A Life Cycle Model of Virtual Communities

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Abstract

The importance of virtual communities is well established in Information Systems (IS) research. A significant number of studies on this topic have focused on investigating motivators and inhibitors of members’ participation. However, virtual communities are not static, but dynamically evolve, and often ‘die’ to be replaced by other virtual communities. To date, there is very little research that investigates the life cycle of virtual communities. The goal of this research is to identify influences that could explain this phenomenon. We summarize our insights in the form of a conceptual model.

1. Introduction

Literature on virtual communities (VCs) has its roots in Electronic Information Exchange Systems (EIESs), which were computer conferencing systems, connecting people electronically [4]. Since then electronic communication has evolved from virtual Bulletin Boards, in late 1970s, to commercialized Multi-User Dungeons/Domains (MUDs), in the early 1980s, to current forms of virtual communities, such as social systems like Orkut, Facebook, or Slashdot [37]. The technologies associated with the evolving form of virtual communities have also changed from text-based interfaces to graphically rich environments in applications such as MMORPGs (Massively Multi-Player Online Role Playing Games).

While the “community” aspect has been questioned in a virtual setting by some [11, 24, 26, 46, 55], many researchers view the virtual medium as a means to build communities when not possible in real life [7, 40, 52, 53, 54, 59, 64]. This mixed opinion about virtual communities has not discouraged growth of virtual communities. Many prominent multinational companies have used virtual communities of practice as a tool to add a human side to their knowledge management (KM) systems. Some of these companies include HP, British Petroleum, Chevron, Ford, Xerox, Raytheon, IBM, and Shell [23]. Some virtual communities grow rapidly in popularity and membership and pass the test of time, while others fail. A systematic conceptual framework that explains the life of virtual communities has not yet been developed. Some successful virtual communities do not start off as being successful. These communities go through a phase of major silence [30, 47] before gaining life. Some other abandoned, or dead, communities sometimes become active again. While most research on virtual communities focuses on the motivators and barriers of participation, little research addresses the holistic notion of the life and death of a virtual community. In this paper, we focus on the life cycle of virtual communities, and the factors that affect it. The paper concludes with a conceptual model of the life of virtual communities. This conceptual model aims at providing a starting point for a framework for virtual community life cycle research.

2. Literature Review

In this section we review literature on virtual communities to get an understanding of, and draw on the current body of knowledge. In the literature review, we look at emergent themes that could explain the phenomenon more clearly. In doing so, we first review different themes in existing literature through which virtual communities have been studied. We next draw on prior research to elucidate each element that comprises our conceptual model for the life of a virtual community. We subsequently present the resultant conceptual model.
2.1. Different approaches to studying VCs

There are three predominant approaches to studying virtual communities. First, at the level of analysis of the community as a whole, research is focused on the sense of community felt by all members and the issues around it. Second, at the discourse level of analysis, the focus is on individual members and the content that results from the discourse in the community. Third, at the level of the analysis of the relationships between members, the focus is on ties and links among members. We present literature on each of the three approaches next.

Researchers have used the term “virtual communities” loosely to refer to a number of people with shared interests communicating through a virtual medium [62]. However, there has not been consensus on the criteria based on which an online group would qualify as a “community.” For the most part, virtual communities have been compared to real life (RL) communities. Therefore, a sense of community, or sense of connectedness to the group, has been considered a significant factor for sustainability by some researchers [e.g. 25]. Blanchard and Markus [10] define sense of virtual community as “a feeling of membership, influence, need fulfillment and emotional connection.” (p. 69)

They add that if sense of virtual community “SOVC” exists, members maintain norms and show support and reveal other community-like behaviors. They found members’ recognition by others, identifying them by their names, providing them with socio-emotional support, developing personal relationships with them, building emotional attachments, and feeling obligated to give back to the community were some of the community behaviors that members revealed. They classified these behaviors under three general categories: exchanging support, creating identities and making identifications, and production of trust. Trust has also been studied in other VC studies [39] and extensively in other virtual settings; e.g. virtual teams [28, 29, 49, 50].

Other streams of research do not view a sense of community as critical to virtual communities. They view VCs (which they call virtual publics) more of a discourse medium [21, 30]. Erickson [21] considers the notion of community as a background mechanism that supports discourse among the members; i.e. it is a means to an end. This, they believe, brings the focus to the medium and the discourse. To them, it is the discourse rather than the sense of community that facilitates the activities of the VC. For example, discourse enables the newcomers to go through the conversations in the form of posts/threads and get a better understanding of the community, which is an advantage over the real life conversations. In identifying factors that influence membership, Jones and Rafaeli [30] study the potential population of people interested in a specific discourse, awareness of that population of the existence of a virtual public that fosters the discourse, availability of the technology to support the group, technical proficiency of the interested population, and maximum capacity or the limit beyond which information overload occurs.

Some researchers use social network analysis to study VCs. This approach investigates how information flows among people and organizations through direct and indirect ties [8, 65]. The focus here is on the relationships rather than on the individuals or the community as a whole. According to this approach, weak ties can be more useful than strong ties in tightly knitted networks because it provides more diversity and thus access to more types of expertise [22].

As can be seen, the major part of literature has been dedicated to identifying factors that influence member participation. Hence, irrespective of the approach adopted, the level of participation the community supports defines the life of that community [57]. When there is no participation, a community can be surmised to be ‘dead’.

We adopt a holistic perspective that draws on each of the three approaches i.e., the community, the discourse, and the network, thereby, adopting a broad definition of virtual communities [12]. Specifically, we delve into socially shaped aspects, technologically facilitated features, individually demonstrated characteristics, and the external influences as elements that emerged from our literature review. We next present literature on each of these elements in detail.

2.2. Socially Shaped Aspects

While some believe that a narrow scope would be detrimental to the community [11, 26, 46] others have found that narrow scope is required to keep the community focused [30]. In the former case, the researchers argue that narrowness of scope would limit the sense of community and it might even lead to weakening of RL communities. Others argue that when the community is overloaded with messages, segmentation and narrowing the scope of the topics could actually help. Otherwise, members either drop out or change their communication behavior [13, 30, 31]. For example, they might lower their response rates. The reason for this is that they find the information to be redundant.
Another reason for not using the community as a source might be the nature of problems. Some problems are perceived to be difficult to convey in a virtual setting (e.g. process-oriented problems). In addition, receiving a large number of irrelevant answers when one needs a quick and accurate answer might prohibit a member to turn to the virtual community for answer. Sometimes in the case of overload, the signal to noise (useful to undesirable information) ratio decreases [42]. In some studies, moderation and control (mere illusion of them, in some cases) showed to be influential in reducing the noise [31].

In some cases, it has been seen that members defend the boundaries of the community together. For example members, as a group, respond to outsiders’ inflammatory messages [58]. Jones and Rafaeli [30] argue that an expanded ‘virtual public’ in the form of a ‘mega virtual public’ cannot be sustained. Therefore, interrelated, smaller, and more focused virtual publics are created through ‘segmentation strategy.’ This helps with the problem of information overload as well.

Some other factors such as culture of community (or organization), and nature of the community (e.g. engineering) also encourage participation [2, 27, 62]. When people sharing the same “practice” [63] and interests belong to a certain social group, others in the same practice are drawn towards that group, thus increasing the size of the community. For example, if a large group of Indian software engineers have profiles on LinkedIn, others who hear about it are motivated to join in.

While some researchers believe that an increase in size of a community leads to increase in participation [14], others do not see it as a critical factor. The latter group goes even further to argue that increase in size could be detrimental because it might lead to information overload [30, 31]. They acknowledge though that even in sustained groups, there are usually periods of silence [47]. Many researchers have found that a small percentage of the members make most of the contribution and many others ‘free ride’ [30, 38]. Most researchers agree that a virtual community needs to reach a critical mass (with a common understanding from beginning) before it can generate heterogeneity of resources needed, which could lead to reasonable amount of participation [30, 31, 42, 43, 51].

In summary, socially shaped aspects encompass the scope of the content, the norms and culture embodied in the practices of the community, techniques of moderation, and the size and critical mass of the membership of the community.

### 2.3. Technologically Facilitated Features

When it comes to designing VCs, in order to aim for success, some recommend minimal design in the beginning, followed by experimentation, evaluation, and refinement of new features. This way, they argue, the community technical features that support a virtual community will be built to suit the needs and the interest of its members as they emerge [6, 42]. This is called co-evolutionary design or “design from inside” [6], which is not mechanistic [34]. Barab et al. [6], in designing the VC under their investigation, mainly focus on complex dualities or tensions (e.g. local needs of members vs. goals of organization) [6, 19, 20, 66]. They recommend that a community should decide on a design by balancing such dualities.

However, in arriving at a minimal design, we need to consider what technologies best support the objectives of that community [23]. In doing so, new technologies that emerge and that support social systems, need to be incorporated in the “shell” of virtual community. The Web 2.0 technologies support constructivist approaches of participation and knowledge generation, and hence are suitable platforms for virtual communities. Technologies such as weblogs, wikis, peer-to-peer systems, virtual worlds, tagging, and syndication, allow for better support of community participation [23].

In summary, the nature of the technologies that support the communities could influence the life of the virtual communities.

### 2.4. Individually Demonstrated Characteristics

A number of researchers have considered the contributions of a virtual public as ‘public good’ that is in accord with gift transactions [35, 51]. In a gift transaction, the receiver is implicitly obliged to return the favor at some point. Therefore, the contributions continue on a ‘virtual public’ [2]. Some other researchers, on the other hand, take a utilitarian position and argue that motivation for contribution is self-interest, e.g. gaining reputation [4, 18, 62]. However, some of these researchers do not see this in conflict with caring for welfare of others [4]. For example, Wasko and Faraj [62] acknowledged that both tangible and intangible benefits to individuals as well as contribution to the knowledge of the community as a whole can be motivating factors for participation of individuals. Tangible returns included getting access to useful information, expertise and best practices, receiving answers to
their questions, availability and accessibility, usefulness for problem-solving, a good source for managing knowledge from different sources, helping new employees integrate to the system faster, bringing geographically dispersed people together, timeliness of information, integrated features (email, websites, etc.), and using other members as filters or guides. Self-actualization through feeling confident, having a chance to show off, and strengthening skills was mentioned as a main intangible return.

In their study of electronic networks of practice, Wasko and Faraj [63], found that members with high level of centrality in the network, perceived enhanced reputation, and strong sense of commitment contribute more helpful responses to the network. In addition, individuals with perceived enhanced reputation, high level of network centrality, having longer tenure in the shared practice, and being guided by the norms of the group contribute greater number of messages to the group.

Besides motivating factors researchers have identified some barriers to participation in virtual communities. Wasko and Faraj [62] found that even when they give highest priority to the well being of organization and their community, employees still hesitate to share if they have fear of being criticized and ridiculed, or misleading other members with their answers. This was shown to be more common among new members (employees). Another set of barriers identified is lack of time, and requirement for security and confidentiality [57]. In the case of fear of breaching the confidentiality, the employees used other means (e.g. telephone or individual emails) to share their knowledge, or they simply self-censored.

In summary, individually demonstrated characteristics include the concepts of public good, utilitarian perspective (which incorporates self-interest, reputation, self-actualization, and intangible and tangible returns), network centrality, fear of criticism and ridicule, fear of misleading others, lack of time, security and confidentiality.

2.5. External Influences

The age at which individuals are exposed to technologies such as the Internet and social networking keeps decreasing. Disney’s Toontown, Whyville, Barbie Girls and Club Penguin are only some examples of the many virtual communities that are available for pre-teens. By the time they are in high school, most individuals in the US are very comfortable with navigating the web using rich interfaces to communicate and conduct business [16]. As this generation gets assimilated into the future workforce, technologies for communication will reflect their needs. We see an increasing use of wikis and forum-oriented platforms in the workplace today.

The use of these technologies is fuelled by the effect of external media that the “millenials”, or the generation that has grown up in the 80s, is exposed to [32]. News stories on television, radio, and news articles available online, discuss virtual communities as a commonplace phenomenon [9]. Press coverage of weblogs, wikis, and social networking sites like Facebook or MySpace popularize these technologies [56], increasing individuals’ curiosity and motivating them to participate. Some news companies choose to have a presence inside virtual communities, thus further drawing members to the community [41, 60]. For example, the recent media coverage of the virtual world, Second Life, popularizes the use of the technology for business [61] and education [1].

Other external influences such as political environment in the case of non-organizational virtual communities (for example internet censorship) and support by top management in organizational settings [57] also affect the life of a virtual community.

In summary, various external influences such as demographics, external media, political environments, and top management support can influence the popularity of and thus the life of virtual communities.

3. The Life of Virtual Communities

The review of literature presented gives us an overall picture of the aspects that influence the life of virtual communities. We define life as active participation [12] and further generation of community-specific content by its members. This is in line with the adaptive structuration view of technology where the change process within a technology emerges in human action as people interact with the technology [17]. In the figure below we present a conceptual model that depicts the elements related to the life of a virtual community. It is important to note that a research agenda based on our conceptual model would need to take into account the complexities of each element. For example, when studying socially shaped aspects, psychological, social-psychological as well as sociological factors need to be investigated. However, a life cycle model is useful when framing a research agenda since it provides a metaphor [48] or a naive model [36] for complex social phenomena.
As shown in the life cycle model, the life of a virtual community is influenced by four elements – namely socially shaped aspects, individually demonstrated characteristics, technologically facilitated features, and the external media. However, this is a dynamic cycle. While prior literature emphasizes the impact of various factors on participation in a predominantly positivist approach, we argue that the existence of the virtual community in turn influences the various elements that affect it – thus begging a process oriented, emergent approach.

Hence, as the life of a virtual community changes, there are changes in socially shaped aspects such as the size of the community, its critical mass, scope and culture. As the life of a virtual community changes, individually demonstrated characteristics such as tangible and intangible returns and utility may change. For example, a community with high participation could be more valuable and helpful to a member than a community with low participation. As the life of a virtual community changes, technologies may evolve to support the changing needs of the members. For example Facebook allows third-party lightweight applications to be “plugged in” to members’ profiles if desired. Finally, as the life of a virtual community changes, external factors such as the interest of media in the virtual community may change.

This model has implications for research in virtual communities. While there is little attention paid to “dead” communities, i.e. communities that have low active participation, the conceptual model proposes that such communities have the potential to be revived based on the four elements. We next discuss specific implications and avenues for future research.

4. Discussion and Future Research

In this paper, we focus on an important but under-researched topic – the life cycle of virtual communities. We draw on the plethora of existing literature on virtual communities that adopt different approaches to studying factors affecting membership and participation. In arriving at a holistic conceptual model, we suggest that the phenomenon be looked at from an emergent, constructivist perspective, rather than a positivist one. We identify the elements
associated with the life cycle of a virtual community. The conceptual model has implications for research and practice in virtual communities.

The conceptual model can be used as a sensitizing lens for specific virtual communities and make sense of their nature. Future research can delve into each element and shed light to specific characteristics, or trace their evolution over time. A longitudinal study of a virtual community would help in further understanding the dynamics of the life cycle model [45]. Comparing virtual communities that are “alive” with those that are “dead” and conducting a cross-case analysis would help contrast the elements in both contexts. The conceptual model can be enhanced by future research that adds more elements or further refines each. One of the limitations of this study is that we have not identified specific stages within the life cycle of a virtual community. Empirically investigating various types of virtual communities or different contexts in which virtual communities may exist would help identify specific stages within the life of those virtual communities [3]. For example, [33] delves into disengagement (i.e. the stage when members leave) from a virtual community. Our study is intended to be a starting point for a discussion of the phenomenon of the life cycle of virtual communities.

5. References


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