stimuli for content provision behaviours, they are integral to the long term community viability.

While content provision and content seeking are conceptually distinct forms of participation, they represent distinct, but important ways that members can be actively involved in the community, summarized in Figure 4.



Figure 4 forms of community participation

2.2.2 Participation Process Model

Online communities are dynamic systems from which resources are created and benefits emerge as a result of the ongoing participation of its members. In order to describe the ongoing relationship of members with a community, work on individual-group relationships is drawn upon (e.g., Carley 1991; Turner 1988). Member participation and ongoing involvement with a community can be conceptualized as a three stage cyclical model of individual actions (Butler 2001a) consisting of: learning, action, and participation, as illustrated in Figure 5

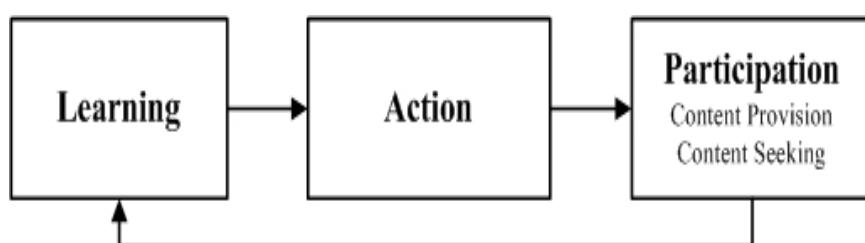


Figure 5 Model of participation (adapted from Turner 1988)



Based on work in the individual-group socialization literature, the learning stage is when individuals assess their expectations as to the costs and potential benefits they stand to realize by being a member of a group (Moreland and Levine 1982). Observing the current conversation of the community provides information about the community. Individuals' interests influence whether or not the conversational-based content of the community could provide potential benefits to them. Participation is a costly activity for members to engage in, incurring time, effort, and attention costs for both the content seeker (e.g., search costs, processing messages) and content provider (e.g., composing a useful reply) behaviours. In the action phase, individuals use the assessment from the learning stage to decide if they are going remain as a member of the community. In the participation phase, individuals decide whether they are willing to actively participate in the community, choosing whether to incur the associated costs based on their expectations of the benefits or not. This participation leads to the emergent nature of online communities, in that the content and conversations in a community are non-static and continuously change over time. However, this decision process is ongoing and cyclical in nature as members must continually learn about the community as they are exposed to new conversations (i.e., posts, messages) and make decisions about their continued involvement with the community. This three phased process drives an individual's assessment of the expected costs and benefits associated with future participation and is based on knowledge about the community is a basis of an individual's decision to participate in the community.

2.3 JOINING AND PARTICIPATION

The resource based view of online communities (Butler 2001b) posits that the perceived value of benefits a community can offer is a primary factor in new members' evaluation of a community. The process model of participation highlights that the decision to participate in a community is not a singular decision, but rather a process; it has the implicit assumption that not only does an individual possess an awareness of the community's existence, but also that one is already a member of the community. Consistent with existing perspectives on participation, this perspective only explains a members' behaviour once in the community.

The process model of participation does not account for how participation decisions might be influenced by aspects that are exerted prior to the moment of membership.

2.3.1 Community Joining

Joining the community is the point at which an individual becomes a member of the community. Membership is defined as formal registration with the community, which provides a member the ability to engage with the community infrastructure (i.e., technology, content, and members). Members are exposed to the conversations generated by other members of the community in that they read messages and have the ability to contribute (but do not necessarily have to contribute a message). This behavioural definition of membership was selected over the psychological definitions often considered in studies of communities (e.g. Roberts 1998) as many of the organizational benefits of communities (e.g. knowledge transfer, social support, information awareness) are predicated on the assumption that individuals can engage in, or at the very least are exposed to, the community's conversations.

While benefit evaluation may be an important factor in the decision to engage a community, this abstract perspective costs and benefits does not fully account for the processes involved in becoming aware of, and ultimately, joining a community. One way to understand this aspect of community life is to view membership choices in a community similar to that of an adoption or purchase decision in which a product's benefits are weighed against its costs (Ratchford 1982). These types of decisions are not an isolated choice whether or not to adopt/buy, but rather, they are the result of a series of steps involving the awareness of, interest in, evaluation of, and decision to use a product or service (e.g., Bruyn and Lilien 2004; Rogers 1962), as illustrated in Figure 6

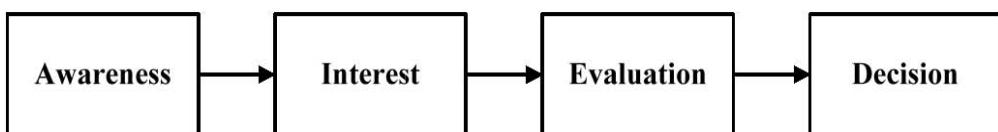


Figure 6 Model for community joining



In the *awareness* stage, an individual first learns that the community exists, but may not have interest in the community or not yet have enough information about the community to determine if they have an interest in or understanding of the potential benefits the community can offer. In the *interest* stage, an individual has already obtained an awareness of the community and develops a curiosity in the community that leads them to learn more about it. The next step is the *evaluation* stage. In this stage a potential member has obtained enough information about the community to determine if it potentially fits his or her needs and offers enough potential benefits that the individual might consider formally joining the community; however, the individual has yet to make a decision with respect to this. The final stage is the *decision* stage where the individual takes an observable action related to membership in the community, such as deciding to register and become a formal community member⁴. The processes are thought to be hierarchical in nature, in that each decision stage is conditional on the previous stage. Although, the stages can occur concurrently should an individual become aware through exposure to a very persuasive source (e.g., an enthusiastic peer) (Bruyn and Lilien 2004).

2.3.2 Process Model of Joining and Participation

While a process model of community joining identifies several key stages that lead to membership, alone it does not fully reflect the ongoing nature of community membership as the decision to join an online community differs from a typical purchase or adoption decision in several key ways. First, with a typical purchase/adoption decision, the characteristics of the product are generally known and, more importantly, are expected to remain unchanged after the decision has been made. Contrarily, online communities have greater uncertainty as they are not built as clearly defined, stagnant systems.

⁴ Based on an individual's assessment of the potential benefits a community has to offer, the result of the decision stage may be that a member decides not join the community as a formal member. However, individuals can easily surf from community to community seeking whatever information is available, and then moving on in search of better resources. The focus of this study is to understand the members (i.e., registered members) of a community, or those users that have the ability to fully participate in the community. As such, non-registered users of a community site are not part of the current inquiry.

Rather, the characteristics of a community, such as its size, focal interests, capabilities, and membership demographics, that impact decisions emerge and change over time through the interaction of individuals' ongoing decisions and actions within the community (Brown and Duiguid 1991; Butler 2001a). A second important distinction is that unlike purchase/adoption decisions, the membership decision is not a singular, one-off event, nor is it the final decision an individual will make with respect to their participation (i.e., content provision and content seeking) in the community. Rather the membership decision marks the start of a series of ongoing decisions related to one's participation in the community. A more complete model of online community participation can be obtained by integrating the process model of community joining derived from the adoption and purchase decision literature (summarized and illustrated in Figure 5) combined with the process model of participation once a member is in the community derived from the existing online communities literature and prior studies of social group engagement (summarized and illustrated in Figure 4). Integrating these two process models leads to the creation of a model of community joining and participation (illustrated in Figure 7).

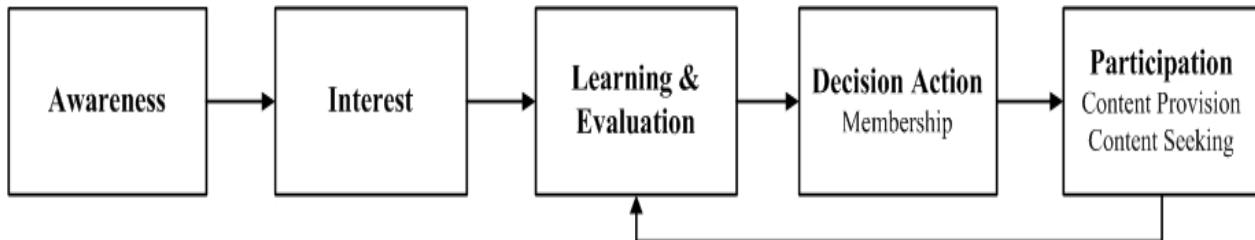


Figure 7 model of community joining and participation

The inclusion of joining processes, and specifically the awareness and interest stages, in a model of community participation has not occurred in existing theoretical explanations of participation (e.g., Butler 2001b; Wasko and Faraj 2000; Wasko and Faraj 2005a). However, the integrated model of joining and participation suggests that the stages related to the introduction of a member to the community can have an impact on participation process. Joining is a learning process – potential members gather information, form impressions, and make decisions. Participation is learning process, not just an automatic economic decision. How the learning processes progress, potentially influenced by the type and sources of information, affect process outcomes.



As such, aspects of the joining process can affect the participation behaviours of individuals once they become a member of the community. Therefore, achieving a better understanding of the influential aspects at the earliest stages of community life has the potential to add to the knowledge of the dynamics of community participation.

2.4 OTHER JOINING MECHANISMS

Traditional organizations tend to recruit members either through formal advertising or informal social mechanisms (Granovetter 1995; Morehart 2001). In the context of online communities, these general strategies still exists, but they take on new forms. As in their ongoing campaign to attract potential members, online communities have two typical methods available to them Internet search and member referral, a particular form of word-of-mouth. While each of these methods might serve as a tool to increase the number of members in a community, perhaps more importantly, the proposed process model of joining and participation suggests these methods might affect how members participate in the community.

2.4.1 Web Search

The visibility of a community's content to non-registered members (i.e., guests) is a design choice made by community owners/administrators. Typically, the content resources of an online community are freely available for anyone to see without becoming a registered member. This gives potential members the ability to partially assess the potential benefits of a community. One common means communities can support the joining process, influencing a potential member's awareness, interest, and learning about the community, is by facilitating Internet search.

Internet search relies on a potential member having a need (e.g. informational, support, companionship) in a certain topic space (e.g., anime, technology, health issue). Using a search engine, an individual looks for an online resource (e.g., internet site and/or community) that could be a potential match with ones interests. Search results may provide an individual with a variety of suitable alternatives, many of which can provide similar benefits (Wang et al. 2006).



Based on an individual's assessment of these potential benefits, an individual can decide whether or not to join the community as a formal member. Due to the prevalence of available alternatives, individuals can easily surf from community to community without incurring substantial search costs (Bakos 1997) to find one that best meets their need. Individuals' assessment of the expected benefits of membership underlies their willingness to participate in the community (Moreland and Levine 1982). Interests are personal, differing from person to person. Across the population of potential members, these varied interests partially distinguish the difference between communities that provide some benefit and those that do not. Potential members make their decision to join a community based on the expected costs and benefits (Brinthaup et al. 1991). The quality of this assessment should be sound due to the openness and visibility of most communities' resources, as a community's history, past discussions, and activities are not only accessible, but also able to be explored using a search engine. Furthermore, as mentioned above, membership is generally *not* required in order to view content and make this assessment. Given a universe of accessible communities from which to choose, it seems viable that an individual can find a community that is a good match with his or her personal needs and interests. For these reasons, members who become aware of the community via search processes would be expected to be active participants.

2.4.2 Word-of-Mouth

Word-of-mouth (WOM) has long been acknowledged to have a major influence on what people know, feel and do (Buttle 1998). In B2C e-business, WOM is the primary driver of traffic to web sites (Slack et al. 1999), representing a significant savings in marketing and sales expense (Cothrel 2000). WOM is an informal, person-to-person communication (oral, written, or electronic) between a perceived non-commercial communicator and receiver regarding the evaluation of a brand, product, organization, or service (Arndt 1967; Buttle 1998; Singh 1988). It has been shown to influence a variety of conditions: awareness, expectations, perceptions, attitudes, behavioural intentions, and actual behaviour (Buttle 1998). It has also been found to be more effective than many other forms of commercial advertising, such as radio and print (Engel et al. 1969; Feldman and Spencer 1965; Katz and Lazarsfeld 1955), for a wide range of products and services (e.g., Chung and Darke 2006; Mizerski 1982; Swan and Richard 1989).



Individuals engage in WOM behaviour when they feel extremely satisfied with (Richins 1983) or committed to (Dichter 1966; Richins and Root-Shaffer 1988) the product/service/firm. This is favorable for the object of the WOM due to the fact that it is a cost effective and powerful tool (Silverman 1997) that can influence a variety of consumer behaviours related to the choice (Arndt 1967; Richins 1983) and attitudes towards a product, including consumer expectations (Zeithaml and Bitner 1996), pre-usage attitudes (Herr et al. 1991), and post-usage perceptions (Bone 1992; Burzynski and Bayer 1977; Galletta et al. 1995).

WOM has also been found to have an impact in building and shaping the resources within traditional organizations through the practice of employee referrals. Existing employees are encouraged to utilize their social ties (e.g., family or friends) to assist the organization in finding quality individuals to fill job openings (Marsden and Campbell 1990; Shinnar et al. 2004). In this recruitment context, WOM is an informal, personal communication of information between message source and recipient about an organization and is independent of the organization's formal recruitment activities (Bone 1995; Cable et al. 2000; Collins and Stevens 2002). There are several important characteristics of WOM as a recruiting source. First, the information communicated in WOM is experiential, based on the experiences of the source with the organization. Second, while occurring informally between people, WOM can serve as a form of informational social influence (Bone 1995). Finally, the content of the WOM communication cannot be directly controlled by the organization; however, it can be influenced indirectly through methods such as building relationships with influential individuals (e.g., opinion leaders and highly networked individuals) or through referral programs that provide incentives for referrals.

Compared to traditional recruiting methods (e.g., newspaper, website, placement services) employee referrals are a more cost-effective tool in attracting talent (Morehart 2001). Additionally, employee referrals have been found to produce a variety of desirable performance outcomes both for the hiring organization and the hired individual, including better job performance (Kirnan et al. 1989), higher job satisfaction (Kirnan et al. 1989), and longer tenure (Breaugh 1981). In traditional contexts, individuals' initial and continued engagement with a product/organization has been attributed to the WOM related factors including the selection from a richer pool of candidates, informational advantages, and the referral source serving as a potential model for ideal behaviour (Fernandez et al. 2000).



Similar to traditional organizational contexts, online communities have a form of WOM through which individuals can become aware of a community, namely, the member referral. Highly engaged individuals tend to spread the word about products and companies they love (Cothrel 2000). In the community context, individuals engaging in WOM are members that are actively engaged in the community (Kang et al. 2007). Contrary to the awareness through search approach, where awareness is created via searches, community-based member referrals look to capitalize on the existing awareness of its current members, both in terms of their awareness of the community and their awareness of other individuals who are potentially interested in the community. When making a referral, current members activate their existing ties in their personal network with others outside of the community, selectively targeting those individuals whom they believe might have an interest (Subramani and Rajagopalan 2003) in participating in the community. This allows referrals to not only increase the awareness of the community to outside people, but also expands this awareness (Breaugh and Mann 1984; Schwab 1982) to those that might not otherwise have had the initiative to find the community. These factors increases the likelihood that the decision related to the interest stage of the joining process would be positive, improving the chances the target of the referral would like to be involved with the community. Furthermore, as community joining and participation decisions have commonalities with contexts, it would be expected that the mechanisms underlying WOM's impact might also underlie referrals in an online community context, impacting the community joining and participation processes.

P1: Referred members will be more actively involved in various forms of participation than non-referred members.

H1a: Referred members will read more threads than non-referred members. H1b: Referred members will make more reply posts than non-referred members. H1c: Referred members will start more threads than non-referred members.



2.4.3 Impacts of WOM on Participation

While referrals might well indeed attract members who are more actively involved in the community, understanding how the specific aspects of referrals combine to create this impact is another issue that needs to be addressed. As discussed, in traditional contexts, the effect of WOM is attributable to the selection of the recipient, pre-information advantages afforded to referrals, and the referrer's ability to serve as a model of social processes (Fernandez et al. 2000). In conceptualizing the joining process as part of the larger participation process, the differential impact of these aspects of referrals in creating their advantage over non-referred members can be more completely understood, which will be examined in this section.

2.4.3.1 Selection

For communities to be successful, they must not only be able to attract new members who are willing to participate in the community, but also be able to *retain* these members in order to sustain themselves (McGrath 1984). Across various contexts, people seek to be affiliated with environments that they believe will best match their personal preferences and help them to fulfill their needs and desires. Commonality is one of the defining characteristics of online communities and includes common goals (Dennis et al. 1998), common interests (Ridings and Gefen 2004a), common values (Figallo 1998), and common needs (Preece and Maloney-Krichmar 2003). The similarity of an individual to that of an organization has been found to impact one's feelings towards, and involvement within, the organization, especially in voluntary organizations (Knoke 1990). While search techniques may make the community available to a broader sea of potential members, referrals provide access to richer pools (Fernandez et al. 2000; Fernandez and Weinberg 1997) of people that might be more predisposed to have more in common with the community than non-referred members.

One of the defining characteristics of a referral is that it utilizes preexisting social connections for interpersonal communication.



One of the main principles of these person-to-person connections is homophily, which states that contact between similar people occurs at a higher rate than among dissimilar people (McPherson et al. 2001, p. 416). Homophily can arise due to similarities in status or values. Status homophily is related to socio-demographic dimensions such as race, ethnicity, sex, religion, or age. Status homophily increases the likelihood of WOM referrals occurring, while also influencing the flow of information between referrer (i.e., existing member) and referee (i.e., potential member) (Brown and Reingen 1987). Value homophily is tied to personally held values, attitudes, and beliefs (Lazarsfeld and Merton 1954). Value homophily has been found to be an important source of influence on people's behaviour (McPherson and Smith-Lovin 1987), especially as an influencing factor in creating relationships (McPherson et al. 2001). One explanation for this is that the similarity of attitudes, beliefs, and values influences the level of individual attraction and interaction (Huston and Levinger 1978). Both status and value homophily have been found to impact the behaviour of individuals, playing an important role in the formation of social groups (McPherson et al. 2001).

It has been proposed (Arndt 1967) that commonality is one of the primary conditions needed to exist in order to support information flow between referral source and recipient in WOM. The homophilous nature of referral associations (e.g., Fernandez et al. 2000; Granovetter 1995; Myers and Shultz 1951; Rees and Shultz 1970; Ullman 1966) can exude informational influence. First, a referral is able to generate additional interest in the recipient as the commonality serves as a cue to the recipient that the product/service to which they are being referred might be of interest to them as it is to the source (Bruyn and Lilien 2004). Second, homophily increases the influence of the referral source with a recipient for personalized decisions, especially where trust is important. This influence is attributable to the fact that the source of the message is viewed as being similar and possessing similar values to the recipient. These factors suggest that a successful referral (i.e., one in which an individual joins the community), will more likely result in individuals joining the community who are more similar in status, values, and interests to current members of the community. In contrast, the general, even random discovery processes associated with Internet search, this is not as likely to benefit from this type of selection. Relying on individuals to search for and find a community may provide communities the potential advantage of being exposed to a larger number of individuals.



However, given the number of available alternatives and low search costs, if the community fails to live up to a new member's initial expectations, it is less likely they will return. For referred members, the homophily that often underlies a successful member referral would increase the chances that commonality between the community and the new member would exist. At a minimum, it would be expected that the referrer felt the referee should have some interest in common with those of the community, thus increasing the level of attraction to the community. It is still possible that a community does not meet expectations for new referred members. However, in this case, the referred member should be more receptive that the community will be beneficial for them as shared similarities between themselves and the referrer will serve as a cue of interest. (Bruyn and Lilien 2004). This would lead the referee to believe the community would be of interest to them as well. Additionally, the referee's post usage perceptions can still be influenced by the referrer (Bone 1992; Burzynski and Bayer 1977; Galletta et al. 1995). Upon joining, even if the referee's initial exposure to the community led them to think it may not be interesting to them, the referrer could alter this perception, leading a referee to try to use the community again.

It has been estimated that as many as four out of five web site visitors are first time visitors, and that the majority of them will never make a return visit (Cothrel 2000). Potential members differ with respect to their initial expectations about the community and the way in which they move through the process of joining and participation in a community. Potential participants make their decision to join and remain with a community based on expected costs and benefits (Brinthaup et al. 1991). A critical step in moving through the participation process is the initial decision to return to the community, as one cannot participate unless they are present in the community. The influences associated with homophily will increase the likelihood of awareness by selecting individuals that might be predisposed to have more in common with the community than non-referred members, generate interest based on referrer oriented cues, and influence the evaluation by referred members. The collective influences associated with homophily, that often underlie a successful member referral, suggest that referrals can facilitate the joining process, which will lead to referred members returning to the community more frequently after their initial visit than non-referred members.



P2: Referred members will be more likely to return to the community at least once after they formally join.

H2: Referred members are more likely to return to the community at least once after they formally join.

2.4.3.2 Pre-Membership Information Advantage

Another aspect of member referral is that they can provide referred members with unique types of information prior to one joining. Online communities can be viewed as an experience good (Nelson 1970). They have more in common with a service than a product due to the intangible nature of the emergent conversations within the community. While expectations of benefits can be created prior to joining, this dynamic can make it difficult to fully and accurately assess these community-derived benefits prior to the point of membership. However, a member referral can provide a referred member with an information advantage over non-referred members.

Referrers can serve as a source of expertise related to the object of the WOM (i.e., the community) (Bristor 1990) due to their prior experience and knowledge (Schiffman and Kanuk 1997). The pre-existing connection between the referee and a member of the community, which is more likely to exist in the case of a personal referral than an Internet search, can act as a conduit for information flow (Rees 1966; Ullman 1966). This connection gives the referee the opportunity to obtain experiential information about the community prior to making a membership decision. For example, the referrer can communicate information about the community's inherent goals (Dennis et al. 1998), interests (Ridings and Gefen 2004a), values (Figallo 1998), or members' needs (Preece and Maloney-Krichmar 2003) with the recipient in a personalized and persuasive manner. Conveying this type of information is especially useful for the more tacit, or experiential, information about the community that could only otherwise be obtained through personal experience (Jovanovic 1979).

The pre-membership information advantage afforded to referred members provides them with a more realistic view of the community (Wanous 1980). For this reason, it would be expected that they will have a better understanding not only of what the community is about, but also what behaviours are expected of them prior to joining the community.



As a result, referred members are less likely to need to directly observe the community before they participate, increasing the likelihood that they will participate more early on in their time with the community.

P3: Referred members will participate more actively than non-referred members in early stages just after joining the community.

H3a: Referred members will read more threads than non-referred members in early stages just after joining the community. H3b: Referred members will make more reply posts than non-referred members in early stages just after joining the community.

H3c: Referred members will start more threads than non-referred members in early stages just after joining the community.

However, as non-referred members spend time in the community they are exposed to the conversations within the community, through which they will obtain similar knowledge about the community. As a result, the participation differences arising from pre-joining information will be temporary.

P4: If initially present, the difference in participation between referred and non-referred members will diminish over time.

H4a: If initially present, the difference in threads read between referred and non-referred members will diminish over time. H4b: If initially present, the difference in reply posts between referred and non-referred members will diminish over time. H4c: If initially present, the difference in thread starting between referred and nonreferred members will diminish over time.

While a pre-membership information advantage can lead to participation differences in the short term, they may also provide long-term advantages. In the long term, people seek to be part of an environment they believe will be a fit (e.g., person-environment fit, person-organization fit), one that matches their personal preferences and helps one to fulfill their needs and desires (Diener et al. 1984; Pervin 1989). In organizational contexts, the person-organization fit that comes from the congruence between the values, benefits, goals, and needs of an individual, which has been found to influence the performance of a variety of individual behaviours, in particular the decision to self-select into, and remain with, an organization (Hoffman and Woehr 2006; Kristof-Brown 1996).

A community's values, goals, and benefits are generated and exchanged through its ongoing conversations.



The nature and volume of communication activity can play an integral role not only in individuals' decisions to join, but also in their decision to continue, or terminate, their involvement with a community (Jones et al. 2004; Lakhani and von Hippel 2003). However, the experiential nature of a community membership may make it challenging for a new member to accurately assess values, goals, and benefits initially. The decision to leave a community can be impacted by a member's experiences with the community failing to meet their initial assessments.

One reason is that a member could find the ongoing conversations of the community to contain uninteresting information. While part of judgment of interest can be attributed to a member's changing personal interests, how interesting conversations are found to be is in part influenced by the nature of conversation within the community. For example, the number of useful conversations can also influence a member's decision to leave a community, as the ongoing development of new content serves as an important mechanism in bringing people back over time (Armstrong and Hegel 1996; Lakhani and von Hippel 2003). Additionally, the quality can also be detrimental, especially if the discussion is uninteresting (e.g., same topics continuously discussed), unfocused (e.g., incoherent or off-topic posts), or overwhelming (e.g., too much content, resulting in information overload).

Additionally, several of the dynamics of online community membership (i.e., people and technology) can create feelings of member-community un-attraction (Mittilä and Mäntymäki 2005), causing members to leave. First, other members in the community can impact the decision to leave a community as members play a role in creating the atmosphere of a community. However, when members are clannish, aggressive, or overly protective, new members may feel unwelcome (Mittilä and Mäntymäki 2005). As many of the norms are developed and propagated by the members of a community, a perceived inaccuracy in the fairness in which rules are applied, or a misunderstanding of the rules of operation, can also result in a member choosing to leave. Finally, should the technical functionality of a community become an issue (e.g., slow response times, complicated to use, hard to find information), individuals may decide to leave. These non-atraction factors highlight the importance of individual experience, as community characteristics are not fully evident until an individual joins a community and is able to experience these features first hand. However, referral sources can utilize their experiences to explicate these factors (Jovanovic 1979).



Non-referred members do not have access to this type of experiential information and, in essence, have to learn on their own in order to determine what membership entails. In undertaking the process of seeking a community that best matches their specific needs, individuals incur search costs (Bakos 1997). For these non-referred members, Internet search results identify communities that may, or may not, fit what the individual is looking for, as ones interests may not fit with those of the community. In situations where the community is not exactly what an individual is looking for, he or she can choose to remain in the community and incur a fit cost (Bakos 1997). While search costs are a factor, the ability of electronic search technologies (i.e., search engines) to facilitate the search process, coupled with the number of available alternatives, reduces these costs. As a result, it would be expected that an individual may join a community, but if it were not a fit for them, they would continue to seek a community that provides benefits that fulfill their needs.

On the other hand, referred members are able to make a better assessment of the experiential aspects of the community prior to joining due to their pre-information advantage, which is afforded to them by referrer's ability to share experiential information with them. As a result, a referred member would have a more realistic perspective of a community's values, goal, benefits and culture; ultimately, of what membership would be like (Wanous 1980). Compared to nonreferred members who lack this pre-information advantage, there is a higher likelihood that the community would meet a referred member's a priori expectations, resulting in a better person community fit. As a result, referred members are more likely to remain with the community for a longer amount of time than non-referred members.

P5: Referred members will have a longer tenure with the community than non-referred members.

H5: Referred members will have a longer tenure with the community than non-referred members.



2.4.3.3 Modeling

In addition to selection and pre-joining information, the interpersonal contact often associated with a member referral may also facilitate behaviour modeling and support socialization. Individuals engage in WOM about an object when their experiences with it have left them feeling extremely satisfied with (Richins 1983), committed to (Dichter 1966; Richins and RootShaffer 1988), or loyal to (Graham 1991) it. Highly engaged individuals tend to spread the word about products and companies they love (Cothrel 2000). In the community context, individuals engaging in WOM are members that are actively engaged in the community (Kang et al. 2007). These are desirable individuals for the community, both in terms of their activity and their impact on bringing new members into the community.

Social collectives often self-organize through the development of norms, that is, jointly held beliefs about what individuals ought to do in certain circumstances (Ouchi 1980). These norms serve in part to limit individuals' ability to act in purely self-interested ways, which, if left unchecked, could disrupt community functioning (Wasko and Faraj 2005a). Community norms are a crucial factor in the success of an online community (Kim 2000). Created and shared by members, they serve as informal rules and guidelines for appropriate behaviour in the community. For instance, to provide an understanding and meaning implicit in a certain rhythm of participation (Smith 2002; von Krogh et al. 2003). With repeated exposure to behaviours consistent with these norms, new members internalize them, which shape their future behaviour.

Communities that are able to organically develop a stable set of norms and regulate them through members' efforts are likely to be more successful than those whose norms are imposed by moderators or site owners (Preece 2004). These norms establish the expected behaviours of members and define the ideal group member (Burnett and Bonnici 2003). New members often learn these norms from the community through socialization and observation. By observing the ongoing conversations of the community, or particular reference members that may serve as role models (Kemper 1968), new members are able to learn and internalize the proper ways to participate within the community. When they do so, they are able to more effectively interact with the group.



Due to their pre-existing relationship, the referrer can serve as a natural a mentor (Reichers 1987) that a referred member can observe and model. Rather than having to try and interpret cues of the community as a whole, they have the referrer from which they can model their behaviour (Sutton and Louis 1987). For example, referred will be able to observe how frequently a member who referred them starts a new thread, or makes a reply post to an existing thread. These observations will be seen as the norm for expected behaviour. Hence, after a referred member has been able to observe the behaviour of the referrer, it is expected that referrer's behaviour will predict the future behaviour of referred members.

P6: Referred members new to the community will model their behaviour after those who referred them.

H6a: The thread reading activity of referrer during a referee's first period with the community will predict the thread reading activity of referee in the following period. H6b: The reply posting activity of referrer during a referee's first period with the community will predict the reply posting activity of referee in the following period. H6c: The thread starting activity of referrer during a referee's first period with the community will predict the thread starting activity of referee in the following period.

As an aspect of the community joining process, member referrals affect how members participate in the community after they join. Member referrals influence member participation through three mechanisms. First, the selection of individuals from pool of individuals that might be predisposed to like the community leads to an increased likelihood referred members will return to the community compared to non-referred members. Second, pre-information advantages afforded to referrals allowing referred members to learn more about the community upon entering. This pre-information advantage leads referred members to be able to engage the community more quickly and as well as better assessment of member-community fit, which results in longer tenures. Third, referrer serves as a model for the referred member's behaviour.



2.5 RESEARCH METHODOLOGY

Data to test the hypotheses was collected at BroadForum (a pseudonym), an online community that had over its 22 months of operations amassed approximately 54,000 registered members (not all active) and 3.4 million posts. It is promoted as a “general discussion” community, with the goal of supporting social conversation amongst its members. Similar to Oldenburg’s (Oldenburg 1999) “great good place”, BroadForum is a public place, neither work nor home, that hosts regular, voluntary, and informal social interactions amongst its members, and where the focus is the sustaining activity of conversation. A broad range of conversational topics arise in this community, including current events, sports, entertainment, fashion, politics, philosophy, technology, and anime, among many others. Members do not occupy any particular professional, technical, or cultural niche. Though the sheer size of the community has led its owner/administrator to group threads into categories to help members organize their conversations, BroadForum maintains its identity as a single online community, hosted by a single owner/administrator.

2.5.1 Data Collection

The hypotheses developed in this chapter are tested using archival data of members’ participation in the BroadForum community. Access to archival data from BroadForum was obtained via the BroadForum web administrator, which provided aggregated data (the non aggregated data could not be disclosed for privacy reasons) pulled from the community’s server logs. These data files provided data of a member’s participatory behaviour within the BroadForum community. Data collection had periods of two weeks, from December 20, 2005 to April 24, 2006. These two weeks files were used to create data *periods*, which represented incremental participation for the specific period of time since the data was last pulled from the community’s server logs.

While individuals can view the content of BroadForum without being a member, they cannot make reply posts or start threads unless they are a member. To become a member one must join the community by formally registering. Joining is accomplished by completing an online form that requires an individual to: create a username for the

community, a password, and provide an e-mail address. After submitting this information, one has formally joined the community and is considered a member.

Data used to test the hypotheses in this chapter were for members who joined the community during the first two periods (i.e., four weeks) of the data collection phase (December 20, 2005 to January 16, 2006). This allowed a minimum of eight periods (16 weeks) of data for new members to be collected, without a concern of right censoring. Member data is organized into these periods. For a member, *period one* represents the period in which a member joined the community. As the data collection scripts were run every two weeks, members could have joined at any point during this two week span of time. As such, a new member's first period in the community could be as long as fourteen days or as short as one day. Relatedly, member data for the period is associated with their number of days they've been a member during this period. This is accounted for in the calculation of daily average activity, described in the measures section. All subsequent periods for members (e.g., period two, period three) represent a full two weeks of time and data.

A visual inspection of the join date trends as related to the percentage of new members, shown in Figure 8, does not appear to reveal any unusual pattern.

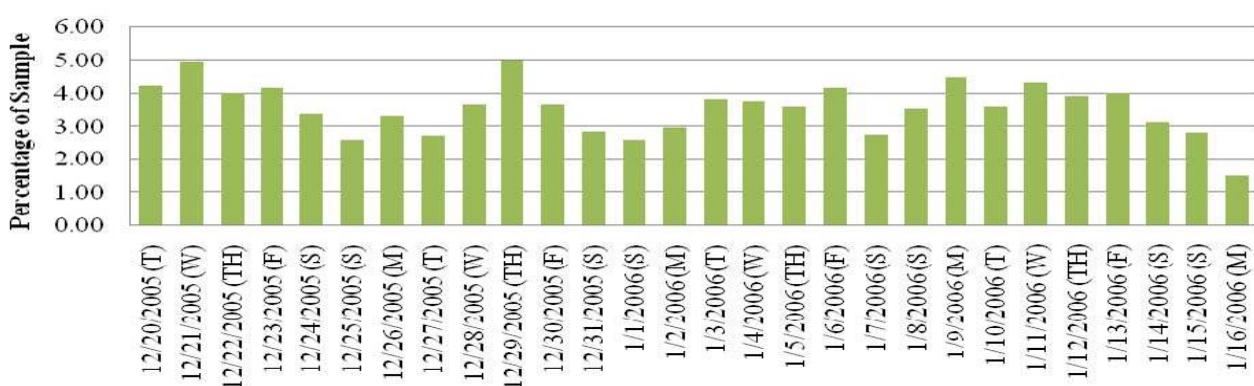


Figure 8 Join Date as Percentage of Sample

Similarly, a visual inspection of the join date trends as related to the percentage of non-referred members and referred members in the sample, Figure 9 and Figure10 respectively, does not appear to reveal any unusual patterns.

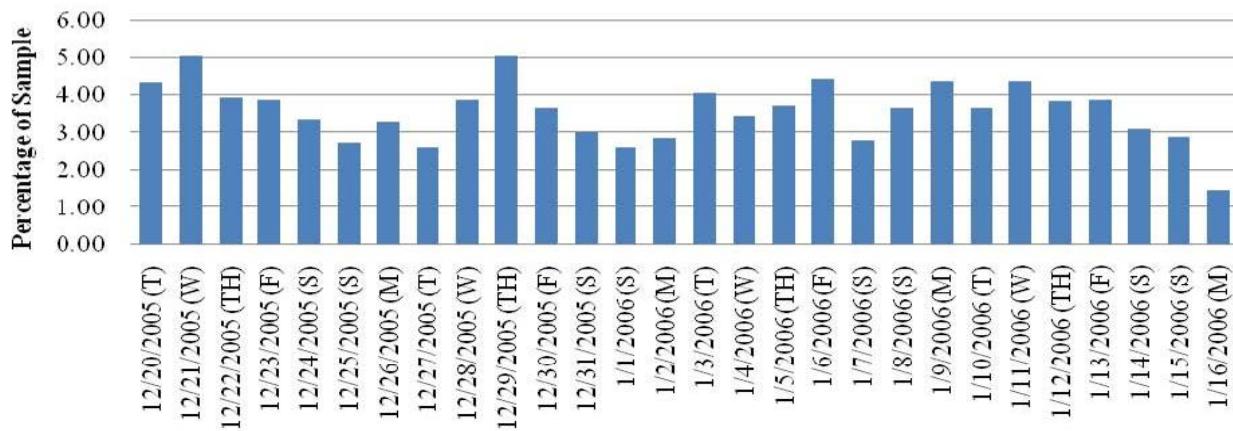


Figure 9 Join Date of Non-referred Members as Percentage of Sample

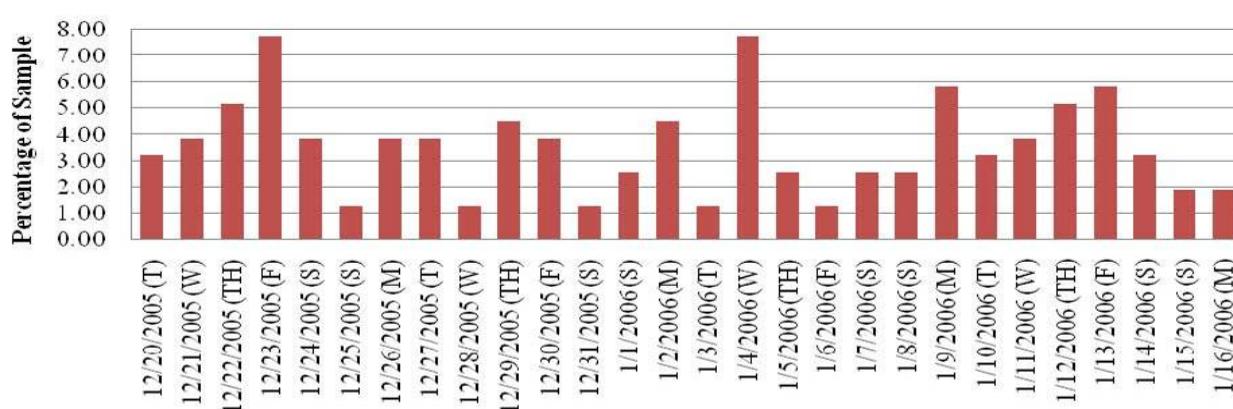


Figure 10 Join Date of Referred Members as Percentage of Sample

2.5.2 Measures

Members can join a community as either a referred or non-referred member. The measure of a *referral* is determined on the basis of a new member being recorded as being referred when they formally joined (i.e., registered) the community. Referral status is indicated in the data file is indicated by a numeric code in a new member's record that indicates the member number of the community member that referred them, or in the case of non-referred members a zero is recorded. This number is recorded when a new member first registers with the community (completing the online form), with the referral status value created in one of two ways during the registration process of a new member. The first way is that when registering with the community, a new member has the option of



providing the username of an existing member who referred them to the community. The other way that a new member is identified as being referred to the community is if they start the registration process by following a link embedded in an e-mailed invitation, which is initiated and sent by the referring member. When registering this way, the referring member is automatically associated with the new member and thus the new member does not have to provide the username of the member who referred them.

The archival data collected from the BroadForum servers were used for the measures of member participation. Conversations in online communities are organized in threads, which are oriented around a topic. Threads provide a “separate topic for each conversation, and one message follows another in chronological order – analogous to a group of people having multiple shared conversations” (Kim 2000, p. 34). Members can engage in content provider oriented participation, as measured by *reply posts*. A *reply post* is a contribution made on an existing thread. *Reply post* is measured as the daily average of the number of *reply posts* made during a period. Members can also engage in content seeking oriented participation, which can take two forms, *threads read* and *thread starts*. *Threads read* is when members view existing threads in the community. *Threads read* is measured as the daily average of the number of threads viewed by a member during a period. *Thread starts* is when a member starts a new conversation or topic by creating a new thread. *Threads starts* is measured as the daily average of the number of threads created by a member during a period.

A measure to assess if a member made a return visit to the community on any day after the one they joined, a dichotomous variable, *came back*, was created. This measure was calculated based on a comparison of the date the member joined the community to the date the member last visited the community, if the dates were not equal, indicating the member returned to the community on any day after the one they joined, a value of 1 (yes), otherwise a 0, (no).

Measure of *tenure* was calculated based on the amount of time (days) between the day the member formally joined the community (i.e., when the member registered with the community and created a username that provides them full participation rights) and the last time they visited the community over eight periods. This method follows established procedures of calculated tenure in an online community environment (von Krogh et al. 2003) as individuals typically do not formally terminate their relationship with the community, but rather just stop visiting. This procedure could create tenures shorter than



they actually are only for those members who still remain with the community after the data collection.

Measures of participation (threads read, reply posts, thread starts) for the referrer are measured the same as described above, except they represent the behaviour of the existing member who referred the new member. Measures of average participation (threads read, reply posts, thread starts) of the community for a period represent the average of the daily average for each form of participation for members that had visited in the community (i.e., signed in) during a specific data collection period.

A summary of all of the measures used to test the hypotheses in this chapter is presented in Table 4.

Construct Label & Description	Measure Label & Description	Hypotheses Used In
Thread reading is a form of participation in which members view continent of existing threads in the community.	<i>Threads read</i> – measured as the daily average of the number of threads viewed by a member during a period. (Due to issues of non-normality, the measure used in all hypothesis testing is the log transformed value of this measure.)	H1a H3a H4a H6a
Reply posting is a form of participation in which a contribution is made on an existing thread.	<i>Reply post</i> – measured as the daily average of the number of reply posts made during a period. (Due to issues of non-normality, the measure used in all hypothesis testing is the log transformed value of this measure.)	H1b H3b H4b H6b
Starting thread is a form of participation in which member starts a new conversation or topic by creating a new thread.	<i>Threads starts</i> – measured as the daily average of the number of threads created by a member during a period. (Due to issues of non normality, the measure used in all hypothesis testing is the log transformed value of this measure.)	H1c H3c H4c H6c



<p><i>Came back</i> indicates a member made a return visit to the community on any day after the one they joined</p>	<p><i>Came back</i> – a dichotomous variable, value of 1 (yes), otherwise a 0, calculated based on a comparison of the date the member joined the community to the date the last visited the community.</p>	H2
<p><i>Tenure</i> represents how long a remained a member of the community prior to leaving.</p>	<p><i>Tenure</i> – calculated based on the amount of time (days) between the day the member formally joined the community (i.e., when the member registered with the community and created a username that provides them full participation rights) and the last time they visited the community. (Due to issues of non-normality, the measure used in all hypothesis testing is the log transformed value of this measure.)</p>	H5
<p>Referrer participation is level participation for the existing member who referred the new (referee) to the community.</p>	<p><i>Referrer-Participation</i>, where post hyphen “participation” is the specific behaviour (threads read, reply posts, thread starts). This is measured the same as described above, except it is for the referrer. (Due to issues of non-normality, the measure used in all hypothesis testing is the log transformed value of this measure.)</p>	H6
<p>The average community participation represents the typical participation for community members as a whole.</p>	<p><i>Community-“Participation”</i>, where post-hyphen “participation” is the specific behaviour (threads read, reply posts, thread starts). Each is measured as the average, of the daily average for each form of participation, of members that had visited in the community (i.e., signed in) during a specific data collection period. (Due to issues of non normality, the measure used in all hypothesis testing is the log transformed value of this measure.)</p>	H6

Table 4 Used measures



2.5.3 Users

During the data collection period 1,982 individuals joined the community by registering as formal members, of which 155 were categorized as referred and 1,827 were categorized as non referred. Descriptive statistics for the first period of membership presented in Table 5.

N = 1.982	Minimum	Maximum	Mean	Std. Deviation
Threads Read (daily average)	0	81	2.30	406.31
Threads Started (daily average)	0	3.667	1.42	13.10
Reply Posts (daily average)	0	41	17.09	171.79
Tenure (days)	0	14	1.11	2.56

Table 5 New Member Statistics (period one)

Descriptive statistics of the sample of community members for the full data collection period are presented in Table 6

N = 1.982	Minimum	Maximum	Mean	Std. Deviation
Threads Read (daily average)	0	53.23	.5927	2.469
Threads Started (daily average)	0	1.10	.01	.046
Reply Posts (daily average)	0	14.32	.10	.555
Tenure (days)	0	110	13.10	28.8

Table 6 New Member Statistics (for 8 periods)

2.6 Data analyses and test results

As is typical of member participation and activity data in online community research, distributions of for the measures of participation are skewed. Following established procedures to reduce the impact of non-normality (Butler 2001b), a log transformation was applied to the data. As there were a significant number of cases in which the measures had zero values, a small constant was added to allow the log (base10) transformation to be applied. The following analyses are performed on the transformed data.



2.6.1 Web Search vs. Member Referrals

Proposition 1 predicts referred members will be more actively involved in various forms of participation than non-referred members. One-way analyses of variance were conducted to test the hypothesized relationships between referral status and each form of participation (H1a – Threads Read, H1b – Reply Posts, H1c – Thread Starts). Descriptive statistics of the logged transformed variables are presented in Table 7

	Referred (N=155)	Non-Referred (N=1,827)
Threads Read (log)	.399 (.494)	.218 (.363)
Reply Posts (log)	.163 (.299)	.061 (.178)
Threads Started (log)	.032 (.091)	.016 (.055)

Table 7 Descriptive Means (Standard Deviations)

2.6.1.1 Threads Read (Search vs. Referrals)

Hypothesis 1a predicts that non-referred members would read more threads than non-referred members. A one-way analysis of variance was conducted to test the hypothesized relationship between referral status and threads read. The independent variable, referral status, includes two levels: referred (1), and non-referred (0). The dependent variable was the daily average of the number of threads read by a member (log transformed) for their first data collection period in the community. The ANOVA was significant, $F (1, 1980) = 33.165$, $p = .000$, supporting hypothesis 1a. The relationship between referral status and threads read accounted for 1.6% of the variance of the dependent variable assessed by η^2 . Results are presented in Table 8

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4.670	1	4.670	33.165	.000	.016
Intercept	54.488	1	54.488	386.968	.000	.163
Referred	4.670	1	4.670	33.165	.000	.016
Error	278.799	1980	.141			
Total	390.623	1982				
Corrected Total	283.469	1981				

Table 8 ANOVA Summary Result [daily average of number of Threads Read]



2.6.1.2 Reply Posts (Search vs. Referrals)

Hypothesis 1b predicts that non-referred members would make more reply posts than non-referred members. A one-way analysis of variance was conducted to test the hypothesized relationship between referral status and reply posts. The independent variable, referral status, includes two levels: referred (1), and non-referred (0). The dependent variable was the daily average of the number of reply posts made by a member (log transformed) for their first data collection period in the community. The ANOVA was significant, $F (1, 1980) = 40.634$, $p = .000$, supporting hypothesis 1b. The relationship between referral status and reply posts accounted for 2.0% of the variance of the dependent variable assessed by η^2 . Results are presented in Table 9

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.476	1	1.476	40.634	.000	.020
Intercept	7.169	1	7.169	197.284	.000	.091
Referred	1.476	1	1.476	40.634	.000	.020
Error	71.945	1980	.036			
Total	82.891	1982				
Corrected Total	73.422	1981				

Table 9 ANOVA Summary Result [daily average of number of Reply Posts]

2.6.1.3 Thread Starts (Search vs. Referrals)

Hypothesis 1c predicts that non-referred members would start more threads than non-referred members. A one-way analysis of variance was conducted to test the hypothesized relationship between referral status and thread starts. The independent variable, referral status, includes two levels: referred (1), and non-referred (0). The dependent variable was the daily average of the number of thread starts by a member (log transformed) for their first data collection period in the community. The ANOVA was significant, $F (1, 1980) = 11.342$, $p = .000$, supporting hypothesis 1c. The relationship between referral status and thread starts accounted for .6% of the variance of the dependent variable assessed by η^2 . Results are presented in Table 10



Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.039	1	.039	11.342	.001	.006
Intercept	.324	1	.324	93.819	.000	.045
Referred	.039	1	.039	11.342	.001	.006
Error	6.847	1980	.003			
Total	7.448	1982				
Corrected Total	6.886	1981				

Table 10 ANOVA Summary Result [daily average of number of Thread Starts]

The results of the individual analysis of the impact of referral status on three forms of member participation (H1a – Threads Read, H1b – Reply Posts, H1c – Thread Starts) provide support for proposition 1, that referred members will be more actively involved in various forms of participation than non-referred members.

2.6.2 Selection

Hypothesis 2 predicts that referral status would positively predict if a new member came would come back to the community at least once after the day they joined. A one-way analysis of variance was conducted to evaluate the relationship referral status and likelihood of a new member returning to the community at least once after they became a member. The independent variable, referral status, includes two levels: referred (1), and non-referred (0). The dependent variable was if the member came back to the community at least once after the day they joined, yes (1) or no (0). The ANOVA was significant, $F(1, 1980) = 22.127$, $p = .000$, supporting hypothesis 2. The relationship between referral status and if a member came back to the community accounted for 1.1% of the variance of the dependent variable assessed by η^2 . Descriptive statistics are presented in Table 11, and the results are presented in Table 12

Referred (N=155)	Non-Referred (N=1,827)
Came Back .52 (.50)	.33 (.47)

Table 11 Descriptive Means (Standard Deviations)



Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4.947	1	4.947	22.127	.000	.011
Intercept	102.303	1	102.303	457.568	.000	.188
Referred	4.947	1	4.947	22.127	.000	.011
Error	442.690	1980	.224			
Total	683.000	1982				
Corrected Total	447.637	1981				

Table 12 ANOVA Summary Result (Came Back)

The results provide support for proposition 2, that referred members will be more likely to return to the community after they formally join.

2.6.3 Pre-Membership Knowledge influence

Proposition 3 predicts that referred members will participate more actively than non-referred members upon joining the community due to a pre-information advantage. To test the prediction regarding the pre-information advantage, a one-way analyses of variance were conducted to test the hypothesized relationships between referral status and each form of participation (i.e., threads read, reply posts, and thread starts). If a pre-membership information advantage exists, it is expected that there will be a significant difference between referred and non-referred with respect to these behaviours (H3a – Threads Read, H3b – Reply Posts, H3c – Thread Starts).

To examine if a pre-membership information advantage is present, the effect of selection (i.e., those who joined, but never came back) must be isolated. In order to do this, the following analysis is performed on a sub-sample of members, consisting of only active community members (i.e., those members who came back to the community during the period). This procedure reduced the number of members in the sub-sample to 683 (80 referred and 603 non referred). Descriptive statistics are presented in Table 13.



	Referred (N=80)	Non-Referred (N=603)
Threads Read (daily average logged)	.6451 (.541)	.461 (.480)
Reply Posts (daily average logged)	.269 (.346)	.162 (.270)
Threads Started (daily average logged)	.051 (.111)	.037 (.081)

Table 13 Descriptive Means of Active Members in Period One (Standard Deviations)

2.6.3.1 **Threads Read** (Pre-Membership Information Advantage)

Hypothesis 3a predicts that referred members will read more threads than non-referred members upon joining the community. A one-way analysis of variance was conducted to test the hypothesized relationship between referral status and threads read. The independent variable, referral status, includes two levels: referred (1), and non-referred (0). The dependent variable was the daily average of the number of threads read by a member (log transformed) for their first data collection period in the community. The ANOVA was significant, $F (1, 681) = 10.092$, $p = .002$, supporting hypothesis 3a. The relationship between referral status and threads read accounted for 1.5% of the variance of the dependent variable assessed by η^2 . Results are presented in Table 14.

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2.401	1	2.401	10.092	.002	.015
Intercept	86.357	1	86.357	362.939	.000	.348
Referred	2.401	1	2.401	10.092	.002	.015
Error	162.035	681	.238			
Total	323.297	683				
Corrected Total	164.437	682				

Table 14 ANOVA Summary Result [daily average of number of Threads Read]

2.6.3.2 **Reply Posts** (Pre-Membership Information Advantage)

Hypothesis 3b predicts that referred members would make more reply posts than non-referred members upon joining the community. A one-way analysis of variance was conducted to test the hypothesized relationship between referral status and reply posts. The independent variable, referral status, includes two levels: referred (1), and



non-referred (0). The dependent variable was the daily average of the number of reply posts made by a member (log transformed) for their first data collection period in the community. The ANOVA was significant, $F (1, 681) = 10.400$, $p = .001$, supporting hypothesis 3b. The relationship between referral status and reply posts accounted for 1.5% of the variance of the dependent variable assessed by η^2 . Results are presented in Table 15

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.813	1	.813	10.400	.001	.015
Intercept	13.139	1	13.139	168.066	.000	.198
Referred	.813	1	.813	10.400	.001	.015
Error	53.237	681	.078			
Total	74.865	683				
Corrected Total	54.050	682				

Table 15 ANOVA Summary Result [daily average of the number of Reply Posts]

2.6.3.3 Threads Started (Pre-Membership Information Advantage)

Hypothesis 3c predicts that referred members would start more threads than non-referred members upon joining the community. A one-way analysis of variance was conducted to test the hypothesized relationship between referral status and thread starts. The independent variable, referral status, includes two levels: referred (1), and non-referred (0). The dependent variable was the daily average of the number of thread starts by a member (log transformed) for their first data collection period in the community. The ANOVA was not significant, $F (1, 681) = 1.883$, $p = .170$, not supporting hypothesis 3c. The strength of the relationship between referral status and the difference in behaviour from the community was, not statistically significant, with referral status accounting for .3% of the variance of the dependent variable. Results are presented in Table 16



Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.014	1	.014	1.883	.170	.003
Intercept	.551	1	.551	75.795	.000	.100
Referred	.014	1	.014	1.883	.170	.003
Error	4.950	681	.007			
Total	5.994	683				
Corrected Total	4.964	682				

Table 16 ANOVA Summary Result [daily average of the number of Thread Starts]

Summarized in Table 17, the results of the analyses above partially support proposition 3, which predicts that referred members would participate more actively than non-referred members upon joining the community. While referred members were more active in reading and posting reply posts, referral status was not associated with differences in thread starting behaviour.

Hypothesis	Activity	Period One	
		Supported	p = .002
H3a	Threads read (daily average logged)	Supported	p = .002
H3b	Reply posts (daily average logged)	Supported	p = .001
H3c	Threads started (daily average logged)	Not Supported	p = .170

Table 17 Summary of Analyses for Proposition 3a (Pre-Information)

2.6.3.4 Participation Differences Diminish With Time

Proposition 3 predicted that referred members will participate more actively than non-referred members upon joining the community due to a pre-information advantage; while proposition 4 predicts that if initially present, the differences in participation between referred and non-referred members will diminish over time as the experience of non-referred members makes up the pre joining information advantage of the referred individuals. To test the prediction regarding participation difference diminishing with time, a one-way analyses of variance were conducted to test the hypothesized relationships between referral status and threads read (H4a) and reply posts (H4b). If the advantage



pre-membership diminishes with time, it is expected that the significant difference between referred and non-referred with respect to these behaviours will become non-significant with time. Note, the relationship between referral status and thread starts (H4c) was not tested, as initial differences in this behaviour were not found, as indicated by the non-significant results of H3c.

To examine the diminished influence of a pre-membership information advantage with time, the effect of selection (i.e., those who joined, but never came back) and tenure. In order to do this, the following analysis is performed on a sub-sample of members, consisting of only active community members (i.e., those members who came back to the community during the period). This procedure reduced the number of members in the sub-sample to 683 members (80 referred and 603 non-referred) for period one, 415 members (52 referred and 363 non-referred) for period two, and 220 members (40 referred and 220 non-referred) for period three.

A one-way analyses of variance were conducted to test the hypothesized relationships between referral status and threads read (H4a) and reply posts (H4b). The independent variable, referral status, includes two levels: referred (1), and non-referred (0). The dependent variables were the daily average of the number of threads read (H4a) by a member (log transformed), and the daily average of the number of reply posts (H4b) by a member (log transformed), for each of the first three periods a member was in the community. A summary of the results are presented in Table 18.

H	Activity	Period One		Period Two		Period Three	
H4a	Threads read (daily average logged)	Supported	p = 002	Supported	p = .003	Not	p = .061
H4b	Reply posts (daily average logged)	Supported	p = 001	Supported	p = .010	Not	p = .382
N	Referred	80		52		40	
	Non-referred	603		363		220	

Table 18 Summary of Analyses for Proposition 4

The results indicate that, during period two, referral status still had an influence on both threads read and reply posts. However, by period three, the influence of referral status was no longer significant. These results support proposition 4 that the information



advantage afforded to a referred member will dissipate over time as the experience of non-referred members makes up the pre-joining information advantage of the referred individuals.

2.6.3.5 Tenure

Hypothesis 5 predicted that referred members will have a longer tenure with the community than non-referred members. A one-way analysis of variance was conducted to test the hypothesized relationship between referral status and tenure. The independent variable, referral status, includes two levels: referred (1), and non-referred (0). The dependent variable was tenure (log transformed). The ANOVA was significant, $F(1, 1980) = 31.858$, $p = .000$, supporting hypothesis 5. The relationship between referral status and threads read accounted for 1.6% of the variance of the dependent variable assessed by η^2 . Descriptive statistics of the non-logged variables are presented in Table 19, and the results are presented in Table 20

Referred (N=155)		Non-Referred (N=1,827)
Tenure	26.23 (39.34)	11.99 (27.46)

Table 19 Descriptive Means (Standard Deviations)

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	15.372(a)	1	15.372	31.858	.000	.016
Intercept	189.424	1	189.424	392.572	.000	.165
Referred	15.372	1	15.372	31.858	.000	.016
Error	955.388	1980	.483			
Total	1349.879	1982				
Corrected Total	970.760	1981				

Table 20 ANOVA Summary Result [Tenure]

The results provide support for proposition 5, that referred members will have a longer tenure with the community than non-referred members.



2.6.4 Modelling

Proposition 6 predicts that new members who have been referred to the community will model their behaviour after those who referred them. If a modelling mechanism is operating, the behaviour of the referrer on various forms of community participation (e.g., threads read, reply posts, thread starts) will influence the behaviour of the new member. Furthermore, there will be a lag in this influence as the cuing behaviour will first have to be observed, before they can be incorporated into the new member's participation behaviour (H6a – Threads Read, H6b – Reply Posts, H6c – Thread Starts). A correlation table of the variables used in the following analyses is presented in Table 21 (all variables the daily average log transformed).

	Measure	Mean	Std. Dev.	1	2	3	4	5	6	7	8
1	Member-Threads Read (P2)	0.15	0.33								
2	Member-Reply Posts (P2)	0.05	0.16	.83***							
3	Member-Threads Start (P2)	0.01	0.06	.58***	.778***						
4	Community-Threads Read (P1)	0.80	0.00	.05	.00	-.07					
5	Community-Reply Posts (P1)	0.20	0.00	-.05	-.00	.07	1.0***				
6	Community-Threads Start (P1)	0.02	0.00	.05	.00	-.07	1.0***	1.0***			
7	Referrer-Threads Read (P1)	0.65	0.64	.18**	.19**	.13	-.04	.04	-.04		
8	Referrer-Reply Posts (P1)	0.28	0.38	.04	.12	.13	-.10	.10	-.10	.83***	
9	Referrer-Threads Start (P1)	0.06	0.11	.11	.19**	.24***	-.20**	.20**	.20**	.55***	.65***

*** p < .001, ** p < .05

Table 21 Correlation Matrix



2.6.4.1 Threads Read (modeling)

Hypothesis 6a predicted that thread reading activity of referrer during a referee's first period with the community will predict the thread reading activity of referee in the following period. A multiple regression analysis was conducted to test the prediction that thread reading activity of the referring member and the average of the community (as a control) in period one predicted the referee's threads read behaviour in the following period. The linear combination of these measures was not significantly related to referred members thread reading activity, $R^2 = .034$, $F(2, 147) = .079$. However, of the individual factors, the referrer's activity was significant, explaining 3.2% of the variability of the referee's threads read. The variance inflation factor (VIF) is a diagnostic indicator that measures how much multicollinearity has increased the variance of the slope estimates (Stine 1995). While there is no well-defined critical value for what constitutes a large VIF, a $VIF > 10$ has been proposed as guideline indication that multicollinearity is a potential issue (Chatterjee and Price 1991). VIF does not appear to be an issue, due to the VIF of 1.002. Results are summarised in Table 22

Variable	Std. Coefficient β	p-Value	VIF
Intercept	-2.442	.617	
Community –Threads Read (log)	0.042	.605	1.002
Referrer–Threads Read (log)	0.181	.027	1.002
N = 155	$R^2 = .034$; Adjusted $R^2 = .021$		

Table 22 Modelling Threads Read (Hypothesis 6a)



2.6.4.2 Reply Posts (modelling)

Hypothesis 6b predicted that the reply posts activity of referrer during a referee's first period with the community will predict the reply posts activity of referee in the following period. A multiple regression analysis was conducted to test the prediction that reply posts activity of the referring member and the average of the community (as a control) in period one predicted the referee's reply posts behaviour in the following period.

The linear combination of these measures was not significant, $R^2 = .014$, $F(2, 147) = .345$. VIF does not appear to be an issue, due to the VIF of 1.010. Results are summarised in Table 23.

Variable	Std. Coefficient β	p-Value	VIF
Intercept Community–Reply Posts (log)	0.010	.617	
Referrer– Reply Posts (log)	0.001 0.13	.991 .148	1.010 1.010
N = 155	$R^2 = .014$; Adjusted $R^2 = .001$		

Table 23 Modelling Reply Posts (Hypothesis 6b)

2.6.4.3 Thread Starts (modelling)

Hypothesis 6c predicted that the thread starts activity of referrer during a referee's first period with the community will predict the thread starts activity of referee in the following period. A multiple regression analysis was conducted to test the prediction that the reply posting activity of the referring member and the average of the community (as a control) in period one predicted the referee's thread starts behaviour in the following period. The linear combination of these measures was significantly related to referred members thread starting activity, $R^2 = .056$, $F(2, 147) = .014$. Of the individual factors, only the referrer's activity was significant, explaining 5.5% of the variability. VIF does not appear to be an issue, due to the VIF of 1.042. Results are summarised in Table 24



Variable	Std. Coefficient β	p-Value	VIF
Intercept	0.104	.700	
Community–Thread Starts (log)	-0.030	.712	1.042
Referrer– Thread Starts (log)	0.229	.006	1.042
N = 155	R2 = .056; Adjusted R2 = .043		

Table 24 Modelling Thread Starts (Hypothesis 6c)

Summarized in Table 25, the results of the analyses above partially support proposition 6, that the participation activity of the referrer's the referee's first period in the community would influence the referee's participation in the following period.

While the referrer served as a model for future referee participation for threads read and reply posts, they did not for reply posts. Interestingly, the average of community behaviours had no impact on the behaviour of the referee.

Hypothesis	Participation	Referrer	Community	R-Squared
H4a	Threads read	.027 **	.605	.034
H4b	Reply posts	.148	.991	.014
H4c	Thread starts	.006 ***	.712	.056

*** p < .001, ** p < .05

Table 25 Summary of Analyses for Proposition 6



2.6.5 Summary of results

The Table 26 summarizes the full set of propositions and results of the related hypotheses tests.

P1: Referred members will be more actively involved in various forms of participation than non-referred members.	Supported	
	Supported	p-value
H1a Threads Read	Yes	.000
H1b Reply Posts	Yes	.001
H1c Thread Starts	Yes	.000
P2: Referred members will be more likely to return to the community after they formally join.	Supported	
	Supported	p-value
H2: Come back	Yes	.000
P3: Referred members will participate more actively than non-referred members in early stages just after joining the community.	Supported	
	Supported	p-value
H3a Threads Read	Yes	.000
H3b Reply Posts	Yes	.001
H3c Thread Starts	No	.170
P4: The difference in participation between referred and non-referred members will diminish over time.	Supported	
P5: Referred members will have a longer tenure with the community than non-referred members.	Supported	
	Supported	p-value
H5a Tenure	Yes	.000
P6: Referred members new to the community will model their behaviour after those who referred them.	Partially Supported	
	Supported	p-value
H6a Threads Read	Yes	.000
H6b Reply Posts	No	.148
H6c Thread Starts	Yes	.006

Table 26 Summary of Results



2.7 RESULTS ANALYSIS

Pre-membership and joining have been acknowledged as important stages in the life cycle of community members (e.g., Kim 2000); however, the way in which a member becomes aware of a community and its resulting influence on subsequent participation has not been examined. While the importance of referrals for online communities has been highlighted in practitioner oriented work, these recommendations have been based largely on anecdotal evidence. The value and impact of referrals on shaping online communities has not been previously theorized. This study takes a first step towards understanding the impact referrals have on participation within online communities.

This chapter draws upon the WOM literature from marketing and organizational behaviour to characterize the impact of referrals in the community context. It is argued that WOM facilitates the awareness of, interest in, and ultimately the decision to join and participate in a community in various ways. First, a referral provides access to a pool of potential members that might be predisposed to like the community due to similarities with existing members. Second, the pre existing contact between the referrer and the referee facilitates information flow between the two parties, allowing referred members to learn more about the community prior to joining. Third, the ongoing presence of the referrer in the community serves as a model for the referred member's behaviour. Although each aspect of WOM has a different underlying theoretical rationale, they are not mutually exclusive. These factors lead referred members to return to the community more frequently after they join, have longer tenures with the community, and to participate more actively, engaging in content seeking and content contribution behaviours more heavily than non-referred members.

The findings presented in this chapter provide support that member referrals play an important role in shaping participation behaviour. Over the data collection period, on average referred members participated more actively in the community, engaging in content seeking and content contribution behaviours more heavily, than non-referred members. The selection dynamic associated with referred members led them to return to the community more frequently after they join. Furthermore, the pre-information advantage afforded to referred members leads to longer tenure for them.



The argument that a pre-information advantage would lead referred members to participate more actively upon joining the community was partially supported, as referred members more actively engaged in threads read and reply posting forms of participation, but not thread starting. A potential explanation for this was revealed through an exploratory examination of the data. It appears that for non-referred members, thread starting constitutes a higher proportion of their overall posting activity (thread starts and reply posts), than for referred members, or even the community at large. Thread starts constituted 24% of non-referred members overall posting activity, but for referred members it was 13.3% and for the community as a whole only 8.3%. One explanation for this difference is that non-referred members do not know other individuals in the community with whom to interact upon joining the community. As such, when non referred members first participate, they do so by trying to start conversations in the community, in an attempt to stimulate an interaction with others members of the community. However, referred members already know at least one other person in the community with whom to interact. As such, proportionally, they start fewer conversations, but engage in existing ones. This pattern appears to become even more pronounced as one becomes more integrated with the community, as evidenced by the lower community proportion of thread starting. In addition to knowing others with whom to interact, it would appear as though a norm of participation for this community is one that emphasizes engaging in existing conversations more so than starting new ones. Arguably, these explanations could be seen as being a result of a pre-information advantage afforded to referred members.

Taken together these results support the idea that referrals not only attract people to the community, but that they also affect participation behaviours. Overall the findings suggest, as argued above, that joining and participation can usefully been seen as part of an integrated processes of community membership.



2.7.1 Research implications

While existing research has identified a variety of factors that influence member participation, this work has examined existing members, making an implicit assumption that the community already contains captive members who actively participate. In other words, members do not simply exist in a community waiting to participate. Instead, similar to product decisions, new members proceed through several decision stages related to joining and participating, and these can be facilitated by a particular form of WOM, the member referrals.

Prior work has identified the socialization of a new member into the community to be a key component of community life, impacting a new member's participation and relationship with the community (e.g., Ahuja and Galvin 2003; Burnett and Bonnici 2003; von Krogh et al. 2003). While this chapter doesn't examine the role of socialization in the development of a community member, the findings presented here have implications for research related to socialization processes. Socialization processes occur over time, during which members learn the rules and norms for communication by observing and interacting in the community's conversations. These socialization processes can help shape behaviour only if a member is present in the community. However, a high percentage of individuals never return to the community after they join. In this community, for example, 65.5 percent of members (66 percent of non-referred and 48 percent of referred) did not return to the community after joining. For these members, the influences afforded by socialization processes are irrelevant, as these members never took the initiative to be exposed to the socialization process. For this reason, socialization may have little direct impact on member retention, at least in the short term. With that said, socialization processes might indirectly influence long term retention by shaping the civility and organization of conversations.

While socialization processes are thought to be a result of the new members' observation of and interaction with the community as a whole, the findings here indicate that the referrer plays an important role for referred members. Not only can a referrer be an influential source in initially getting an individual to join the community, but their pre-existing connection can serve as a source of continued influence (e.g., as a model for participation). This is enhanced by the fact that the participation behaviour of the larger community does not shape the participation of the referred member.



This suggests that rather than a universal community socialization process, there might be various forms of socialization within the community. This could present an interesting issue for communities. First, for non-document norms and values, the various forms of socialization could produce mixed signals to new members, making it difficult for them to identify the “proper” way to act. Second, there is a chance that community socialization could shift from the traditional perspective of “this is how we do things in this community” to one of “this is how I (i.e., the referrer) do things in this community”. This dynamic has the potential for connected individuals to shape the community as they bring new members into the community. While this could be desirable if the referrer’s goals are aligned with those of the larger community, it could be detrimental if they are misaligned, giving a small group of influential members the power to “hi-jack” (Cosley et al. 2005) the community.

The high percentage of individuals that join a community but do not return is intriguing. One potential explanation for this is that unlike traditional groups from which socialization theory is drawn, the costs to join a community are relatively low and leaving is easier and less visible, which in turn leads to greater turnover. Even still, this is perplexing given the open nature of a community’s resources that allows one to search a community prior to joining. So while joining may be inexpensive, it isn’t necessary. Past research has suggested that one of the main reasons for “lurking” in a community is to allow potential members to ascertain the benefits and learn the norms of a community before making the commitment to join (Nonnecke and Preece 2000; Nonnecke and Preece 2001; Nonnecke and Preece 2003). It would appear that, at least in this community, attempts to pre-learn information about the community through observation prior to joining is low, if not non-existent. While this paper has found that referrals can increase the likelihood of a member returning, it does not help explain why people are not returning. The pattern observed in this community suggests that members are first formally joining, then making quick evaluations of the community. It is possible that these quick evaluations have less to do about the potential cost and benefits than other factors, such as web site quality. While a great deal of research has focused on the quality of web sites and use intentions, this research has typically been set in the context of e-commerce sites. Future research should examine factors of online community site quality and its impact on member retention and use.



This study contributes to the referent WOM referral literature in marketing and organizations in several ways. While several studies have examined online communities as the communication channel for WOM (Bickart and Schindler 2001; Gruen et al. 2006; McWilliam 2000), the online community as the focus of the WOM has not been investigated. This represents an interesting context because, unlike typical purchase decisions, the decision to use the community is not a singular one-off choice. An individual can choose to become a member and never return, as such continued membership in a community is a set of repeating choices. This study finds that WOM can be an influential factor in initially getting a member to join and return to the community. Furthermore, WOM has a prolonged influence, with referred members returning more frequently, longer, and actively participating in the community more heavily. These findings have implications for traditional products where purchase decisions are ongoing, such as gym memberships or service subscriptions (e.g., cable). Additionally, the impact of referrals could be applied to member attraction in volunteer organizations, where the cost of joining and leaving are also relatively low.

This study finds that differences in participation can partially be explained by the way in which an individual comes into the community (i.e., non-referred vs. referred). Future research on member participation should take into account how a member enters the community when studying community participation, comparing its role to traditional motivators of community participation (e.g., altruism, empathy, reciprocity). In addition, future work should examine the impact of different informational sources (e.g., search results, ads, reviews) on the decision making processes related to community joining and participation.

While the impact of a pre-existing social tie is considered (its presence indicated by a referral), this chapter does not examine the strength of the connection between referrer and referee. Thus, a potential area for future research would be to examine how the strength of this relationship impacts referee behaviour. Additionally, this study did not exam the content of the WOM communication, only that it took place in some form due to the successful referral. Future research should seek to identify what specific community-related information results in a successful WOM. Furthermore, researchers should examine the factors that lead a referee to join the community, but not to return.



Another interesting area of inquiry for future research would be to exam the “life-span” of the WOM in a community context. For example, as suggested by this study, does the WOM most strongly influence the first initial interactions with the community, but then fade as the member is able to compare their initial assessment to the expectations created by the referrer? What is the role of WOM (both positive and negative) for existing community members? For example, if a referrer left the community, would this impact the decision of the referred member to stay or leave the community? Finally, due to the importance of referrals to communities, future research should also investigate the factors, both personal- and community-oriented, that motivate individuals’ decisions to refer others to the community.

2.7.2 Administrators

For administrators, this study highlights the importance of existing members as community resources that can be used to grow and develop the community through member referrals. Referrals are valuable to a community because they make individuals aware of the community’s existence, thus growing the number of members in the community. While this is true, this is a less interesting way to view referrals, as the number of referred members to a community is quite low compared to other means. In this study, for example, referrals accounted for only 7.8 percent of new registered members. However, even though they only account for a small portion of new members, administrators should not underestimate the impact referrals have on the size of their membership, even if referrals only account for a small portion of new members.

One way referred members are valuable to the community is in addressing the issue of turnover. The life span of a non-referred member (11,99 days) is less than half that of referred members

(26,23 days). This is partly due to the fact that referred members return to the community more frequently after they join. In fact, getting members to return to the community after they join can have a big impact on tenure. For example, for members who returned to the community at least once, tenure more than tripled for non-referred members to 36.33 days; even with this large increase, referrals still provided an advantage to the community, with tenure increasing 50.81 days for referred members.



While only 7,8 percent of all new members were referred, they represented 22,9 percent of all members still active in the community at the end of the data collection period. Thus, referrals provide an advantage for member tenure with the community. Longer tenure can be explained by a combination of factors. First, the homophiles nature of the referral relationship predisposes referred members to have more in common with the community. Second, the connection between the referrer and the referee serves as a conduit for information flow. This allows referred members to learn more about the community before they make a membership decision. Finally, referred members are better able to make more informed judgments about their potential fit with the community.

Referrers are not only a useful source of information prior to joining the community, but they also serve as models of community behaviour for the referred member once they join. It has been suggested that those who make referrals are typically highly engaged individuals (Cothrel 2000) (Kang et al. 2007) that feel extremely satisfied with (Richins 1983), committed to (Dichter 1966; Richins and Root-Shaffer 1988), and loyal to (Graham 1991) a product or organization. Assuming this is true in the community context, referrers represent core members of the community whose behaviour would be the ideal model for new members. Community administrators seeking to capitalize on this could seek to identify these core members and encourage them to actively refer people to the community. Doing so would likely result in bringing in additional members who are more like the ideal community member. With that said, however, although homophile can have a positive impact, it also contributes to the tendency for organizations to become non-diverse and demographically stagnant (Cohen 1977). This has the potential to have negative consequences for communities, as this can result in a narrow range of perspectives and hampers the exchange of ideas, which in turn could result in non-sustaining conversations.

Referred members not only participate in the community longer, but they also participate more than non-referred members when they join the community. Specifically, for their first two periods in the community, referred members make significantly more reply posts and read more threads than non-referred members. Interestingly, the two groups of members did not differ with respect to their thread-starting activities. One potential explanation for this is that non-referred members do not know other people in the community and therefore start conversations in the community in an attempt to meet others.



On the other hand, referred members already know people in the community and therefore have existing conversations to partake in (both with respect to reading and posting replies). As non-referred members lack this benefit, community managers might look to create a surrogate relationship, potentially partnering with established members of the community upon joining the community. This would not only provide the non referred member a specific member to communicate with, but would also provide them with someone they could model their behaviour after.

To achieve all of these benefits, administrators should look to increase the amount of WOM referrals in the community, perhaps by communicating to their members the importance of referred members to the community. The participation differences between non-referred and referred members would suggest that administrators should look to facilitate the community joining and participation process, perhaps by providing new members with additional information about the community, including its identity, values, interests, and characteristics. Based on how they entered the community, new members might be presented with different types of information. In addition, referral sources should be asked to share this information with potential members prior to joining. This type of information could help present a clear and consistent perception of the community to potential members, which could increase the likelihood a community would be a good fit for the new member (and vice versa). Despite these advantages, this strategy has the potential hazard of keeping away members who do not initially see such a fit, but where it could develop over time. However, if an administrator does not foresee or desire any drastic changes in the community's focus, this strategy could be utilized to keep the current focus, where the benefits of identifying a person-community fit early are likely to outweigh the potential negative effects.

Finally, because WOM referrals serve as both a mechanism to selectively target desirable individuals to the community and as an informal filtering tool, they can be used strategically by administrators as a community development tool. One strategy for administrators is community openness, attracting members through both WOM referrals and non-referrals. This strategy would allow natural selection to guide the development of the community, likely leading to larger communities, but with wide variation on members and their participation. Another strategy would be exclusivity, relying solely on referrals to attract new members. While this method would attract fewer members, it would likely attract individuals who are more willing to participate in the community.



The role of referrals is an important design consideration for community administrators, representing a powerful tool to manage the growth and direction of the community. However, each community administrator will need to determine the appropriate balance of openness versus exclusivity, and natural selection versus managed evolution.

2.7.3 Limitations

This study is subject to several important limitations. The first of these concerns related to the measurement of a WOM referral, as an individual may be referred to the community via word-of-mouth processes, but when a member joins the community they may not state (fill-in thereferrer's name on the online form) that they were indeed referred to the community. This arise due to a variety of factors such, a new member not knowing, or forgetting, the referrer's username in the community, overlooking this optional field on the online form, or choosing not to disclose the name of the referring member. However, this is no different from referrals in traditional organizational studies, where a job applicant might become aware of an organization and related job opportunities via WOM, but not formally reveal that they have been referred to the organization (Fernandez and Weinberg 1997). Furthermore, the issue of a non-reported referral is not relevant for referred members who joined via a referral link embedded in an e-mail sent to them, as the referral is recorded automatically. However, even if non-reporting was an issue, it would represent an issue of an underreporting of referrals, and as such, the impact of referrals would be expected to be even stronger than the results presented in this study as these members would be categorized as non-referred. A second limitation is that data were gathered from a single community (albeit a general interest community) calls into question the generalisability of the results, which only repeated replication in other communities could determine. A final limitation is that content seeking or content provision behaviours were not coded to identify behaviours that may have more or less useful content. It therefore remains possible that tallies of the number of posts made by any two different members could be identical, yet one could have provided much more informative, topical, helpful, interesting, and useful content than the other. However, given that members in this community were not simply providing "answers" that could be independently rated for their utility, coding them would have been extremely problematic.



2.8 CONCLUSION

For communities fighting with the issues of attracting and maintaining a membership of individuals willing to participate in the behaviours that keep a community functioning, this chapter identifies the importance of referrals. This research suggests that WOM referrals not only play a role in increasing the external awareness of the community, but the mechanisms underlying these referrals can facilitate referred members' positive progression through the various decision stages related to joining and participating in the community. By theorizing community joining and participation as a process that can be influenced by referrals, the study presented in this chapter provides new insight into community participation, highlighting that the existing social ties members have with those outside of the community are a valuable resource available to online communities wrestling with the issue of attracting and maintaining participating members.

These considerations could lead at focusing more on the social ties inside an organisation rather on the technological side.



Online communities have become a widely-used medium for interaction among Internet users, enabling conversations across a broad range of topics. Multiple communities often arise to address similar topics, and because they offer members access to similar kinds of resources, they serve as partial substitutes for each other. Given that each can be accessed with equal ease, why would individuals choose to return repeatedly to a particular community, and to adopt any of the various roles that are necessary to keep that community going? Drawing on typologies of workplace commitment, it is argued that members may develop psychological bonds with a particular online community that are analogous to those that form in the workplace — that is, bonds based on affect, obligation, and/or need. Conceptualizing online communities as ongoing public conversations, theory is developed to explain how each of these forms of community commitment affects a member's adoption of different conversational roles (content seeking, content providing, and informal moderation) within an online community. The results indicate that each form of community commitment leads members to adopt a different set of conversational roles as observed by their public behaviours in the community. In addition to demonstrating the importance of modelling member-community bonds as antecedents of conversational behaviours, these findings also underscore the benefits of simultaneously considering multiple forms of commitment. Community administrators may use this research to learn about the different approaches they might use to encourage members to adopt the conversational roles that are most needed to enhance the quality of their particular community.

3.1 INTRODUCTION

With widespread adoption of the Internet, finding individuals who share similar interests has never been easier. Beginning with the birth of Usenet in 1979, the Internet has hosted an ever increasing collection of tools that help people who share common interests communicate with each other.



Over time, these tools have led to the creation of a vast number of online communities, each with its own purpose, leaders, members, social structures, community resources and norms of interaction. Whether in the form of discussion groups, bulletin boards, chat rooms, list-servers, newsgroups, MUDs, or Wikis, the growth of these online communities has been remarkable. Of the estimated one billion people who use the Internet (e.g., Hof 2005), more than 84% have participated in an online community (Horrigan 2001), which has resulted in an explosion of text-based conversation. For example, Usenet discussions recently exceeded 2 terabytes a day, and Big-Boards.com tracks 1,959⁵ large bulletin-board based communities (averaging 105,000 members and 3.7 million total posts).

This tremendous growth has inevitably led to the creation of competing communities offering similar bundles of resources (Wang et al. 2006). For instance, as of October 2007 there were 603 Usenet newsgroups dedicated to discussing topics surrounding the Microsoft Windows operating systems⁶. Because the conversations that occur in online communities are often freely available

and easily accessible, it is easy to imagine that individuals might shift from site to site, consuming whatever is of use to them at one location, then moving on in search of more or better content. A simple cost-benefit model suggests that the lure of different content, available at little incremental cost, might draw individuals into a series of fleeting connections that last only as long as it takes to consume the relevant information available at that time (Pirolli and Card 1999). Indeed, research suggests that many new visitors to online communities soon disappear (Arguello et al. 2006; Jones et al. 2004). Yet there is also evidence that online communities are not purely transient collections of casual foragers, but also include relatively stable groups of individuals who voluntarily adopt a variety of roles that are necessary to keep the community functioning (Bagozzi and Dholakia 2002; Lee and Cole 2003).

In an environment characterized by low switching costs, such stability seems counter-intuitive. Why would some individuals choose to return repeatedly to a particular community when many other alternatives – some surely superior – are available?

⁵ Accessed October 3, 2007 from www.big-boards.com

⁶ Accessed October 3, 2007 from <http://netscan.research.microsoft.com/>



Further, why would some individuals chose to invest additional time and energy engaging in behaviours – such as contributing high value content or serving as an informal moderator – that are necessary to keep the community's conversations going? Simple inertia or habit might account for why some individuals might stay once they have arrived, but not for why they might also choose to assume one or more roles that are vital to a community's success. Dispositions and personality traits (such as the desire to build a reputation, an enjoyment in helping others, a belief in generalized reciprocity, or an altruistic disposition) might explain why individuals tend to engage in certain roles in general (Constant et al. 1994; Lakhani and von Hippel 2003; Wasko and Faraj 2000). However, as such antecedents would be expected to motivate a member's behaviours in many communities, they do not adequately explain why the same individual may behave very differently in different communities (e.g., Kim, 2000). Though dispositional models of member behaviours have many useful implications, the advancement of research in online communities requires that we move beyond statements about why individuals engage in key community behaviours in *general* and develop models that explain how an individual relates to and behaves within a *particular* community.

Explaining local, rather than global, role adoption requires a theoretical approach that considers both the individual *and* the community in question, and that accounts for the consequences of the different kinds of connections that typically emerge between a particular individual and a community. This leads to the central question motivating this research: How do the bonds that form between a member and an online community affect the set of specific conversational roles that he or she will adopt?

A comprehensive answer to this question has important implications for both researchers and administrators of online communities (Butler 2001b; Hall 2001; Williams and Cothrel 2000). Academics have called for more context-sensitive community research (e.g., Burnett and Bonnici 2003), and this could be accomplished by theorizing members' role adoption as a function of their relationship with a community. Such a model could help build a more complete picture of member behaviours in online communities; indeed, it may serve as a point of integration for a broad range of antecedents to online behaviours.



For administrators of online communities who care more about why an individual member frequents *their* community than why that member might frequent any number of competing communities, this model could suggest ways of encouraging members to adopt the kinds of roles that are key to keeping their online community active, focused, and evolving.

In the remainder of this manuscript, the paper offers a robust approach for understanding why members voluntarily invest effort in certain conversational roles in an online community. First, drawing on the well-developed organizational commitment literature, which describes employee employer bonds in the workplace, it is argued that a similar framework of commitments is useful for understanding member-community bonds. However, the employment-related outcomes of workplace commitments do not translate well into the community context, where members do not have jobs to perform, but instead adopt a variety of roles as participants in ongoing public conversations. The next step, therefore, is to review the online communities literature to identify a core set of conversational roles that members adopt. The paper proposes new theory to predict the extent to which a member will adopt each role (and perform the behaviours associated with that role) as a result of the type of commitment that member feels towards the community. The model is tested using survey and archival data from a well-established online community and close with a discussion of the findings and their implications for researchers and community administrators.

3.2 TYPOLOGY OF COMMITMENTS

We began to develop a framework for conceptualizing the different bonds that might arise between a member and an online community by investigating a parallel body of research that

examines the psychological bonds employees develop to their employers. Given the presence of alternative employers, employees acting as utility maximisers might be expected to leave their jobs whenever a more lucrative position becomes available (Williamson 1985). However, employees do not switch jobs nearly as often as this opportunistic approach would predict.



One key explanation for this is that many employees feel committed to their employers, which acts to reduce the possibility that they will depart even when higher-paying jobs are available (Meyer and Allen 1991; Meyer and Allen 1997; Mowday 1998). While other theories have sought to explain why employees remain with their employers (e.g., organizational identification, psychological contracts, and perceptions of fair interpersonal treatment), the workplace commitment literature offers the most well-developed and integrative theoretical framework for capturing a broad range of psychological bonds, with many other employer-related cognitions thought to serve as antecedents to or correlates of various forms of commitment (Meyer et al. 2002).

Investigations into workplace commitment have produced a rich body of research examining employees' enduring desire to remain with an employer (Mowday 1998). In their seminal work, Meyer and Allen (1991) conceptualized organizational commitment as a psychological link that characterizes an employee's relationship to an employer, and that has significant implications for the employee's decision to continue or discontinue the employment relationship (p. 67). However, commitment is not a uni-dimensional construct (Meyer and Allen 1991), with most commitment research pursuing one of three common themes: employees' perceptions of the costs of leaving the organization, their feelings of attachment to the organization, and their sense of normative obligation to the organization. Meyer and Allen sought to settle some of the ongoing debates in the commitment literature by arguing that organizational commitment was best conceptualized as a multidimensional construct consisting of three components: *continuance*, *affective*, and *normative* commitment. Although each has a different underlying theoretical rationale, they are not mutually exclusive. Indeed, employees can simultaneously possess different levels of each type of commitment, and, though distinct, they are often correlated (Meyer et al. 2002). Much subsequent empirical research has found that each has a distinct pattern of effects on workplace attitudes and behaviours (for reviews, see Meyer and Herscovitch 2001; Meyer et al. 2002). In the three following sections, each type of workplace commitment and propose that members of an online community may develop analogous forms of community commitment are described.



3.2.1 Continuance

Continuance commitment is a function of employees' perceptions of the costs (both social and economic) of leaving their employer, the benefits associated with remaining, the alternatives available, and the associated feelings of dependence on the employer. Employees with a strong continuance commitment *need* to remain with their employer because they believe that the net cost of leaving is too great (Meyer and Allen 1991). Sometimes termed “calculative” commitment (Swales, 2002) and described as the “sense of being locked in place because of the high costs of leaving” (Jaros et al. 1993, p. 953), this perception of dependence is a function of employees’ beliefs about whether the benefits of continued employment outweigh the costs (Scholl 1981). Employees who have a high level of continuance commitment believe they are bound to remain with a current employer because they doubt that there are alternatives available that could provide the same level of net benefits (Meyer and Allen 1997).

We term the corresponding construct in online communities *Continuance Community Commitment* (Continuance CC) and define it as the extent to which a member believes that the unique benefits associated with participating in a particular community are too valuable to forego. Members invest time and energy in online communities and report receiving a range of tangible and intangible benefits (Wasko and Faraj 2000; Wellman et al. 1996), including both informational and social benefits (Kollock and Smith 1996; Lakhani and von Hippel 2003; Ridings and Gefen 2004b). Evidence from group-level studies of communities suggests that perceived costs and benefits have significant effects on members’ behaviours (Butler 2001b; Jones et al. 2004; Wang et al. 2006). Members who expect to receive valuable benefits from their ongoing membership in a community, and who believe that few alternate communities could provide the same level of benefits, may feel the need to remain a member. Hence, it is likely that an analogous form of continuance commitment may arise in members of online communities who believe that it offers them unique value, and come to depend on it.



3.2.2 Affective

Affective commitment refers to an employee's emotional attachment to an organization (Meyer and Allen 1991). Individuals with high levels of affective commitment like their organization and *want* to continue as employees. A variety of factors may cause an employee to develop a high level of affective commitment. Both identification with the employing firm (Rousseau 1998) and a sense of belonging (Porter et al. 1974) are thought to be important antecedents to affective commitment, while the extent to which employees experience role conflict has been found to negatively influence it (Mathieu and Zajac 1990). Affective commitment may also be the result of social exchanges that lead employees to trust their employers (Cook and Wall 1980), feel fairly treated (Riketta 2002), and feel supported by their employers (Eisenberger et al. 1990). Affective commitment is also stronger when employees and employers share similar goals and values (Griffeth et al. 2000; O'Reilly et al. 1991).

Affective bonds may also form between a member and an online community. *Affective Community Commitment* (Affective CC) is the extent to which a member feels a strong emotional attachment to a particular community. Indeed, research has shown that such feelings of attachment are not uncommon among individuals within a community (Blanchard and Markus 2004; Hiltz and Turoff 1993). Antecedents to workplace affective commitment may also occur in community contexts – instance, when a member shares the community's values, trusts its leaders, feels that he/she is being fairly treated, and finds his/her involvement with that community to be personally gratifying. Indeed, some members develop a very strong sense of belonging (Faraj and Sproull 2000; Markus et al. 2000), and may even report that they love their online community and think of its members as friends (Baym 2000, p. 120).



3.2.3 Normative

Normative commitment is a third distinct form of workplace commitment that reflects an individual's sense of obligation to continue employment. Employees with a high level of normative commitment feel they that *ought* to remain with an organization (Meyer and Allen 1991). Normative commitment may arise through several processes. As new employees are socialized, they learn about the particular set of values held by others within the organization. These values often include loyalty (Wiener 1982) and obligation (Ashforth et al. 1998), and over time may become internalized by an employee and adopted as his or her own values (Etzioni 1975). Additionally, feelings of obligation may result when employees believe they have received benefits from an employer that exceed what they deserved. When employees are unable to adequately reciprocate for these received benefits (Gouldner 1960), their sense of indebtedness may produce a discomfort that leads them to a stronger normative commitment.

Normative Community Commitment (Normative CC) refers to the extent to which a member feels a sense of obligation towards a particular community. This sense of normative commitment has been documented among members of online communities (Rheingold 1994), with continued participation being seen as “the right thing to do” (Wasko and Faraj 2000, p. 168). A variety of factors may produce Normative CC, including a belief that other members deserve reciprocal treatment (Wellman and Gulia 1999), community leaders who attempt to instil a culture of reciprocity (Lazar et al. 2001), and a belief that it is a worthy thing to work for the good of the community (Kollock 1999). Members who have benefited from others’ friendship and advice may feel indebted to the community, and may come to feel that they are obliged to remain members in order to repay the perceived debt (Lakhani and von Hippel 2003). In the context of an online community, then, members may experience normative commitment towards a community if socialization processes instil a sense of loyalty and obligation, or if individuals feel indebted to the community.



3.3 CONSEQUENCES OF COMMITMENT

Research on workplace commitment has found that different types of commitment have distinct patterns of effect on a wide range of employee behaviours, including job performance (Angle and Lawson 1994; Somers and Birnbaum 1998), attendance and absenteeism (Somers 1995), turnover (Jaros 1997), “citizenship” and “extra-role” behaviours that benefit the employer but are not specified in the employee’s job description (Organ and Ryan 1995), employee well-being (Thompson et al. 1998), and work-family conflict (Frone and Rice 1987). Indeed, a recent meta-analysis of 155 studies of workplace commitment (Meyer et al. 2002) confirms that employees’ withdrawal cognition, turnover, job performance, job satisfaction, and extra-role behaviours are all differently predicted by each form of work-related commitment. In the workplace context, commitment is broadly accepted as a powerful predictor of job-related outcomes.

Although the three forms of community commitment are analogous to those found in the workplace, it is not simply appropriate the existing network of workplace dependent variables for use in the online community context. The structure of the employment context is fundamentally different from that of the community membership context (de Souza and Preece 2004; Herrmann et al. 2004). Members of online communities are not employees, are not paid by the community, are not assigned a pre-set job or place in a formal hierarchy, are not expected to perform defined tasks for a large portion of their work week, do not have managers or supervisors, have no fiduciary relationship to the community, and are not part of a set of formal processes that produce products or services that are exchanged with customers for money. As a result of these differences, many of the outcomes that the workplace commitment literature considers (job performance, work-family conflict, absenteeism, etc.) are either meaningless or must be substantially recast. In the world of online communities there are no “jobs” that people are “hired” into, no performance reviews, membership is not exclusive, and involvement, though time-consuming, rarely constitutes a defining life activity.



In particular, the implications of workplace commitment theory's focus on "extra-role behaviours" are unclear in a community context; with no assigned roles, and thus no clearly articulated expectations, it is problematic to identify particular behaviours as being "in-role" or "extra-role".

As a result of these fundamental differences between traditional organizations and online communities, the downstream nomological network that has been developed in the workplace commitment literature fits the community context poorly, and could not be applied without considerable – and potentially inappropriate – conflation of constructs. Although the three forms of commitment are applicable in contexts beyond employment (Meyer and Allen 1997), we cannot rely on workplace commitment theory to provide us with hypotheses about the way members' bonds with an online community will predict the roles that they might adopt, and the related behaviours they will perform, within the community. In order to develop theory that specifically explains how the bonds that exist between a member and a community influence the ways in which he or she participates in that community, we must turn to the online community literature.

A defining characteristic of online communities is the creation of a pool of member-generated content around a particular set of topics or themes (Butler 2001b; Hagel and Armstrong 1997) through persistent public discussions that carry on over an extended period of time (Figallo 1998; Rheingold 1994). New content emerges as long as members continue to communicate (Golder and Donath 2004), attracting new members who in turn provide more content to sustain the conversation (Hagel and Armstrong 1997). These conversations convey more than just facts (Galegher et al. 1998); they also benefit members by providing social support and friendship (Ridings and Gefen 2004b), emotional support (Blanchard and Markus 2004), access to others' beliefs and opinions (Herring 1996), and expert advice (Lampel and Bhalla 2007). Such benefits are produced as members engage in conversations (Arguello et al. 2006) that occur along a longterm topical or thematic trajectory that is re-negotiated over time, and as new ideas and new conversational directions emerge (Baym 2000). The communicative practices by which members produce these content pools are an important subject for research (Wilson and Peterson 2002), as conversations do not simply occur within an online community – they are also the mechanism by which the community is built and perpetuated (Bishop 2007; Bregman and Haythornthwaite 2003).



Three core behaviours are present in all dialogues: soliciting, giving, and acknowledging what was given (Wells 1981, p. 7-8)⁷ As described below, each of these behaviours has also been found in conversations within online communities. However, conversations in online communities are not dialogues, but polylogues (Marcoccia 2004); rather than necessarily proceeding via two-person turn-taking behaviours, as dialogue often does, conversations in online communities involve a wide range of different individuals who may contribute sporadically in what has been termed an 'open state of talk' (Goffman 1981, p. 134) or a 'discontinuous conversation' (Kerbrat-Orecchioni 1990, p. 217). A given solicitation thus often receives multiple replies, and may also receive acknowledgements from individuals who were not party to the original exchange (Collins and Berge 1997). Consistent with the idea that conversation is central to the functioning of online communities, researchers have described a range of conversational behaviours that correspond to the ideas of soliciting, giving, and/or acknowledging (e.g., Brush et al. 2005; Etzioni and Etzioni 1999; Turner et al. 2005; Williams and Cothrel 2000). Further, patterns have been observed in any single member's behaviours (Golder and Donath 2004; Viegas and Smith 2004), suggesting that these behaviours are not merely random events; rather, they reflect different kinds of conversational roles that members may adopt, to varying degrees, over time (Fisher et al. 2006; Golder and Donath 2004; Herrmann et al. 2004).

Most research that examines roles in online communities begins with a distinction between soliciting information and giving information and argues that communities are built around two key roles: content seekers and content providers (e.g., Fisher et al. 2006; Fisher et al. 2003; Lakhani and von Hippel 2003)⁸ *Content seekers* ask questions, start conversations and consume the available content (e.g., Anderson 2004; Golder and Donath 2004; Kollock and Smith 1996; Nonnecke and Preece 2003). *Content providers* publicly respond to content seekers and contribute information and/or knowledge resources that are seen as valuable and interesting to other members (e.g., Galegher et al. 1998; Lakhani and von Hippel 2003; Wasko and Faraj 2000; Welser et al. 2007).

⁷ This three-part structure has been used in much subsequent research, for instance, in analyzing the structure of written dialogue (e.g., Dolly 1990)

⁸ Finer grade distinctions also possible; for instance, what Turner et al. identify as "answer person" and "conversationalist" and Brush et al. (2005) describe as "key contributors" and "low volume repliers" can be seen as different classes of content providers.



Others have extended this content-based approach by showing that some members also fill the role of *informal moderators* who acknowledge others' contributions, encouraging and guiding them toward topics that are of central interest to the community (e.g., Ahuja and Galvin 2003; Butler et al. 2007; Kollock and Smith 1996; Lampe and Resnick 2004; Salmon 2000).

The roles of content seeker, content provider, and informal moderator⁹ are not pre-defined or imposed, but rather emerge over time as a function of consistencies in a member's behaviours within a community (Fisher et al. 2006; Golder and Donath 2004). They are neither exclusive nor binary; that is, members may hold a variety of roles, and some will be more engaged than others in each role (Galegher et al. 1998). While some research holds that such roles are mutually exclusive and progress in lockstep (e.g., Ahuja and Galvin 2003), no such assumptions are made, allowing instead that a member's level of engagement in multiple roles may change over time (e.g., Herrmann et al. 2004; Kim 2000). In the sections that follow, these three conversational roles and the ways that community commitments can affect the likelihood a member will adopt the behaviours associated with each are elaborated on.

3.3.1 Content Seeker

Members who adopt the content seeker role invest energy in starting conversations and in consuming the resources that are available through an online community. Such members have been described in some contexts as “questioners” (Turner and Fisher 2006), who mostly post new threads that seek help, information, or clarification from other members (Turner et al. 2005; Welser et al. 2007). They also include members who post messages with the goal of initiating conversations in which they would like to participate (Turner and Fisher 2006). Content seekers are important to the viability of an online community because they serve as an audience that motivates potential content providers to participate (Hall 2001; Nonnecke and Preece 2000).

⁹ While there may be other roles in some online communities, the prevalence and importance these three across a variety of contexts and their mapping with the three aspects of conversation argues for the sufficiency as a foundational model of conversational roles in online communities.



Their behaviours affirm the importance of the community's central theme, and demonstrate that it remains topical and relevant (Butler et al. 2007; Nonnecke and Preece 2003). Their presence signals to outsiders that the community is active and vibrant, with a critical mass of interested members (Butler 2001b).

Content seeking behaviours, which include reading posts and starting conversations, underlie many of the benefits a member receives from an online community. Hence, continuance CC is expected to be a primary antecedent of these content seeking behaviours. Continuance CC is based on a member's calculated expectation that he/she will receive significant benefits from the community. Those with high levels of continuance CC perceive that leaving the community would result in a costly forfeiture of benefits (both informational and social). A member who believes that there are few alternative communities where he/she could obtain the same kind of useful content is more likely to be an active consumer of content at that site, starting conversations on topics of interest to him/her and reading extensively to access as much content as possible. Having benefitted from the content available in a community in the past, such members anticipate that future interactions with the community will also be beneficial (Ridings and Gefen 2004b). These anticipations increase the likelihood that they will continue to engage in the activities that are the basis of the benefit they derive from community conversation: content-consumption behaviours (how many posts he/she reads) and conversation-starting behaviour (how frequently he/she begins new discussion threads).

3.3.1.1 Content Consumption Behaviour

Reading takes time. Typical adult reading rates are around 200 words per minute (e.g., Saubramanian and Pardhan 2006). Even ignoring navigation and search time, reading 10-20 messages will likely require a substantial amount of effort. Still, individuals with a high level of continuance CC will be more persistent in consuming content that is available through a community. Holding a strong belief that the benefits associated with a community are too valuable to forego would increase an individual's willingness to spend time seeking valuable content by reading a greater number of posts (e.g., Koh et al. 2007, p. 7).



Further, while individuals with low continuance CC might be discouraged when they encounter content that does not directly match their own interests and expectations, a lack of fit is unlikely to deter members with high continuance CC (at least in the short run). Indeed, individuals with strong expectations that content will be valuable to them may be especially persistent in their content seeking behaviours (e.g., Hsiu-Fen and Gwo-Guang 2006). Such persistence may occur irrespective of actual content quality, as cognitive dissonance (Festinger 1957) would cause such individuals to behave as though the community contains highly valuable, unique content – whether it actually does or not. Such an effect would not be expected among members with low levels of continuance CC, who would be more likely to discontinue their reading behaviour in the face of content that does not match their interests and needs (Butler 2001b). Together, these effects suggest that members with high continuance CC will view more posts than those with low continuance CC.

H1: A member's level of continuance CC towards a particular community will positively influence the quantity of posts that he or she consumes in that community.

3.3.1.2 Conversation-Starting Behaviour

Reading the conversations that take place within a community is central to the process by which individuals derive informational, social and emotional benefits from that community. While reading alone can provide individuals with significant benefits (Nonnecke and Preece 2003), much depends on the degree to which the content created by others meets the needs and desires of the reader. Such alignment is not always the case. One thing that individuals can do to increase the likelihood that community conversations will benefit them is to initiate new conversations around topics that interest them. Starting conversations increases the benefits available to a member by improving the likelihood that future content will be aligned to his or her own specific interests and needs (Arguello et al. 2006, p. 959).



By introducing themselves, asking questions, or making provocative statements, an individual can both signal that there is interest in a particular topic and increase the chances that personally relevant content will be created within the community.

Individuals with high levels of continuance CC would be more likely to direct the community's efforts and attention by starting conversations that are closely related to their interests. Such members would be more willing to invest the time needed to begin new discussions of personally relevant topics, as they would already hold the expectation that the community will provide them with valuable responses (Joyce and Kraut 2006, p. 725). Alternatively, members with low levels of continuance CC would be less likely to anticipate that the community in question will provide them with uniquely valuable content. They are therefore less likely to expend effort in attempting to direct the community's discussion, and thus will do so less frequently.

H2: A member's level of continuance CC towards a particular community will positively influence the frequency with which he or she begins new threads in that community.

3.3.2 Content Provider

Whether individuals are drawn to an online community by a desire to interact with like-minded others (Wasko and Faraj 2000) or by the information available through it (Armstrong and Hegel 1996; Lakhani and von Hippel 2003), the consistent generation of high-quality conversations is crucial. Members who adopt the role of content provider respond to content seeking behaviours by contributing valuable information and/or knowledge resources to the community's conversations (Welser et al. 2007). In some contexts, they have been described as “answer people” (Golder and Donath 2004; Turner et al. 2005), who spend a considerable portion of their time finding questions and helping peers (Lakhani and von Hippel 2003) and, in the process, create valuable online resources (Butler et al. 2007). In other contexts, they are the ones who provide social support and foster debate and discussion (e.g., Preece 1999).



No matter what the context, the degree to which a member has adopted a content provider role may be assessed by observing how frequently he/she posts replies to others' discussion threads, and by tracking how interesting and valuable the community judges his or her posts to be (Golder and Donath 2004, p. 6).

The nature of content provision is such that continuance CC, with its emphasis on members' assessments of costs and benefits, is unlikely to be a major motivation for adopting this role. While content seeking behaviours provide members with direct benefits that offset the associated costs, such calculations are significantly less compelling when it comes to content provision behaviours. Not only are the costs higher, since creating high-quality responses to other members' queries requires both extensive reading and writing, but the benefits for providers are more diffuse, and in the extreme, non-existent. This is compounded by the "public good" nature of online communities – that is, if they choose to, members can benefit from others' contributions while not providing any of their own. From a pure cost/direct benefit perspective, then, there is relatively little reason for individuals to adopt the role of a content provider within an online community (Connelly and Thorn 1990; Kollock and Smith 1996).

While calculative arguments suggest that continuance CC will not be a factor in an individual's decision to adopt a content provider role, content provision behaviours are likely to be influenced by the affective form of community commitment – that is, by the extent to which a member feels a strong emotional attachment to a community. In general, individuals are more willing to do work that benefits others if they have an affective attachment to them or to the group that they are part of (Grant 2007). In the online community context, Blanchard and Markus (2004, p. 65) argued that "successful communities [are] distinguished by members' helping behaviours and members' emotional attachment to the community," and found that in their study of a large newsgroup, members who participated more actively had higher levels of attachment to the community. Members with higher affective CC see themselves as belonging to a group that they like, which increases the likelihood that they will be willing to invest the time, energy, and attention needed to contribute in response to others and in ways that are beneficial to the community as a whole.



3.3.2.1 Responsive Contribution Behaviour

Responsive contribution behaviour – posting replies in discussions initiated by others – is a core content provision behaviour. High levels of affective CC are expected to have two complementary effects on the quantity of replies that a member contributes. First, members with high levels of affective CC are more likely to enthusiastically take part in conversations started by others because they are inclined to help individuals who are part of a group that they like (Cialdini et al. 1997). Their affective attachment to the community makes them want to see it prosper, and this leads such members to help it prosper by partaking in active conversation streams and contributing valuable content (Wellman and Gulia 1999). Each time they add their input to others' conversational threads, these members are providing benefits to others and are helping to sustain and advance the community that they like.

Members with high affective CC also identify more strongly with the community. Such members like their community, care more about its central conversational topic or theme, and will have a stronger desire to publicly demonstrate their solidarity with the community (Blanchard and Markus 2004). They seek to accomplish this by 'writing themselves into the script' of conversations that evolve in the community, and in doing so, help shape the trajectory of existing conversational streams by responding to others' posts. Conversely, members with low affective CC feel no particular bond or emotional connection with the community, and thus are less invested in its long-term viability; as a result, they are less likely to care enough to reply to others' postings. A greater sense of belonging, combined with genuine caring for the community, means that individuals with higher levels of affective CC are more likely to engage in responsive contribution behaviours.

H3: A member's level of affective CC towards a particular community will positively influence the frequency with which he or she posts replies to existing threads in that community.



3.3.2.2 Providing Interesting Content

Providing interesting content for others can be a difficult task. Learning the genres and norms that underlie community conversation takes time (Arguello et al. 2006; Yates and Orlikowski 2002). Understanding a question, thinking through an answer, and writing a message that thoroughly and effectively addresses a content seeker's idiosyncratic question can require significant effort (Lakhani and von Hippel 2003). Nevertheless, content providers are not only willing to provide content in response to others, but also to respond in a way that is beneficial to both the content seeker and the community as a whole.

Since members with high levels of affective CC feel more strongly connected to their community, they are also more likely to try harder to provide content that is valuable to the community (Blanchard and Markus 2004). Their affective bond with the community makes it less likely that they will respond to others' requests in ways that are uncaring, intolerant, or unhelpful. Because they like the group and feel a sense of belonging, they will be more willing to invest the time and effort to compose responses that are beneficial to a wide range of members. Content providers' tendency to make valuable contributions will be reflected in the (positive) judgments others make about the value of their content, which will enhance the contributor's reputation within the community (Fisher et al. 2006). When others know that a certain member's posts will be of high quality, they will be more likely to choose to read that member's posts (Farquhar and Rowley 2006, p. 167). Hence, because of their willingness to invest time and effort in creating higher quality, community specific content, members who have a high affective CC are expected to contribute posts that are read more frequently.

H4: A member's level of affective CC towards a particular community will positively influence the number of times his or her posts are read by other members in that community.



3.3.3 **Informal Moderator**

Members who adopt the role of informal moderator help to guide discussions towards coherent themes (Kollock and Smith 1996), often through the use of social sanctions (Hafner 2001), to ensure that community conversation stays focused and is beneficial to its larger population of members (Collins and Berge 1997). Informal moderators help propagate the informal rules and guidelines that underlie behaviour in the community (e.g., how to make useful, focused comments or ask questions), and also signal when behaviour is inappropriate or damaging to the community (e.g., spamming, flaming, or making off-topic postings). A community that is able to organically develop a stable set of guidelines and regulate itself through members' actions is more likely to succeed than is one in which rules are imposed by site owners (Preece 2004). Keeping community conversations focused in this way also reduces the cognitive load on content seekers, increasing the long term viability of the community (Lampe and Resnick 2004).

Informal moderators acknowledge and offer encouragement to members whose posts are valuable to the community, and attempt to discourage those whose posts are off-topic, irrelevant, or otherwise of low value to the membership (Burnett and Bonnici 2003). These “social encouragement” and “social deterrence” behaviours (Butler et al. 2007) can occur via public postings or through private email exchanges (Blanchard and Markus 2004). Social encouragement occurs when a member promotes desirable behaviours by publicly recognizing others who contribute especially informative and supportive messages (Kim 2000). Social deterrence reflects members’ efforts to shape others’ behaviours by managing disputes, discouraging the discussion of topics outside of the stated focus, and reprimanding those who engage in inappropriate behaviour (Lampe and Resnick 2004).

3.3.3.1 **Social Encouragement and Deterrence**

The idea of community justice in geographic communities – whereby community members take responsibility for self-policing and responding to crime via social deterrence mechanisms that enhance community life – has increasingly been a focus of research (e.g., Sampson 1995).



The idea of community justice builds on the recognition that when citizens engage in civic activism, they discourage crime and steer would-be criminals towards socially appropriate behaviours. These kinds of social encouragement and social deterrence behaviours are more likely to emerge among citizens who feel a strong sense of loyalty and social obligation towards their community (Clear and Karp 2000). Their sense of normative commitment leads them to take personal responsibility for preserving the viability of their community.

Similar processes are likely to occur in online communities. Members who have high levels of normative CC are more likely to engage in leadership behaviours (Blanchard and Markus 2004, p. 72), because they feel an obligation to do the right thing for their community and will strive to preserve its long-term viability. As a result, such individuals are more likely to engage in behaviours that protect and enhance the community. By promoting constructive behaviours and discouraging disruptive ones, social encouragement and social deterrence help to maintain a sense of cohesion within a community by defining what is acceptable behaviour and what is not (Bergquist and Ljungberg 2001; Burnett and Bonnici 2003). These informal moderation behaviours reward positive behaviours and punish negative behaviours, which over time serves to both winnow out unproductive members and retain productive ones (Golder and Donath 2004), as well as to help socialize newcomers. By helping to preserve the rules and expectations for appropriate conduct, informal moderation strengthens the community (Ahuja and Galvin 2003). Because they feel a strong loyalty and obligation to the group, members who have high levels of normative CC are more likely to help work to preserve the community.

H5: A member's level of normative CC towards a particular community will positively influence the extent to which he or she engages in social encouragement in that community.

H6: A member's level of normative CC towards a particular community will positively influence the extent to which he or she engages in social deterrence in that community.

These hypotheses are depicted visually in Figure 11

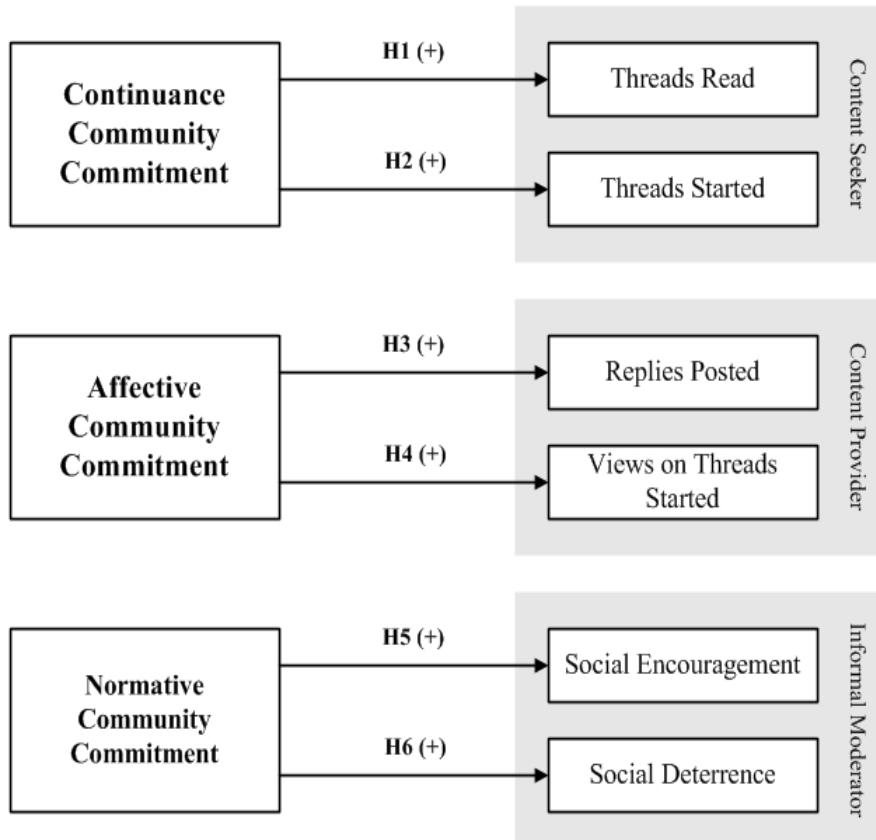


Figure 11 Summary of Hypotheses: Commitment and Conversational Roles

3.4 RESEARCH METHODOLOGY

Data to test the research model was collected at BroadForum (a pseudonym), an online community which had, during its 22 months of operation, amassed approximately 50,000 registered members and 3.4 million posts. It was promoted as a “general discussion” community, with the goal of supporting social conversation among a diverse group of members. Similar to Oldenburg’s (1999) “great good place”, BroadForum was a public place, neither work nor home, that hosted regular, voluntary, and informal social interactions among its members, and where the focus was the sustaining activity of conversation.



A broad range of conversational topics arose in this community, including current events, sports, entertainment, fashion, politics, philosophy, technology, and anime, among many others. Members did not occupy any particular professional, technical, or cultural niche. Though the sheer size of the community led its owner/administrator to group threads into categories to help members organize their conversations, BroadForum maintained its identity as a single online community, hosted by a single owner/administrator.

The BroadForum administrator sent to his members an invitation to complete an online survey in exchange for the chance to win a gift certificate from a popular online retailer. Which reduced the likelihood that they would perceive the survey invitation as unsolicited spam – a common problem in studies of online communities (Andrews et al. 2003; Ridings et al. 2002). Subjects were solicited via an invitation message made in a new thread posted throughout the BroadForum community (as recommended by Andrews et al. 2003). Follow-up postings were made on days 7 and 11, and data collection terminated on day 14.

3.4.1 Respondents

The invitation was viewed 3,183 times over these 14 days, but this tally did not distinguish between unique and repeat views. A total of 741 members accessed the survey site, meaning that at least 23.3% of those who viewed the invitation clicked through to the survey. Of these click troughs, 324 (43.7%) subsequently went through the entire survey. A conservative estimate¹⁰ is thus that at least 10.1% of potential respondents completed the survey (although this figure would increase if the invitation was viewed multiple times by the same individual). Responses made by those under 18 years old and those with large amounts of missing data was deleted, resulting in a final dataset of 192 adult members (ages ranged from 18 to 53, with a mean of 23.5).

¹⁰ Following an established procedure for calculating response rates in surveys of online communities (Ridings et al. 2002) produced a response rate of 25.9% of individuals who accessed the survey site. While nothing is known about those who read the invitation but chose not to access the survey web site, the ability to track how many times invitations were viewed and how many surveys were started and completed allowed for the calculation of a reliable response rate, thereby providing better metrics than are typical of online data collection efforts (Andrews et al. 2003).



Tenure as a registered member ranged from 6 to 671 days, with a mean of 360 days. Eighty-four percent of respondents were male. The largest proportion of respondents reported spending between 2 and 4 hours daily using the Internet and online communities.

3.4.2 Measures

The survey instrument was developed by the site administrator and sent to the marketing department and internal reviews. The revised items were then further refined in a pilot study performed in three different online communities, with a total of 285 completed responses. Based on extensive analysis of the pilot study data and further rounds of informal discussions with community administrators and members, led to the convergence to the final set of items shown in Table 27

Of the original 100 questions only the ones shown in table 27 were selected in order to achieve an as close as possible Dillman's (2000) approach. Items were selected to adapt from Meyer and Allen's (1997) workplace commitment scales to create community commitment equivalents, and items from Butler et al. (2007) to measure social encouragement and social deterrence.

Rounds of informal discussions with the community administrator were realised to measure the relevance of the responses and of the selected questions. The selected questions were then reduced to the final set after a careful “statistical” meaning test to reduce the sample test to a meaningful and homogeneous one performing a preliminary variance and covariance analysis.



Continuance Community Commitment	C11	I am sure that there are other sites where I could find the same content and services that I get at this site. [r]
	C21	I keep coming to this site because there are few alternative sites available.
	C3	If I stopped coming to this site, it would take me a long time to find a site that could replace it.
	C4	There are very few other places where I could find the kind of useful content and services that I get from this site.
	C5	The content of this site is too valuable for me to stop visiting.
Affective Community Commitment	C1	I feel like a part of the group at this site.
	C2	I have a real emotional attachment to this site.
	C3	This site has a great deal of personal meaning for me.
	C4	I feel a strong sense of belonging to this site.
	C5	I feel a strong connection to this site.
Normative Community Commitment	C1	I feel an obligation to continue visiting this site.
	C2	I would feel guilty if I stopped visiting the site now.
	C31	This site deserves my loyalty.
	C4	I keep coming to visit this site because I have a sense of obligation to it.
	C5	I visit this site partly out of a sense of duty.
Social Encouragement	E1	I praise other users when they post an informative message or comment.
	E2	I praise users when they are supportive towards others.
	E3	I encourage users to tell others about this site.
Social Deterrence	C1	I try to settle disputes between users.
	C2	I encourage users not to post messages that are off-topic (i.e. hijack) from the original thread.
	C3	I reprimand other users' inappropriate behaviour.
Gender		What is your gender? 1. MALE 2. FEMALE



Age		What is your year of birth
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All attitudinal items were measured on a 7-point Likert scale anchored on “1 = strongly disagree” and “7 = strongly agree”

Table 27 List of Survey Items

We gathered archival data from BroadForum’s server logs a few weeks after the completion of the survey; all data spanned sixteen weeks only, and not any prior period. Measures of the degree to which a member adopted a content seeker role included the number of threads he/she started and the number of posts he/she read. Measures of the degree to which a member adopted a content provider role included the number of replies posted by that member, and the number of times others viewed threads started by that member. In addition, demographic data about all respondents (gender, age, tenure), and included these variables as control measures by modelling them as antecedents of the dependent variables was gathered.

These data were employed in a simultaneous test of structural and measurement models using Partial Least Squares (PLS Graph, Version 3.00). To assess the adequacy of the measurement model using three common tests of convergent validity (Chin 1998; Hulland 1999) were used. First, after dropping three items that loaded poorly (CC1, CC2, and NC3), all loadings of the remaining items on their intended constructs were greater than 0.7, indicating that there was more shared variance between constructs and their items than error variance (Carmines and Zeller 1979).

Second, the internal consistency of each construct was assessed using composite reliability (Werts et al. 1974), and found the lowest to be 0.87, well in excess of Nunnally’s (1978) 0.7 guideline. Third, the average variance extracted (Fornell and Larcker 1981) for each scale was calculated, which measures the average amount of variance that a construct captures from its indicators relative to the amount due to measurement error. All scales exceeded Chin’s (1998) guideline of 0.5, meaning that at least 50% of variance in indicators was accounted for by its respective construct. Table 28 provides the results of these measurement model analyses.



		Response Mean	Std. Dev.	Cronbach's Alpha	Internal Consistency	AVE	1	2	3	4	5	6	7	8	9	10	11
1	Continuance CC	.13	.42	.81	.89	.72	.871										
2	Affective CC	.70	.40	.92	.94	.76	.512	.88									
3	Normative CC	.50	.64	.90	.93	.78	.27	.35	.85								
4	Messages Read	694	708	n.a.	n.a.	n.a.	.16	.16	.12	.00							
5	Threads Started	7	0	n.a.	n.a.	n.a.	.20	.14	.10	.51	.00						
6	Replies Posted	71	570	n.a.	n.a.	n.a.	.03	.01	.02	.47	.40	.00					
7	Threads Read By Others	964	4173	n.a.	n.a.	n.a.	.23	.13	.13	.41	.79	.38	.00				
8	Social Encouragement	.33	.17	.78	.88	.70	.35	.46	.31	.13	.16	.04	.19	.00			
9	Social Deterrence	.41	.43	.77	.87	.69	.25	.42	.30	.12	.09	.04	.12	.51	.00		
10	Gender	.84	n.a.	n.a.	n.a.	n.a.	.08	.00	.01	.23	.08	.07	.09	.12	.03	.00	
11	Age	3.5	.4	n.a.	n.a.	n.a.	.04	.03	.015	.20	.08	.10	.07	.04	.05	.39	.00
12	Tenure (days)	60	09	n.a.	n.a.	n.a.	.02	.13	.06	.08	.07	.10	.03	.04	.13	.33	.017

Table 28 Correlations, Convergent, and Discriminant Validity

To assess discriminant validity, the correlations of items with their intended constructs was examined and found that all items correlated most strongly with their intended construct. Also noted was that the square root of AVE for each construct (see Table 28) exceeded all respective inter-construct correlations, providing further evidence of discriminant validity. Though workplace affective and normative commitments are sometimes strongly correlated, the community-oriented scales had no such validity problems. An exploratory factor analysis of survey response items (see Table 29) also supports construct validity.



	Component				
	1	2	3	4	5
AC1	0.76			0.35	
AC2	0.83	0.23			
AC3	0.78	0.25	0.32		0.21
AC4	0.77		0.22	0.29	
AC5	0.79	0.26	0.30		
CC3	0.26		0.76		
CC4			0.89		
CC5	0.28		0.76		
NC1	0.33	0.75			
NC2		0.86			
NC4	0.25	0.89			
NC5		0.85			
CIT1SE				0.86	
CIT2SE				0.82	0.21
CIT3SE			0.26	0.61	0.26
CIT4SD	0.22				0.79
CIT5SD				0.31	0.72
CIT6SD					0.82

Extraction Method: Principal Component Analysis. Rotation Method:
Varimax with Kaiser Normalization Values <.20 suppressed

Table 29 Exploratory Factor Analysis of Survey Response Items

3.5 DATA AND RESULTS ANALYSIS

We tested the hypotheses by examining the size and significance¹¹ of structural paths in the PLS analysis¹² and the percentage of variance explained, with all significant paths (both hypothesized and not) shown in Figure 12.

¹¹ PLS produces standardized regression coefficients for structural paths. Bootstrapping techniques, a nonparametric approach for estimating the precision of paths, were used to test for significance using 500 re-samples

¹² Archival data (number of replies, threads started, views on threads started, posts viewed) was highly skewed, as is typical in community user data (Butler 2001); therefore the logarithm of these variables calculated.

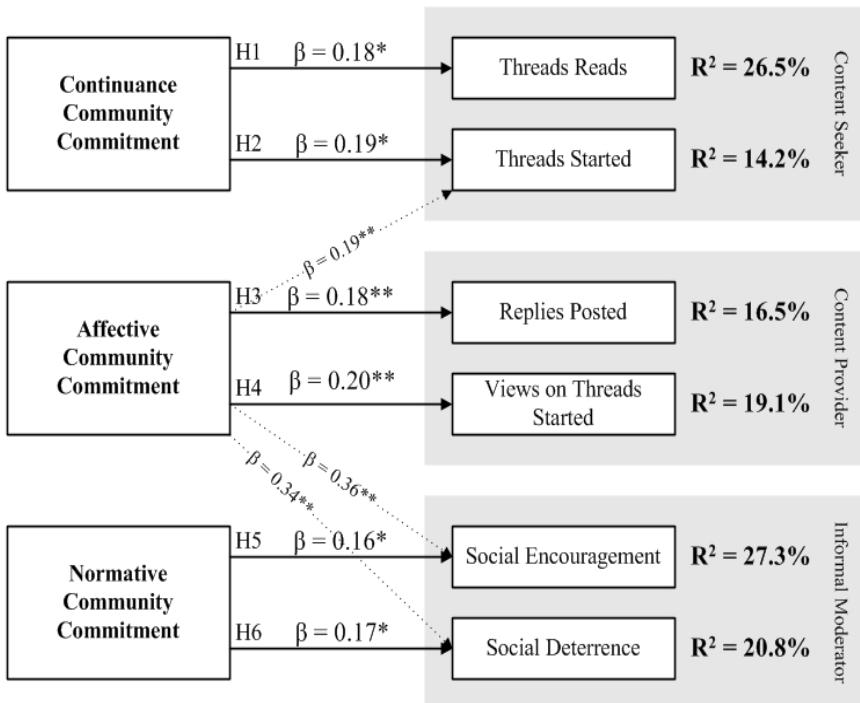


Figure 12 Empirical PLS Path Model

First, the model showed several significant antecedents to content seeking behaviours that, along with controls, explained 26.5% of the variance in the number of messages read and 14.2% of the variance in the number of threads started by a member. Continuance CC predicted messages read (H1, $\beta = 0.18$, $p < .05$) and threads started (H2, $\beta = 0.19$, $p < .05$) as hypothesized. Interestingly, affective CC ($\beta = 0.19$, $p < .05$) also predicted thread starts.

Second, the model significantly predicted content provision behaviours, explaining 16.5% of the variance in replies posted by a member, and 19.1% of the variance in the number of times that member's threads were read. Affective CC predicted replies posted (H3, $\beta = 0.18$, $p < .01$) and the number of times a member's threads were read (H4, $\beta = 0.20$, $p < .01$) as hypothesized. No other community commitments significantly affected these content contribution behaviours.



Lastly, the model explained significant variation in members' informal moderator behaviours, including 27.3% of the variance in social encouragement and 20.8% of the variance in social deterrence. Normative CC predicted social encouragement behaviours (H_5 , $\beta = 0.16$, $p < .05$) and social deterrence behaviours (H_6 , $\beta = 0.17$, $p < .05$). However, affective CC also predicted both ($\beta = 0.36$, $p < .001$ and $\beta = 0.34$, $p < .001$, respectively). Control variables were significant in some instances; gender significantly predicted messages read ($\beta = 0.29$, $p < .01$), threads started ($\beta = 0.21$, $p < .01$), replies posted ($\beta = 0.25$, $p < .01$), and the number of times a member's posts were read ($\beta = 0.24$, $p < .01$). Tenure significantly predicted messages read ($\beta = 0.21$, $p < .05$), and the number of times a member's posts were read ($\beta = 0.16$, $p < .05$). Age did not significantly influence any dependent variable.

3.5.1 Successive Analyses

Recent advances (e.g., Meyer and Herscovitch 2001) suggest that because employees can develop multiple work-relevant commitments, it is useful to consider all three together to create a kind of "commitment profile". The underlying logic is that the presence of certain kinds of commitment may amplify or dilute the effects of other kinds of commitment. To allow for this possibility, a second PLS model (details omitted) was constructed to test interaction effects that might have reinforcing effects on behavioural outcomes. Two interaction effects were significant; the cross-product of normative CC and continuance CC positively influenced both the number of replies posted by a member ($\beta = 0.16$, $p < .05$) and the number of times others viewed threads started by a member ($\beta = 0.16$, $p < .05$). A member who has both a high level of normative CC and a high level of continuance CC thus behaves in ways that are similar to a member with a high level of affective CC, replying more frequently to others' posts and having their threads read more often by others.



3.6 DISCUSSION AND IMPLICATIONS

The possibility that need, affect, and obligation might influence members' behaviours has been noted in separate studies of online communities (Constant et al. 1994; Lakhani and von Hippel 2003; Wasko and Faraj 2000), but these have not previously been theorized collectively as member-community bonds that predict members' adoption of specific conversational roles. The study contributes to the literature by advancing a theoretically-grounded framework for understanding these bonds, and by synthesizing a new body of community-focused theory that helps to explain why members adopt particular conversational roles within communities. The power of this approach is evident, as it was found that each form of community commitment has unique explanatory power and is not interchangeable with other forms in nature, scope, or impact. This research also benefits community administrators, who face the challenge of achieving an appropriate mix of conversational roles that maintain the quality of the member generated content pool over time (as argued by Kim, 2000). With a better understanding of how members' psychological bonds to their communities lead to the adoption of specific conversational roles, administrators can better target their member development and retention efforts towards producing the kinds of bonds that will keep the community active, focused, and evolving. In the remainder of this section, the paper elaborates on these general contributions by discussing the implication of the findings for researchers and for community administrators.

3.6.1 Implications for further research

A range of research has sought to understand what drives members to participate in online communities in general. Two studies stand as exemplars of contrasting approaches to understanding these behaviours, and both are useful in demonstrating the contribution of this current study to the existing body of online community research. First, an exploratory study by Wasko and Faraj (2000) asked members of an online community why they participated in it, and respondents gave a wide range of reasons (including anticipated benefits, enjoyment, and moral obligation, among others).



Wasko and Faraj saw these as alternate explanations for participating in online communities generally, and, based on the strength of the responses they gathered, concluded that a variety of individually-held beliefs about moral obligation were the most important factors in explaining online behaviours. This study takes a key step forward from the important base of evidence amassed by Wasko and Faraj by advancing a comprehensive set of member-community bonds based on a well-established parallel literature, theorizing the unique impacts of these bonds, and documenting the specific kinds of bonds that lead to the adoption of specific conversational roles. Moving beyond general statements about the presence of certain underlying rationales and their effects on broad collections of behaviours, the paper provides evidence about the effect of specific bonds conversational roles and behaviours. The precision that comes from simultaneously testing alternate forms of commitment and finding clearly substantiated effect patterns helps to advance the literature beyond the general finding that members report many different rationales for their various behaviours within communities. Integrating a wide range of ideas into one model that reveals which bonds are most important in understanding each conversational role thus establishes a new baseline upon which future research can build.

In a subsequent study, Wasko and Faraj (2005a) built on their earlier findings to investigate how the beliefs and network positions of members of a professional network of practice predicted whether they provided helpful answers to others' questions. Though the context was dissimilar to ours (focusing on work-related question-and-answer behaviours among a group of legal professionals), the findings of this study reveal the limits of existing attempts to theorize the effect of commitment on contribution behaviours. As part of this study, Wasko and Faraj posited that individuals who were more committed to a professional network of practice would contribute more knowledge. However, their operationalization of commitment attempted to combine aspects of affective, normative, and continuance logic into one measure, which ultimately failed to support their hypotheses. By fully elaborating the community versions of each commitment construct, this research provides a plausible explanation for Wasko and Faraj's lack of significant findings. Rather than finding that commitment has no effect on members' behaviour, this more precise model in fact reveals that it has a rich array of effects.



Researchers who might have discarded the commitment construct as unimportant should reconsider this important set of ideas when developing models of online behaviours and their antecedents.

In addition to these general contributions, the findings also offer researchers a variety of specific insights into the nature of members' relationships to their online community. First, the impacts of affective CC on a broad range of conversational behaviours reveals how important it is that at least some members feel strong emotional attachment and identification with the community. Such individuals engage in more content provision and informal moderation behaviours, and start more threads as well. Although thread-starting is also a function of continuance CC, threads started by members with high affective CC are read more frequently by others, suggesting that they are seen as more relevant or interesting. Whether this is due to a greater sensitivity to the needs of the community as a whole, a greater willingness to customize contributions to those needs, or the greater visibility (and hence, credibility) of these individuals within the community, the implication is that the behaviours of members with higher affective CC are more tightly embedded within the community as a whole. In contrast, members with high levels of continuance CC appear to start threads that are less interesting to the community, as they may be focused more on their own needs and interests. Affective CC is thus associated with behaviours that are performed *with* or *for* the community, while continuance CC is linked with activities that are performed *in* the community.

We hasten to add that this does not imply that continuance CC is a bad thing, despite the fact that community research has typically cast content seekers as drains on a community's resources. Similarly, continuance is typically characterized in the workplace literature as an undesirable form of commitment, leading employees to remain with a firm even if they hate their jobs, because they can see no better alternatives. However, in a community context, continuance CC produces content seekers who constitute the audience that in turn attracts content providers, and is thus key to the synergistic growth of the community's conversations (Butler 2001b). The fact that this is the case underscores the considerable differences between employees and community members. A perceived lack of alternatives leads employees to grow to resent their employer and to minimize their job-related efforts. However, in a community context, it leads members to try harder to maximize the unique benefits of the community to them personally.



Across these two contexts, variation in the processes by which benefits are allocated may explain why continuance commitment has such different effects: Employers often pay salaries that are relatively insensitive (at least in the short run) to variation in employees' effort level, while communities produce benefits in direct relationship to the amount of effort a member chooses to invest in obtaining content. Workplace commitment researchers therefore may seek to build on these findings by investigating whether compensation style or the ability to adapt jobs to individual needs significantly moderates the negative effects of continuance commitment in the workplace.

Continuance CC may also play a more subtle positive role, as revealed through the testing of commitment profiles. It was found that when a member has a strong continuance CC and a strong normative CC, that member behaves in some ways that are consistent with affective CC. This combination of need and obligation leads members to reply to others' posts more frequently and to start threads that are viewed more frequently by the community. To our knowledge, this kind of equifinality has not yet been demonstrated in the community literature, and suggests that more research is needed to elaborate on the ways that content providers may contain heterogeneous subpopulations that vary in theoretically predictable ways.

Interestingly, it was found that the impacts of normative CC were considerably weaker than the literature on reciprocity and altruism would have predicted (Constant et al. 1994; Wasko and Faraj 2000). Normative CC did not predict members' content provision behaviours, and was a weaker predictor than affective CC in predicting informal moderator behaviours. It is possible that methodological variation may account for the differences in findings. Past research has typically relied on self-reported measures to assess both contribution and reasons for contributing, which may bias responses towards the socially acceptable association of obligation with contribution. The use of archival behaviour data may therefore explain some of this discrepancy. More substantively, studies also differ with respect to the entity that is the target of an individual's sense of obligation (another individual vs. a specific group or community vs. generalized altruism or reciprocity without a focus). While these differences complicate comparison across studies, they also raise questions about the interplay between different types of obligations.



Perhaps obligations incurred at the individual level do not transfer to the community as a whole, or perhaps this transference is mitigated by other factors (e.g., affective commitment to the community). Improving our collective understanding of this potentially complex interplay remains an intriguing challenge for future research.

Our findings may also guide scholars interested in modeling and explaining the development of online communities by highlighting the need for more integrative theoretical approaches. To date, research has tended to treat theories of need, affect, and obligation as competing explanations for behaviours in online communities. The results suggest instead that the three can mutually co-exist, and that any attempt to explain online behaviours will be incomplete unless it considers all three. Future research that examines the synergistic impacts of different levels of each (for instance, by simulating different combinations of conversational role populations and examining the trajectory of the resulting body of conversation) could go far in illuminating the dynamic process of community formation.

Because of the inability to observe how different community commitments emerged over time, a variety of interesting questions remain about the nature and evolution of commitments in online communities. First, is there a typical temporal sequence in the evolution of a member's community commitments? For instance, does affective CC and its community-focused approach develop later, after an initial period of continuance CC (which, with its individually-focused style, acts as a mechanism to keep new members coming back)? If so, how does normative CC fit into the evolution of member commitments? Second, given that communities are fundamentally collective enterprises, research is also necessary to understand the interaction between collections of people having these different kinds of commitments and associated roles, and how such differences may in aggregate contribute to the operation of a community as a functioning whole. In particular, there seem to be some parallels between these current findings and the core-periphery structure that is often discussed in the context of online communities (e.g., Kim 2000), with continuance CC members operating at the periphery and affective CC members at the core. There are clearly some tantalizing possibilities for building powerful new connections between social network studies and a social psychological approach, where individual-level insights may complement network-level findings to produce a more integrated, multi-level theory of member roles.



Looking forward, a natural extension to this study would be to examine the factors that influence how new members, as they are socialized into a community, form various kinds of community commitment. As argued in the workplace literature, the various forms of commitment may serve as points of integration for a broader range of other antecedents, mediating their effects on outcome behaviours. The workplace commitment literature suggests that there are a broad range of antecedents to each form of commitment, some of which may also apply in community settings. For instance, potential antecedents could include the existence of shared values between members and the community, the level of trust in the community, or the community's supportiveness. Additionally, the impact of community commitment on a variety of important perceptual outcomes – such as members' satisfaction with the community, their intention to leave, and their intention to continue participating in the community – could be examined to build a more complete nomological network.

Participation has been an important concept in the information systems literature, particularly with respect to system development. User participation is typically defined as the behaviours and activities performed by target users or their representatives during the system design process (Barki and Hartwick 1989). Additionally, participation varies in degree with respect to the influence a user has on the system design (Ives and Olson 1984). In their seminal review, Ives and Olson (1984) identified several key categories of user participation, which reflect varying degrees of user participation. These categories include: 1) no participation – users are not asked to participate, 2) symbolic participation – user input is sought but ignored, 3) participation by advice – users are consulted, 4) participation by weak control – users may have sign-off responsibility, 5) participation by doing – users are members of design team, 6) participation by strong control – users may pay for the system development. The concept of participation in online communities, developed in this paper, share a few commonalities with the concept of user participation. For example, both state that participation can take on various forms, or behaviours, within their context (e.g. reading, starting new threads, posting replies). Additionally, both perspectives suggest that participation is a mechanism through which users of the system can influence the shaping of the system.

While the perspectives share some commonalities, there are quite a few important distinctions.



For example, in the online community context, participation is central to a community's development and success (Cothrel 2000; Kim 2000); however, in the system development context, the influence of user participation on the success of a system has been mixed. Furthermore, the performance of various types of participation in online communities is optional, with individuals free to engage the community to the degree they would like; whereas in the context of system development, typically users must be invited to be allowed to participate. Finally, users of an online community can have a more direct influence in shaping the community through their participation; whereas in traditional system development literature, influence and participation are not always related (Lucas 1978). The conceptualization of participation developed in this paper can inform future work on system development literature, particularly for systems designed around user generated content (e.g., Web 2.0), as the impact of user participation shifts from influence and guiding design to creation of system resources.

3.6.2 Implications for Administrators

Our results highlight the complex problem faced by community administrators seeking to build a stronger member base: how to encourage members to engage in the various kinds of conversational roles that are key to the creation of a viable content pool over time. Building affective CC is clearly important, with affectively committed individuals forming the content providing core of a community. However, such relationships may well be more difficult to develop and foster, especially on a large scale. Members primarily motivated by continuance CC are also important, because they serve as an audience and are probably easier to attract. However, they are less likely to make substantive contributions to the community beyond what is linked to their interests and needs. These individuals make up the periphery of a community: They are still learning about what it takes to be an active core member, and their posts are still largely driven by their own needs. The value of such individuals to the community might not be as immediately apparent as that of core individuals with a high level of affective CC. However, community administrators who can appreciate such individuals as part of the diversity necessary to keep a healthy community growing are likely to do a better job of ensuring that the community's conversation does not become too introspective and exclusionary. If a healthy online community is characterized by several different kinds of members, then efforts to maintain a balance of member types may be crucial to its success.



Rather than trying to understand the “ideal member” of an online community – as much past research has done – the results of this study suggest that there may be various important types of members, each motivated by different kinds of bonds. A community benefits from having a mixture of these individuals, which seems to produce an interlocking pattern of self-reinforcing behaviours. Understanding the effects of different kinds of commitment thus provides administrators with a new perspective on their members, which may help focus their efforts to strengthen their community. Administrators may be able to indirectly stimulate a range of desirable behaviours by influencing specific member beliefs and attitudes. Importantly, it is not necessary to try to encourage individuals to perform all the major kinds of behaviours that keep a community functioning; instead, different kinds of people may be more easily encouraged to take up each conversational role. These results support a useful framework for examining these challenges, and may help community administrators better understand the kinds of psychological connections that can be nurtured to encourage the behaviours that will help improve their communities.

Although this study did not investigate predictors of community commitments, a range of workplace antecedents described earlier in this paper are also likely to affect the creation of commitments in a community context. These are incorporated into the recommendations below for how administrators may encourage members to adopt each kind of role.

Administrators who wish to encourage content seekers have two routes for enhancing members’ sense of continuance CC. First, administrators should develop as accurate a picture as possible of the kinds of uniquely valuable content that members associate with the community, either through surveys, by observing message popularity, or perhaps via interviews and focus groups. Clearly, some kinds of content available in any community are more unique and more valuable than other kinds, which may be more broadly available or simply less interesting to that specific member base. Such a requirements-gathering process would help administrators reposition their community towards the slices of content that hold the most unique value to members. For instance, administrators might create new topical discussion areas, solicit invited content contributions from outside experts to stimulate conversations in these new areas, or seed controversial discussions to encourage active member engagement in high-value topics.



Second, administrators should undertake communications to ensure that all members are aware of the unique benefits available through their community. Such efforts to persuade members that the community is indeed unique and does provide particularly valuable content could be accomplished by posting short examples of high-value content not available elsewhere, by retelling stories of members who benefitted greatly from community content, or by publicly mocking select instances of low-quality content available in other communities. Content seeking can thus be enhanced both through efforts to increase the actual benefits available in a community, and through efforts to affect members' perceptions of those benefits.

Administrators who believe that their community requires more content providers have a range of choices available to them for enhancing members' levels of affective CC. First, it is clear that a member's sense of emotional connection with a community is likely to be stronger when he or she identifies deeply with the community. Communities that have diffuse or unfocused identities make it difficult for individuals to grow to believe that there is strong commonality between themselves and the community. Any effort an administrator can make towards creating a clear and consistent perception of unique community identity (common values, common interests, common characteristics) is therefore likely to increase affective CC in members who see parallels between the group's identity and their own, and in turn encourage content provision behaviours. Of course, this same effort may drive away members who do not see such a match; however, if an administrator is not introducing radical changes in community purpose or content, the beneficial effects of producing strong identification in the existing member base is likely to outweigh the negative effects. Other ways of enhancing identification are also possible, including focusing the community on an elevating vision or goal that harnesses members' aspirations. Alternately, known detractors of affective commitment should be avoided. For instance, role conflict in the workplace may have analogues in the community environment when the adoption of one role carries expectations that are not aligned with others. Second, affective CC is likely to be enhanced when members feel that they are supported and treated fairly by the community, and trust the community administrator. A range of initiatives to encourage mutual respect and accountability among members and administrators is thus also likely to enhance affective CC and make it more likely that members will adopt content provision roles.



Finally, the analysis shows that administrators who wish to encourage more members to take on an informal moderator role have two options for doing so – namely, via affective CC, and via normative CC. Interestingly, the analysis indicates that, at least in the BroadForum community, members' emotional bonds with the community led them to offer more social encouragement and social deterrence than did their sense of obligation to the community. This suggests that attempts to promote social encouragement and control behaviours could be more effective when accomplished through indirect approaches. Rather than trying to directly instill a sense of obligation in members, administrators might be more successful if they focus their efforts on building members' emotional sense of connection with the community as described above. However, administrators who do wish to enhance normative CC may do so via communications with members that stress the underlying "rightness" of the causes with which the community is associated, and the reasons why members should feel a sense of obligation to these super ordinate community goals. Alternately, administrators could recount stories of members who displayed loyalty and who were greatly respected by the administrator and other senior community leaders, as a way of underscoring the importance of loyalty to the community. Finally, and perhaps most extremely, taking actions to chastise members who fail to reciprocate may also help reinforce a sense of obligation among others, though the unintended consequences of such actions remain unknown and potentially serious.

3.6.3 Limitations

This study is subject to several important limitations. The first of these has to do with methodology. While four of the six dependent variables used in this research were derived from archival data collected after respondents completed the survey, two of the dependent variables were self-reported. The results for H5 and H6 are therefore subject to the typical limitations of cross-sectional, survey-based research. More generally, the fact that data were gathered from a single community (albeit a general interest community) calls into question the generalisability of the results, which only repeated replication in other communities can determine.



Similarly, the sample of active community members was made up of self-selected respondents, and may not be representative of all community members. In particular, it is possible that the sample may be biased towards members who are highly committed to the BroadForum community. However, since respondents vary significantly in terms of their commitment scores, online behaviours, and length of association with the community (see Table 28), it seems unlikely that the findings are purely the result of such bias. Comparisons of respondents against all active members revealed, not surprisingly, that respondents both read and posted more messages than did non-respondents. Facing a large daily message volume, it stands to reason that members who read more posts would be more likely to notice the survey invitations. Similarly, the act of posting a message is similar to the act of completing a survey, and so it stands to reason that respondents would also be likely to post more messages. Though respondents therefore should not be taken as fully representative of the BroadForum population, these differences in means are unlikely to affect the predictive power of the theoretical model (which makes no assumptions about mean levels of behaviour but rather seeks to explain variance in behaviour).

A final limitation is that none of the content seeking or content provision behaviours were coded into an attempt to identify postings that have more or less useful content. It therefore remains possible that tallies of the number of posts made by any two different members could be identical, yet one could have provided much more informative, topical, helpful, interesting, and useful content than the other. However, given that these communities were not simply providing “answers” that could be independently rated for their utility, coding them would have been extremely problematic. Further, the possibility that different members could provide different kinds of content simply increases the error variance in the model; if present, this would serve as noise that would make it /less likely that one would find the hypothesized effects. As the hypotheses were supported, it can be concluded that any such extraneous variation in content, if present, was not sufficient to invalidate the predictions. However, future research that controlled for content quality could stand as a useful elaboration on the model and might help explain larger portions of variation in outcome behaviours.



3.7 CONCLUSIONS

How do the bonds that members feel toward an online community lead them to adopt conversational roles that enhance the long-term viability of the community? This research suggests that the three classic forms of commitment provide an important framework for understanding these bonds. By theorizing the community-specific outcomes of affective, normative, and continuance CC, this paper has provided a new perspective on communities as interlocking sets of conversational roles that together produce important resource pools. It is hoped that this research will form the kernel of new locally-situated models of member roles and behaviours that will help administrators better manage their communities and offer researchers a new foundation for future efforts to enhance our understanding of online communities.



At one time most Internet users were simply consumers of information. However, this has changed as new technologies have emerged, shifting the role of user to that of consumer and creator. Having been used by majority of internet users (Horrigan 2001), online communities have become an important new form of organization (Lakhani and von Hippel 2003). The success and failure of these communities lies in their ability to develop and maintain a membership base (Butler 2001b) of users that are willing to participate.

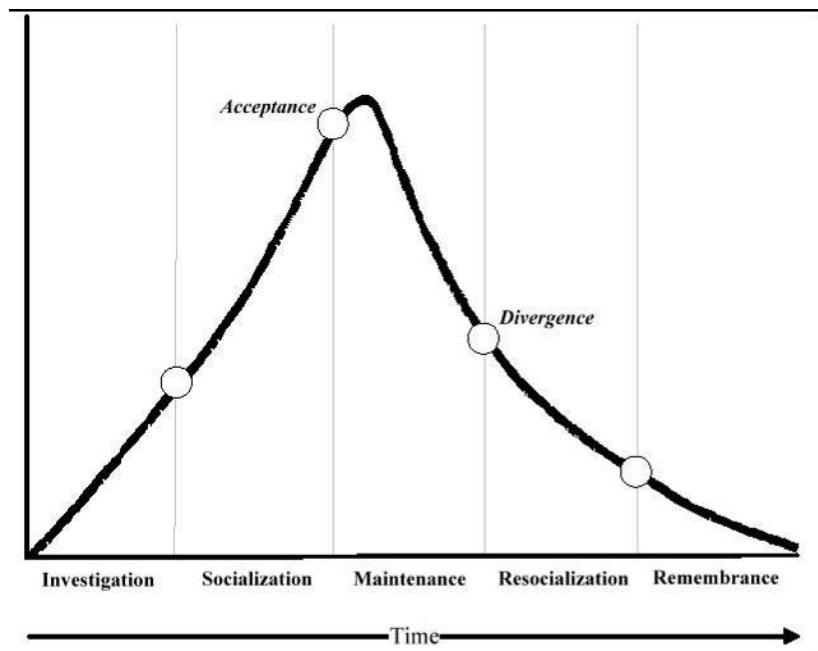
The primary focus of this dissertation research was to further extend the collective understanding of participation in online communities. In particular, this dissertation sought to make its contributions by addressing gaps in the online community literature in several ways. The first, was to adopt a broader view of participation, one that included various forms of participation (e.g., content seeking, content provision). Second, was to understand how becoming aware of the community, in particular through referrals, might impact members' participation within the community once they become a member. Finally, the dissertation sought to examine how a members' commitment to the community influenced their participation in the community. The remainder of this chapter will summarize findings related to each of the studies, as well as explore the relationship between referrals and commitment.

4.1 MEMBER REFERRALS

Prior research has primarily focused on understanding factors that influence participation once an individual becomes a member. This dissertation proposed the idea that how an individual comes to be aware of a community, in particular through member referrals, can have an impact on their participation in the community. This dissertation found that member referrals offer an advantage to communities attempting to address the issue of attracting and maintaining members who are willing to participate. The pre-existing connection between referral source and referee serves as an important source of information for new referred members. This allows referred members to know more about the community prior to making the decision to join.

Furthermore, referral sources serve as a model for a new member's behaviour. In all, referred members return to the community more frequently after they join, have longer tenures with the community, and more actively participate than non-referred members. These findings have implications for what is currently known about membership life cycle, and in particular the role of socialization processes.

The literature on group formation suggests that members move through various stages in their relationship with a group: investigation, socialization, maintenance, resocialization, and remembrance (Moreland and Levine 1982; Moreland and Levine 2000), illustrated in Figure 13.



(Adapted from Moreland and Levine 2001)

Figure 13 Socialisation process for Typical members

Kim (2000) suggested that members move through similar stages during their life with the community: visitor, novice, regular, leader, and elder. The mapping of these stages to those of traditional group socialization processes are illustrated in Figure 14

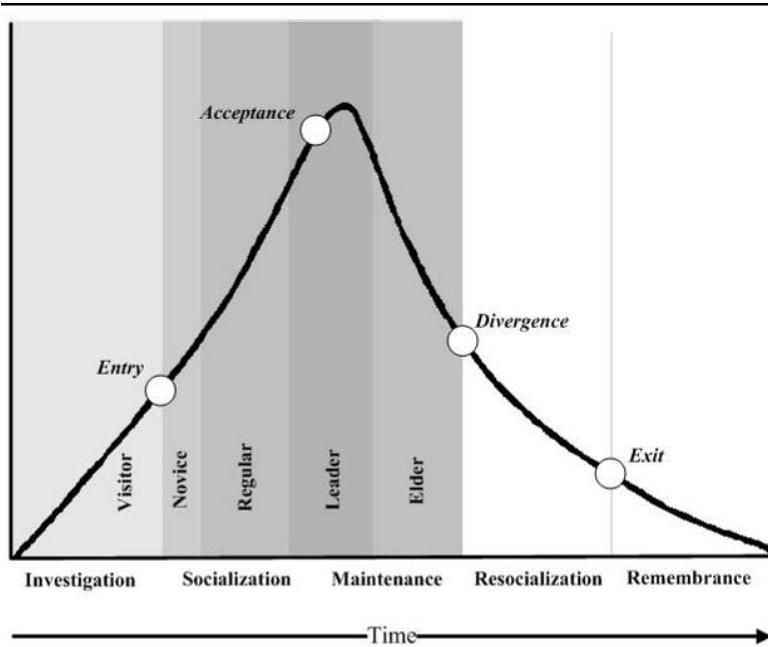


Figure 14 Member life cycle and socialisation process

The framework of these models has served as the basis for much of the socialization research within online communities. It has been argued that socialization processes are a key component of community life (e.g., Ahuja and Galvin 2003; Burnett and Bonnici 2003; von Krogh et al. 2003). It is through the observation and interaction with the community taking place over time that members become socialized to the rules and norms of the community. As new members become more socialized, their relationship develops as they gradually become more involved with the community.

Both established theoretical and practitioner-oriented perspectives identify the investigation/visitor as a stage in socialization processes. Furthermore, the point of formally entering/joining a community is identified as the first milestone in the socialization process. However, the role of this part of the process has been largely ignored and untheorized. The findings in this dissertation suggest that this earliest stage of member life has important implications on a member's life within a community. This draws into question some of the existing views of socialization process within communities, particularly with respect to members' first interactions with the community.

To examine the impact of referral with respect to long-term socialization process, data related to a members level of participation (threads read, reply posts, and threads started) over the data collection period was explored. To removed the impact of individuals who join the community, but never return (thus aren't exposed to socialization processes) as well as attrition over the data collection period, the participation levels of only those new members that were active during the last data collection period (individuals that had a tenure of 96 days and longer) are presented in Figures 15, 16 and 17

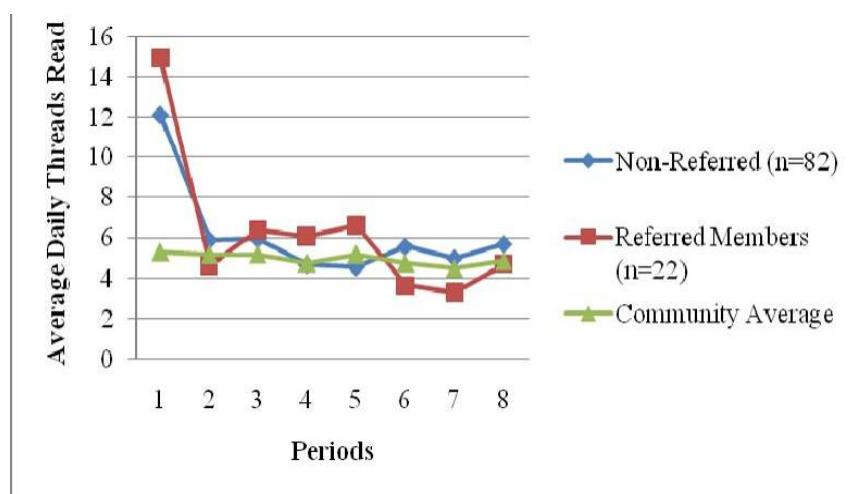


Figure 15 Threads Read – Members with Tenure 96 Days and Longer

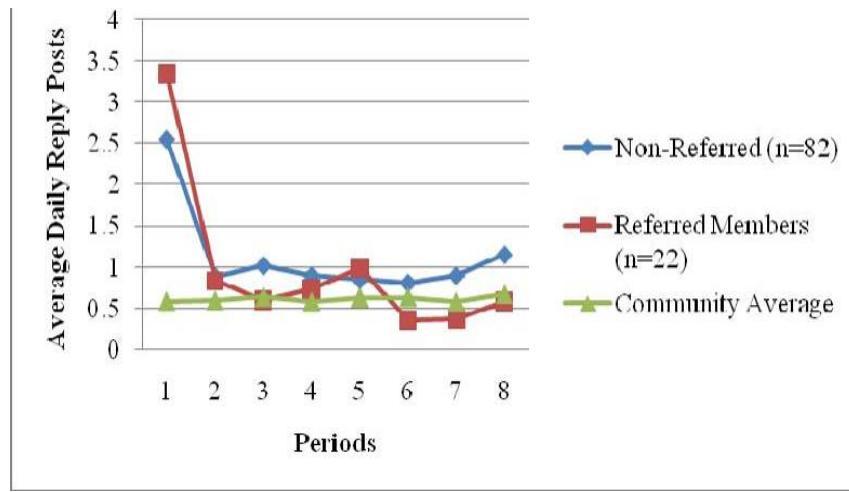


Figure 16 Reply Posts – Members with Tenure 96 Days and Longer

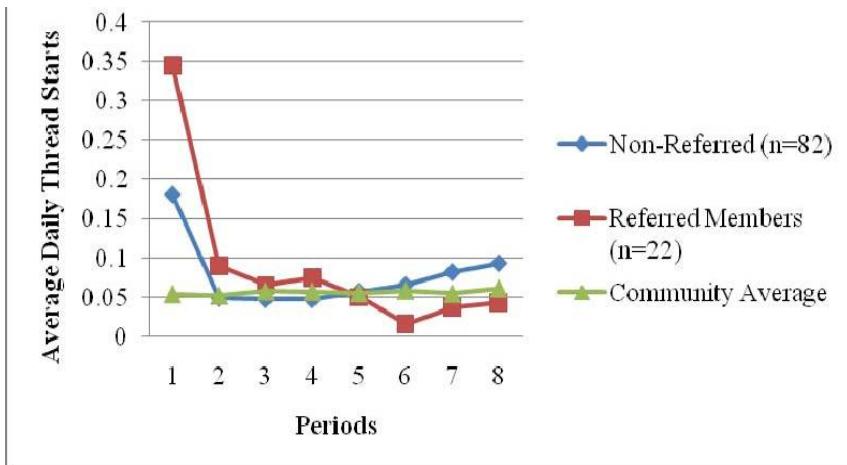


Figure 17 Thread Starts – Members with Tenure 96 Days and Longer

The figures illustrate a few interesting patterns with respect to the participation of new members. First, as detailed in chapter two of this dissertation, referred members participate more actively than non-referred members. Secondly, these trends reveal that referred members are more active than the community average for reply posts and thread starting forms of participation; whereas for threads read the community average is higher. This would seem to indicate that rather than observing the content of the community to assess its potential value and learning the norms for interaction, referred members are actively participating in community conversation right from the start. However, potentially more intriguing is the overall pattern of participation over time, regardless of referral status. For both referred and non-referred members, participation does not start off slowly, gradually building with time, as theories of community socialization would suggest they should. Rather, the opposite appears to be true, as all forms of participation are at their highest points for the first period in the community, then quickly dropping off and becoming stable over time.

While these participation trends do not rule out that socialization processes exist within this community, they do draw into question the role of socialization in online communities. Socialization might only play a role in the “how” of participation, but not the “how much”, which past research has suggested. Additionally, while commitment might develop over time in the community, commitment is a psychological construct, not a behavioural outcome.



As such, work that attempts to equate commitment to level of a member's participation (e.g., Ren and Kraut 2007) should be cautious in adopting this perspective. If this perspective were adopted, it would appear as members are most committed to the community at the start of their membership with the community, which seems unlikely. Additionally, this perspective of community commitment is limited as it does not capture various forms of commitment a member can towards the community. Finally, if socialization processes are present, the time frame in which they take place might be much more compact than previously thought.

4.2 REFERRALS AND COMMITMENT

This dissertation examined the impact of referrals and commitment on community participation. Referrals were found to have an impact in attracting members that participated at higher levels in the early part of their membership and stayed in the community longer than non-referred members. Each of the forms of commitment was found to have unique influences on the various forms of participation. However, the relationship between referrals and commitment was not examined.

Theory is not clear on the expected role of referrals on the development of commitment. Literature on organizational behaviour suggests that the referee-referrer relationship may improve the referred member's experience in the organization, which can lead to increased satisfaction and commitment with the organization (Fernandez et al. 2000). While this suggests a relationship might exist, this does not indicate which type of commitment would be influenced by being referred. To examine the relationship between member referral and community commitment, the relationship of referral status and the three forms of commitment was explored, illustrated in Figure 18

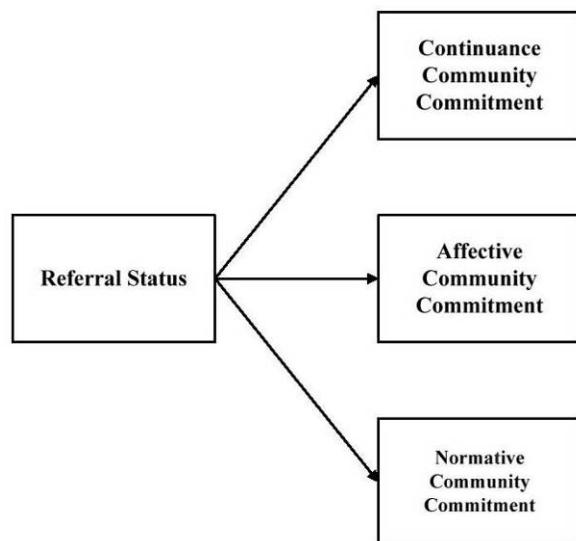


Figure 18 Impact of Referral Status on Commitment

Data to test this model is the same data set reported in chapter three of this dissertation. This sample included 192 members, although only 66 members were referred. The impact of referral status on the various types of commitment was explored by examining the size and significance¹³ of structural paths in the PLS analysis and the percentage of variance explained, with all paths shown in Figure 19

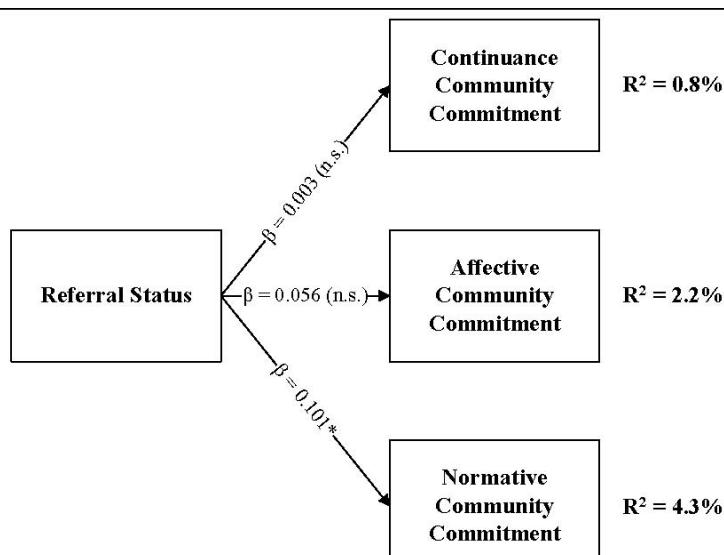


Figure 19 Impact of Referral Status on Commitment with PLS

¹³ PLS produces standardized regression coefficients for structural paths. Bootstrapping techniques, a nonparametric approach for estimating the precision of paths, were used to test for significance using 500 re-samples.



The model showed referral status to be a marginally significant ($\beta = .101$, $p < .10$) antecedent to normative commitment, explaining 4.3% of the variance. Referral status did not significantly explain affective commitment ($\beta = .056$, n.s.) or continuance commitment ($\beta = .003$, n.s.). Control variables of gender, age, and tenure did not significantly affect any of the forms of commitment.

There are several things that could be learned from this exploratory work to guide future inquiry in this area. First, being referred does not lead members to develop continuance commitment. This is not surprising as none of the factors associated with continuance commitment (e.g., high cost of leaving) are discussed in the literature on WOM or referrals. There is no reason to expect there would be a relationship. Second, the non-significance of referral status on the development of affective commitment might be surprising. While past work has suggested being referred might result in commitment, it did so not directly, but through intervening variables (e.g., improved experience, satisfaction). As such, the weak direct impact of referral status on affective commitment could be in part due to these other factors not considered in this exploratory analysis. Third, the impact of referral status on normative commitment could be expected. Normative commitment is associated members feeling a sense of obligation towards a particular community. This sense of obligation is created by leaders who attempt to instill a culture of reciprocity (Lazar et al. 2001), if members who have benefited from others' friendship, or may feel indebted to the community (Lakhani and von Hippel 2003). Making a referral is seen to be an important form of community work done for the betterment of the community (Butler et al. 2007); as such the referrer might be a source of community values. The existing referrer-referee connections might help to facilitate the transfer of these values into the new member, thus leading to the impact of referral status on the development of normative commitment.

4.3 Final remarks

This dissertation has found member referrals and community commitment to play an important role in members' participation within online communities. These factors exert their influences at different stages of a member's association with a community. Referrals appear to be most influential at the earliest stages of community life, facilitating the return of members after they join and the level of their participation in the short term.



This may be useful in helping communities overcome initial judgments of members with respect to the potential value of the community, giving the community a chance. However, communities must be able to develop committed members to sustain participation. Commitment is not a trivial issue to be found anywhere, in a “voluntary” on line organisation it can be easier to be achieved than in a work place. Effective motivational tools should be developed from the corner stones of this research to realise effective communities in a working environment.



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