# Virtual internet communities and commercial success: individual and community-level theory grounded in the atypical case of TimeZone.com

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## Abstract

One potentially powerful way of organizing in the new Internet world is through the medium of the virtual Internet community. An effectively managed virtual community provides economic gains to the community organizer and to its members. We attempt to build theory grounded in the study of TimeZone.com, a virtual Internet community devoted to wristwatch hobbyists and enthusiasts. We argue that a member's off-site communication, experience, perceived value of site management, content, and collectively held knowledge are positively associated with a member's e-based economic transactions within this virtual community. Building on our theorizing attempts at the individual level, we develop propositions at the organizational level that relate characteristics of virtual Internet communities (membership size, scalability, and level of site management) to commercial success. © 2001 Elsevier Science Inc. All rights reserved.

## 1. Introduction

The emergence of the Internet has created the possibility of a truly global market place characterized by commercial transactions 24 hours a day, 7 days a week. The rate of adoption of the Internet, which has been estimated at 4,000 new users per hour, outpaces all other significant innovations in consumer technology, including the telephone, VCR, and PC

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(eMarketer, 1999). The number of people on-line is expected to increase from 250 million in 2000 to 350 million in 2005 (Nua, 1999). This rapid growth has a tremendous commercial impact. It is estimated that e-commerce sales will reach approximately $1.3 trillion by 2003, with the business to consumer (B2C) segment capturing about 13%, and the lion's share of 87% going to the business to business (B2B) segment (Plumely, 2000). One potential business model to profit in the B2C Internet space is the virtual Internet community because rather than surf the Web, 57% of Internet users prefer to visit the same sites repeatedly (Business Week-Harris Poll, 1997). Some argue that many of the future B2C commercial transactions will be conducted via virtual on-line communities (Bressler & Grantham, 2000), which are communities motivated by a similar interest among the members and formed through computer mediated communication on the Internet.

The Internet enables millions of people worldwide to exchange information and conduct business. In particular, the Internet's potential for multiway information transmission (one to one, one to many, and many to many) provides a mechanism for the formation of shared-interest groups, or *communities.* Hagel and Armstrong argue that "the notion of community has been at the heart of the Internet since its inception" (1997, p. 134). The term community originates from the Latin root word *communis,* which can be formed by pairing the following words (Fernback & Thompson, 1995): (1) *cum*: meaning together and *munus*: meaning obligation, or (2) *cum*: meaning together and *unus*: meaning one. Thus, a community can be seen as a group in which individuals come together based on an obligation to one another or as a group in which individuals come together to be one in purpose.

Tönnies (1912) was one of the first to study communities. He proposed a dichotomous distinction between society and community as he defined *Gemeinschaft* (community) as intimate, private, and exclusive living together, whereas the larger *Gesellschaft* (society) was seen as the public life, that is, the world itself. Tönnies distinguished three different kinds of communities: (1) community by kinship, (2) community of locality, and (3) community of mind. It is the last kind of community that is of interest here. The community of mind "implies only co-operation and coordinated action for a common goal. . . . Gemeinschaft of mind expresses the community of mental life. . . . [it] represents the truly human supreme form of community" (1967, p. 8). He further argued that all three types of communities are "closely interrelated in space as well as in time" (1967, p. 9).

The community phenomenon is central to anthropology research, which has advanced almost one hundred definitions of the term (Hillery, 1955). Despite these efforts, no definite theory of community has emerged (Bell & Newby, 1974). In their attempt to synthesize the wide variety of definitions, Karp, Stone and Yoels (1977) identified three elements defining communities: (1) sustained social interaction, (2) shared attributes and values, and (3) a delineated geographical space. For management scholars, however, the study of communities is a relatively new research avenue. Lawrence (1995), in his study of the Canadian forensic accounting community, built on Karp et al. (1977) and proposed three elements that must be in place to define an organizational community: (1) sustained social interaction, (2) community standards, and (3) membership rules. It is important to note that Lawrence (1995) deviated from the assumption that communities are defined by geographical boundaries. In contrast, he argues that a focus on geography as a defining criterion of communities runs

counter to the observation of the multifarious ways in which individuals form communities with the help of modern technology.

A *virtual community* is similar to a community of mind described by Tönnies (1967), except that it forms through an electronic communication medium and is not bound by space and time. Further, a virtual community is similar to an organizational community defined by Lawrence (1995) as it allows for social interaction among its members using various Internet tools and exhibits certain community standards and rules. Brown and Duguid argue that virtual Internet communities are social worlds (Strauss, 1978), as they view them as an extension of "a long tradition of communities forming around documents" (2000, p. 190). Further, virtual communities are based upon ongoing, many-sided exchanges that take place via computer mediated communication. These are on-line forums that are shaped by the contributions and discourse of like-minded netizens (Murphy, 1997). Rheingold posits that "people in virtual communities do just about everything people do in real life, but we leave our bodies behind . . . virtual communities are social aggregations that emerge from the Net when people carry on public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace" (1993, p. 3, 5). Hagel and Armstrong (1997) emphasize the relationship building aspect of virtual communities as they provide, for people with similar interests, an opportunity to come together, unrestrained by time and space. Combining content and communication, a virtual community allows people to engage in the exchange of information, and learn from each other and about each other. In the end, communities are not solely about aggregating information or resources, but about bringing people together to meet some of their social and commercial needs.

This paper attempts to develop theory at two levels. The first part of the paper addresses the question: What motivates individuals to engage in commercial, e-based transactions within virtual communities? This section develops the individual-level theory underlying member motivation to engage in on-line, economic-based exchanges. In a subsequent section, we change the level of conceptualization from the individual level to the organizational level, and develop propositions that relate characteristics of virtual Internet communities to commercial success. We end this paper with a discussion of its contribution, limitations, and managerial implications, and discuss avenues for future research.

Hagel and Armstrong (1997) indicate that on-line communities meet four types of consumer needs: (1) interest, (2) relationship building, (3) transaction, and (4) fantasy. *Communities of interest* are formed by individuals with a shared interest, expertise, and passion in a wide range of areas such as interior design, sports cars, or bird watching. The Motley Fool (www.motleyfool.com), for example, is a community of interest for personal investors. The site organizers developed several different stock portfolios and invited site visitors to comment on the choices made. The social and personal element is even more strongly developed in *communities of relationships,* which are formed by individuals that encounter a need to share a particular, often intense, life experience, such as the death of a loved one, divorce, or the diagnosis of a life-threatening disease, with others that face the same challenge. The WebMD (www.webmd.com), for example, is a forum where people form relationships based on the discussion of health concerns. *Communities of transaction* focus on the exchange of information to facilitate economic exchanges. Wine.com (www. wine.com) is a case in point as it offers a vast amount of information on wines and also

sells a wide range of wines. Finally, *communities of fantasy* provide people the opportunity to explore new identities in imaginary worlds of fantasy. The Red Dragon Inn (www.reddragoninn.com) allows individuals to take on new identities and to play in such a fantasy world.

The theory presented here is grounded in a case study of TimeZone.com (Glaser & Strauss, 1967), a unique but telling case of a successful virtual community. We chose TimeZone.com (www.timezone.com), a virtual community dedicated to wristwatch hobbyists and collectors, since our object exhibits three of the four types of needs. TimeZone.com is a community of interest, relationship building, and transaction. It does not, however, address the fantasy element. Further, one of the coauthors has been an active member of TimeZone.com for years and thus provides a rich ethnographic participant-observer understanding of the site and its membership (Van Maanen, 1995). In addition, this author was able to solicit the support of the site organizer to conduct an on-line survey within TimeZone.com; the results of that survey are reported elsewhere (Rothaermel & Sugiyama, 2000).

Founded in 1995, TimeZone.com claims to be the world's most complete watch resource and the premier Web site for watch education and entertainment. It offers a large variety of information for watch aficionados, hobbyists, and novices. TimeZone.com is a place for watch enthusiasts to gather, transact, and discuss the many aspects of watches and the watch industry. This virtual community generates three million page views and receives more than 80,000 unique visitors each month (PR newswire, 1999). This implies that the average community member accesses TimeZone about 37.5 times a month or 1.25 times a day.

We believe it is appropriate to build theory from the study of this virtual community. It is an interesting, extremely niche oriented site that caters to watch hobbyists and enthusiasts. We must caution that watch hobbyists and enthusiasts may be different from the larger population, and thus TimeZone.com may not be representative of most virtual Internet communities. However, we agree with Starbuck (1993): insightful theorizing may not come from studying averages across large samples, but rather from the study of atypical organizations. TimeZone.com is atypical since it focuses on one very specific niche of interests: watches. On the other hand, we argue that TimeZone.com is not a completely atypical virtual community. Like many other on-line communities, it addresses members' needs in the areas of interest, relationship building, and transaction.

Membership survey results indicated that the TimeZone community supports an active base of Web savvy and loyal members (Rothaermel & Sugiyama, 2000). Rothaermel and Sugiyama (2000) further found that 55% of all respondents had purchased something on the site. The results also indicated that 56% of the respondents had discovered TimeZone through an on-line search engine, while 26% had found TimeZone via a link from another Web site. Member participation in virtual on-line communities usually takes place through public site facilities such as *forums,* an asynchronous communications platform similar to the time-tested bulletin board systems, updated for Internet browsers on the web. With respect to member participation in TimeZone's public forum, 94% of all respondents indicated that they had posted at least one message in the public forum, with 27% posting one or more times a day and an additional 50% posting occasionally. Active off-site communication is expressed by the fact that 84% of respondents have used email to communicate directly with

other TimeZone members. In addition, 36% of the respondents indicated that they have been visiting TimeZone for more than one year, while 60% indicated that they visit the site several times a day.

We argue that most commercially driven virtual communities will exhibit the elements of typical and atypical on-line communities listed above. In particular, most virtual communities are typical that they address one or more needs of their members, that is, interest, relationship building, transaction, and fantasy. At the same time, most communities will generally be niche oriented as they address a specific interest of their members. We believe that our theorizing efforts (Weick, 1995) that follow below will help researchers in their study of individuals' transactions in virtual communities, as well as of intercommunity performance differentials.

## 2. Community members and commercial exchange

At the individual-level theorizing we will discuss the question: what factors lead individuals to engage in e-based economic exchanges within a virtual community? We focus on individual transactions since our intent is to investigate factors that lead to the commercial success of virtual on-line communities. Put differently, Internet communities rely on individual transactions to succeed. Virtual Internet communities can tap primarily into five potential sources for revenues (Hagel & Armstrong, 1997): (1) subscription fees, for example, a fixed monthly charge for participation in the community; (2) usage fees, for example, a charge based on the number of hours of usage or the number of web sites accessed or a combination of the two; (3) member fees, for example, a charge for downloading specific information; (4) advertising commission; and (5) transaction commission. We argue that advertising and transaction commissions represent the most sustaining business model for virtual Internet communities because the first three business models impede positive network effects (Arthur, 1996) as they slow down and limit growth and usage of the community. Nevertheless, a community must have reached a critical mass of membership for advertising and transaction commissions to be a viable revenue source. We argue that individual transactions are critical to the economic well-being of virtual communities. In this situation, the site organizer is in a position to demand a commission on each transaction, which is paid by the seller of the product.

In a virtual community, members share information and trust is engendered through ongoing community interactions (Figallo, 1998). Moreover, in a virtual space where people do not meet face to face, a community provides its members with a context for evaluating the quality and reliability of the content they encounter (Fombrun, 1996). Information about products, for example, may be presented in an aggregated form, giving the user a sense of the opinion of the community as a whole, or it might take the form of subjective individual evaluations that can be judged by the other users based on the standing of the individual providers within the community (Resnick & Varian, 1997; Avery, Resnick & Zeckhauser, 1999). Granovetter (1985) has pointed out that individuals have a preference for transactions with individuals of known reputation. Thus, members can then apply the information generated within the on-line community to evaluate content and potential transactions.

A further community benefit, disintermediation, is derived from the virtual community when it is applied to a commercial environment (Hawkins, Mansell & Steinmueller, 1999). The Internet enables the disintermediation of supplier networks by directly connecting consumers to suppliers. The free exchange of information within virtual communities reduces the traditional control of the supplier; it enables the consumer networks to aggregate their purchasing power and force competition among vendors (Hagel & Armstrong, 1997). This reduction of information asymmetry between vendor and consumer is beneficial to consumers in that the resulting competitive situation more closely reflects the economic construct of perfect competition with potentially zero economic profits for vendors (Perloff, 1999; Shapiro, 1999).

## 2.1. Individual-level propositions

### 2.1.1. Off-site communication

Granovetter (1985) critiques the oversocialization as well as the undersocialization perspective in studying individual economic behavior. Even though these perspectives represent contrasting theoretical lenses, both lead to the conclusion that economic action and decision making are carried out by atomized actors. Granovetter (1985) instead argues that individuals are embedded in concrete, ongoing systems of social relations and concludes that this embeddedness influences individual economic behavior.

It is through member participation and interaction in virtual communities that members become embedded in the on-line community. This process turns casual users into members, members into contributors, and contributors into evangelists, spreading the word to the cyber world (Hagel & Armstrong, 1997). In a Business Week-Harris Poll (1997) surveying Internet users, 57% of the respondents indicated that participation in an on-line public forum makes them feel that they are part of a community. Member participation in a public forum is seen as a key ingredient in weaving the fabric of a virtual community (Rheingold, 1993).

A member's participation in the community's public forum can be considered on-site communication because it occurs within the context of the virtual community and the public messages posted are a form of one to many communication. Off-site communication, on the other hand, is communication between members of a specific virtual community outside the context of the virtual community itself. This extrasite communication is generally one to one communication via email and telephone. Some members of virtual communities even meet in person. King (1994) reported that half of the recovering addicts in virtual support groups contacted each other by phone or met in person. Hiltz and Turoff (1993) found a similar phenomenon in that soon after an especially intense virtual conference, many of the participants changed their business or vacation travel plans to accommodate a face-to-face meeting with one another. Such off-site communication strengthens the relationship-building process of virtual communities.

Rothaermel and Sugiyama (2000) found off-site communication, as measured in one-to-one email exchanges among TimeZone members, was a significant explanatory variable with respect to an individual's transactions in this specific Internet community, while on-site communication, measured by a member's participation in the public forum, was not. In particular, 84% of TimeZone members indicated that they communicate via email with other

TimeZone members outside the virtual community. Moreover, 29% of the respondents indicated that they communicate directly with other community members via telephone, while 28% even meet occasionally in person with other community members. We argue that such off-site communications are more socially embedded information exchanges than posting messages in the public forum, since off-site communication is personalized, one to one communication, while postings in the public forum are impersonal, one to many communications (Brown & Duguid, 2000). One TimeZone member commented on this relationship building process as follows (Rothaermel & Sugiyama, 2000): "I found friends with the same interests. Some of these have become close personal friends." Another added: "the intellectual stimulation I receive has made it [spending a lot of money on watches] all worth it, especially meeting in-person several great TimeZone folks and Richard [the site organizer]." Community members may regard one another as their closest personal friends despite initially meeting in cyber space (Hiltz & Turoff, 1993), because their feelings of closeness are based on shared interests rather than on shared social characteristics such as socio-economic standing (Wellman, Salaff & Dimitrova, 1996).

We speculate that off-site communication may be a stronger factor in explaining a member's embeddedness and thus his or her individual e-based economic exchanges than on-site communication. This notion may help to explain the finding by Rothaermel and Sugiyama (2000) that members who have engaged in an e-based transaction via TimeZone have posted significantly less frequently in the community's public forum than members who have not engaged in an e-based transaction via TimeZone. We propose that virtual Internet communities may not be a complete substitute for personal, simultaneous, one to one interaction, either vocally or face to face, which is evident given that almost 30% of the respondents communicated with other TimeZone members via the telephone and in person, in addition to their participation within the virtual on-line community.

> P1: *A virtual community member's use of off-site communication is positively associated with the member's e-based economic exchanges in a virtual community.*

### 2.1.2. Member experience

Virtual communities, like all other communities, are social networks (Tönnies, 1912; Lawrence, 1995). It is only through practice, however, that the community member will learn the intricacies of the specific virtual on-line community (Brown & Duguid, 1991). Such knowledge about the functioning of the community is accumulated over time as a member actively participates in the virtual community. We argue that long-standing members are more likely to engage in an e-based transaction via a virtual community than are novices. When members are new to a virtual community, they tend to passively watch the community activities from the side lines. This behavior is often reinforced through the rules of on-line Internet communities because many on-line communities have separated public forums, one for the 'general' public, where anyone can post and read messages, and the other for 'experts,' in which only experts can post messages and the remainder of the community can only read the messages.

Once the community member feels more comfortable within a specific community, he or she may begin to actively participate in the community, for example, via postings in the public forum, and become more likely to engage in an e-based economic transaction. Thus,

we argue that a member's experience, defined as the length of time a member has been using the web site, should be positively associated with the member's economic transactions within the virtual community.

One could also argue that newcomers to the virtual community use the public forum as an entry to the community and that over time, as the member's socialization through experience progresses, the member begins to engage in e-based economic exchanges via this community. This perspective fits nicely with the finding in Rothaermel and Sugiyama (2000) that member experience had (besides off-site communication) the strongest association with an individual's purchases via TimeZone.com. This finding may point to an individual-level experience curve effect of conducting e-based exchanges via an virtual on-line community. In other words, experienced members are more likely to make a purchase within the virtual community.

> P2: *A virtual community member's experience is positively associated with the member's e-based economic exchanges in a virtual community.*

### 2.1.3. Site management

It has been pointed out that virtual communities need guidance, warmth, and an occasional push (Hagel & Armstrong, 1997). Active site management facilitates intermediation and comprises the 'rules of the game' put in place by the community owner, for example, who is allowed to post ads, how long ads will be on the site, how transactions will take place, and how they will be recorded, and so forth.

We argue that the perceived value that a virtual community member places on the site management is positively associated with the person's commercial transactions within the community. We analyzed several areas in which rules of the community were communicated to members of TimeZone.com and found that the 'sales corner,' which allows members to post watches for sale and to post want to buy ads, exhibited the most explicit rules. For example, want to buy ads are only permitted for private individuals buying for personal use. Individuals and hobbyists can post up to three times per day, while businesses are only allowed to post one watch for sale per week. Posting for fake watches or replicas is not allowed, and the caution "that the condition [of the watch] is the most important aspect of pricing . . . [and] unless otherwise stated the watch should be running, and keep acceptable time" is given. Members of TimeZone.com praised their site management (Rothaermel & Sugiyama, 2000): "I think Richard Paige [the site organizer] is doing an excellent job;" "I have received a valuable watch education . . . This would not have been possible without the incredible Internet and the efforts of R. Paige [the site organizer]."

> P3: *The perceived value that a virtual community member places on the site management is positively associated with the member's e-based economic exchanges in a virtual community.*

### 2.1.4. Site content

While it is possible to maintain member interest based solely on member-contributed content, an important element for the community is the on-going addition of new content that members perceive as valuable (Hagel & Armstrong, 1997). Such content helps to retain current members and to attract new ones. New members, in turn, help stimulate the community by bringing fresh ideas and perspectives. The new content also allows the

community management to guide the future direction of the community (Kozinets, 1999). Examples of such content generated by community organizers are the product reviews, company evaluations, and other information posted in their respective community subcategories to create value for the community members. One specific example of valuable content provided by TimeZone is found in its 'watch school.' The watch school offers interactive on-line courses on subjects like watch repair and assessment for any level. A permanently evolving curriculum is designed to teach not only basic service and repair skills, but also an understanding of the concepts that contribute to watch design and watch repair.

It appears that TimeZone members are pleased with the content they encounter (Rothaermel & Sugiyama, 2000): "By far the best internet 'community' I've been ever involved with. The amount of resources is amazing – The quality just adds to it;" "TimeZone postings have turned a passing interest in wristwatches into a full blown hobby;" "A tremendous information resource for the watch enthusiast, and highly entertaining as well. Can be quite addictive;" and "Greatest horological site in the world!" Thus, we argue that members who perceive the content offered by community organizers as valuable are more inclined to engage in a commercial transaction within the community than members who do not place as much value on the content generated by the community organizers (Fombrun, 1996).

Virtual communities also provide valuable site content as they filter and aggregate information of interest for their members out of the 'unlimited' and unorganized information of varying quality available in cyber space. On the one hand, virtual Internet communities facilitate the disintermediation of supplier networks, while on the other hand, they allow the intermediation of information (Bressler & Grantham, 2000). The emergence of the Internet has led to seemingly unlimited information. For example, the 320 million web pages available in December 1997 have grown to over 1 billion web pages by February 2000 (Glanz, 2000). This vast amount of information has begun to confuse and bewilder many web users. Too much information may lead to information overload. Simon (1960) argued that a wealth of information leads to a poverty of attention. Consequently, about 70% of Internet users indicate that for the Web to be useful, portals must filter out excessive information (King, 1999). Virtual internet communities work like portals in their respective niche as they filter out and integrate the most valuable information with respect to the shared interest of the community.

> P4: *The perceived value a virtual community member places on specific site content is positively associated with the member's e-based economic exchanges in a virtual community.*

### 2.1.5. Collectively held knowledge

We argue that the continued interaction of members as well as the evolutionary shaping of the virtual community creates a form of a community that is similar to a community of practice described by Brown and Duguid (1991). Communities of practice are groups of individuals who work, learn, and innovate together. Their informal organization and their accomplishment of tasks are very different from their description in their formal organizational charts, manuals, and training programs. It has been shown that such communities hold valuable collective knowledge and that such knowledge is generated and shared through the continued interaction of the community members (Orr, 1990). Further, the collectively held

knowledge that is shared among community members is one of the main factors of success of such communities of practice (Brown & Duguid, 1991).

We propose that the success of a virtual Internet community rests on its capability to engender collectively held knowledge. Collectively held and shared knowledge strengthens the trust within the group as well as the relationship building process (Brown & Duguid, 1991). This in turn should be positively related to an individual's commercial transactions in the virtual Internet community. The continued interaction of community members generates collectively held knowledge within virtual Internet communities. Turoff et al. (1998) indicate that various computer-mediated communication structures exist, which allow virtual communities to build a community-specific knowledge base over time.

Rothaermel and Sugiyama (2000) found evidence of such collectively held and shared knowledge in the TimeZone community in comments provided by the TimeZone survey respondents, such as: "The amount of information available, and the willingness of others to share is fantastic!;" "I'm pleased with the sheer amount of information available here, not to mention all the excellent people on the forum who fill in the specific details;" "It has been a wonderful education experience. It is staggering how much a person can learn by participating in a forum like this one." Other TimeZone members stated: "The potential knowledge available here is not available anywhere else;" "I could have spent my whole life trying to learn what I've learned in the last 18 months [participating in TimeZone] and it's doubtful I would have discovered the necessary resources;" "I learned everything I know about time pieces from TimeZone. If only there was a TimeZone for other things in life."

> P5: *The perceived value a virtual community member places on the collectively held knowledge within the community is positively associated with the member's e-based economic exchanges in a virtual community.*

## 3. Inter-community performance differentials

In the following section, we inductively derive propositions with respect to the commercial success of virtual Internet communities based on our study of TimeZone.com (Eisenhardt, 1989). Here, we shift the focus from the individual level to the community level of analysis. We advance propositions with respect to the performance of a virtual Internet community and believe this to be a first step in theorizing about intercommunity performance differentials (Hoskisson, Hitt, Wan & Yiu, 1999; Shay & Rothaermel, 1999).

### 3.1. Membership size

Tight knit communities exhibit a high level of trust, collectively held knowledge, and strong relationships (Tönnies, 1912; Brown & Duguid, 1991). We argue that these externalities apply to communities up to certain size of membership. We further argue that the relationship between a virtual Internet community's size and its success is curvilinear, that is, it exhibits diminishing marginal returns and past some point diminishing total returns. Up to a certain point, incremental new members add additional value to the community; beyond a certain point, incremental new members dissipate value.

In the Rothaermel and Sugiyama (2000) survey, some members of TimeZone expressed concern with respect to the increasing size of their community. One member, for example, voiced a concern regarding the forming of cliques by 'watch experts' within TimeZone. Moreover, the experts were accused of only answering questions from other clique members (presumably also experts) and not answering questions posted by 'general' TimeZone members. Ensuing social stratification within the TimeZone community may indicate that this community has grown beyond an 'optimal' size. Such sentiments are evident in these comments: "I have noticed that this group is very territorial and that new users are not tolerated. It is unnerving, since most of us started out as 'newbies,' we weren't born aficionados;" "It makes me a little sad when the teasing gets vicious, especially to newcomers . . . the level of civility is declining throughout the Empire;" "I am surprised at the abrasive attitude of some TimeZoners." The problem of size of the membership is emphasized explicitly by this member: "My involvement has decreased considerably over the past few years due to the increase in number of participants. More questions, but no more people to answer these questions. Some of the new people bring with them divisive attitudes and actions and this further reinforces my lack of involvement."

Astley (1985) indicated that the stability of communities is precarious. He suggested that communities are complex systems, which tend to be fragile and to disintegrate when confronted with disturbances beyond a certain point. A continued increase in the size of membership can lead a community to collapse as the interconnections among members become increasingly fragile (Astley, 1985). Thus, communities that continue to increase in size may move beyond the edge of chaos (Brown & Eisenhardt, 1998), where an unstructured increase in membership size will be dysfunctional to community success.

> P6: *The relationship between a virtual Internet community's membership size and its commercial success is a curvilinear inverse U relationship.*

### 3.2. Community scalability

On the other hand, communities are not static, indeed they are often compared to living organisms that grow, mutate, and divide themselves (Astley, 1985). Thus, the size of a community's membership need not necessarily be a limiting factor but rather may present itself as an opportunity to realize increasing returns to scale (Arthur, 1996). The deciding factor as to whether membership size is an advantage or disadvantage with respect to the community's commercial success is its scalability, which allows a community to accommodate even dramatic growth in membership without losing its sense of community (Hagel & Armstrong, 1997). A virtual community's scalability may be viewed as a dynamic core competence that can be leveraged to accommodate growth (Lei, Hitt & Bettis, 1996). In particular, a virtual community may divide itself into subcommunities focused on more specific topics of the larger community. For example, a virtual travel community may create subcommunities focused on domestic versus international travel, which can then be further divided into respective geographical areas, countries, regions, and cities.

Our study object, TimeZone.com, has not yet extensively created subcommunities to accommodate its growth, even though the Rothaermel and Sugiyama (2000) survey results indicated that some of its members desire subcommunities focusing on a specific manufac-

turer of watches, for example, a 'Breitling Forum' and a 'Omega Forum,' or a forum focusing on 'Trade Only.' Other members, however, voiced their concern about emerging subcommunities within TimeZone: "I am concerned about fragmentation . . . according to brand or type preference;" or "I think the most 'dangerous' innovations are the specific-brand-forums. TimeZone runs the risk of balkanizing its readership in the style of many usenet news groups." Another respondent adds: "I think the Public Forum has become far less interesting since the introduction of the various brand forums . . . the sense of community and level of horological inquiry has suffered as a result. I spend much less time on TimeZone than I used to." Nevertheless, scalability is one effective way for a virtual Internet community to accommodate its growth while attempting to preserve the community spirit (Hagel & Armstrong, 1997). TimeZone.com is already experiencing the difficulty of this balancing act despite the limited implementation of subcommunities.

In Proposition 6, we argued that the relationship between a virtual community's membership size and its commercial success is curvilinear. Here, we posit that this relationship is positive *if* the community is scalable. Hence, we argue that there exists a positive interaction between membership size and scalability. In particular, larger communities have more countervailing power with respect to vendors, and can therefore demand a larger margin for the specific transactions on the site. Second, increased scale implies that more transactions will take place, which in turn will generate more transaction-based revenues for the site organizer. Third, larger communities attract more vendors and advertisers. Thus, assuming successful scalability, large membership is an advantage rather than a disadvantage in harvesting increasing returns to scale (Arthur, 1996). We propose a positive interaction between size and scalability, that is, a virtual Internet community's size should be positively associated with its commercial success if the community is scalable.

> P7: *The relationship between a virtual Internet community's membership size and its commercial success is positive if the community is scalable.*

### 3.3. Level of site management

Effective site management has been compared with the gardener's touch in managing organic growth (Hagel & Armstrong, 1997). Members of TimeZone seem to appreciate the current site management. Respondents in the Rothaermel and Sugiyama (2000) survey commented: "I think the TimeZone staff are doing an excellent job;" "Keep up the good work;" and "Love it."

Orr (1990) points out that the benefits generated by communities of practice can be disrupted or even destroyed through involvement of management in (re-)organizing work. Members of communities of practice actively resist when their process of learning, working, and innovating together is interrupted by management (Brown & Duguid, 1991). Further, Brown and Eisenhardt (1998) have suggested that semistructured organizations outperform organizations with too little or too much structure. We argue that a curvilinear relationship exists between the level of site management and the success of the respective virtual Internet community. Too little site management may lead to chaos within the virtual community, while too much site management may destroy the intangible benefits of trust, relationship building, and knowledge generation associated with virtual communities.

P8: *The relationship between the level of site management of a virtual Internet and its commercial success is a curvilinear inverse U relationship.*

## 4. Discussion and conclusion

A virtual Internet community is a potentially powerful and innovative organizational form, which can be created through the aggregation of people who share a common interest (Shapiro & Varian, 1999). We theorized with respect to individual-level factors influencing an individual's economic transactions within a virtual Internet community. In the second part of the paper, we shifted the level of conceptualization to the community level and presented propositions with respect to the commercial success of virtual Internet communities.

We would like to indicate that our theorizing contains several limitations. Clearly, the theory of virtual Internet communities is not well developed; the phenomenon itself is relatively new, and the concept of economically driven virtual communities is continuing to evolve as members and site managers experiment with them. Therefore, we relied mainly on an inductive approach to theory generation and the development of tentative propositions (Eisenhardt, 1989). Nevertheless, we hope that the theorizing efforts presented in this paper will contribute to further theory development, and in particular to empirical examination of the propositions across a wide variety of contexts.

The theory developed here, if confirmed by empirical analysis of a large number of Internet communities, contributes to the understanding of factors that are associated with an individual's e-based transactions via a virtual Internet community and the overall success of the virtual community itself. Thus, we believe that our theorizing attempts are managerially relevant. In particular, the management of site content and of the site itself are two levers that managers can pull to directly influence the community of transaction aspect of their respective virtual on-line communities. It seems that TimeZone's management was successful in this area because 55% of the respondents indicated that they had made a purchase via TimeZone (Rothaermel & Sugiyama, 2000). Moreover, the average TimeZone member buys between two and ten watches annually on this site (PRNewswire, 1999). The Rothaermel and Sugiyama (2000) survey provided some representative comments on this community of transaction aspect of TimeZone including: "Purchases as a result of this 'fun' here, have caused a 'redistribution' of my savings account;" "I am a poorer but wiser man of it;" "TimeZone has made my wallet quite thinner . . . I didn't know there were so many watches I just had to have;" and "I am broke from buying all these watches."

Member experience and off-site communication point to the importance of social embeddedness in explaining an individual's e-based economic transactions. It appears that commercial transactions within on-line communities are embedded in social relations, analogous to the off-line world (Granovetter, 1985). We believe this is a particularly fruitful avenue for future research because it leads us to speculate that virtual communities may not be fully virtual. On-line information and knowledge sharing seem to contain a social dimension that motivates socially rich, one to one communication (Brown & Duguid, 2000).

The finding that off-site communication is a stronger predictor of an individual's on-line purchases than on-site communication (Rothaermel & Sugiyama, 2000) should caution organizers of virtual Internet communities who may have a tendency to build on-line

communities that emphasize on-site communication. We suggest that this is important, but that site organizers should also build mechanisms into their sites that facilitate off-site communication (e.g., providing email addresses of people who post in the public forum, etc.). One TimeZone member commented on that issue (Rothaermel & Sugiyama): "It would be better if posters to the public forum were required to list their e-mail address. I know there are concerns about spam, but there are occasions where I would like to reply privately without posting an 'e-mail me' message."

We speculate that virtual Internet communities may have more in common with physical communities than it first appears. We posit that organizers and researchers of virtual on-line communities may benefit from what is already known about physical communities, such as planned communities and occupational communities. Planned communities (also known as New Towns, Garden Cities, or Greenbelt Towns) are cities in which the community organizers attempt to plan most aspects of development before construction begins (Kelbaugh & Kelbaugh, 1997). Occupational communities are made up of people who share similar values and identities that transcend specific organizational settings (Van Maanen & Barley, 1984), and are thus similar to organizational communities (Lawrence, 1995). Some even suggest that a proliferation of virtual communities may reverse the contemporary privatization of community observed in Western cultures, that is, the fact that communities have moved from public places like cafés, parks, and pubs into private homes (Wellman et al. 1996). These literature streams emphasize the impact of social embeddedness on the behavior of individuals in communities. Applying the theoretical insights generated from the study of physical communities to virtual Internet communities, while bearing in mind the idiosyncrasies of virtual communities, may provide a fruitful avenue for future theory building.

## Acknowledgment

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