2-1-2009

A Life Cycle Perspective on Online Community Success

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Using the information systems lifecycle as a unifying framework, we review online communities research and propose a sequence for incorporating success conditions during initiation and development to increase their chances of becoming a successful community, one in which members participate actively and develop lasting relationships. Online communities evolve following distinctive lifecycle stages and recommendations for success are more or less relevant depending on the developmental stage of the online community. In addition, the goal of the online community under study determines the components to include in the development of a successful online community. Online community builders and researchers will benefit from this review of the conditions that help online communities succeed.

Categories and Subject Descriptors: H.5.3 [**Information Interfaces and Presentation**]: Group and Organization Interfaces—*Asynchronous interaction, synchronous interaction, web-based interaction*; H5.2 [**Information Interfaces and Presentation**]: User Interfaces—*User-centered design*; H.4.3 [**Information Systems Applications**]: Communications Applications—*Bulletin boards, electronic mail*

General Terms: Design, Human Factors, Management

Additional Key Words and Phrases: Online communities, lifecycle, success factors, literature review

ACM Reference Format:

Iriberri, A. and Leroy, G. 2009. A life-cycle perspective on online community success. *ACM Comput. Surv. 41*, 2, Article 11 (February 2009), 29 pages DOI = 10.1145/1459352.1459356/ /http://doi.acm.org/10.1145/1459352.1459356

1. INTRODUCTION

The Internet is the mainstream medium for information exchange and social interaction. For the past 15 years, millions of Americans have turned to it daily to conduct very diverse information-seeking and communication activities. A great number of users are information consumers. They read world news, review weather forecasts, look for medical information or information on hobbies and interests, and search for maps and driving directions [Pew Internet & American Life Project 2007]. Many assumed an additional role and became information providers. They contribute content on a wide range of topics in blogs, wikis and, more recently, podcasts and videos [Baller and Green 2005; Fichter 2005; Goodnoe 2006; Totty 2007]. Today, the most popular activity for the

This work was supported in part by CONACYT-Mexico.

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majority of Internet users is social interaction. Of the 147 million adult Internet users in the U.S., 91% go online to keep in touch with friends, relatives, coworkers, and people they know in the physical world [Pew Internet & American Life Project 2007]. Included in this majority are those who take advantage of the global reach of the Internet to build new online relationships with people they have never met in person but with whom they share a common interest. Now users play games online with each other, chat and exchange information in chat rooms, discussion forums, and meeting rooms, visit social or professional networking sites, and visit dating and other social networking sites to meet people.

Starting with the Well, the pioneering online community established in 1985 [Rheingold 1993], hundreds of new online communities and social networking sites have emerged [Reid and Gray 2007]. Many of those continue to exist and thrive today and show dramatic membership growth. Others draw little participation from their members and some have disappeared completely. In response, researchers from various disciplines are searching for the conditions that make online communities more or less successful. The result of this effort is an extensive body of literature that proposes guidelines and success factors derived from the different perspectives of sociology, psychology, management and economy concepts and theories, a limited number of empirical studies, and a variety of anecdotal stories. Kim [2000] suggested nine strategies for building successful online communities based on her practitioner experience. For example, giving the community a purpose, encouraging etiquette, and integrating rituals increase the chances of success. Preece [2000] articulated participatory design, sociability, and usability concepts and recommended applying these concepts in building communities. From a social psychology perspective, Koh et al. [2007] stressed the need to motivate participation, while Leimester and Krcmar [2004] concluded from their case studies that protecting the privacy of participants is essential. More recently, researchers have started empirically testing independent conditions that can indicate the success of these communities. However, little effort has been made to document the online community development processes and provide guidelines to introduce success factors and design choices in an integrated and orderly way.

Integrated and sequenced implementation guidelines will help designers decide the exact point in time in the life of the community when certain design components are most relevant as opposed to others. The impact each design component has on the success of the online community shifts depending on which life-cycle stage the online community is experiencing. For example, knowing when it is more relevant to introduce a reward system for contributions as opposed to enforcing a strict set of behavioral rules and regulations is important depending on whether the community is new or mature. Making sound design choices and implementing them at the right time maximizes their impact on continued member participation and online community existence.

With the goal of collecting and ordering guidelines, we review the research and practitioner literature on online communities. We survey definitions, characteristics, and classifications of online communities. We look at the perspectives that various disciplines use to study online communities, and, finally, we narrow our focus in order to understand the evolution of online communities and identify success factors in each stage of evolution. We organize the findings of our review as follows. We first explore definitions, followed by the benefits that online communities bring to individuals, communities, and organizations. Then we introduce the five life-cycle stages of online communities and review the different types of online communities and how they are classified in the literature. We review different metrics used to measure success. Finally, we integrate our findings by classifying success factors according to life-cycle stage and online community type. We conclude by providing recommendations for future research.

2. DEFINITIONS

Various disciplines have studied online communities, each one providing its own definition. As early as 1993, Howard Rheingold, a writer and futurist and the most cited author in the online community literature, described online communities from a social perspective as "*social aggregations* that emerge from the Net when enough people carry on public discussions long enough, with sufficient human feeling to form webs of personal relationships in cyberspace" [Rheingold 1993, page 5] (emphasis added). He stressed that it is possible to form strong and continued friendships online. Hagel and Armstrong [1997], prominent authors in the management literature, naturally focused on business models and their value to organizations. They defined online communities as "computer-mediated spaces where there is a potential for an integration of content and communication with an emphasis on *member-generated content*." (as cited in Lee et al. [2003], page 50; emphasis added). They ascertained that the content created in online communities brings value to business organizations. In social psychology, Blanchard [2004] and Blanchard and Markus [2004] studied online communities from a "sense of community" perspective and defined them as "groups of people who interact primarily through computer-mediated communication and who identify with and have developed *feelings of belonging* and attachment to each other." [Blamchand 2004, page 55] (emphasis added). They explored the perceptions of members with respect to the community and their feelings toward other members.

Finally, in order to build consensus among researchers in the information systems field and to encourage more focused and controlled research, Lee et al. [2003] compared nine of the most popular existing definitions and produced their own. Their working definition stated that online communities are "*cyberspace[s]* supported by computer-based *information technology*, centered upon communication and interaction of participants to generate *member-driven content*, resulting in a *relationship being built*" [Lee et al. 2003, page 51] (emphasis added). This definition reflects the complex nature of online communities and underlines the components of online community that should be subject to further study. These components are cyberspace, information and communication technology, member-driven content, members' interactions, and relationship formation. In this review, we adopt this working definition.

3. LITERATURE SELECTION

We searched six electronic databases: PsycInfo, Sociological Abstracts, ABI/INFORM, ACM Portal, IEEE Xplore, and AIS Digital Library. We chose these databases because they cover the disciplines in which the components of online communities, as defined by Lee et al. [2003], are studied. These disciplines are computer science (cyberspace), information systems (technology use), psychology (feelings and relationship formation), sociology (social interaction), and management (value of member-driven content). We found 1167 publications that use the terms *online communities* and *virtual communities* in their abstracts or titles. They were published between 1993 and 2007. Table I details the coverage of the electronic databases we used. For example, IEEE Xplore and the AIS Digital Library contain the most recent conference proceedings of three major information systems conferences, specifically HICSS, ICIS and AMCIS.

In the present study, our objective was to review research findings and present an integrated method to build successful communities. Therefore, we narrowed down our search and included only those peer-reviewed articles that focused primarily on the online community design process, discuss building strategies, and test conditions that suggest online community success based on empirical findings. Once again, we searched each of the databases listed in Table I using the phrases *virtual community* or *online*

Table I. Electronic Literature Databases

Literature Search		
Database	Discipline	Coverage
PsycInfo	Psychology	More that 2150 titles from 1800 to present
Sociological abstracts	Sociology and related disciplines in the social and behavioral sciences	1800 serials, publications, book chapters, dissertations and conference papers from 1952 to present
ABI/INFORM	Business management	4000 journals, publications and periodicals from 1923 to present
ACM Digital Library	Computer science and information Systems	Publications from the Association for Computing Machinery: journals, newsletter articles, and conference proceedings published over 50 years
IEEE Xplore	Computer science, electrical engineering and electronics	Publications of the Institute of Electrical and Electronics Engineers: 132 journals, transactions, conference proceedings and magazines (1,640,248 online documents)
AIS Digital Library	Information systems	Publications of the Association for Information Systems: Journals and conference proceedings

community and filtered the search to include only peer-reviewed publications. We read the resulting titles and abstracts one by one and marked those articles that included the words and phrases relating to success, design, or building process, and to motivations for contribution and participation. We then reviewed the list of references in each of these articles and identified additional titles that met our search criteria. Finally, we read the marked articles to extract the variables that their authors investigated and that are indicative of success. The result of this selection process was a set of 27 articles that were (1) peer reviewed, (2) empirical, and (3) test constructs indicative of success, and five additional conceptual or practitioner-oriented publications that, although not methodologically rigorous, were frequently cited and authored by prominent writers and practitioners in online communities.

Table II lists authors, variables under study, and types of research of the publications we selected. The type of study column indicates whether the research is empirical (based on data and observations) or nonempirical (of the type which emphasizes concepts and ideas, are more descriptive in nature, and do not include a clear scholarly research question) [Alavi et al. 1989; Chen and Hirschheim 2004]. In this article, we included many more articles that supported specific sections on benefits or types of online communities but did not analyze success factors. Still many other valuable publications were excluded from our review because they did not directly test conditions that lead online communities to success, but discussed, for example, the impact of online communities on society, individual member roles within online communities, or research agendas. We believe that a systematic review of the 32 selected empirical research findings on online community success factors will help online community designers to achieve a more informed creation and operation of online communities that will likely lead them to success.

4. RESEARCH IN DIFFERENT DISCIPLINES

From 1993 to 2007, research on online communities grew in waves of overlapping stages through the disciplines. Figure 1 illustrates these waves and Table III details the focus of each of the different disciplines and lists the concepts studied. For example, in the early 1990s, computer science contributed the technological medium, the standards, and the mechanisms to facilitate online communication and interactions. These

Table II. Research on Online Communities Design and Success by Author and Type of Study

Research on Online Community Design and Success		
Focus/variables	Type of studies	Author
Building process and strategies	Empirical	Leimeister and Krcmar [2003]; Zhang et al. [2001]; Kling and Courtright [2003]; Iriberri [2005]; Andrews et al. [2001]; Alem and Kravis [2005]
	Nonempirical (conceptual)	Preece [2000]; Kollock [1996]
	Nonempirical (practitioner)	Kim [2000]
Success factors	Empirical	Cothrel and Williams [1999]; Williams and Cothrel [2000]; Ginsburg and Weisband [2004]; Leimeister and Sidiras [2004]; Andrews et al. [2001]
	Nonempirical (conceptual)	Preece [2000]; Kollock [1996]
	Nonempirical (practitioner)	Kim [2000]
Subgroups support	Empirical	Maloney-Krichmar and Preece [2005]
Trust support	Empirical	Leimeister et al. [2005]
Rewards and recognition	Empirical	Hars and Oe [2002]; Chan [2004]; Ludford et al. [2004]; Beenen et al. 2004]
	Nonempirical (conceptual)	Tedjamulia et al. [2005]
User motivations	Empirical	Nonnecke and Preece [2000, 2001]
Participation and contributions	Empirical	Sangwan [2005]
	Nonempirical (conceptual)	Jones and Rafaeli [2000]
Technology use	Empirical	Brazelton and Gorry [2003]
Management	Empirical	Humel and Lechner [2002]
Member roles	Empirical	Butler et al. [2005]
Relationships	Empirical	Zhang et al. [2001]; Zhang and Hiltz [2003]
Members identity	Empirical	Donath [1999]
Member profiles	Empirical	Zhang and Hiltz [2003]; Kapoor et al. [2005]
Information sharing	Empirical	Iriberri [2005]; Hall and Graham [2004]; Constant et al. [1994]

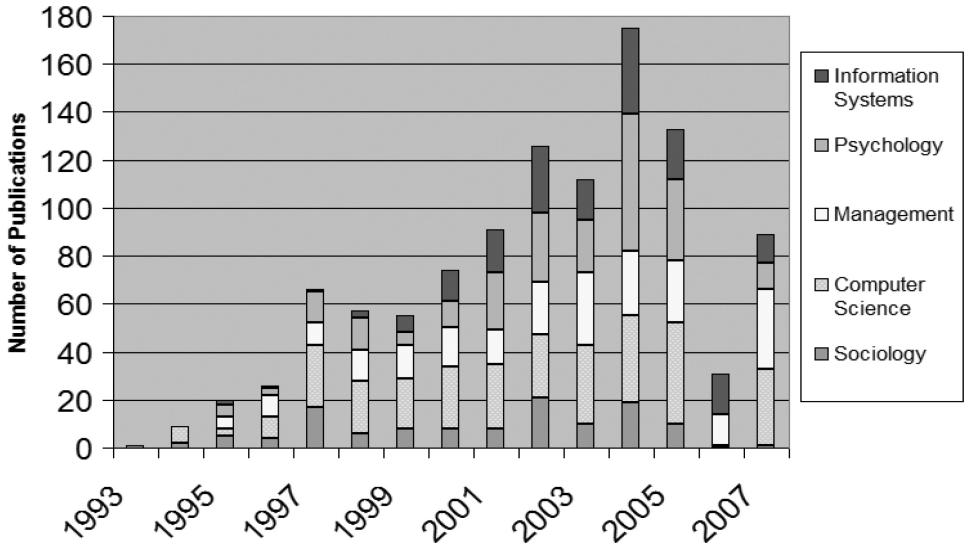

Fig. 1. Online community publications in different fields (based on literature searches on April 14, 2006, and September 7, 2007).

Table III. Research Focus of Different Disciplines

Research on Different Disciplines		
Discipline	Focus	Artifacts/Concepts Studied
Computer science	Technology media and mechanisms	Internet, Web, email, usenets, discussion forums, Internet relay chat, electronic boards (wikis), Web logs (blogs), videos, podcasts, and social network services [Fichter 2005; Parameswaran and Whinston 2007]
Sociology	Physical versus virtual community comparisons	Social aggregations [Carver 1999; Jones and Rafaeli 2000; Cummings et al. 2002] Identity [Turkle 1995] Social networks and social ties [Wellman et al. 1996] Social capital and collective action [Hampton 2003; Hampton and Wellman 1999] Impacts on individuals and society (e.g., isolation, social involvement, and well-being) [Katz and Rice 2002; Kraut et al. 2002; Kraut et al. 1996]
Management	Value of user-generated content	Marketing and customer service organizational knowledge [Hagel and Armstrong 1997] Organizational knowledge [Wegner et al. 2002]
Psychology	Relationship and attachment among community members	Sense of community [Blanchard 2004; Blanchard and Markus 2004]
Information systems	Development, implementations, outcomes, and applications of online communities	Participatory design and policies of behavior [Preece 2000] Trust and anonymity [Lemeister and Krcmar 2003] Content quality rewards for contribution [Tedjamulia et al. 2005] Online and offline interaction support [Andrews et al. 2001]

technologies include the Internet and the Web as the platforms on which communities developed. During subsequent years, many more applications such as email, Usenets, discussion boards, chat rooms, electronic meeting rooms, Web logs, wikis, and, more recently, multimedia technology and applications known as Web 2.0 were added [Parameswaran and Whinston 2007]. Innovation and advances in the availability and ease of use of this communication technology led to the popularization of online communities and to the initiation of the first wave of research on online communities.

During the first wave, which started in 1993 when Howard Rheingold coined the term *virtual community*, sociology took the lead focusing on online communities as a social phenomenon capable of modifying how people interact in society. Sociologists compared online communities to physical communities and explored the presence of various community-related concepts such as social aggregations, identity, social networks and ties, and social and collective action. They also studied the impacts of Internet use on individuals and society, such as social isolation, social involvement, and well-being [Carver 1999; Jones and Rafaeli 2000; Cummings et al. 2002; Turkle 1995; Hampton 2003; Hampton and Wellman 1999; Katz and Rice 2002; Kraut et al. 2002, 1996]. For example, Wellman et al. [1996] and Wellman [2005] found that online communication can strengthen face-to-face communication in local communities, as opposed to producing social isolation. Moreover, they found that online interactions can facilitate accumulation of social capital which may enhance civil involvement. Those interested in the impact of online communities on society found that by facilitating strong social relationships, trust, and reciprocity, an online community may gather enough social capital to engage in social action to achieve a collective goal [Blanchard and Horan 1998; Chaboudy and Jameson 2001; Hampton 2003; Iriberri 2005]. For example, Hampton

[2003] reported on an online community where members rallied to request improved housing conditions from a developer; Kling and Courtright [2003] discussed an online community where teachers share ideas and materials to enhance math education; and Chaboudy and Jameson [2001] and Iriberri [2005] described online communities where elementary school parents and teachers aimed to increase students' performance by increasing parent-teacher communication.

A second wave in research on online communities started around 1996 with management researchers analyzing the value to business organizations of the content generated by online communities. Hagel and Armstrong [1997] studied online communities as viable business models capable of attracting customers who are searching for information on products or activities of interest to them, and who want to find and build relationships, conduct transactions, or live fantasies. They suggest that if organizations provide mechanisms to identify and satisfy customer needs more accurately this can then turn into profit for vendors. When businesses provide the space for interaction, vendors can strengthen customer loyalty and also extract customer information to further improve marketing and customer service programs. Wegner et al. [2002] focused on online communities that emerge in business organizations and are used by employees as repositories of organizational knowledge. In these communities of practice, the knowledge created and stored by members contributes to the organization's ability to solve problems, create new products, innovate, and ultimately increase productivity [Millen et al. 2002]. This is evident in the widespread use of wikis, electronic boards, and electronic meeting rooms where team members in organizations add content and share online documents, thus reducing by one-half the time it takes them to complete projects [Conlin 2005; Goodnoe 2006].

In the third wave of online community research, psychology researchers focused on members' relationships and attachments within online communities. Blanchard [2004] and Blanchard and Markus [2004] studied sense of community including feelings of belonging, safety, and attachment to the group. When these feelings are present, members develop lasting relationships with other members, feel attachment to the community, and perceive the online community as a source of social and emotional support. In one online community of multisport athletes, Blanchard and Markus [2004] found that active participants develop personal friendships that in some cases move into private and face-to-face interactions.

Last, in the fourth wave, information systems researchers integrated previous perspectives, developed working definitions, and created research agendas to initiate a more focused and controlled empirical study of online communities [Gupta and Kim 2004; Lee et al. 2003; Li 2004]. The focus shifted to members' needs and requirements, development of electronic tools to support online communities, adoption and implementation of these tools, online communities for new purposes such as teaching and, finally, outcome assessment [Arnold, et al. 2003; Kling and Courtright 2003; Stanoevska-Slabeva and Schmid 2000, 2001]. For example, Stanoevska-Slabeva and Schmid [2001] described the activities members conduct in online communities and matched those activities with the technology platform capable of supporting those activities; and Arnold et al. [2003] presented a model to translate member needs into technology requirements.

In the latter years of this fourth wave, the focus of the information systems discipline moved toward proposing conditions that would increase member participation and ensure online community success. For example, Preece [2000] recommended following a participatory design approach, which takes into consideration user needs, and establishing a clear purpose combined with policies of behavior to govern the interactions of members. She referred to the fostering of "tacit assumptions, rituals, protocols, rules, and laws" that define the community identity. Similarly, Leimeister et al. [2005]

Table IV. Benefits of Online Communities for Individuals [Malooney-Krichmar and Preece 2005; Butler et al. 2005; Johnson and Ambrose 2006; Preece 1998, 1999]

Benefits for Individuals
Information exchange
—Access to a wide variety of members, information, and experiences with which to exchange information
—Access to obscure or otherwise inaccessible information
Social support
—Opportunity to build and maintain social ties with people already known offline or those met online
—Opportunity to help and provide support to the group or to the larger community
—Opportunity to offer and receive emotional support in a climate of trust, equality, and empathy
—Opportunity to bond socially and generate social action
Social interaction
—Opportunity to meet people and build friendships
—Opportunity to be entertained
Time and location flexibility
—Flexible access to the community
—Flexible time management
—Spatial and temporal independence
—Visibility beyond boundaries of local work or geographical community
Permanency
—The ability to think about and edit responses
—The ability to store and retrieve messages
—Access to research articles and hyperlinks within the community related to the focus of the community
—The ability to establish permanent social presence through photographs, textual profiles, and archive messages, and the ability to control with ease one's level of participation in the community

proposed implementing mechanisms to encourage trust, such as discretionary levels of anonymity, which can help promote lasting relationships. Most recently, empirical studies have been carried out to test independent success factors such as presence of content quality, interaction support, organization of online and offline events, rewards for contributions, volunteerism, and posting of member pictures and profiles.

The four waves of online community research have produced an extensive and rich body of research that began with theoretical and conceptual effort and has started to focus on empirical and theory testing activities. In this research, extensive discussions on the definition, benefits, and classifications of online communities abound. The next sections provide an overview of these discussions that will lead to the presentation and integration of findings on the conditions that indicate online community success.

5. IMPORTANCE AND BENEFITS

A great number of online community case studies have emphasized that many people are drawn to the Internet for social interactions. When people become part of an online community, they enjoy a wide variety of benefits (Table IV). A first category of benefits are inherent benefits that come from forming a social group, such as opportunities to *exchange information*, *give and receive social and emotional support*, *develop friendships*, and *have fun* [Ridings and Gefen 2004]. For example, members of a community of practice for researchers on asynchronous learning networks (i.e., online teaching) use the platform to *exchange information* and comment on the effectiveness of these networks [Zhang et al. 2001]. Members of online communities also *receive social and emotional support* when they need it. In the case of an online community for sufferers of a debilitating knee injury, members express their relief at being able to air their frustrations and worries during treatment and recovery periods with people who can relate to them [Maloney-Krichmar and Preece 2005]. Moreover, online communities facilitate social bonding and *friendship development* among members. `Caringbridge.org` and

GroupLoop.org, two communities for cancer patients and their families, let teenagers who undergo chemotherapy treatments and are afraid to appear in public meet people, share their feelings, and develop lasting friendships with other teenagers undergoing similar treatments [Szabo 2006]. Finally, online communities give individual members interactive *entertainment* opportunities. Chess players, for example, enjoy playing online with others and setting up online tournaments to challenge their skills against those of other members [Ginsburg and Weisband 2004].

A second category of benefits inherent to an online community, in contrast to a physical one, originates in the medium and technology. The Internet and its applications provide 24/7 access and operation, global geographical reach, asynchronous interaction, text editing capabilities, and permanent storage facilities. Members in online communities can communicate and interact with other members located in geographically distant places from the comfort of their own homes. For example, soccer enthusiasts from around the world can interact in an online community and exchange pictures of their favorite players, read profiles, and stay relevant on teams' events and tournaments [Holmes 2006]. Members can interact anytime they want to (i.e., synchronously or asynchronously), and for some communities this is an essential capability. For example, in the online community of "self-harmers," members can find support anytime day or night [BBC News 2005]; and multiple sclerosis patients can coordinate joint injection sessions in their community to encourage each other through this painful procedure [Johnson and Ambrose 2006]. An unforeseen benefit is made possible by the editing and storage facilities, which allow members to self-pace and document their interactions with other members. Members of a knee injury online community acknowledge that they can express their appreciation for being able to think through and edit their messages, and incoming members are able to view permanent records of members' profiles, comments, and opinions so that they can take part in ongoing discussions immediately after they join [Maloney-Krichmar and Preece 2005].

Those members who contribute actively to the online community receive a third category of benefits. Wang and Fesenmaier [2004] found that people find self-satisfaction and pride in fulfilling their altruistic goals of helping others out within their community. Along with these individual benefits, communities have benefits as a whole. When enough members actively participate, and as relationships, trust, and reciprocity build up in the community, the community fulfills its goals and can even achieve collective goals and actions for the benefit of all, such as improving housing conditions, educating children, and conserving water. These actions would not otherwise be possible if members acted alone [Blanchard and Horan 1998; Butler et al. 2005; Chaboudy and Jameson 2001; Hampton 2003].

Different types of benefits of online communities arise when they are hosted by profit-oriented organizations (Table V). Online communities of customers are believed to promote customer loyalty when customers perceive value in the ability to communicate with other customers regarding products and services they purchase or wish to purchase [Hagel and Armstrong 1997]. For example, buyers of fitness videos share their experiences and results at beachbody.com after using these videos. Potential buyers look for information to support their decisions to purchase those videos. Similarly, organizations with online communities of employees benefit from improved communication and trust, enhanced collaboration and access to expert knowledge, and increased productivity. In a study of nine online communities in seven organizations, Millen et al. [2002] found that employees participated in the creation, accumulation, and diffusion of knowledge within the organization through online community platforms. The organization was able to enhance problem solving, create new business and products, and increase team productivity as the collective use of the technology facilitated interactions and reduced the time needed to seek, gather, and share information.

Table V. Benefits of Online Communities to Organizations [Millen et al. 2002]

Benefits for Organizations
Customer loyalty
—Opportunity to obtain feedback and information on customer needs and requirements
—Opportunity to improve customer service
Employee communication and trust
—Better understanding of what others are doing in the organization
—Increased levels of trust
Visibility and reputation
—Opportunity to improve reputation
—Increased access to expert knowledge
—Information exchange with highly credible sources
Productivity
—Increased quality of knowledge and advice
—Increased idea creation and enhanced problem solving
—Increased new business and product innovation
—Time saving during information seeking and sharing

As more members participate actively in the online community, more of these benefits are accrued for each member and for the community as a whole. As more members contribute to the community, the community sustains itself and achieves success.

6. SUCCESS METRICS

In order for benefits to become available, an online community has to succeed. In our review, we found various ways to define and measure success. The most common metrics used in the empirical research we reviewed were volume of *members' contribution* and *quality of relationships* among members. Researchers who focus on measuring success agree that, the larger the volume of messages posted and the closer members feel to each other, the more successful the online community becomes. In addition to contribution and quality of relationships, metrics that are more precise are also advocated. Preece [2001b] identified a great number of success metrics and classified them into two groups: those related to sociability and those related to usability. Sociability measures include number of participants, number of messages per unit of time, member's satisfaction, reciprocity, and trustworthiness. Usability metrics include number of errors when using the interface, user productivity, and user satisfaction, among others. She emphasized the importance of considering both categories in evaluating the success of online communities.

Although many different metrics could be used, most empirical studies used metrics that were either quantitative or qualitative. Quantitative metrics include *size* (number of members), *participation* (number of visits, hits, logins), *contributions* (number of messages posted per period), and *relationship development* (extent of contact between members). For example, Ludford et al. [2004] measured the increase in the volume of *contributions* in terms of the number of messages posted as a result of letting members know how unique their contributions are, which in turn results in a more lively community. Size is a common and often quoted measure of success. `MySpace.com`, one of the most popular social networks for young people, had 70 million active members by 2007 [News Corporation 2007] while `Facebook.com` had 39 million; the numbers double if we consider inactive members as well [Facebook 2007]. The common qualitative metrics of success are *member satisfaction* and *quality of members' relationships*. Zhang and Hiltz [2003] studied the impact of making members' profiles and pictures available to the community on how satisfied members are with being part of the community. They found that geographically distant members enjoy and appreciate getting to know each other by viewing each other's pictures and reading each other's profiles. Cummings

Table VI. Different Online Communities Based on Four Dimensions [Lazar and Preece 1998]

By Attributes	By Relation to Physical Communities
—Goals, interests [Kim, 2000]	—Based on (frequent face-to-face)
—Family and lifestyle	—City
—Work	—Government
—Play	—Education
—Spirituality and health	—Some what (periodic face-to-face)
—Politics	—Online scholarly community
—Business transactions	—Hobbies
—Education	—Not related (no face-to-face)
—Intense interaction, emotional ties	—Anonymity – role playing
—Shared activities	—Health
—Shared resources	—Victims of crime
—Support	
—Conventions, language, protocols	
—Size	
—Anonymity levels	
—Sources of revenue	
By supporting software	By boundedness
—Listservs	—Tightly
—Newsgroup	—Organization intranet
—IRC	—Loose
—MUD	
—Web-based bulletin	
—Team rooms	

et al. [2002] found that the quality of members' relationships is lower in communities where there is limited communication and high turnover. Thus, these researchers have stressed the need to focus on increasing participation and maintaining a tightly knit community.

The variety of metrics shows that success is a complex concept but also that it is an important variable to measure. If researchers want to compare online communities, assess their outcomes and, more importantly, measure the impact of adding design components to an online community, they will be focusing on these success metrics.

7. ONLINE COMMUNITY TYPES

As the number of online communities continues to increase and millions of people participate in them, researchers have attempted to classify communities to better study them. They have generally differentiated between communities based on the need they fulfill. Hagel and Armstrong [1997] stated that online communities satisfy different needs at any given time in a nonexclusive way. According to them, a community can be of *interest, relationship, fantasy,* or *transaction*. At the same time, communities are classified by *geographic* characteristics, that is, formed by members in close proximity, by *demographic* characteristics, that is, formed for or by people of specific age, gender, life style, or ethnicity, by *topical* characteristics such as specific interests, hobbies or pastimes, or by *activities* such as shopping, financial investment, or gaming [Kim 2000]. Lazar and Preece [1998] argued that existing online communities can also be classified based on four dimensions (Table VI): *attributes*, *supporting software*, *relation to physical communities*, and *boundedness*.

According to Lazar and Preece [1998], the *attributes* of a community include its goals, topic of interest, type of activity, type of interaction, size, level of support, level of anonymity, type of conventions, language, and protocols, among others. As for the *relation to physical communities*, online communities may require frequent, periodic, or no face-to-face interactions. Online communities may use such *software* applications and technologies as email lists, newsgroups, bulletin boards, Internet-relay chat, and

meeting rooms, and can be *tightly or loosely bounded* to an organization. Lazar and Preece (1998) suggested that the label one uses to describe a community may vary as each community shows one or more of the characteristics in each of these four dimensions. For example, krebsgemeischaft.de, a community of cancer patients, may be designated as a support or as a high-interactivity community because it provides support for cancer patients and their families (*goal*) and encourages intense interactions among members (*interaction*). It also may be designated as privacy-oriented because is provides mechanisms to protect members' privacy and identity *(level of anonymity*), or as an online community with discussion forum (*supporting software*), or as one with *periodic face-to-face* interaction because it targets patients affiliated with a specific hospital in Germany (*relation to physical community*) [Leimeister and Krcmar 2003].

Others build on the classification provided by Lazaar and Preece [1998]. Leimeister and Krcmar [2004] added source of revenue, such as subscription-based revenue, membership revenue, or usage-based revenue. Preece and Maloney-Krichmar [2003] added other supporting software possibilities such as mailing lists, usenet news, discussion forums, chats, immersive graphic environments, and e-groups. Kim [2000] added areas of interest such as spirituality, health, work, politics, and education as goals of an online community. As the use of online communities for transactions has increased substantially, transactions have been added as a possible goal of some communities [Resnick and Zeckhauser 2002; Hiltz and Goldman 2004].

Finally, in an analysis of 50 online communities, Hummel and Lechner [2002] identified five genres of communities. These genres are *games*, *interest or knowledge*, and three other mixed genres also oriented to transactions, *business-to-business* (knowledge and transactions), *business-to-consumer* (interest, commerce, and transactions) and *consumers-to-consumers* (interest, trade, and transaction). These genres are based on four dimensions that characterize a community, namely, a defined group of actors, interaction, sense of place, and bonding. Each of these dimensions exists in each community in the form of features and management activities. For example, a community has a clearly defined group of actors if it has a precise content focus and clear entry and access rules. Hummel and Lechner's [2002] work is relevant to our review because they provided the basis to translate the four dimensions of online communities into physical features (i.e., management and technology) that can be implemented in an online community. We use Hummel and Lechner's [2002] work to prescribe the implementation and highlight the importance of specific success factors in each of the different community genres.

For a period between 2005 and 2007, there was an explosion of a new type of online communities, known as *social networking sites*. These social networking sites are online community whose only purpose is the creation and maintenance of social relationships or friendships. Because of the growth in this new type of online communities, compared to the limited growth of traditional communities of interest, it seemed that this community type would become the most prevalent. Members of these social networking sites use multimedia and Web 2.0 technologies such as social bookmarking and photo and video sharing to build their profiles and introduce themselves to other members [Parameswaran and Whinston 2007]. Members create detailed electronic profiles and invite other members to become their electronic acquaintances (or, more recently, help others create their profiles, like at YahooGraffiti.com). The emphasis on these social networking sites is on meeting people and including them in networks of friends. The most notable examples of social networking sites are MySpace.com and Facebook.com. Promoters of these communities believed they had found the key to motivate member participation that would lead to successful communities. However, privacy and safety concerns of members along with limited return of investments decelerated the growth of these communities. This deceleration is making developers of social networking sites

refocus their efforts on promoting vertical social networks for members with similar personal interests. These vertical social networks would behave in the same way as traditional online communities of interest do when, for example, pet lovers, football fans, and video creators interact, exchange information, and relate to each other except they would do it within the social networking services where they are already members [Bajarin 2007; Ezzy 2006]. Hence, in essence social networking sites are online communities that take advantage of the new and improved social computing technology for interaction and multimedia information exchange. Parameswaran and Whinston [2007] in a comprehensive overview of social computing concluded that Web 2.0, online communities, and social computing are different terms that all refer to those applications and services which "facilitate collective action and social interaction with rich exchange of multimedia information" (page 762).

8. LIFE-CYCLE MODEL

Online communities evolve in stages, and each stage presents distinct characteristics and needs. Community building efforts must take into consideration the needs of members and of the whole community in each stage [Preece 2000; Andrews 2002; Kling and Courtright 2003; Malhotra et al. 1997]. Wegner et al. [2002] identified five stages in building online communities: potential, coalescing, maturing, stewardship, and transformation. Andrews [2002] suggested three stages: starting the online community, encouraging early online interaction, and moving to a self-sustained interactive environment. Malhotra et al. [1997] illustrated four stages of evolution and design using an online community of college football fans. They described the inception, beginning of user involvement, interactivity, and growth and experimentation activities of this community over a 2-year period. These authors maintained that to motivate contributions to online communities, features must evolve according to members' needs at each stage.

In this review, we have labeled the five stages of the online community life-cycle as follows: inception, creation, growth, maturity, and death (Figure 2). We chose these names because they match the stages in the information systems life-cycle (ISLC), a widely known concept used by information systems developers. The ISLC is a comprehensive model that describes the development and operation of any information system. The main idea is that any system "must evolve through the same consistent and logical process without ignoring any step" [Ahituv and Neumann 1982, page 254]. Ahituv and Neumann [1982] emphasized the need to use a user-/management-oriented approach for developing information systems, in which developers identify what the system should do (what are the needs) as opposed to how it does it (what technology). They also emphasize that the nature of the life-cycle is not linear, but that in practice it is an iterative process. In an online community, the needs of users and management evolve along with the life-cycle stages of the community. Therefore, developers need to understand the online community life-cycle and identify what users and management will need in each stage to develop the community and encourage participation.

The first stage in the online community life-cycle is inception. At *inception*, the idea for an online community emerges because of people's (members and operators) needs for information, support, recreation, or relationships. Depending on the type of need, interested individuals, or a group of friends, begin forming a vision for a community where people can disseminate information, communicate, and interact [Malhotra et al. 1999; Wegner et al. 2002]. Examples include communities of support for diabetes patients, communities to discuss water conservation alternatives, and communities to bring video game players together to discuss and improve their game strategies. In

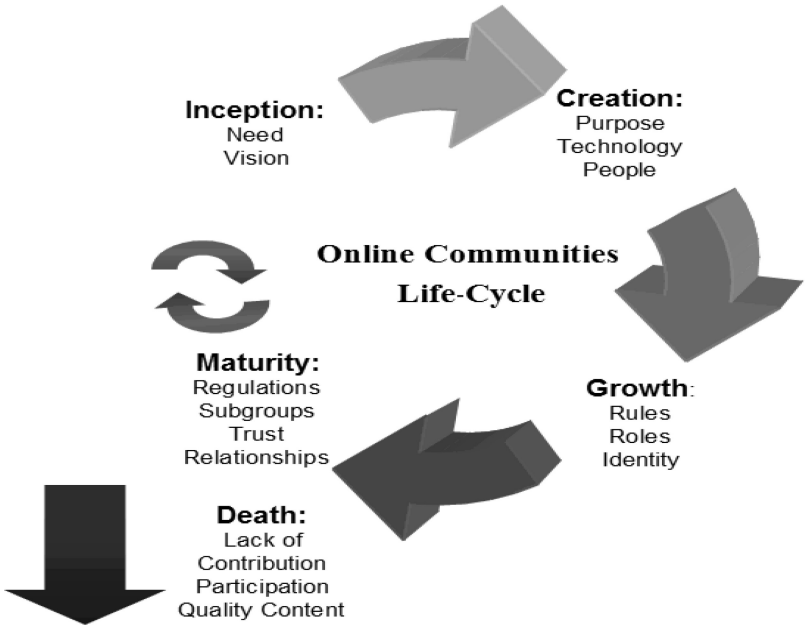

Fig. 2. Online communities' life-cycle.

addition to the vision, incipient communities begin with a focus and some rules of behavior and communication, which helps the communities maintain focus.

Once the vision is clear, the required technological components, including Internet applications such as email, listserv, bulletin board, discussion forums, or chats, may be selected and gradually incorporated, responding to the needs and preferences of creators and initial and potential members. The *creation* of the online community begins when these technological components are in place and when the initial group of members can begin to interact and spread the word for other members to join [Malhotra et al. 1997].

In time and when enough members have joined, a culture and identity for the community begins to develop. Members start using a common vocabulary and, as the community grows, members select the roles they will play in the community. Additionally, communication and participation etiquette rules surface. Some members lead discussions, some provide support, while many look for support and information. Some members become leaders while others become followers or lurkers, who read messages posted by other members but do not actively contribute to the community. Some volunteer information while others use this information [Maloney-Krichmar and Preece 2005; Butler et al. 2005; Nonnecke and Preece 2000, 2001; Ridings et al. 2006]. These characteristics, common to both online and physical communities, initiate the *growth* stage of the online community.

As the online community *matures*, the need for a more explicit and formal organization with regulations, rewards for contributions, subgroups, and discussion of more or less specific topics is evident. In this stage, the community is strengthened and trust and lasting relationships begin to emerge. Throughout the life of the community, new members join in and old members whose needs are satisfied or whose initial excitement for joining the community wears down leave the community. As new members join, the community evolves and a cycle of interaction repeats. New members bring new

ideas for discussion and their roles change [Nonnecke and Preece 2001; Burkett 2006; Ridings et al. 2006]. Many communities thrive in this stage for long periods. Other communities change course, or add new features to maintain user interest, iterating in a mature state. Still others lose momentum and member interest completely and begin to *die* down when they face poor participation, lack of quality content, unorganized contributions, and transient membership [Jarvenpaa and Knoll 1998].

Activities and needs of members change in each stage of the online community evolution. Each stage require different tools, features, mechanisms, technologies, and management activities. Developers have to identify the needs in each stage and add the right technology components that will better support the community, in the way the information systems life cycle prescribes.

We believe that matching features with each community life-cycle stage may more efficiently lead to success. In our review, we found that existing research has focused on independent (i.e., isolated) factors or features that may lead to community success. Existing research results are valuable in understanding the online community phenomenon and identifying success factors, but little effort has been made to identify when in the life of the community each component or success factor must be implemented or to what degree to maximize its impact on success. We ascertain that the technology and mechanisms that support and ensure success of online communities should evolve to match their growth and evolution. If each stage of the online community life-cycle presents different requirements and challenges, then stressing specific success factors at a certain stage of evolution will be more important. Relevant technology support at the appropriate stages is necessary, if success factors implemented in previous stages are maintained.

We also believe that the purpose or type of online community determines the degree of relevance each specific factor may have in the success of the community. In the next two sections, we review existing views of success and propose a sequence to add features to online communities as they evolve.

9. ISOLATED SUCCESS FACTORS BASED ON CURRENT RESEARCH

Recommendations for building online communities from various disciplines range from lists of strategies to design principles and theoretical frameworks [Preece 2001a, 2001b; Kling and Courtright 2003; Andrews 2002]. Figure 3 illustrates the current views on online communities by researchers of different disciplines. It also demonstrates how each discipline has its own focus of study. Sociologists have suggested modeling online communities after physical communities to ensure success. In their recommendations, they used theories that explain identity, social interaction, and social organizations. Kollock's [1996] design principles for online communities and Wasko and Teigland [2004] research agenda used theories on social dilemmas, cooperation, public commons, and collective action. The most salient design principles resulting from their work are the incorporation of identity persistence (i.e., the ability to recognize members by names), group boundaries (i.e., the ability to differentiate rightful members), and permeated control (i.e., the ability to allow group members to monitor and sanction members' behaviors).

Business practitioners and management researchers have provided development strategies and focus on the value of online communities to organizations. Kim [2000] contributed a set of nine strategies and three design principles. Similarly, Cothrel and Williams [1999] contributed seven principles for success based on an extensive study of 15 successful business online communities. These authors have agreed on the importance of three conditions: focusing on the needs of users and explicitly indicating that satisfying these needs is the purpose of the online community, providing support

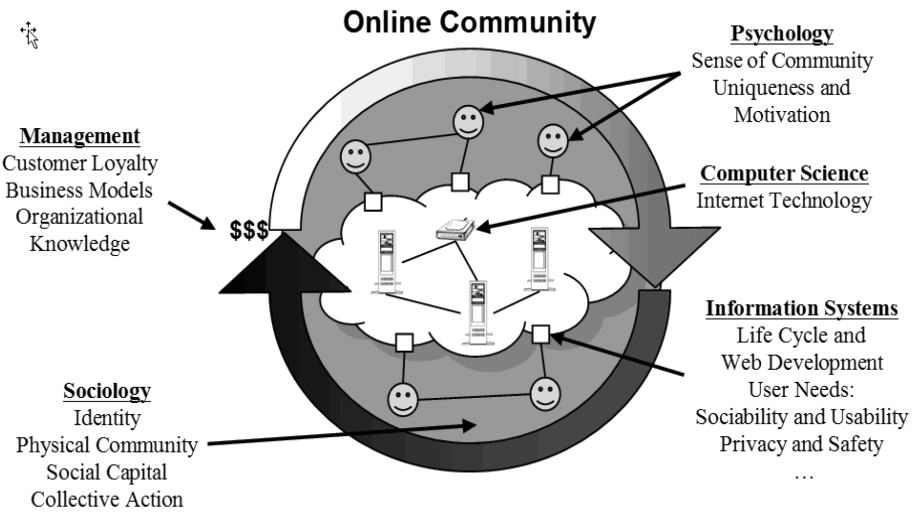

Fig. 3. Current research: online community success factors as seen by different disciplines.

for individual roles of members, such as moderators or experts, within the community, and facilitating the organizations of online and offline activities or events. Furthermore, management researchers have focused on creating successful business models to attract customers and enhance customer loyalty.

Psychology, human computer interaction, and computer-supported collaborative work researchers study people's motivations to participate in and contribute to online communities. Blanchard and Markus [2004] applied theories of sense of community and emphasized the importance of having facilitators to encourage discussions and reward members for their contributions, and ensuring member's legitimacy and persistent identity. Similarly, Beenen et al. [2004] highlighted the need to encourage contributions by explicitly acknowledging members' uniqueness of opinions.

Information systems researchers reference these theories and propose frameworks for developing successful online communities. Preece's [2000] and Tedjmulia et al.'s [2005] frameworks stress the importance of incorporating sociability-support and usable components in the design of online communities. Sociability-support components include the existence of clear purpose, protocols, and codes of behavior. Usability components include the ease of use with which users can find information or the speed with which users can navigate through the online community. Incorporating these conditions in the design ensures the path to success. Tedjamulia et al. [2005] went further and encouraged the incorporation of extrinsic reinforcements such as gifts, social recognition, and feedback to motivate online community members to contribute actively to the community.

Leimeister and Sidiras [2004] compiled a list of 30 different success factors drawn from existing research in information systems and other fields and ranked them according to importance from the perspective of participants and operators. They found that participants and operators value in the first and second places the ability of the online community to handle member data sensitively and the stability of the online community Web site. Leimeister et al. [2005] empirically tested the impact on success of factors such as exposing the identity of managers and content providers, clearly establishing their goals for the online community, making up-to-date and expert-generated content available, making members' profiles available for other members, and providing varying

levels of anonymity. They found that these components build trust among members and motivate continued membership. Others are testing many other components such as rewards for contributions, assignment of administrative roles to members, acknowledgment of members' longevity, organization of online and offline public events, and posting of member's pictures and profiles, among others. The one factor researchers focused on most is member recognition and rewards for contributions [Ginsburg and Weisband 2004; Andrews 2001; Andrews et al. 2001; Beenenet et al. 2004; Butleret et al. 2005; Chan 2004; Hall and Graham 2004; Hars and Ou 2002; Tedjamuliaet et al. 2005]. Providing rewards for contributions seems to increase the number of messages posted by community members, making it more active and more successful.

The current volume of online community research is vast but findings related to success are isolated. Online community designers face a myriad of design strategies and features with little guidance on how to integrate these when building online community platforms. A one-time effort to integrate all these components is costly and not necessarily productive in terms of maximizing success. It is necessary to integrate all the disconnected findings into a set of guidelines based on the growth of the community and its needs. What follows is a description of current research on success factors, with an indication as to when they matter most to community development according to the life-cycle of the community.

10. INTEGRATED SUCCESS FACTORS BY COMMUNITY LIFE-CYCLE STAGE

We integrated the success factors found by researchers and practitioners into the information systems life-cycle model for different types and genres of online communities. We based this integration on research articles that reported findings on the conditions that lead to participation in, contribution to, sustainability of, and success of online communities. The criteria we used to select articles for this review are explained in Section 3. In our integrated life-cycle model depicted in Figure 4, we match the online community building process with timed stages. We also indicate the features that should be selected and gradually added depending on the type of community under development (i.e., what is necessary in each stage) and the purpose of the community (i.e., for what type of community the feature is essential). The rationale used to classify factors by stage was the result of our and others' experience building online communities, like Arnold and Leimeister [2003], Preece [2000], Kim [2000], and Cothrel and Williams [1999].

This classification of factors is also based on reports by the various authors who have described the online community life-cycle, specifically Malhotra et al. [1999], Wegner et al. [2002] and Andrews [2002] (see Section 8); tested online community success factors, such as those described by Leimeister et al. [2005], Beenen et al. [2004], Zhang and Hiltz [2003], and Maloney-Krichmar and Preece [2005] (see Table II); and identified online community types and genre, such as those described by Hummel and Lechner [2005] (see Section 5). The review of research findings helped us decide, for example, that at maturity, when a critical mass of members is reached (as opposed to at inception, when the community has very few members), it is necessary to include subgroup support to manage information overload [Jones and Rafaeli 2000; Maloney-Krichmar and Preece 2005], and that at inception a sense of purpose and a trademark for the community must exist [Preece 2000; Kim 2000].

Our life-cycle perspective incorporates the interaction between a changing hardware and software platform, and the development of the community as a response to its social dynamics and evolution prescribed by the authors we reviewed. Online community hardware and software development must evolve along with the online community through a life-cycle. Tables VII through XI detail the integration of success factors per

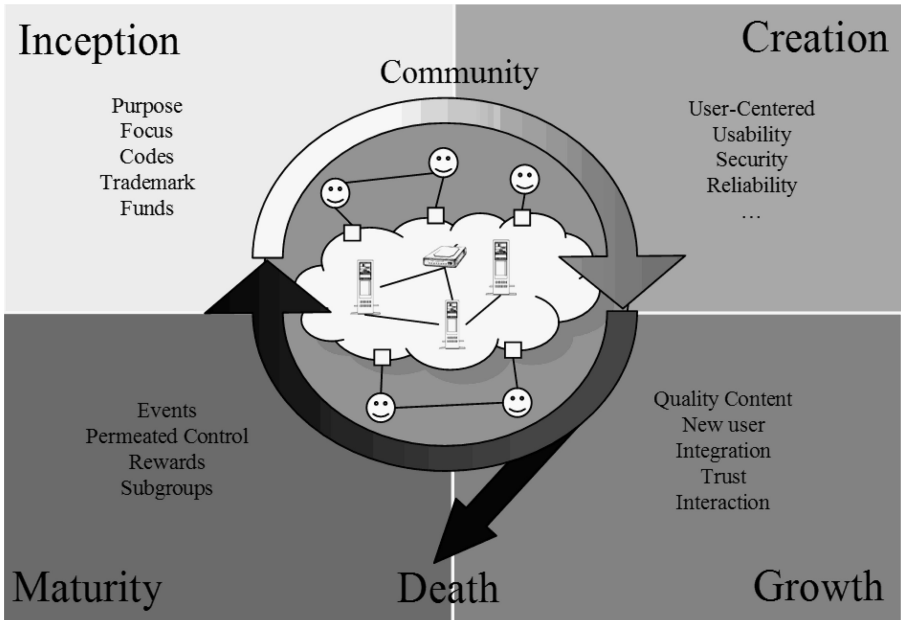

Fig. 4. Integrated view: online community success as seen from a life-cycle perspective.

life-cycle stage. In each table, the first column lists *success factors*, the second lists the *type of community* or genre where the factors were tested and studied, and the third lists the *authors* who reported those conditions as success factors. We present one table per life-cycle stage with the success conditions or features that should be implemented in that stage.

We grouped reported conditions and labeled them in bold with a generic name for easy reference. For example, Table VII (inception) lists *purpose* as a success factor, and lists online *communities of support and interest* as the type of community where this purpose was studied, and shows Andrewset et al. [2001], Kim [2000], Leimeisteret et al. [2005], and Maloney-Krichmar and Preece [2005] as the *authors* who reported on the impact of this success factor. This table shows that having a clear purpose and a specific population target is paramount in the inception stage, as opposed to, for example, rewarding members or managing subgroups, which is necessary in the maturity stage. If at inception an online community does not have a clear purpose, then participants will not feel attracted to participate or their contributions will be off-target. Similarly, Table VIII (creation) shows that Hummel and Lechner [2002] found *privacy protection* is an important condition to *game communities*. However, they found that *communities of interest and support* are interested in knowing the *identity* (i.e., the member profile) of each member, since knowing the history of each member increases her or his credibility and her or his contribution's perceived value to the community. They found that *communities of knowledge* also prefer to be able to read each member's profile.

In analyzing Tables VII through XI, it is important to emphasize that although some factors are more important than others depending on the *life stage* or *type* of online communities, none should be neglected. Once implemented, each of them must remain in place in the community throughout the life cycle. That is, once each factor is present, it should continue to exist in the subsequent stages of the online community evolution.

Table VII. Online Community Success Factors for the Inception Stage

Life Cycle Stage: Inception		
Success factor	Community type	Authors
Purpose	Interest	Maloney-Krichmar and Preece [2005];
Purpose	Support	Andrewset et al. [2001]; Kim
Transparency of goals	All	[2000]; Leimeisteret et al. [2005]
Focus	All	[Andrewset et al. 2001]
Target Audience		
Focusing on one target group		
Codes of conduct	Interest	Leimeister and Krcmar [2003]; Kim
Establishing codes of behavior (netiquette and guidelines) to contain conflict potential	All	[2000]; Preece [2000]
Facilitator to monitor and control behavior		
Trademark	All	[Kim 2000]
Building a strong trademark		
Tag line		
Funding/revenue sources	All	Leimeister and Krcmar [2004]
Defining sources of revenue as a starting condition for building a virtual community		
Advertising and subscription fees		

For example, if codes of behavior are established in the inception stage, they should continue to exist in the growth and maturity stages for them to have a positive effect on the success of the community. In the following sections, the success factors for the inception stage are explained in detail in both the text and table. In lieu of being too repetitive, factors in other stages are generally reviewed in the text and listed in detail in the corresponding tables.

10.1. Inception

During inception, the idea for an online community emerges to satisfy a need for information, support, recreation, or relationship. Some communities emerge when a small group of people with a similar interest interacts online, while others are born when a business organization provides a platform for interaction. Success factors such as purpose, focus, a code of conduct, trademark, and source of revenue at this stage are necessary for all types of communities. Table VII lists the success factors at this stage.

—*Purpose*. Before the online community support hardware and software platform is put together, creators must have a clear purpose for the community, and this purpose needs to be explicitly written in the online community interface (i.e., the homepage). Potential members need to know what the online community's purpose is before they can decide to participate.

—*Focus*. Creators must decide on the need they will address and identify characteristics of the target audience (i.e., interests, age, gender, and ethnicity). They need to ensure that they cater to those needs. At this stage, Wegner et al. [2002] recommended also specifying clearly the community's area of interest to its members.

—*Codes of conduct*. Operators need to establish regulations clearly to be able to contain possible conflicts and allow for effective monitoring of members' behavior such as the language used, age of members, and whether or not they are allowed to advertise products or services. In the case of online communities that are born in business organizations' platforms, stricter codes of conducts or regulations may exist.

Table VIII. Online Community Success Factors for the Creation Stage

Life-Cycle Stage: Creation		
Success factors	Community type	Author
User-centered design and evolution Evolution of the community according to the ideas of its members Knowing member preferences can maximize benefits to members Specific target groups Design with users in mind Focus on the needs of members	All	Leimeister and Krcmar [2004]; Andrews [2001]; Andrewset et al. [2001]; Kollock [1996]; Williams and Cothrel [2000]; Cothrel and Williams [1999]
Interface usability Intuitive user guidance/usability Sophisticated user interface Ease of use Simple and easy to use interface	Gaming Support All	Ginsburg and Weisband [2004]; Tedjamuliaet et al. [2005]; Maloney-Krichmar and Preece [2005]; Preece [2000]; Nonnecke and Preece [2001]; Andrewset et al. [2001]
Security and privacy Handling member data sensitively Access-rights structure (privacy, security, authorization) Security	Interest Support	Leimeisteret et al. [2005]; Leimeister and Krcmar [2003, 2004]; Andrews [2002]; Williams and Cothrel [2000]; Hummel and Lechner [2002]
Anonymity Discretionary levels of identity disclosure (from show all personal information to show none)	Game (show none) Support (discretionary)	Hummel and Lechner [2002]; Leimeisteret et al. [2005]
Identity persistence Ability to identify other members Ability to learn history of other members	Interest Support	Hummel and Lechner [2002]; Kollock [1996]
Reliability Stability of the Web site Reliable interface	Interest Support All	Andrewset et al. [2001]; Maloney-Krichmar and Preece [2005]
Performance Fast reaction time of the Web site Performance	Interest All	Andrewset et al. [2001]; Leimeister and Krcmar [2004]

—*Trademark*. Kim [2000] emphasized the need for a tagline that differentiates the community and expresses its nature. "News for Nerds. Stuff that Matters" is the tagline of `Slashdot.org`, an online community for open source enthusiasts. She suggests that an appealing tag would trigger, in the right audience, the desire to participate.

—*Funding and revenue*. Depending on the goals of the creator, sources of funding or revenue must be secured. Several options to fund online communities exist: private funding, membership fees, fee per use, and advertising, among others.

From this list of success factors, Maloney-Krichmar and Preece [2005] found evidence of the importance of having a clear *purpose* in an online community of support for patients undergoing treatment for a knee condition. Similarly, Leimeister and Krcmar [2003] found that *codes of conduct* are important in online communities of interest and support for cancer patients.

10.2. Creation

In the creation stage, creators select the technological components (e.g., Web sites with bulletin boards, discussion forums, or chats rooms) that will support the online community based on the needs of potential members and the purpose of the community

Table IX. Online Community Success Factors for the Growth Stage

Life-Cycle Stage: Growth		
Success factors	Community type	Authors
Attracting members Existence of an offline customer club as starting advantage Real life status symbols Actively encourage new members to join Offering privileges or bonus programs to members	Gaming Interest Transactions	Ginsburg and Weisband [2004]
Growth management Continuous community-controlling with regard to growth of the number of members Sending reminders to contribute Setting numeric goals for contributions Framing similarities of opinion and uniqueness of contributions	Interest	Beenenet et al. [2004]; Ludfordet et al. [2004]
Integration of new members Assistance for new members by experienced members Room for long-term users and newcomers	Interest Support	Maloney-Krichmar and Preece [2005]
Up-to-date content Offering up-to-date content Knowledge stewards to organize, upgrade, distribute knowledge Up-to-date Legitimization	Gaming Support	Brazelton and Gorry [2003]; Ginsburg and Weisband [2004]; Leimeister and Krcmar [2004]
Content quality Offering high-quality content Knowledge stewards to organize, upgrade, distribute knowledge Content generation by the host Interesting content Competent content management Quality of content	Knowledge Interest	Brazelton and Gorry [2003]; Sangwan [2005]; Tedjamuliaet et al. [2005]; Leimeister and Krcmar [2003, 2004]; Andrewset et al. [2001]; Zhang and Hiltz [2003]; Leimeisteret et al. [2005]
Interaction support Encouraging interaction between members Member directory, photographs and video clips, commenting features and recommender systems	Knowledge Game Interest	Zhang and Hiltz [2003]
Trust building Building trust among the members Member directory, photographs and video clips, commenting features and recommender systems, and matching profiles Clear identification of operators Member profiles Transparency of providers	Knowledge Support Interest Gaming All	Zhang and Hiltz [2003]; Andrewset et al. [2001]; Donath [1999]; Leimeister and Krcmar [2003]; Kollock [1996]; Kapoor et al. [2005]; Kim [2000]; Leimeisteret et al. [2005]
Neutrality/non-partisan offers Sustaining neutrality when presenting and selecting offers		Leimeister and Sidiras [2004]
Reaching critical mass Reaching a high number of members within a short period of time		Leimeister and Sidiras [2004]
Transparency Increase of market transparency for community members Trustworthy operators Affiliation to established, reputable organizations	Support Interest	Andrews [2002]; Andrewset et al. [2001]; Leimeisteret et al. [2005]
Personalization of portal Personalized page design of the community site according to the preferences of its members	Game	Leimeister and Sidiras [2004]
Personalization of offers Personalized product and service offers for community members		Leimeister and Sidiras [2004]
Offline events and meetings Supporting the community by regular real-world meetings		Andrewset et al. [2001]; Kim [2000]; Cothrel and Williams [1999]

Table X. Online Community Success Factors for the Maturity Stage

Life-Cycle Stage: Maturity		
Success factors	Community type	Authors
Regular online events Arranging regular events	Interest Gaming	Andrewset et al. [2001]; Williams and Cothrel [2000]
Sales and offers Price efficiency of offered products and services Sales Constant extensions of offerings		Leimeister and Krcmar [2004]; Leimeister and Sidiras [2004]
User tools Tools for working with shared materials Recommender systems to match user profile Commenting systems Search engines Document storage and sharing	Knowledge	Andrewset et al. [2001]; Zhang and Hiltz [2003]
Permeated management and control Integration of the members into the administration of the community Volunteers are critical to provide 24/7 service Distributed delegation to group operators Support for volunteerism Membership roles Facilitators to monitor and control behavior Invitation-only subgroups	Interest Gaming Support	Ginsburg and Weisband [2004]; Maloney-Krichmar and Preece [2005]; Leimeister and Krcmar [2003]; Andrewset et al. [2001]; Williams and Cothrel [2000]; Kim [2000]; Cothrel and Williams [1999]
Recognition of contributions Appreciation of contribution of the members by the operators Recognize existing volunteers with explicit reward model Real-life status symbols (identity of contributors) Recognition of participation: by name, identity, positive feedback Recognizing uniqueness of contribution and benefits to the group Extrinsic rewards: gift, social recognition, feedback Visibility of contribution Incentives must match user values	Gaming Interest	Ginsburg and Weisband [2004]; Chan [2004]; Andrews [2001]; Beenenet et al. [2004]; Hars and Ou [2002]; Andrewset et al. [2001]; Butleret et al. [2005]; Hall and Graham [2004]; Tedjamuliaet et al. [2005]
Subgroup management Establishing and supporting sub groups within the community Use of channels to segment communications (communities of interests) Support for permeable subgroups Virtual space with an appropriate communication channel Narrowly focused discussion forums Flexible gathering places	Gaming Support	Ginsburg and Weisband [2004]; Maloney-Krichmar and Preece [2005]; Jones and Rafaeli [2000]; Leimeister and Krcmar [2003]; Andrewset et al. [2001]; Hall and Graham [2004]; Kim [2000]
Recognition of loyalty Special treatment of loyal members Recognizes existing volunteers with an explicit reward model (free membership/ status in volunteer chain) Recognition (identity, expertise, tangible recognition) Extrinsic rewards: gift, social recognition, feedback	Gaming	Ginsburg and Weisband [2004]; Andrews [2002]; Chan [2004]; Tedjamuliaet et al. [2005]; Butleret et al. [2005]; Hars and Ou [2002]
Member satisfaction management Continuous community, controlling with regard to member satisfaction Focus on user needs	All	Leimeister and Sidiras [2004]; Cothrel and Williams [1999]

Table XI. Determinants of Online Community Termination

Life Cycle Stage: Death		
Success factors	Community type	Authors
Undersupply of content Poor participation Unorganized contributions Transient membership Members with weak ties Willingness to share information Lack of anonymity Concerns about privacy and safety Shyness about public posting Time limitations	All	Jarvenpaa and Knoll [1998]; Nonnecke and Preece [2001]; Iriberri [2005]; Zhang and Hiltz [2003]; Constant et al. [1994]

(Table VIII). In this stage, a different set of success factors takes precedence over those implemented in the previous stage (developers should not lose sight of the importance of maintaining the success factors already implemented in the previous stage). In creating the community, creators must focus relentlessly on the needs of the users and must ensure that the tools are usable, that the supporting platform is reliable, that the personal member information is secure, and that all technology components have an adequate level of performance.

Leimeister and Sidiras [2004] found that operators and members of online communities value the *security and privacy* of their personal data very highly. Wegner et al. [2002] explained that, as the community coalesces, it is important to develop a sense of trust and security. Similarly, Andrews [2002] advised that, in order to encourage interaction, operators must guarantee privacy. Therefore, creators must ensure this member information is secure. Recent instances of crime among members of `MySpace.com` evidence this need [Romano 2006]. These incidents happened to a certain extent because members made their personal data easily available to other members.

In terms of the importance of each factor in communities of different types, Hummel and Lechner [2002] suggested that *interface usability* (i.e., ease of use and sophistication) is of primary importance for *gaming communities*. Conversely, Maloney-Krichmar and Preece [2005] suggested that a simple but reliable interface is best for *communities of support*. Also, Kollock [1996] believed that member identity persistence, in the form of fixed usernames and user profiles, is necessary in online communities because it allows members to identify others in the community, know their history, and trust them. Discretionary levels of anonymity as opposed to complete anonymity are necessary in support communities because they promote relationship building, mutual support, and more private and offline interactions for those members who choose to meet each other in person. Hence, personal information should be kept secure and private but members should be left at liberty to reveal their own identities to members they select. In this regard, Leimeister *et al*. [2005] described the implementation of four levels of anonymity in a community for cancer patients that range from "show everything in my profile" to "display nothing."

10.3. Growth

In the growth stage, word of the online community spreads and members join, while a culture with an identity, a common vocabulary, a shared history, roles, and rituals begins to surface. In this stage, creators must ensure that new members visit the online community and join in, that their integration is smooth, and that up-to-date and quality content is offered. Trust-building elements including clear identification of operators, accessible member profiles, and, if available, sponsorships from reputable organizations should be incorporated as much as possible (Table IX).

Both Andrews [2002] and Leimeister et et al. [2005] found that it is easier to attract new members if the online community clearly shows the identity of its operators (*transparency)* or is affiliated with a reputable organization. Similarly, Andrews [2002], Kim [2000], and Cothrel and Williams [1999] suggested that, to encourage growth and facilitate word-of-mouth communication to attract new members, operators should organize community-building activities such as *offline meetings or events.* These events will also help members know each other better. In this stage, Andrews [2002] stated it is important to provide members with technology features that help them present their profiles and contact information to the community.

Success factors in this stage are important for all types of communities but personalization is especially important for *game communities* since their members value a sophisticated interface that gives them a sense of place [Hummel and Lechner 2000].

10.4. Maturity

If successful in previous stages, online communities mature into formal organizations. Creators and operators need to focus on their sustainability and continued success. At maturity, a critical mass of members and member-generated content is achieved. Researchers advise that creators and managers facilitate the formation of subgroups, delegate control to volunteer subgroup managers, organize online events, and reward and acknowledge members' participation and contributions [Andrews 2002; Ginsburg and Weisband 2004]. As member contributions reach a new height, the formation of subgroups and the permeation of control to facilitate subgroup discussions help decrease information and administration overload for members and operators [Andrews 2002; Maloney-Krichmar and Preece 2005]. Jones and Rafaeli [2000] emphasized the need to allow *subgroup formations* and to facilitate interactions and discussions on different subtopics of interest or for different types of members. For example, Maloney-Krichmar and Preece [2005] found that in an online community of support for patients undergoing treatment it is important to provide different spaces, one for patients and one for members of their families, in order to provide a sense of intimacy. Table X details success factors in this stage.

The success factor that earns the most attention in this stage is *recognition of members' contributions*. Members who are loyal or who contribute or participate actively as volunteers should be rewarded by acknowledging them by name, with gifts, or simply by providing them with feedback. *Volunteerism* is especially important for *game communities* so that they can provide 24/7 member support. *Subgroup management* is especially important for *interest* and *support communities* in order to reduce information overload and provide a sense of intimacy.

10.5. Sustainability or Death

Once online communities mature, they may take several paths. Some sustain themselves and continue to grow and succeed, others change course, and a few cease to exist. Wegner et et al. [2002] explained that people may begin to leave the community when it is no longer useful to them. However, if the community achieves sustainability in this stage, benefits begin to accrue. At maturity, Malhotra et al. [1999] ascertained the identity of the community consolidates and collective action may begin. On the other hand, if communities experience poor participation, lack of quality content, unorganized contribution, and transient membership [Jarvenpaa and Knoll 1998], their termination may be eminent.

Iriberri [2005] found evidence to suggest that members would not contribute content to the community if they were concerned about their identity being known, if

contributions were unorganized, or if content was undersupplied. These termination conditions seem to apply to all online social spaces [Desanctis and Roeach 2002]. Table XI lists conditions for online community termination.

As discussed, existing research has tested isolated success factores for online community success. However, sytematically integrating these succes factores according to the growth and needs of the community, as we have done, will optimize the use of development resources and maximize online community success.

11. CONCLUSIONS AND FUTURE RESEARCH

Researchers and practitioners in different disciplines are studying conditions that lead to lively and sustainable online communities. We reviewed this literature and organized success factors based on the information system life-cycle, the community life-cycle, and the type or genre of community. Online communities evolve following distinctive life-cycle stages where users and operators need change. As a result, different technology features are needed depending on the need and the development stage of the online community. An integrated and organized view of factors that lead to success, as opposed to a list of isolated factors, can facilitate development and maximize success. Information systems researchers and online community builders interested in creating lively and sustainable communities where members participate willingly and contribute actively will benefit from this detailed review and integration of the conditions that will lead their online communities to succeed.

The complexity and diversity of online communities make them a challenging subject of research. Existing research, although valuable, has produced "snapshot views" of online communities. Future research should focus on the dynamic nature of online communities and test, for example, whether the order that we propose in which factors should be implemented leads to more or less success, and if and how these factors interact to promote success. Other efforts could focus on understanding the needs of different types of users (i.e., according to gender, age, and ethnicity). Online community designers will benefit from further research on how to implement these factors to ensure an optimal development process and maximum success.

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Received July 2006; revised September 2007, December 2007; accepted April 2008