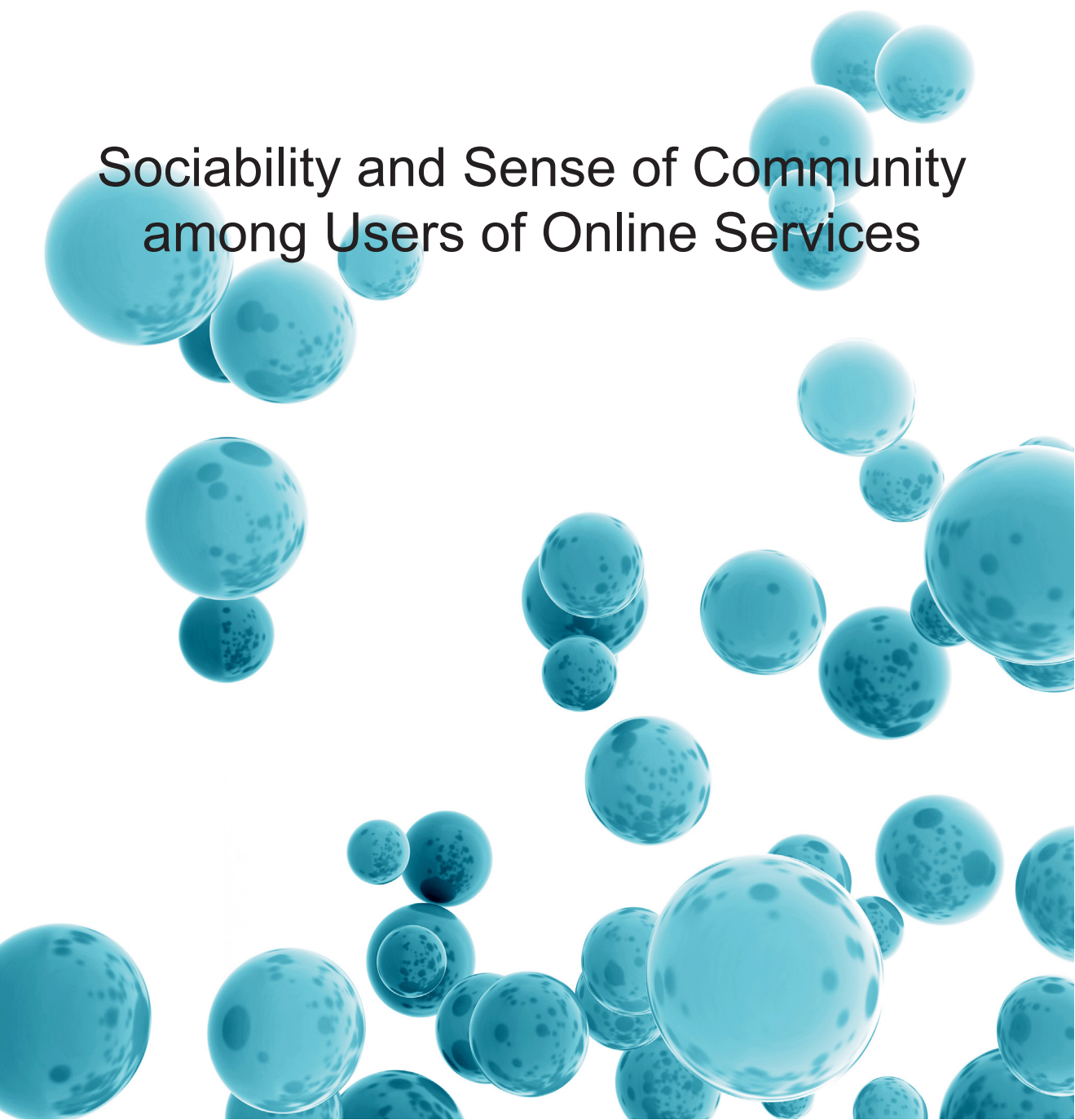# SANNA MALINEN

Sociability and Sense of Community among Users of Online Services

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UNIVERSITY OF TAMPERE

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Abstract

The dissertation explores a current and popular phenomenon referred to as 'online communities' from both theoretical and empirical viewpoints. Online communities are discussed in the context of a wider development in social life from small geography-based units to large and dispersed social networks, which can be mediated by technology. In this study, online communities are understood as fluid objects that are created and maintained through users' social interactions and actual social practices. Therefore, they are not stable and fixed groups but, instead, a social process that transforms over time.

The empirical portion of this work illustrates the multifaceted nature of the research subject and consists of five case studies exploring the usage of software intended for various purposes: an online photo-sharing service, an online exercise diary, online auctions, and social-media applications for smartphones. In addition, there is a research article consisting of a literature review that synthesise research into online community participation conducted over the past 12 years. The findings from the empirical sub-studies show that community-evocative feelings and behaviors can emerge within various online settings, including dispersed networks and content-oriented sites focusing on artefacts that users produce, such as photographs. However, users can have very different orientations with respect to their interest in social networking and community-building within the context of the same site. The literature review shows that the majority of previous research on user participation has focused on the quantity of their activity. Instead of dividing users into active and passive on the basis of the amount of content they produce, research should acknowledge that there is greater variety in the ways of participating and belonging to an online community.

The dissertation vividly illustrates that online communities are a constantly changing and developing phenomenon. In recent years, the most notable technological changes have been the surge in popularity of large-scale social network sites and increased usage of the Internet via mobile devices. In order for the concept of community to be applied in description of online sociability within current technological settings, the meaning of this term and the criteria for community needs to be rethought.

Tiivistelmä

Tämä tutkimus tarkastelee yhteisöllisyyttä verkkoympäristössä sekä teoriaan että empiiriseen aineistoon nojautuen. Työn teoreettinen osuus käsittelee verkkoyhteisöjä koskevaa aiempaa tutkimusta ja tieteellistä keskustelua siitä, voiko yhteisöllisyyttä syntyä teknologian välityksellä ja millaista nykyaikaisen teknologian välittämä yhteisöllisyys on. Työn empiirinen aineisto havainnollistaa tutkittavan ilmiön moninaisuutta ja koostuu viidestä tapaustutkimuksesta, joissa tarkastellaan erilaisiin tarkoituksiin kehitettyjen verkkopalveluiden käyttöä. Väitöskirjan kuuden tutkimusartikkelin keskeisiä teemoja ovat: käyttäjien motiivit sisällön jakamiseen, heuristisen arvioinnin soveltuvuus verkkoyhteisöjen kehittämiseen, sosiaalisen median mobiilikäytön tunnuspiirteet, luottamuksen rakentuminen verkossa, käyttäjien kulttuuritaustan vaikutus verkkososiaalisuuteen sekä millä tavoin käyttäjien osallistuminen on ymmärretty ja käsitteellistetty aiemmassa verkkoyhteisöjen tutkimuksessa.

Tässä tutkimuksessa yhteisöt ymmärretään muuttuviksi objekteiksi, joita luodaan ja ylläpidetään erilaisten sosiaalisten käytäntöjen kautta. Näin ollen, yhteisöt eivät ole pysyviä ja muuttumattomia, vaan sosiaalinen prosessi, joka muuttaa muotoaan ajan myötä. Tulokset osoittavat, että yhteisöllisyyden kokemuksia ja yhteisöllistä käyttäytymistä voi esiintyä hyvin monenlaisissa verkkoympäristöissä - myös sellaisissa laajoissa ja hajanaisissa verkostopalveluissa, jotka keskittyvät digitaalisten artefaktien, kuten valokuvien tuotantoon ja jakamiseen. Yhteisöllisyyden kehittymisen kannalta on tärkeää, että käyttäjillä on mahdollisuus säännölliseen vuorovaikutukseen ja että verkkopalvelussa on sellaisia sosiaalisia rakenteita, jotka mahdollistavat käyttäjien omaehtoisen sosiaalisen verkostoitumisen. Tällaisia rakenteita ovat esimerkiksi mahdollisuus kahdenvälisten suhteiden luomiseen sekä ryhmiin liittymiseen. Tutkimus myös osoittaa, että saman verkkopalvelun käyttäjillä voi olla hyvin erilainen suhtautuminen sosiaaliseen verkostoitumiseen ja yhteisön rakentamiseen, jolloin sama verkkopalvelu on toiselle käyttäjälle yhteisö ja toiselle informaation lähde tai sisällön säilytyspaikka. Koska yhteisöllisesti suuntautuneet käyttäjät muodostavat sosiaalisia suhteita ja verkostoituvat aktiivisesti, he myös todennäköisemmin kokevat verkkopalvelun verkkoyhteisöksi.

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The first seeds for this dissertation were planted in 2000, when I started work as a researcher of technology-mediated interaction at the Information Society Institute, the University of Tampere, in a research team studying mobile phone use in the context of family life. Working with researchers Pirjo Rautiainen, Virpi Oksman and Anu Matfeinen was a truly remarkable opportunity for me. With this pioneering research team, I learned to apply social scientific approaches, especially ethnography, in the context of technology use. I want to thank you for providing me such an inspiring working environment.

The majority of research data for this dissertation was collected in research projects at the Unit of Human-Centered Technology (IHTE) at the Tampere University of Technology. I thank my research team – Sari Kujala, Jarno Ojala and Johan Saarela – and all the research partners of the PROFCOM research project for making the empirical part of this dissertation possible. Working in joint research projects has helped me to widen my perspectives on the topic, and cooperating with research partners representing different research areas and industries has taught me many new things. During the years I worked at IHTE, I was introduced to many of the latest technological applications, which substantially broadened the scope of this study. I am most grateful to all the people who patiently participated in interviews, surveys, tests, and trials, and thus contributed to my work by providing their valuable time and constructive feedback. I also want to express my gratitude to all my colleagues at IHTE: especially Piia Nurkka for providing me peer support, having experienced the ups and downs of a researcher's life, and co-writing an article, not to mention being my movie date throughout these years, Teija Vainio for wise words and advice, Heli

helping with childcare. I thank my mother and father for reminding me that there really is life beyond university and research. Perttu, I want to express my gratitude for your patience in sharing this turbulent phase of life with me. My beyond-awesome children Miira and Aleksi who have been amused by my "colouring book" project, you have given me the much-needed balance during the dissertation process but also the most important reason to complete it: the greatest reward for me from finishing this work is to be able to spend more time with you in the future.

Tampere, November 2015

Sanna Malinen

Contents

List of original publications

This dissertation comprises the following six publications, which are referred to in the text as publications I–VI. The publications are reproduced by permission of the publishers.

I. Malinen, S. 2011. Strategies for gaining visibility on Flickr. *Proceedings of the 44th Hawaiian International Conference on System Sciences (HICSS'44)*, IEEE, pp. 1–9. DOI=10.1109/HICSS.2011.389

II. Malinen, S. & Ojala, J. 2011. Applying the heuristic evaluation method in the evaluation of social aspects of an exercise community. *Proceedings of Designing Pleasurable Products and Interfaces (DPPI'11)*, ACM, Article 15, 8 pages. DOI=10.1145/2347504.2347521

III. Malinen, S. & Ojala, J. 2011. Perceptions of trust between online auction consumers. *International Journal of Web Portals*, Vol. 3, No. 4 (October–December), pp.15–26. IGI Global.

IV. Malinen, S. & Ojala, J. 2012. Maintaining the instant connection: Social media practices of smartphone users. In Dugdale, J., Maclet, C., Boujut, J.-F., & Hassanaly, P. (eds). *From Research to Practice in the Design of Cooperative Systems: Results and Open Challenges – Proceedings of the 10th International Conference on the Design of Cooperative Systems (COOP'12)*. London: Springer-Verlag.

V. Malinen, S. & Nurkka, P. 2015. Cultural influence on online community use: A cross-cultural study on online exercise diary users of three nationalities. *International Journal of Web Based Communities*, Vol. 11, No. 2, pp. 153–169. DOI=10.1504/IJWBC.2015.068539

VI. Malinen, S. 2015. Understanding user participation in online communities: A systematic literature review of empirical studies. *Computers in Human Behavior*, Vol. 46 (May), pp. 228–238. DOI=10.1016/j.chb.2015.01.004

1 Introduction

1.1 Research background

In recent years, Internet services that rely on user-generated content, often referred to as social media or Web 2.0, have become a popular target of activity online. Common to all forms of social media is that they enable users to create, share, view, and comment on digital content of interest and to give and receive support and information reciprocally. In terms of functions, there has been relatively little new in social media, as most of the features, such as the ability to host pictures online or update a personal Web page, have existed for many years; therefore, the significance lies not in the technology itself but, rather, in its ability to attract millions of people to adopt the technology and use it to collaborate, share information, and socialise (Ellison & boyd, 2013). According to Christian Fuchs (2014, p. 6) all computing systems can be considered social in the sense that they store and transmit human knowledge. What makes social media particularly 'social', however, is that, unlike many other computing systems and Web applications, they support direct communication between people, in which those people can mutually exchange symbols that are interpreted as being meaningful (Fuchs, 2014, p. 6).

The topic of interest for this dissertation, 'online community', is defined as a group of people with a common interest or a shared purpose, whose interactions are governed by policies in the form of tacit assumptions, rituals, protocols, rules, and law, who use computer systems to support and mediate social interaction and facilitate a sense of togetherness (Preece, 2000, p. 10). In this view, an online community is understood as a group of people who share a sense of togetherness. However, the term 'online community' is also commonly used to denote a broad range of software, covering discussion forums, mailing lists, social-media applications, social network sites (SNSs), wikis, and blogs. As technologies proliferate and new sites constantly emerge, it is challenging to try to create definitions covering all the various Web sites encompassing social elements. For instance, SNSs have evolved so rapidly within the past few years that it has become difficult to define them solely by their features: some of the features that initially distinguished these from other Web sites have since become insignificant, while others have been reproduced by other genres of social media, such as media-sharing Web sites or gaming sites (Ellison & boyd, 2013). In the

context of this dissertation, I use the term 'online community service' to refer to all of these various types of Web sites and applications that enable people to share, discuss, and co-create digital content. However, in this work online communities are not viewed only in terms of their appearance (i.e., their technological characteristics); online communities' formation is understood as a social process that can take place within various technological settings. Therefore, I apply the term 'online community' when discussing the online social formulations and groupings that can emerge on various technological platforms.

Although technologies that support online communities are rather young, having begun to take shape in the early '90s, online communities became a culturally significant phenomenon only in the 2000s, when they started to attract mass media attention and were brought into the mainstream (Ellison & boyd, 2013). In particular, SNSs are a genre of social media that has grown in popularity worldwide and become adopted by millions of people, of greatly varying backgrounds and ages (Anderson & Bernoff, 2010). In the United States, 65% of Internet-using adults and a full 80% of young people aged 12–17 years were reported as using social network sites such as Facebook, MySpace, or LinkedIn in a survey conducted in 2011 by the Pew Research Center (Madden & Zickuhr, 2011). Similar findings have been reported in Finland, where the popularity of social network sites has been constantly growing: in 2014, 56% of 16–74-year-olds reported having followed some social network service in the past three months, and no fewer than 90% of people in the age group of 16–24 years reported checking social network sites almost daily or more frequently (Official Statistics of Finland, 2014a; 2014b). Overall, SNSs have been attracting more and more people, from all age groups and national backgrounds, and constantly expanding their user base, having thereby become an important part of social life for study.

In the course of their existence, technologies of online communities have evolved, and simple text-based environments are now accompanied by user-generated multimedia content. According to Ellison and boyd (2013), SNSs becoming more media-centric and less profile-centric has been the most important technical change of the past few years, as most of the activity currently is organised around a stream of updated content. The shift from traditional text-based forums to visually richer services has also brought new and more varied user groups, since not only technically skilled people can participate online. Whereas in the early days, most online community services were considered 'geeky' and attracted only a small proportion of Internet users, the recent focus on personal networks and familiarity between participants has made social media feel very different from previous varieties of online community services (Ellison & boyd, 2013).

Online communities have inspired plenty of research since they entered existence. Research into them has been acknowledged to be in an exploratory, developing, and

dynamic phase at present, with the membership and numbers of communities increasing rapidly (Gallagher & Savage, 2013). The majority of research has examined online communities at a single point in time; therefore, Iriberri and Leroy (2009) have referred to the existing research as 'snapshot views' that have not taken into account the dynamic and evolving nature of online communities. Another major limitation of the research is lack of continuity in the use of the term 'online community': it has been applied to denote a wide range of software, even though across these various technical systems there can be large differences in users' motivation, purpose, and activities, which makes generalisations harder (Gallagher & Savage, 2013).

In this dissertation, technology is viewed not only as a physical object but also as a part of human activity. This work adopts the idea of social shaping of technology, which means that in order to connect digital media to social consequences, we need to understand both features of technology and people's actual practices that influence and emerge around technology (Baym, 2010, pp. 44-49). The direction of influence between technology and social life is thus two-way. According to Nancy Baym (2010, p. 45), from the social shaping perspective, it is important to consider how societal circumstances give rise to technologies. Therefore, for a comprehensive understanding of the popularity of social media and online communities, the empirical findings are discussed in the context of larger cultural and societal transformations.

This dissertation adheres to the understanding that online and offline social lives are two sides of the same social reality. Instead of treating them in contrast to each other, I view 'online' and 'offline' as overlapping and being influenced by each other. In a contrast to views typical of technological determinism, which have taken mediated communication as something unreal, Baym (2010, p. 154) argues that the online and offline realms are equally real in terms of experiences: 'mediated communication is not a space, it is an additional tool people use to connect, one which can only be understood as deeply embedded and influenced by the daily realities of embodied life'. Similar perspectives have been put forth in the discussion of whether the term 'virtual community' is suitable for describing groups mediated by technology. Andreas Wittel (2001) argues that 'virtual' refers to a nostalgic conception of communities, in which community is associated with longing for a physical place and implies that virtual experience is something less real. He argues that the term is also misleading since it suggests that 'virtual' is something contrasted with the real world, something that does not really exist, even though online interaction is symbolically mediated and experienced as real. In this work, I view online groups as just as real as those found in face-to-face context, and, therefore, the term 'online community' is chosen to denote groups that form and interact in an online context.

1.2   Objectives and scope

User-generated content is known to attract people and create traffic on a Web site. Users can create value for the service by posting content and involving others by means of various features offered via the site (Vasalou, Joinson, & Courvoisier, 2010). Social features can lead users to spend more time on the site and become more involved with its activities; therefore, features typical of social media have been utilised in the design of various Web sites. When users feel attracted to a Web site, they tend to visit it more frequently. This concept is sometimes referred to as 'stickiness' of a Web site: when the site draws visitors and encourages them to 'stick' there, they invest time – and in the context of e-commerce also money – in it (Preece, 2000, pp. 121–122). It has been acknowledged that user participation is essential for the sustainability of online community services (Koh et al., 2007; Preece, Abras, & Krichmar, 2004; Velasquez et al., 2013), which makes them dependent on their users not only as consumers but also as content-producers. For this reason, research has often emphasised the meaning of social interaction and collaboration for sustainability of online community services.

There are a great many Web sites that have gained success but even more that have been left without notice by Internet users and disappeared. Lack of user contribution has been acknowledged as the most important reason for failing (e.g., Ling et al., 2005). Understanding how to facilitate social interaction and user contribution are in the interests of Web site administrators and designers, so a large amount of effort has been devoted to creation of guidelines for making online community services more successful (Gallant, Boone, & Heap, 2007; Kim, 2000; Preece, 2000).

As a medium for communication, the Internet is known to be somewhat dichotomous. Even though there are many characteristics that encourage self-disclosure, such as the presence of peer groups and the possibility of anonymity, the Internet also involves isolating and antisocial aspects that may hinder formation of social ties. In contrast to face-to-face situations, social and non-verbal cues are not mediated on the Internet, a fact that is believed to result in more self-centred behaviour (see, e.g., Bargh & McKenna, 2004). Also, the lack of a shared physical space makes it difficult to perceive the boundaries of the group and to judge who can see the content that is posted (see, e.g., Marwick & boyd, 2011). From this perspective, the question of facilitating sociability by removing obstacles in computer-mediated communication has become an important research topic.

In this dissertation, I propose that online communities are created and maintained by their users through concrete social practices and actions. I approach online communities not so much in terms of their technological qualities as in the realm of social constructions that are fluid and can take many forms, with diverse

manifestations. The main aim with this dissertation is to understand what the criteria for online community experience are, how online communities are formed and maintained through users' activities, and how their emergence can be facilitated. For finding the answers, the following research questions are addressed:

RQ1: What motivates users to participate in and create content for online community services?
RQ2: What are the typical practices in forming and maintaining online communities?
RQ3: How can online communities be supported and facilitated?

The findings are discussed against the backdrop of theory in community studies, for determination of how the idea of community is related to various forms of today's technology-mediated interactions. Through a literature review and empirical research data, this study is designed to contribute to the understanding of how today's communication technologies shape and influence the ways in which people interact and create social ties. The results of the research project provide valuable information on user needs with respect to online community services and can be applied in the improvement of community elements of various types of Web sites.

1.3   The research process

For this dissertation, a large quantity of empirical data was collected in case studies, which were conducted to cover users of a broad spectrum of software, intended for various purposes. The case-study research approach was selected in order to afford a rich view of the phenomenon studied and to cover a wide spectrum of online sociability. The empirical case studies were carried out in research projects with industrial partners representing several fields. The Internet services studied were at different stages of development, some of them having been used for years globally, while one was in the prototype stage and not open for public use. All the empirical data collected describe users' social activity that is formed around digital content and shaped in online interaction.

The dissertation summarises key findings from six publications, each of them representing an individual sub-study. The first article published in the dissertation project was based on qualitative interviews of users of the popular online photo-sharing service Flickr. The aim was to understand what motivates users to contribute and whether Flickr is experienced as an online community or, instead, just an online photo album, a place to store pictures, for its users. With the second publication, the goal was to find out whether a particular commonly used usability evaluation method,

the heuristic evaluation, is applicable in the evaluation of social features of software. For this purpose, a set of sociability heuristics based on the existing online community research literature was created. The service evaluated was a prototype for software aimed at tracking exercise, and the goal of the user study was to develop its community features before the service became publicly available. The third publication explores users of an online auction site and discusses the importance of trust in the context of consumer-to-consumer electronic commerce. A more specific aim was to investigate how a user's trustworthiness is constructed and evaluated in online interaction. In the fourth publication, the focus is on how social media are used via a mobile device. Since social media use increasingly involves smartphones and tablet computers, the relevant sub-study explored how mobile social media use differs from usage with a stationary Internet connection. The fifth publication represents a survey comparing users from three distinct national backgrounds with regard to their interest in community features and behaviours in the use of a Web site. The software studied is the same exercise diary that was inspected for the second publication. However, at the time of the fifth sub-study, the Web site had been open for several months, which made it possible to investigate actual users. With the first five publications, the contribution is empirical. The sixth publication contributing to the dissertation provides a theoretical contribution and presents a literature review that synthesises previous empirical research into online community participation in order to describe the various forms of participation identified in previous studies and to investigate how the concept of participation has been approached in empirical research. The publications covered in the dissertation and the alignment of the main research themes are presented in Table 1, below.

Table 1. Research questions and articles for the dissertation

Research questions	I	II	III	IV	V	VI
RQ1: What motivates users to participate in and create content for online community services?	X			X	X	X
RQ2: What are the typical practices in forming and maintaining online communities?	X		X	X	X	
RQ3: How can online communities be supported and facilitated?		X	X	X	X	X

1.4   The structure of the thesis

The dissertation is organised as follows. The first chapter has presented an overview of the research topic, the objectives and the research questions for the study, and the research process and the structure of the dissertation. In the second chapter, the background theory for the dissertation is introduced and the notion of community is discussed, from the social scientific theories of the 19th century to the context of today's technology-mediated groups. Furthermore, Chapter 2 presents the theoretical foundations for online community research by introducing the main research topics and debates in the field. The third chapter provides an overview of the research design and methods that have been employed for this dissertation and presents the data collection procedure for each individual sub-study in more detail. Chapter 4 presents the main results of the six publications and summarises the associated key findings. These findings are reflected upon and discussed in Chapter 5, alongside identification of the implications for future research and discussion of the main limitations of this work. The fifth chapter also presents the primary contribution of this dissertation to online community research and the practical considerations for application in online services' design. Finally, Chapter 6 highlights the conclusions drawn from this work. The six original research articles are found at the end of the dissertation.

2 Theoretical background

2.1 The concept of community: From place-bound to mediated communities

Community is one of the key concepts discussed in the social sciences, but, at the same time, perhaps the most ill-defined of them (Miller, 2011, p. 184). Many attempts have been made to grasp the idea of community; in the 1950s, sociologist George Hillery (1955) had already identified 94 ways of defining the term. From his analysis, Hillery determined that the only thing common to all 94 definitions is that they involve people. Graham Day (2006, p. 1) concludes that, in essence, 'community' refers to 'things which people have in common, which bind them together, and give them a sense of belonging with one another'. Over the past few decades, scholars have viewed community differently, and each definition has been reflective of the broader societal context of its era. Consequently, conceptualisations of community have changed over the years.

In classical sociology, the term 'community' was often used to describe the state of 'groupness' as distinguished from conditions of isolation or individualism as a part of critique of the Industrial Revolution (Day, 2006, p. 2). One of the first and most famous theories of community was presented in 1887 by German scholar Ferdinand Tönnies, who drew a distinction between community, *Gemeinschaft*, and society, *Gesellschaft*, and considered them opposites. According to Tönnies (1988, pp. 42–44, 64–67), relationships in communities are face-to-face, enduring, and based on emotions, whereas relationships in society are characterised as instrumental and ego-focused, with a state of anonymity and individualism being dominant. In the view of Tönnies, communities are location-based entities in which social ties rely on geographical proximity or kinship, thereby emphasising the power of locality as a source of attachment. However, according to Tönnies, the dual forces of individualisation and modernisation were threatening communities, which were seen as set to become eventually replaced by society as the primary focus for social relations (Delanty, 2003, p. 33).

Among the early social scientists, Émile Durkheim continued the discussion about community in 1893 and criticised Tönnies for ignoring the real forms of community that come along with modernity. According to Durkheim (1964), in a modern society,

communities do not disappear but take on new forms, replacing the traditional forms of the past. In Durkheim's view, in traditional small groups there is no space for individuals' autonomy, so collective norms and values are mechanically reproduced among the group (Delanty, 2003, p. 38). With modernisation and urbanisation, people become increasingly specialised and there is a need for co-operation and pluralism, which Durkheim saw as a basis for new kinds of communities (Delanty, 2003, p. 38).

Until the 1970s, communities were generally understood as locally constrained and definitions of community treated neighbourhoods and communities as almost synonymous; then, from the 1970s onward, the proliferation of long-distance relationships led some scholars to expand their perspective to include non-local ties as well (Gruzd, Wellman, & Takhteyev, 2011). An important extension in the conceptualisations of community from physical location to the communicative nature of communities occurred in 1983 when Benedict Anderson wrote about nations as 'imagined communities' and in 1985 when Anthony Cohen introduced the term 'symbolic community', both scholars stating that community can extend beyond its physical location and exist in people's minds through shared meanings. The notion of symbolic community was an important theoretical contribution, as it showed how communities are not rigid structures but fluid and open to change (Cohen, 1985; Delanty, 2003, p. 47). Anderson (1983, p. 6) took nations as an example of social identity that is based not on face-to-face meetings in everyday life but on collectively shared resources: '[T]he members of even the smallest nation will never know most of their fellow-members, meet them, or even hear of them, yet in the minds of each lives the image of their communion.' Even though communities can be imagined, they are formed and maintained through people's actual practices and have concrete outcomes. As Gerard Delanty (2003, p. 124) writes, 'community is not a static notion but defined in the process of achieving it'. In other words, instead of focusing only on their structures, research should explore how communities are created and maintained through ongoing practices.

The view on individualism has varied with the shift in focus between traditional and post-traditional community theories, as traditional theories saw individualism as a threat to community whereas in post-traditional views it plays a significant role in community's construction. Communities can no longer be seen as something opposed to the individual; instead, individualism is a foundation for communal activity, as communities are sustained by the pursuit of self-fulfilment and self-expression through collective participation (Delanty, 2003, pp. 120, 129). Unlike in the traditional view, which leant on locational or cultural ties, in the theories of the late modern era these are no longer an important 'container' of communities; instead, communities are understood as based on communication and collective action (Delanty, 2003, pp. 70–71). One of the most famous theorists of the late modern era, Michel Maffesoli (1996)

introduced the term 'neotribalism' to describe contemporary social groupings that are based on shared lifestyle and interests. According to Maffesoli, people can belong to several temporary collectives at the same time. In neo-tribes, the emphasis is on what unites members rather than what separates them (Maffesoli, 1996, p. 10). Therefore, these collectives can readily fall apart if they no longer meet their members' personal needs.

Overall, communities have been associated with many good qualities, such as mutual support and caring, and they are known to have many positive outcomes in their members' lives. Therefore, as Steven Brint (2001) states, it is not surprising that community has become such an appealing concept in public discourse. Brint argues that not all communal relationships are amicable, and, therefore, he criticises most definitions and studies of community as being too unrealistic, for being stuck in the traditional imagery of 'Gemeinschaft'. According to Brint, discussion should be continued if we are to ascertain how the idea of community can be brought into today's context, particularly today's technology-mediated groupings.

In a theoretical sense, the understanding of people being able to form communities beyond locality through media and symbolic resources has been an especially strong foundation for the concept of 'mediated communities'. I have given some idea of how community has been a popular and oft-applied concept, but at the same time it has remained under-studied. In the theories of community, the attributes attached to the notion have been somewhat nostalgic and idealised in feel, characterised by longing for the past and fear of the future. As Delanty (2003, p. 119) states: '[c]ommunity was never lost – it was never born'.

2.2   Online communities

2.2.1   Definitions and approaches to online communities

The growth of information technology has created a research area focused on computer-mediated communication. One central topic for researchers of this field has been virtual or online communities, which are widely used concepts for describing groups formed and communicating within an online context. In 1993, Howard Rheingold, the most cited author in literature on this subject, described virtual communities 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, p. 5). Hence, for Rheingold, the time spent and feelings experienced for others are the essential qualities that

separate communities from mere groups. In Rheingold's definition, there is also an underlying assumption that it is possible to form strong and continuous relationships online.

In management studies, scholars John Hagel and Arthur Armstrong (1997), who focused on the business value of virtual communities in their work, defined virtual communities as 'computer-mediated spaces where there is a potential for an integration of content and communication with an emphasis on member-generated content' (cited in Leimeister & Ragajopalan, 2014, p. 3). Later, Jennifer Preece (2000, p. 10), the pioneer of online community studies in the field of human–computer interaction, presented her definition, in which she states that an online community has the following characteristics: it consists of **people**, interacting socially as they strive to satisfy their own needs or perform special roles, who have a common interest or a shared **purpose** that provides a reason for the community to exist; whose interactions are governed by **policies** in the form of tacit assumptions, rituals, protocols, rules, and laws that guide people's interactions; and who use **computer systems** to support and mediate social interaction and facilitate a sense of togetherness. In studies adopting a psychological perspective, online communities have been viewed through the lens of members' attachment and feelings of belonging to the group, and online communities have been understood particularly as a source of support. Anita Blanchard and M. Lynne Markus (2002; 2004) emphasised the psychological component of communities and defined virtual communities 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'.

Another well-known and frequently cited definition was offered by Constance Elise Porter (2004), who includes the main components of previous definitions but adds business partners in her definition of virtual community thus: 'an aggregation of individuals or business partners who interact around the shared interest, where the interaction is at least partly supported and/or mediated by technology and guided by some protocols and norms'. Recently, only a few new definitions for online communities have emerged. Faraj, Jarvenpaa, and Majchrzak (2011) highlight the dynamic and fluid nature of online communities; online communities are adaptive, as they change when the attention, actions, and interests of the collective of participants change over time, meaning that many individuals in an online community are at various stages of exit and entry that change fluidly through time. According to them, even though online communities are fluid, they are also continuous, such that they change 'boundaries, norms, participants, artifacts, interactions, and foci' continuously over time but remain essentially the same (Faraj, Jarvenpaa, & Majchrzak, 2011). Robert E. Kraut and Paul Resnick (2012, p. 1) acknowledge the diversity of technologies referred to as online communities, and they propose that an online

community is 'any virtual space where people come together with others to converse, exchange information or other resources, learn, play, or just be with others'. The term 'online community' can be applied to many social configurations, which might be closely knit small groups or include millions of people; a feature common to them all is 'ongoing interactions with people over time, with some of the interactions being technology mediated' (Kraut & Resnick, 2012, p. 1). As we have seen, common to all the definitions given for virtual/online communities is that they include people gathered together, usually around a shared interest or goal, interacting with each other repeatedly but not necessarily solely, in some form of online environment.

Particularly in the early studies, scholars were interested in online communities in relation to physical communities, and these two realms were often set in opposition to each other. One important question that was proposed is whether online communities render people isolated from the physical world and communities that surround them in real life. This question was based on the logic that time spent online would reduce time spent with family, friends, and other members of the real-life community (Miller, 2011, p. 192; Nie, 2001). However, research has found that offline and online activities are integrated, and online communication can extend and enhance in-person contact in local communities, instead of producing social isolation and pulling people away from their in-person ties (Gruzd, Wellman, & Takhteyev, 2011; Nie, 2001). On the contrary, research has found that people who interact online also see each other in person; the Internet and in-person contact thus extend and enhance, rather than replace, each other (Wellman et al., 2001). According to the same study, people who use the Internet frequently also tend to have larger social networks and are in greater contact with the members of their network. It seems, therefore, that people who are social in offline life also use the Internet in a more social way.

In the context of technology, particularly the Internet, scholars have often argued about whether it is possible for a community to exist without any physical contact. Consequently, there is a large body of work discussing whether online groups can be understood as communities or might even offset a decline in social ties and, in this way, revive communality. Brint (2001) argues that communities with regular face-to-face interaction are different from those in which face-to-face interaction is absent because physical presence is required for generating strong feelings of identification and a sense of appreciation for others. However, common to all communities, including mediated ones, is that members are connected through common experiences, ties of affect and loyalty, and personal interests rather than formal authority and rational interests (Brint, 2001). Delanty (2003, p. 184) claims that technology-mediated communities cannot be equated to 'real' communities because the technology that mediates them is highly personalised; instead, he says, they can cause a withdrawal from community, stemming from the displacement and strong emphasis on the self

coupled with weakening commitment to others. Furthermore, Delanty argues, technologically mediated communities remain 'thin' and, therefore, it is unlikely that they can generate strong forms of engagement and commitment. Vincent Miller (2011, p. 201) states that online communities can be referred to as open-ended in the sense that they can have a limitless number of members and there are no constraints to the ways in which people can be affiliated with others, which makes these less exclusionary than offline forms of community. As a form of organisation, online communities are instrumental and non-obligatory, so an individual cannot expect to remain in one forever. Instead, a member has to prove relevance or usefulness in order to be included (Miller, 2011, p. 201). Accordingly, because there is an element of choice in the online context, online communities are usually created and sought out to provide something that people want or need, and once these benefits are obtained, the member obtaining them is able to leave the group. Being loosely connected and activity-based, online communities can provide many benefits while imposing few constraints on the freedom of individual members (Brint, 2001).

Since technology has liberated social networking from the restrictions of place and proximity and increased freedom of choice, people are able to make contact with like-minded people who share the same interests. Accordingly, it can be said that information technology has intensified communities and 'brought the distant closer' (Delanty, 2003, pp. 172–173). Particularly when the interaction is based on shared interests and passions, there are assumptions of similarity, which can make the other persons seem more attractive (Baym, 2010, p. 102). In this sense, online communication can be even more meaningful or 'authentic' because people can freely choose to be in communities in contrast to being 'obliged' to have membership by kinship or the location of one's residence, because online communities are created and shaped by the actors themselves (Miller, 2011, p. 191).

2.2.2   Types of online community

As online communities are supported by a great variety of technologies and have emerged around numerous topics and purposes, scholars have made several attempts to classify them, in order to understand the phenomenon better. Armstrong and Hagel (1996) who created a classification of online communities based on the user needs they meet, have stated that online communities can be divided into four groups. According to them, online communities can be of **interest**, bringing together people who interact extensively around specific topics of interest; **relationship**, focusing on intense personal experiences, with members generally participating anonymously; **fantasy**, which allow people to create new personalities, stories, and environments; or

transaction, which facilitate buying and selling of goods and services and provide information about these transactions (Armstrong & Hagel, 1996). Later on, a similar typology was created by Hummel and Lechner (2002), who divided online communities into groups by their business purpose and actor roles, identifying five distinct community genres: **games**, **interest or knowledge**, **business-to-business**, **business-to-consumer**, and **consumer-to-consumer**.

A more extensive classification, based on a literature review, was carried out by Jonathan Lazar and Jennifer Preece (1998), who categorised online communities by four characteristics: **attributes**, **supporting software**, **relation to physical communities**, and **boundedness**, which may vary in each online community. By **attributes** Lazar and Preece refer to things that define online communities, such as a shared goal or interest, strong emotional ties, or support between community members, and online communities that possess more of these attributes are easier to detect. The second element, **supporting software**, can support communication and aid in creating the boundaries of the community. As for the third characteristic, **relation to physical communities**, Lazar and Preece state that some online communities are geographically focused, and based on news, events, people, and locations in the physical community. Some communities also involve regular face-to-face interactions, whereas others do not have any relation to physical community and prefer anonymity. The fourth characteristic in the schema, **boundedness**, refers to the number and quality of connections, particularly whether the communication takes place among the members of the community or with people who are outside the defined community. The main contribution of the classification scheme developed by Lazar and Preece is that it provides several analytical dimensions for online communities in terms of which they can be compared.

Another frequently cited classification is that of Katarina Stanoevska-Slabeva and Beat F. Schmid (2001), who emphasise two elements of online community: community members and platform. According to them, the requirements of the community are dependent upon the aim of the community and the type of transactions required by it. Accordingly, they identified four types of communities: **discussion communities**, **task- and goal-oriented communities**, **virtual worlds**, and **hybrid communities**. Discussion communities are dedicated to the exchange of information, and their emphasis is on content creation and exchange related to a clearly defined topic. In the second type, task- and goal-oriented communities, the driving force for participation is the reaching of a common goal, which might involve, for example, transactions or learning. The third type of community, virtual worlds, can arise around games providing either a mapping with a real setting or a fantasy world. Typically, information about participants is presented through avatars. The last group, hybrid communities, can combine different types of communities and technologies. As an example of a

hybrid community Stanoevska-Slabeva and Schmid mention an online store with 3D simulations of individual rooms and salespersons. The main contribution of this typology is that it recognises the importance of technology in community-building for fostering online communities and shaping communication in them.

An attempt at creating a more holistic and interdisciplinary classification for online communities was made by Porter (2004), who proposes a typology using establishment type and relationship orientation as the key categories. According to her, a community's establishment type may be either member-initiated, when a community is established and maintained by its members, or organisation-sponsored, as in the case of communities established and maintained by either commercial or non-commercial (e.g., government) organisations. Relationship orientation denotes the type of relationship fostered among the members of the community: member-initiated communities foster either social or professional relationships among members, whereas organisation-sponsored communities foster relationships both among members and between individual members and the sponsoring organisation (Porter, 2004). In addition, Porter suggests five attributes that can be used to characterise online communities: **purpose** (content of interaction), **place** (extent of technology-mediation of interaction), **platform** (the design of the interaction), **population interaction structure** (the pattern of interaction), and **profit model** (return on interaction). Communities that share that same establishment and relationship orientation categories may still differ in how they are situated in terms of other attributes, such as platform, population interaction structure, and profit model. According to Porter, previous online community typologies put forth by scholars have often been based on variables that are of primary importance to their discipline; technology platform and population have been used especially often in definition of online communities. However, these attributes are narrowly focused around discipline-bounded areas of interest and therefore not appropriate categorisation variables to serve interdisciplinary research agendas: the classifications should be descriptive of online communities of any type (Porter, 2004).

A decade ago, a subtype of online communities termed social network sites gained huge success among Internet users. The first and most oft-cited definition of SNSs was offered by danah boyd and Nicole Ellison in 2007, and, because the social and technical landscape of SNSs has evolved since then, they recently proposed an updated version of their definition. According to them, a social network site is 'a networked communication platform in which participants 1) have uniquely identifiable profiles that consist of user-supplied content, content provided by other users, and/or system-provided data; 2) can publicly articulate connections that can be viewed and traversed by others; and 3) can consume, produce, and/or interact with streams of user generated content provided by their connections on the site' (Ellison & boyd, 2013).

Whereas early text-based online communities such as listservs and text-only discussion forums typically revolved around topics of mutual interest for people without a pre-existing friendship connection, the focus with SNSs is on the display of identity information for social networks (Ellison & boyd, 2013). The structure of the user interface of SNSs places the user and his or her personal interests at the centre and thereby reflects the nature of person-centric networks constructed by each individual.

SNSs have been categorised according to their purpose and the forms of user participation they allow. Nov, Naaman, and Ye (2010) propose that there are, firstly, content-based sites characterised by sharing of information artefacts; secondly, social interaction platforms, which are sites for joining social structures; and, thirdly, sites for sharing of metainformation such as tags or bookmarks. However, as their study examining Flickr users indicates, in some SNSs all three characteristics are present at the same time, thus enabling multiple forms of participation for users. In the study of user groups utilising the video-sharing site YouTube, Laine, Ercal, and Luo (2011) suggest that there are friendship-based SNSs, such as Facebook, wherein the main goal is to socialise with other users, and, on the other hand, there are highly content-oriented SNSs, such as YouTube or Flickr, that people visit mostly for the content, with social connection being a side effect. Interaction with the content and networks differs in these services, depending on their affordances. In a 'purely social' type of SNS, the relationships are usually symmetrical and mutual, whereas in a content-based type of SNS they are asymmetrical and directed subscriptions, as the aim is to follow or subscribe to desirable content (Laine, Ercal, & Luo, 2011). Ellison and boyd (2013) have made a similar division, between profile-centric and media-centric sites, though they added a third type of services, location-based SNSs. According to them, profile-based sites were dominant especially in the beginning, as the first SNSs were designed with dating in mind. However, profile-based sites were relatively static portrayals in which people presented themselves through a photograph and text. Over time, as social network sites have matured, they have become less profile-oriented and more focused on updating streams of user-generated content (Ellison & boyd, 2013).

As these categorisations reveal, there are several dimensions in terms of which online communities have been compared and classified. Most often, they cover purpose, technology, type of content, and the quality of relationships. In summary, online communities can be classified according to technologies but also on the basis of their main purpose and the intensity of participation in them. Technologies for online communities have evolved over time, and, in particular, the emergence of SNSs has transformed computer-mediated communication: it has shifted toward a more synchronous position where the activity is centred on a constantly updated stream of content, which can be personalised in accordance with one's preferences.

2.2.3   Sense of community

Scholars have been pondering whether the mere usage of a Web site can make a person a member of an online community. Some definitions have identified the emotional experience of belonging as a key element and psychological foundation of communities. Rheingold's (1993, p. 5) definition emphasises 'sufficient human feeling' as the key element of a virtual community, and Quentin Jones (1997) argues that a virtual community can evolve within a virtual setting when a certain threshold of interactivity and level of sustained membership are exceeded and there are variety of communicators and a common public space where a significant proportion of the interaction occurs. According to Jones (1997), it is important to draw a distinction between the place, a **virtual settlement** within which the virtual community operates, and the virtual communities themselves. Similarly, not all place-based neighbourhoods are communities; for instance, Barry Wellman (1996) noticed that physical and experienced communities do not necessarily coincide, because people tend to construct personal communities with people who provide them with support, often living outside their neighbourhood. However, neighbourhoods can evolve into real communities when certain community feelings and behaviours occur among people (Blanchard & Markus, 2002; 2004). The term 'sense of community', or 'SOC', has been applied in the investigation of feelings of connection and belonging in both place-based and online social groupings. McMillan and Chavis (1986) define SOC as composed of four elements in a physical setting: the feeling that members have of belonging to a community; a sense of mattering to one another and to the community; the feeling that their needs will be met through their commitment to the community; and the belief that members have a shared history, common places, time together, and similar experiences. Experienced sense of community is known to bring many positive outcomes in people's lives by increasing satisfaction and also involvement in community activities (McMillan & Chavis, 1986). In the organisational context, it is known to increase job satisfaction and organisational citizenship behaviour such as commitment, loyalty, altruism, and courtesy (Burroughs & Eby, 1998).

   Blanchard and Markus (2002; 2004) have investigated whether the elements of sense of community – membership, influence, integration and need fulfilment, and shared emotional connection – observed in physical communities exist in online context as fully. In their study of a sports-related newsgroup, they found similarities to the conceptualisation by McMillan and Chavis; however, some differences were detected with regard to the main dimensions. **Feelings of influence** – i.e., feelings of having influenced other members or being influenced by others – were not detected in the online group; this finding indicates that influence may not be as important a component for sense of community online as in a face-to-face context (Blanchard &

Markus, 2004). A similar finding was made by Obst, Zinkiewicz, and Smith (2002), who noticed that participants' feelings of influence in the online group were weaker than the corresponding feelings related to their physical community. They explain this by the greater choice of membership in interest-based groups and lessened need for influence and control over them. Furthermore, Blanchard and Markus identified another two major differences with the online group, which did not figure in the framework by McMillan and Chavis. With regard to **feelings of membership**, McMillan and Chavis described how members identify with the community, whereas in online context the members make attempts to distinguish themselves from the group (Blanchard & Markus, 2004). In other words, instead of sharing the group identity, online group members sought individuation from it. Blanchard and Markus also highlight the need for **creating relationships with specific members** and argue that, on account of anonymity, people may have greater concerns about others online and, therefore, individual relationships between members form a more important part of SOC than in physical communities (Blanchard & Markus, 2004; Blanchard, 2008).

In the final part of the main contribution of Blanchard and Markus (2002; 2004), they point out that the sense of virtual community (SOVC) is created in dynamic social interaction and that interaction between the users is the starting point for community evolution. They view SOVC as a process that arises from a set of social processes and behaviours that also serve to maintain the community. These processes are **exchanging support**, **creating identities and making identifications**, and **producing trust**. In this view, community is defined by members' interactions, and the processes that support a sense of virtual community come before the actual community feelings, in a contrast to the model proposed by McMillan and Chavis, who saw community feelings and processes as emerging together. Blanchard and Markus (2004) also state that, because the SOVC is intrinsically satisfying to members, they continue to perform behaviours that create and sustain it.

Recently, Rotman and Wu (2014) and Rotman, Golbeck, and Preece (2009) have examined the sense of community within current online settings, and they argue that it is not based on the attributes introduced in the model by McMillan and Chavis. A strong sense of community can be felt and expressed in the context of current social network sites, as Rotman and colleagues (2009) found in their study of YouTube, but users' actions do not culminate in the cohesiveness and diversity of interactions that characterise a community in its traditional sense. While users reported feelings of membership, attachment, and belonging to the larger group of YouTubers, analysis of their actions revealed a completely different interaction pattern, in which relationships among users tended to be singular, or composed of very small clusters of two to three users (Rotman, Golbeck, & Preece, 2009). Thus, the actual community in which the interaction takes place does not reflect the perceived YouTube community. According

to Rotman and Wu (2014), SOC in online environments thrives through meaningful, either informational or emotional, interactions among active participants who mutually recognise each other and identify with the community heritage. They propose an updated framework for understanding the changing nature of SOC in today's virtual environments (see Table 2, below).

Table 2. Comparison of the sense-of-community elements of McMillan and Chavis (1986), Blanchard and Markus (2002 & 2004), and Rotman and Wu (2014)

SOC element	McMillan & Chavis (1986)	Blanchard & Markus (2002 & 2004)	Rotman & Wu (2014)
Membership	Feelings of membership that arise from community boundaries, emotional safety, identification with the group, personal investment, and a common symbol system.	Recognition of other members and identification with individual members of the group through real or fabricated identity.	Characteristic of today's online communities: Instead of strict topicality and defined boundaries, flexible boundaries and a common domain of interest, which can encompass a wide range of topics and lead to new sub-communities.
Influence	Feelings of having an influence on and being influenced by the community, which emerges from the processes of maintaining group norms.	Members perhaps being unaware of influencing and being influenced by each other. Even with the most influential 'core group', the influence was non-hierarchical and not the dominant element in members' minds.	Ongoing, bi-directional interaction creating a community and strengthening the bonds between members. Online communities possess an open collection of stories and artefacts telling of a shared history that sustains a feeling of affinity. Users can learn the community culture and shared values without direct involvement in community interactions.

Integration and fulfillment of needs	Reinforcement that stems from the rewards of being a member, such as status in the group, competence, shared values, meeting others' needs, and having one's own needs met.	Mutual informational and socio-emotional support.	Motivations to join that vary from person to person, leading to different needs. When SOC is experienced, an online community becomes a personal space instead of mere information exchange; over time and through repeated interactions, more affection-driven interaction will occur.
Shared emotional connection	Connection that develops from frequent and positive interaction, shared history, opportunities to honour members, opportunities to invest time and resources in community, and opportunities to experience a spiritual bond among members.	Attachment to the group as a whole and sense of obligation to 'give back' to the group.	Emotional support that is dependent on the community's ability to sustain a nurturing and supportive environment, and that contributes to the level of intimacy and personal ties that users establish, especially in communities created within loose networks.

The comparison of all three conceptualisations of SOC elements highlights that one significant difference between physical and online communities lies in the structure of social ties: personal, meaningful, and affection-driven interactions seem to be the source of the SOC in online context, and these interactions are often singular. Furthermore, instead of the strict topicality and boundaries that were typical of early forms of online community services, today one finds loose networks that are clustered around a broad domain of interest and can generate new and diverse subgroups.

Some have questioned whether rather loose online networks with no shared histories or narratives can be a source of sense of community (see, for example, Wittel, 2001; Brint, 2001; Delanty, 2001). As previously discussed, empirical research has found strong evidence that SOC can be experienced online as well, even though its main elements are transferred to the online environment with differences from the

original conceptualisation. For instance, a comparison of the SOC of members of an online fan community and their local neighbourhood communities by Obst, Zinkiewicz, and Smith (2002) revealed that participants felt even higher levels of SOC with the fandom than with the geographic communities in which they were living. This finding was explained by the greater levels of perceived choice of membership and ties between members based on common interest. Most of the current online communities tend to be loose and temporary network-type groupings; nevertheless, they can offer their members strong feelings of togetherness. Quite an illustrative example of this kind of temporary but strongly experienced community is introduced by Nathalie Paton (2013), who explored a group that formed on YouTube as a consequence of a disruptive media event, the Virginia Tech shootings, and is based on commemoration through tribute videos. Paton argues that even though these kinds of support communities usually exist only in a small window of time, they can provide shelter, comfort, and relief through a sense of togetherness for their members at the time of their existence.

2.2.4   Supporting online communities with design

Throughout the history of online community research, scholars have been interested in finding out how to encourage user participation. In reality, not all members actively contribute – online communities are sustained by only a small minority of members. According to the '1% Rule', for one active contributor, there are 99 % who do not contribute (Arthur, 2006). Jakob Nielsen's (2006) 90-9-1 rule states that 90 % of members are 'lurkers', who only observe; nine per cent contribute from time to time; and one per cent account for most contributions. In the research literature, lurking has often been referred to as the 'problem of under-contribution' (Ling et al., 2005), and active participants have been viewed as the key element for online communities' success.

Opinions on how much control over users a designer or a community manager can actually have are varied. Kraut and Resnick (2012) argue that there are many design choices to make for creating successful communities and improving them. They also suggest that social scientific research can inform design by providing information about likely consequences of various design choices (Kraut & Resnick, 2012, p. 11). Then again, Blanchard and Markus (2004) have criticised researchers for too often assuming that mere creation of a platform is sufficient for emergence of an online community. According to them, it can only guarantee the existence of a virtual settlement, whilst in order for a virtual community to exist, there need to be community-like behaviours and processes among members, which are not certain to

occur. They argue that, no matter the good design and policy, an online community's outcome is up to the users and cannot be guaranteed.

The term 'social presence' has been used to describe the lack of physical presence and sense of the other party's emotions. **Social presence theory** (Short, Williams, & Christie, 1976) suggests that communication media differ in their capacity to transmit classes of non-verbal communication in addition to verbal content, and the fewer the number of cues a system supports, the less warmth and involvement users experience in communication with each other (Walther, 2011). On a continuum of social presence, the face-to-face medium is considered to have the most social presence, and written, text-based communication the least (Short, Williams, & Christie, 1976). When there is no social presence, sustaining relationships and social interaction may become challenging. However, research has proved that self-disclosure is higher online than in face-to-face contexts (Joinson, 2001). In general, people seem to be less restrained and to express themselves more openly online. This phenomenon is referred to as **the online disinhibition effect** (Suler, 2004). Anonymity, invisibility, and asynchrony, among other elements, are the main factors that create the effect; online, people are able to separate their actions from their in-person identity, and, therefore, they feel less vulnerable in performing self-disclosure and acting out (Suler, 2004). However, John Suler emphasises that even though people are more open and say more freely what they really think, the online persona is not more 'true' than the offline one. Instead, these personae can be understood as shifts of personality expression that are facilitated by various modalities of online communication (Suler, 2004; see also Turkle, 1997). Nevertheless, anonymity can lead to a more creative way of using the Internet and render it an 'identity laboratory' for personal experiments. As Patricia Wallace (1999, p. 47) writes: 'When we alter characteristics of ourselves on the Internet – even fundamental ones like age, race, or gender – we might not think of ourselves as liars or artists. Instead, we are playing with our identities as we would try on different hats to see how they feel and how others would react to them'.

There is a growing body of work on ascertaining optimal conditions for online community, especially with regard to user-interface features. However, the variety of software referred to for online community can make the creation of common design guidelines difficult. When Muller et al. (2012) compared 188 online communities in terms of participation rate, sharing, and the connections that members make, their conclusion was that even with the same technologies available, community owners and members can make novel use of those resources, with very different community forms and outcomes resulting. This finding suggests that community technologies should be, first and foremost, flexible and customizable, to allow users to create new configurations of resources, and that future research into success metrics should analyse each community type separately (Muller et al., 2012).

To sustain an active online community, it is important to attract new people to be members, but at the same time it is equally crucial to retain the existing members over time. Previous research has identified several critical stages for online communities' sustainability. According to Kraut and Resnick (2012, pp. 2–6), there are five high-level design challenges related to these stages: starting a new community, gaining new members, encouraging commitment, encouraging contributions, and regulating misbehaviour and conflict. In addition, redesign of the site has been identified as a critical stage at which users tend to leave the community, as it can disrupt their communication patterns and restrict the access to content (Gazan, 2011). Surprisingly, studies investigating why online community members leave the site or reduce their contribution have revealed that technology does not play the principal role in decisions to abandon the site. According to Brandtzaeg and Heim (2008), lack of interesting people, of friends, and of content on the site were named as the most important reasons for leaving it. Also, community response and feedback and a large number of contacts with other members have been found to be critical for staying on the site and being an active member (Kalaitzakis, Papadakis, & Fragopoulou, 2012; Singh, 2012). As for usability, in a study of an online health community Maloney-Krichmar and Preece (2005) found that usability issues do not seem to be crucial for community members: people can interact and create a sense of belonging also when the technology does not support it optimally. For instance, in a study looking at Facebook users, Hart et al. (2008) found that the lack of usability was not perceived as a major problem because when users found the use of the service socially enjoyable, the positive experiences outweighed the negative ones. Similarly, in their study with Twitter users, Gruzd et al. (2011) noticed that Twitter does not support the development of online communities, because it is asymmetric and intended for sharing brief updates and broadcasting information, but it can be used in a communicative manner and become a basis of online community, even without a supportive design.

Interactivity – i.e., responsiveness – is named as one of the most important characteristics of digital media (e.g. Miller, 2011) and, accordingly, also a key element in Web design. Another important motivator for Web use, especially the use of SNSs, is awareness. The goal of staying updated or keeping oneself informed has been found to be important in SNSs' use. In a study of Facebook, Adam Joinson (2008) noticed that frequently repeated visits to Facebook are motivated by tendencies toward surveillance-type behaviour – i.e., people's desire to see what is going on in their networks. This surveillance motivation triggers behaviour referred to as 'perpetual contact', entailing frequent visits on Facebook since people want to check the latest content such as photographs and status updates (Joinson, 2008). Social network sites facilitate this curiosity and heighten the need to be updated by providing users with a constantly updated stream of the latest activity. Blanchard and Markus (2002)

emphasise that, for creation of a successful online community, the first and most important task is to create a public conversation in which participants are provided with support and helpful information; members need a safe environment in which they can participate without fear, one in which they can identify other members and learn to trust others.

2.3   Managing online presence

Over the years, the technical platforms of online communities have evolved and the tools available for self-representation have become more diverse. One major change in online self-presentation between the 1990s and the present day has been that while the first online social environments were mainly anonymous and there was only a little integration between online and offline lives, today these are more connected to each other (Miller, 2011, p. 181). The studies of online identity reflect the technological circumstances of our era: In the early studies of online sociability, researchers emphasised fantasy aspects and the possibility of hiding one's true identity and playing with roles (e.g., Turkle, 1997). Researchers noticed that on the Internet, people were able to reinvent themselves through one or several online identities. For example, recall that Wallace (1999, p. 52) referred to the Internet as an 'identity lab' in which users are able to create and test new identities. Sherry Turkle described the practice of switching between identities and contexts with the metaphor of windows. As one participant of the study by Turkle (1997, p. 13) stated, 'real life is just one more window – and it's not usually my best one'; for some users, the experience of the 'real' world did not differ in quality with communication via computer. Turkle's study was among the first to describe how people were forming online communities that seemed to replace and transcend the boundaries of their face-to-face communities.

While in the 1990s the Internet was often seen as a playground and fantasy fulfilment, Miller (2011, p. 182) suggests that recently the trend has been toward more realistic online self-presentation. Over the past decade, the popularity of social network sites in particular has changed the conception of the online persona from something anonymous and faceless, leaving less room for identity play. For example, Facebook user profiles are intended to be created for real identities and use real names. Research has pointed out that keeping in touch with real-life friends and intensifying or maintaining relationships with some offline connection (for instance, those whom people do not see very often or who live far away) are deemed more important uses of Facebook than creating new ties (Ellison, Steinfield, & Lampe, 2007; Joinson, 2008). This connection between offline and online worlds has distinguished Facebook from previous versions of online communities, as online interactions do not necessarily

remove people from their offline world anymore but can support relationships and keep people in contact, even when life changes move them away from each other (Ellison, Steinfield, & Lampe, 2007).

The requirement of self-presentation is closely built into SNSs. For example, it is not possible to create an account on Facebook without the creation of a personal profile. Acquisti and Gross (2006) argue that the security, access controls, and privacy of social network sites are weak by design. The reason for this lies in the utility of posted content for the service: the easier it is for people to join and connect with other users, the greater the utility of the content to the users themselves and the higher its commercial value to the network's owners and managers (Acquisti & Gross, 2006). In a similar vein, Harry Blatterer (2010) states that deliberate disclosure of personal information is a necessary component of social networking. Social network sites such as Facebook can exist only as long as people are willing to share personal information freely and give up some of their privacy in order to gain visibility on the site (Blatterer, 2010). However, privacy concerns have been found to be the primary obstacle to users sharing and disclosing matters online (Brandtzaeg, Lüders, & Skjetne, 2010; Vitak & Kim, 2014).

According to Marwick and boyd (2011), the structure of social network sites has complicated our metaphors of space and place, including our understanding of the audience. Unlike in traditional online communities, with SNSs a person can belong to multiple networks at the same time, which makes it more difficult to grasp the boundaries of the 'community' (Ellison & boyd, 2013). Typical of SNSs is that they enable users to create individually constructed networks in which everyone is able to make his or her personal privacy adjustments to determine whom to share personal content with. Social network sites have also brought out new issues related to the boundaries of privacy and publicity online. With SNSs, people can add individuals from different social contexts, such as family, friends, classmates, co-workers, and neighbours, to their 'friends' list. This characteristic of SNSs, which flattens multiple audiences into one and brings people from diverse contexts together in a single location, is referred to as context collapse (Marwick & boyd, 2011). Because the structure of SNSs does not allow different self-presentation strategies for different audiences, tensions arise when someone attempts to create a consistent presentation of self (Marwick & boyd, 2011).

Contrary to expectations, research has found that the privacy settings of the Facebook user interface are considered rather simple with respect to hiding content from people outside one's friend network (Brandtzaeg, Lüders, & Skjetne, 2010). People seemed to be more concerned about certain people on their friends list being able to view content not intended for them (Johnson, Egelman, & Bellovin, 2012). It seems that people are less equipped to deal with problems that stem from their SNS

friends coming from different social contexts and the existing user-interface tools are not enough to solve the problem. Researchers have identified several behavioural strategies applied to address the situation, such as restricting access to 'real friends' only, creating multiple accounts, or limiting the content to material appropriate for everyone by means of self-censorship (Vitak & Kim, 2014). However, the current tools for boundary regulation are still deemed somewhat inadequate, and this may reduce users' satisfaction with the SNSs and negatively influence social interaction (Wisniewski, Lipford, & Wilson, 2012).

Blatterer discusses motivations for online disclosure and addresses the question of why people willingly share personal information on social network sites even when doing so may have harmful consequences and the information could be used by other parties for their gain. According to him, the answer is in the perceived benefits of visibility. Visibility is motivated by a fundamental need for social recognition: Disclosure via SNSs can offer users recognition of their lives and choosing not to engage in this may restrict one's possibilities for social interaction – i.e., 'connectivity' (Blatterer, 2010). Blatterer states that there is ongoing tension between the need for privacy and the need for visibility on SNSs, but on account of the experienced benefits, people are willing to trade their privacy for visibility.

Research has shown that there is a range of meanings attributed to privacy in online contexts, and a given individual's conception of privacy can be very different from what is implemented in the user interface. Even though the tension between privacy and publicity has been emphasized quite often, it does not seem to be the most worrying factor for SNS users. Instead, people point more to concerns about those who are their SNS friends. For instance, Marwick and boyd (2011) found a tension in communication with different audiences on Twitter, as a user has to balance the conflicting needs for interpersonal and public communication since there are demands for authentic communication and self-promotion at the same time.

In summary, the emergence of social network sites has created many new issues with regard to the topic of publicity/privacy. Whereas in the early applications Internet users were mostly anonymous, SNSs have integrated real personae with online presentation, and the centrality of the representations of social networks distinguishes SNSs from earlier-origin forms of online interaction, such as text-based online discussion forums or personal homepages. The main issue of privacy for SNS users is not how to prevent strangers from seeing their personal content but the collapsed context, which brings multiple audiences into the same location. Because social relationships are fluid and dynamic, they need to be constantly managed. People also aim to create a continuous and coherent self-presentation. According to Marwick and boyd (2011), social media combine elements of broadcast media and face-to-face communication: they collapse multiple social contexts into one but are unlike

broadcast media in that those generating the content are not professional image-makers but individuals striving for balance between their needs for personal and public information. One of the main challenges for SNS users is to maintain authenticity and intimacy simultaneously from a position at the centre of several networks.

2.4   Online participatory culture

One topic that is central for understanding the current digital culture is the notion of media convergence, which describes the changing dynamics between media consumers and producers. These changes have been approached through the participatory-culture framework introduced by Henry Jenkins. He defines the concept of convergence as follows: 'the flow of content across multiple media platforms, the cooperation between multiple media industries, and the migratory behavior of media audiences who will go almost anywhere in search of the kinds of entertainment experiences they want' (Jenkins, 2006, p. 2). Media convergence – i.e., the above-mentioned changes in production, consumption, and accessing of information – is facilitated by and strongly associated with digital media, and without a doubt the emergence of the Internet has encouraged its diffusion. However, it should not be viewed only as a technological process; rather, it should be considered a cultural shift in which consumers are encouraged to seek out new information and make connections. According to Jenkins, this process occurs not through technology but within the minds of individual audience members and through their social interactions with others (Jenkins, 2006, p. 3). Technologies related to media convergence have evolved around existing social and cultural practices of sharing, such as storytelling or scrapbooking of news clips (Jenkins, Ford, & Green, 2013, p. 12).

In the participatory model, circulation of media content is heavily dependent on user participation, and, therefore, active users and user-generated content have become the key elements. The circulation of content is done not by isolated individuals but within larger communities and social networks beyond their immediate geographic proximity (Jenkins, Ford, & Green, 2013, p. 2). Unlike in the traditional broadcasting model, the audience is no longer a stable one congregating around the media object; instead, it consists of small, active, and highly engaged groups who also produce content, thereby collapsing the distinction between consumers and producers (Jenkins, 2006, pp. 18–19). This networked audience connects people with each other, creating an active creative network that consists of many distinct relationships to be navigated (Marwick & boyd, 2011). In the participatory model, consumers and producers are in continuous dialogue, and content has become endlessly recyclable, adaptable, and constantly available, leading to continual creation of new products and experiences

(Miller, 2011, pp. 81, 94). Jenkins, Ford, and Green (2013, p. 27) apply the term 'spreading' to describe the process of circulation of media content in which the material is remade through editing, mixing, and its insertion into new context. They emphasise that spreading the media content is a highly social activity in which media content has an important role as a mediator of social connections. People evaluate media content on the basis of its social value, and the content that is perceived as interesting and valuable for them and their social networks, ends up being circulated (Jenkins, Ford, & Green 2013, p. 199). This circulation of content can forge and solidify our social connections in many ways. For instance, we can use media for communicating to others who we are and what we think or activate a community by sharing stories that are interesting to others. In an overall summary of their views, Jenkins et al. (2013, p. 219) state that content that enables and encourages open processes of analysis and meaning-making for audience has a greater tendency to spread among people.

Originally, participatory culture was studied in the context of online fan communities, which consisted mostly of early adopters who use media creatively. Over time, the cultural shift seen in that context has taken place within institutionalised mainstream media and business contexts too. With the success of online community services, companies and manufacturers of various consumer products have recognised the potential of user participation for business purposes and established their own user communities and Web sites to support their brands or products. For manufacturers of consumer products and services, online communities offer direct contact with customers that allows the manufacturers to engage in dialogue with them. Online customer communities can also constitute a source of knowledge that companies can exploit in the product-development and innovation process to meet consumers' needs and demands better (O'Callaghan, 2004). In this approach, customers are at the centre of value creation and companies are no longer mere producers of products or services so much as (co)developers of customer experiences (O'Callaghan, 2004).

The economic value of user participation and the commodification of user-generated content have also prompted criticism among scholars, creating debate about who owns the user-generated content and who should be paid for users' creative labours (Jenkins, Ford, & Green, 2013, p. 48). Tiziana Terranova (2000) states that the Internet is extremely labour-intensive: to maintain the users' interest, producing a good Web site is not enough; that site also needs to be updated regularly. In this connection, it is largely the users who keep a site alive through their labour – i.e., active participation and content creation – and the value of the users for the digital economy is crucial. Even though the labour of building and maintaining an online community is not compensated for by financial rewards, it is undertaken willingly, in exchange for the social pleasure. Social rewards such as status, prestige, esteem, and relationship-

building take the place of monetary rewards as the primary drivers in content production and social transactions (Jenkins, Ford, & Green, 2013, p. 61). Richard Barbrook applies the term 'gift economy' to describe the important element of a digital economy that relies on people's free and socially based exchange of information. According to him, for most users the Internet is for sharing and interacting without the direct mediation of money, and in the absence of markets to mediate social bonds, communities are formed through the mutual obligations created by gifts of time and ideas (Barbrook, 1998). As Terranova (2000) states, the digital economy has therefore become an important area of experimentation with value and free cultural or affective labour.

According to Jenkins, Ford, and Green, it is crucial to understand that media audiences and producers operate within different logical and economical systems. They refer to these two distinct systems as the commodity culture and gift economy: in a commodity culture the emphasis is on economic motives, whereas in a gift economy it is placed on social motives (Jenkins, Ford, & Green, 2013, p. 63). According to these authors, tensions are likely to arise because of media content circulating fluidly between these two, quite different systems of appraising and assigning value. In the commodity culture, sharing content may be viewed as economically damaging, whereas in the gift economy it is failure to share content that is socially damaging (Jenkins et al., 2013, p. 63). They argue that the business model of Web 2.0 has failed in the aim of transforming social goods generated in social exchange into commoditised user-generated content, since, over time, it may also turn playful participation originally intended to serve the community into alienated work (Jenkins et al., 2013, pp. 65, 83). Online communities lie at the juncture of two cultures, and, as Jenkins, Ford, and Green state, social and cultural practices operate in economic context while economic practices also operate in social and cultural contexts. In order to avoid negative outcomes caused by the tensions between commodity and gift economies, providers of online community services need to be aware of the logic of worth employed in the participation and must maintain transparency and authenticity when they operate within user communities (Jenkins et al., 2013, p. 72).

Another important question regarding economic value for Internet users has arisen, with online advertising. In many online community services, Facebook in particular, users have been given a dual role: they are not only consumers and producers of the service but also a product that is being sold to a third party by the service provider. A study of Facebook users' disclosure behaviour by Stutzman, Gross, and Acquisti (2013) revealed that in the years 2005–2011 the number of 'silent listeners' – i.e., third-party applications that get access to user information and (indirectly) advertisers – increased substantially. However, users are often unaware of the surveillance by these third-party apps, and, while users have decreased their public sharing of information,

the quantity of data disclosed to the silent listeners and retained by Facebook itself has increased (Stutzman, Gross, & Acquisti, 2013). All active members using social network sites are simultaneously collectors and providers of personal information, as their usage of technology leaves traces of personal information that third parties can utilise for their gain. Even though the privacy policy of services such as Facebook states that the service will not collect and share users' information without their consent, users are highly unlikely to withhold that consent, because doing so would result in missing out on social benefits and opportunities Facebook provides (Fuchs, 2014, pp. 166–167; see also Blatterer, 2010).

2.5 Conclusion: From community to individually connected networks

As this review has pointed out, research has often viewed local and mediated communities dichotomously and questioned whether technology-mediated forms of groupings and relationships can be authentic or real, and whether they can even be referred to as communities. Felicia Wu Song (2009, p. 14) has criticised the comparison of online and offline sociability for having come to dominate the discussion of online communities and states that online communities deserve to be studied in their own right. According to Song, this comparison is often rooted in literature that portrays the Internet as flawed and tends to favour face-to-face interaction, thereby setting face-to-face communities as a norm (Song, 2009, pp. 24–25).

However, even without the Internet, contemporary life seems to have moved away from locality as a strong basis for social ties. With the increased mobility and weakened sense of locality also comes the opportunity for people to belong to multiple and specialised non-local social networks. Because 'community' has been viewed as such a traditional term, should it be applied in a more flexible manner or, as some scholars have proposed, replaced with a more suitable concept? Wellman (2001) suggests that 'community' no longer functions for describing contemporary social life, as recent decades have witnessed a shift from tightly bounded communities constrained by geographical locale to person-centred social networks, which he calls 'networked individualism'. According to Wellman, modern social life is constituted of networks in which each individual is a member of the unique personal networks of people to whom he or she is linked (Wellman, 2001). Membership in these networks connects a number of social circles, and each person is the centre of his or her own community. Another theorist who views networking as an important social practice of late modernity is Andreas Wittel (2001), who introduced the term 'network sociality' to

sum up typical characteristics of sociality shaped by information technology. According to Wittel, the concept of network covers the logic of networks – that is, the dynamic flow of people, ideas, and information, along with constantly changing relationships – better than the more static notion of community does. Wittel states that network sociality is based on instrumental, informational, and brief encounters, and that, therefore, evaluations of other people are not based on previous experience and shared history. Instead, he claims, evaluations of a person's knowledge and skills take place in the situation of the encounter. Wellman and Wittel both view social relations as being in a process of transformation in which they are growing more person-centred, mediated, and a-spatial.

To continue the discussion about networks as a core element of social life, Miller (2011, p. 196) suggests that it may be more appropriate to approach community as an ego-centric network of relationships centered on oneself and one's interests, one that is actually well implemented in the user-interface design of current social network sites. From this angle, current forms of online sociability might actually reflect the nature of contemporary communities. Miller (2011, p. 202) also states that, because current social networks are typically disembedded and a-spatial, the key problem in network sociality is how to maintain networks without continuous social presence. According to him, networks have to be maintained and renewed through continued communication, without which social networks would eventually shrink and connections be lost.

Online communities have been criticised for being very personalist in nature, and some scholars have seen this person-centredness as weakening the commitment to others and thus being a hindrance to sense of community (e.g., Delanty, 2003, p. 184). Later on, research into sense of community has found evidence that in online communities a person's representation of the group switches emphasis from 'us' to 'you and me' (Blanchard, 2008; Rotman, Golbeck, & Preece, 2009), indicating that it is personal networks and relationships that are at the centre of community experience, not a person's social identity as a group member. Strong feelings of belonging can be detected among users of content-oriented social network sites such as YouTube and Twitter, or in the 'blogosphere', and these online platforms can connect individual users into a collection of interlinked and individually constructed community networks (Gruzd, Wellman, & Takhteyev, 2011; Rotman, Golbeck, & Preece, 2009; Dennen, 2014). Boundaries of these types of online communities are difficult to define, and the experience of what is community varies from one person to another – one person's community might be mere 'sociability' for another (Song, 2009, p. 26). Individual members' sense of who belongs to a given community and who does not may differ on the basis of, for instance, awareness, interest, and prior interaction (Dennen, 2014). In this view, online communities are understood as a subjective process.

This review has shown how 'community' is no longer the most accurate term to describe social groupings and affiliations of the late modern era, especially with regard to technology-mediated groups. In the context of today's technology-mediated groups, a strong sense of community and belonging can be identified in networks that are formed around personal interests, shared content, or individual relationships. This dissertation adheres to the understanding that community can be based on shared experience, **sense of community**, with people whom we do not necessarily know outside the online context. The audience we communicate and target our content to can be imagined in the sense that our conception of who is part of a community or can see the content we share may not match the actual situation. In this respect, online communities can be understood as imagined and existing in people's minds. However, online social connections and group memberships are experienced as real and are created and maintained through members' continuous and concrete social actions, and they are, in this sense, just as real as the offline connections.

3   Research design and methodology

3.1   The research design

The dissertation project was undertaken for gaining a holistic understanding of social interaction, user participation, and social practices in the context of Internet services referred to as online communities. For the empirical part of this dissertation, a case-study research design was adopted in order to enable collection of rich data and inspection of the phenomenon in the real context of use. According to Robert K. Yin (2009, p. 18), a 'case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident'.

The five empirical studies contributing to this dissertation all represent single-case studies. According to Yin (2009, pp. 47–49), single cases are appropriate under several circumstances: the case being critical in testing a well-formulated theory, representing an extreme or a unique case, being representative or typical, being revelatory, or being longitudinal. In the context of this dissertation, all of the case studies are unique and were selected in order to build variety into the data. The research topic 'online community' is approached through several examples of the phenomenon because they can be very different in their structure and affordances. Therefore, it is important that the data present samples of the phenomenon studied by providing views and descriptions of online sociability in multiple settings. A longitudinal element is also present in this dissertation, in two ways; firstly, the empirical data were collected over a three-year span during which the phenomenon evolved and gained in popularity among users, and, secondly, one of the services studied was inspected twice, at different points in time: before its launch and few months after.

Since the case-study design is rather flexible as a method, it can bring out new and unexpected results in the course of the study, and result in research taking new directions. In the context addressed by this dissertation, some of the technological environments studied were rather new at the time of study, so one important aim was to produce new information by coming to understand how the services studied were used and experienced by their users. Especially when one studies a phenomenon that is relatively new and dynamic, a look into the topic and the concepts related to it is needed. Accordingly, a descriptive research approach is particularly useful in the early

stages of research: descriptions can help a researcher to identify the concepts that are needed for theory-building (Dubin, 1978, p. 87). According to Yin (2009, pp. 10–11, 20), a case-study design can feature both descriptive and explanatory elements; it is preferred particularly for observing contemporary real-life events over which a researcher has little control and when questions such as 'how' and 'why' are posed. In the dissertation project, the first sub-studies adopted a descriptive research strategy. Later, as the research progressed and the phenomenon was becoming clearer, exploratory elements were added and hypotheses were statistically tested.

So far, most of the empirical research has adopted a descriptive approach to online communities. Magda David Hercheui (2011) argues that, while having introduced a level of rich detail, in general, empirical studies still lack understanding in a theoretical sense and significant emphasis has been placed on the novelty of the phenomenon. The interest in the descriptive approach to the phenomenon may be partly explained by online communities being shaped via diverse technologies and, thus, by their uniqueness. As research into online communities – and our knowledge of them – accumulates, the body of evidence for making generalisations and building a theory grows. Online communities are fluid and temporary as social constructions, with their memberships and interactions constantly evolving. As communities form, change, and disappear much more rapidly online than in the physical context, their transient nature can make detecting and analysing them difficult (Goggins et al., 2007). Research has, therefore, produced mostly 'snapshot views' of the phenomenon in its various forms (Iriberri & Leroy, 2009). However, Miller (2011, p. 29) concludes that all digital media, including online communities, are in a continual state of transformation, 'always being updated, modified, compressed, decompressed linked and databased, and in that sense has the potential to exist in infinite versions'. Therefore, digital media should be viewed more as continuing processes instead of 'frozen' objects.

3.2   Methodology

The research employed a combination of quantitative and qualitative methods. Qualitative research investigates the subject in a natural setting, with an attempt at interpreting and making sense of it. Conducting in-depth user interviews provides an insider's view of the phenomenon studied, whereas quantitative data were collected to yield more generalisable results on the usage of services, with a larger user base and testing of hypotheses. Three of the six sub-studies employed a mixed-methods approach: different methods have been combined for collection of as rich data as possible and to respond to the goals of the study in the best possible way. The benefit of a mixed-methods research design lies in its adaptability and creativity: this is

pragmatic and responsive to real-world conditions, as it allows creative research adaptations to particular settings and questions (Patton, 2002, p. 253).

The methods used consist of the following techniques employed for data collection:

Interview: All of the interviews conducted in the various sub-studies were semi-structured, which means that the topics and issues to be discussed are specified in advance but new ideas and questions can be brought up during the interview in light of what the interviewee says. The interviews usually lasted 1–2 hours. Some were conducted at the interviewee's home, others on university premises, at a public library, or at a café. All interviews were audio-recorded and transcribed. For this dissertation, 73 individual interviews were carried out, in all. For most of them, the interviewees were allowed to use a computer and thereby illustrate matters related to the online service that was being discussed.

Questionnaire: Both online and paper questionnaires were collected for this study. In sub-study 2, a brief paper questionnaire was filled in at the interview stage when test users were asked about their experiences during test use. In sub-studies 3 and 5, a more extensive dataset was collected, via an online questionnaire filled in by 334 and 258 respondents, respectively. The large datasets thereby generated were analysed with SPSS statistical software.

Field test: In sub-study 2, a field test was executed for 10 test users, for testing of a prototype version of a service intended for exercise in a real use context and in as natural a setting as possible. During the three-week test period, the participants were advised to use the service freely and as a part of their natural exercise routines. They were also given a template for daily reporting on how they had used the service and whether they had encountered any problems. The filled-in templates were discussed in greater detail in face-to-face interviews, which were conducted after the test period.

Diary of use: In a similarity to sub-study 2, users in sub-study 4 were asked to keep a diary of how they had used social media via a mobile device during two days of their choice. They were given a template, which featured some questions regarding the situation of use, and advised to describe the context of use, what they did, and why they decided to use social media in the mobile realm, in as much detail as possible. In all, 15 use diaries were collected, for collection of more accurate data on the amount of mobile social-media use and descriptions of the context and situations related to it. The diaries were analysed before interviews and also discussed in the interviews. The diaries served as important input to the interviews, because people were able to describe their typical usage and exceptions on the basis of the filled-in diary and most likely would not have recalled all the individual situations without it.

Heuristic evaluation: The usability of software products is often investigated with evaluation methods. The heuristic evaluation method, the most popular of the usability evaluation methods, is used for identifying usability problems by evaluating the

interface in relation to a list of guidelines and passing judgement according to one's own opinion (Nielsen & Molich, 1990). The method is also known as the expert review method, since the evaluators' experience and knowledge affect the evaluation results. The benefit of heuristic evaluation is its cost-efficiency and simplicity: it is easy and fast to carry out. It is recommended that, to improve the method's performance and reliability, heuristic evaluation be conducted by several evaluators. However, when several evaluators evaluate the same software, they might detect substantially different sets of usability issues. Usually, only the most severe problems are detected by all the evaluators, whereas unique and minor usability violations remain unidentified (Jacobsen et al., 1998). For improved reliability of heuristic evaluation, combining it with other usability inspection methods is suggested (Jacobsen et al., 1998). In sub-study 2, heuristic evaluation was employed in the appraisal of usability and sociability aspects of the service prototype studied. The evaluation was conducted by three members of the research group, and the findings were compared with the results of the user study.

Online observation: Observation was used as an additional method, to gain information that could not be obtained through interviews. In two of the sub-studies (1 and 2), the research group created an account in the service to observe the user activity and the content posted on the site under investigation. The participants were informed about the account, and they were able to follow or become friends with it if they wanted to. However, the online observation was conducted in a non-participatory manner: the account was not used for sharing content, contacting users, or taking part in discussions; instead, it was used to gain insight and enable presence at the site of the study. The information gained from online observations was used for refining interview questions. This method was particularly important during a three-week trial period (sub-study 2), when the prototype of the online exercise diary was open to only 10 test users. Observing the actual usage and content on the site helps a researcher build his or her understanding of the object of study.

Systematic literature review: The final method was chosen for sub-study 6, to enable a synthesis of existing empirical academic research on the topic. The systematic literature review was aimed at detecting as much of the relevant literature as possible by means of a well-defined search strategy; in particular, clear criteria for inclusion and exclusion of articles is important for ensuring unbiased selection of articles (Kitchenham, 2007; Okoli & Schabram, 2010). A detailed description of the selection method increases reliability and allows others to repeat the procedure. As a result of the selection process, 83 articles meeting the criteria were reviewed and analysed for the study.

3.3   Data collection and analysis

To enable capturing the constantly changing and loosely bounded phenomenon that is online communities, a diverse set of research data has been collected. Empirical research data from five user studies were collected in 2009–2011 at Tampere University of Technology in research projects funded by the Finnish Funding Agency for Technology and Innovation (Tekes) and four Finnish industrial partners (Nokia, Sanoma, Suunto, and Tekla). Data collection for sub-study 6 was conducted in 2013–2014 at the School of Information Sciences of the University of Tampere.

For the data collection in the empirical studies, purposeful sampling was used to enable selection cases that are 'information-rich' and illuminating, thereby offering useful manifestations of the phenomenon of interest (Patton, 2002, p. 40). Purposeful sampling is guided by time and resources and allows a researcher to choose a case for its illustration of some feature or process that he or she is interested in (Silverman, 2013, p. 148). However, purposeful sampling is aimed at creating insight into a phenomenon, not empirical generalisation to a whole population (Patton, 2002, p. 40). According to David Silverman (2013, pp. 154–156), the generalisability of the findings can be increased by combination of qualitative data with quantitative measurements of populations. When one is conducting case studies, it is important to keep in mind that findings from a single case-study cannot be generalised to the whole population or ecosystem; instead, single cases offer perspectives on the phenomenon under study.

Participants were selected via a different technique in each case, with the choice depending on the goals of the study in question. Influenced by the 'lead user' method introduced by Eric von Hippel (1986), two of the cases (sub-studies 1 and 4) involved emphasis on the more experienced and active users, who can be referred to as lead users. According to von Hippel (1986), investigating lead users can be useful particularly in attempts to understand user needs for potential new products in fields characterised by rapid change. Lead users are often investigated in the early stages of the product development process, since they are well qualified and motivated to make significant contributions to the development of new products or services (von Hippel, 1986). In this dissertation, the more advanced users, who can be referred to as lead users, were selected so as to ensure sufficient experience of use or technical skills for as many descriptions of real use as possible. In sub-study 4, the main aim was to explore how social media are used with a smartphone; therefore, we wanted to investigate people who had an advanced phone model with a flat-rate Internet connection, so that limitations in the device or access to the Internet could not affect the usage and, thereby, the results. Furthermore, sub-study 1 explored online photo-sharing and social interaction practices, hence I wanted to select users who were sharing their pictures online and using the service regularly. This ensured that the participants had enough

experience to provide insights into the phenomenon of interest. In other words, in these two cases the aim was to gain as information-rich data on the service use as possible, which entailed selection of participants in line with predefined criteria. In the rest of the case studies, participants were randomly sampled from the user population of the service under study via an invitation to participate or a link to an online questionnaire on the site that was being studied, through mailing lists or an ad. However, in qualitative studies that included face-to-face interviews, one important criterion for selection was the geographical location of the interviewees, as we were not able to travel around the country. Therefore, invitations to take part were targeted mostly at people who were able to come to the Tampere region for the interview.

In summary, this dissertation is an analytical synthesis of five empirical sub-studies enhanced by a systematic literature review of related research on online communities. Each of the sub-studies posed individual research questions and applied its own set of methods in order to contribute to understanding of the phenomenon. The results described in the dissertation rely on multiple sources of evidence, and findings of the single-case studies were analysed separately. Hence, each sub-study provides evidence that supports the theoretical and conceptual analysis carried out for this work as a whole. More detailed description of the methods, participants, and analysis of each case is presented in Table 3, below.

Table 3. Overview of the five empirical sub-studies

Study	Software in the study	Software's purpose/goal	Data collection	Data analysis	Partici-pants (*N*)	Publi-cation
I	Flickr.com: online photo-sharing service	Storing, sharing, and viewing of photographs	Interviews	Qualitative analysis	9	I
II	Movescount.com: online exercise community	Recording, sharing, and viewing of training data	Stage 1: three expert evaluations, three-week trial use, interviews and paper questionnaire after the test period (*N*=10)	Qualitative and quantitative analysis	10	II
V			Stage 2: online questionnaire (*N*=258)	Quantitative analysis	258	V
III	Huuto.net: online auction site	Buying and selling of merchandise online	online questionnaire (*N*=334) and 24 interviews	Quantitative and qualitative analysis	358	III
IV	Social media applications for smartphones	Social networking, content-sharing, and consuming content via mobile device	15 use diaries and 30 interviews	Qualitative and quantitative analysis	30	IV

3.3.1   Sub-study 1: Online photo-sharing service

The first sub-study investigated users of photo-sharing site Flickr in 2009. Because the aim was to understand motivations for online photo-sharing and to investigate how people socially interact via a content-oriented Web site, participants who engaged with

Flickr regularly and shared their photographs with other users were searched for. The participants were recruited from Helsinki-related subgroups of Flickr through an invitation letter and a link to an online questionnaire. The questionnaire included several questions about their background and their Flickr usage in general, and the participants were selected on the basis of their activity and their location and availability for interviews. As a result of screening, nine interviewees were chosen, two of them females and seven males. They were from various occupational backgrounds. Their age ranged from early twenties to early sixties, with most of them being in the 25–35-year age group.

The interviews were conducted at the subjects' homes or on the premises of a public library. The research approach was ethnographic, since I wanted to gain insight into their experiences and activities that were not familiar to me. The informants were, accordingly, given the role of experts. Particular attention was given to their descriptions and interpretations of their actions, and they were able to illustrate their responses by showing photographs, comments, and other content on the site with the aid of a computer. All interviewees were given film tickets as a reward for participation.

All nine interviews were semi-structured. In other words, there were certain predefined discussion topics, but the participants were able to speak freely about their experiences in their own words. The main themes of the questions were their motivations to share photos online; how they were using Flickr; and how, why, and with whom they were interacting and networking on Flickr. The interviews were recorded and transcribed, and a qualitative content analysis was carried out. In the analysis, emphasis was first placed on recurring patterns, themes, and explanations, after which more occasional mentions and differences between users were examined. The content analysis strategy applied in this study can be called conventional, as the codes were derived directly from the informants rather than from a pre-existing theory or framework (Hsieh & Shannon, 2005).

3.3.2   Sub-study 2: Online exercise diary

In the second sub-study, the software was investigated in the prototype stage and users were involved in the early stage of development, to ensure that their ideas and opinions would be incorporated into the design process and influence how the design was to take shape. This research approach can be referred to as community-centred development, as it is based on an iterative design–evaluate–redesign paradigm (Preece, Abras, & Krichmar, 2004).

The research data were collected by means of several methods. Firstly, the research group evaluated the software by means of the heuristic evaluation method and applied

sociability guidelines based on previous research literature. However, since in the heuristic evaluation method the software is evaluated from an expert's point of view, we wanted to find out whether the findings of the reviewers differ substantially from how actual users would perceive the software. In order for us to evaluate the reliability of the heuristic evaluation method also, the findings from the expert evaluations were compared with the findings from the user study. This way, we could investigate whether the factors that promote sociability were perceived in a similar way by both parties. For understanding of the users' perspective, a three-week-long qualitative field study was arranged. At the end of the test period, the participants were interviewed about their experiences of using the service and filled in a brief questionnaire in which the social features of the service were evaluated.

For the user study, 10 test users were recruited from a customer database maintained by the service provider; all of them regularly used, or had been using, a heart rate monitor manufactured by the company that provided the software used in the study. The participants were aged 23 to 45 years, the average age being 36 years, and the gender distribution was even (5 females and 5 males). All of the participants were rewarded with a small product gift by the service provider.

During the field study, the participants were able to use the service freely. They were advised to exercise as usual and use the service as a normal part of their everyday activities, just as they would use it outside the study. After each login to the system, they were advised to fill in a structured diary in which they briefly described how long they used the service, what they did, whether any problems occurred, and how they perceived their overall experience of the service. In the face-to-face interviews that were conducted after the trial period, these diaries were reviewed and discussed with the interviewees, in order for the researchers to form an understanding of the trial period. The main themes of the 10 semi-structured interviews were the following: user experiences, content, social interaction, profile information, and privacy. The interviews were recorded, and the participants were able to use a computer to show the features and functions of the service during the interview if needed. For investigation of how the users perceived the various social aspects of the service, eight survey items were formulated on the basis of sociability heuristics. The responses for these were estimates with a Likert scale from 1 ('strongly disagree') to 7 ('totally agree'). In the analysis, data collected from all three sources (the field test, user interviews, and questionnaire) were compared with the findings from the heuristic evaluation for determination of how the users' and experts' views differed and whether the two groups detected the same sociability issues.

3.3.3 Sub-study 3: Online auction site

The subject of the third sub-study was a popular Finnish online auction with more than 1.4 million registered users at the time of study, in 2010. A mixed-methods research design was applied in the data collection. In the first stage, a qualitative, interview-based study was conducted for 24 users of the online auction site. Twenty of the participants were selected from the database of the online auction site by the service provider; they were a random sample from among the regular users who lived in the Tampere region. In addition, four pilot interviewees were recruited by the research team through their networks. All 24 participants had been both selling and buying items through the service within the previous couple of months. Half were female and half male, with participants' ages ranging from 22 to 61 years (average age: 39 years). They had been registered users for, on average, seven years. All the interviewees were rewarded with a product gift from the service provider. The interviews were recorded and transcribed, and, to enable conducting a content analysis, transcripts were uploaded for use by the qualitative data analysis software QSR NVivo 8. The approach to the content analysis can be defined as summative (Hsieh & Shannon, 2005), as it started with the identification and quantification of certain themes.

In the second stage, we wanted to gain more specific information on the factors that influence trust, in addition to descriptive qualitative data. Therefore, an online survey was conducted. The online questionnaire was open for six days, via a link on the front page of the online auction site, and, in total, 334 respondents filled in the questionnaire. The sampling method was random: the system picked one out of 300 users for the survey, including both sellers and buyers, from all of the online auction categories. The gender distribution of the sample was unequal: the majority (65%) of the respondents were female, and only 35% were male, with the overall age range being 13–76 years (average age: 36). They had been registered with the service for five years, on average; however, most of the respondents were rather new to the online auction site, with half of them (51%) having been registered with it for three years at most and 12% of the sample consisting of newcomers who reported having created their account under a year ago earlier.

In the questionnaire, in addition to the basic demographic questions and questions about their online auctions use, respondents were asked to indicate on a five-point Likert scale the degree to which they agreed with statements regarding the online auction and the current implementation of several features that were considered relevant for trust-building. Software from SPSS was used for the statistical analysis of quantitative data. Initially, descriptive statistics were calculated. Then, for comparison of variables, one-way ANOVA tests were conducted.

3.3.4 Sub-study 4: Mobile social media

The fourth sub-study explored use of social media with a smartphone. Two types of qualitative research data were collected. Thirty owners of high-end smartphones were interviewed for this study. In addition, their mobile social media use was investigated in more detail through diaries kept by 15 of the participants. The participants were recruited through mailing lists and discussion forums intended for various student and hobby groups, one of which was aimed at fans of Apple products. Because we wanted to find participants who were using social media via a mobile device regularly, 51 people who had enrolled for the study filled in an online screening questionnaire featuring questions about their background, including their current mobile-phone model, and on how often they used social media by means of a PC and a mobile device.

On the basis of the screening, 30 participants, in all, were selected on the basis of their current model of mobile phone and their amount of social media usage via the mobile device. Of the participants, 10 were female and 20 male, and the subjects' ages ranged from 17 to 56 years (average age: 29). All interviewees were rewarded for their participation with a gift voucher.

The main themes of the semi-structured interviews were motivations for using social-media services, description of the context of use, content creation and sharing, and routines and patterns of mobile social-media use. During the interview, each participant was also asked to show on the mobile phone the social-media applications he or she most frequently used. The interviews were audio-recorded and transcribed in order to enable a qualitative content analysis. For the study to generate more detailed information, 15 of the participants were asked to keep diaries of all their mobile social-media usage in the course of two days of their choice. They were advised to write down each time they used social media in the diaries and describe in detail the situation, the duration of use, what they did, and whether any problems occurred. They were told to report incidents especially if the context of use affected the use of social media in some way. In total, the diaries included descriptions of 125 use situations. The diaries were kept on forms provided by the research group and submitted via e-mail before the face-to-face interview. The diaries were then thoroughly discussed in the interviews. Some quantitative analysis was conducted for the diary material – for example, descriptive statistics of duration, frequency, and situation of use were compiled.

3.3.5   Sub-study 5: Online exercise diary

The fifth sub-study investigated the online exercise diary that had been studied in the prototype stage in sub-study 2. At the time of sub-study 5, the site had been running for more than four months globally, and 10 language versions were supported. With sub-study 5, the focus was placed on real users, with different national backgrounds, and the main aim was to compare the usage by different nationalities. Data were collected via an online questionnaire. The participants were recruited with the aid of the Web site owner, which provided the e-mail addresses of 1,000 users, from three countries – the US, Germany, and Spain – who had agreed to receive marketing material, including invitations to surveys, when they registered to use the site. By e-mail, the respondents were sent a link to the questionnaire and an invitation to participate, written in their chosen interface language. Users from the above-mentioned countries were chosen as the main targets of the online survey because these countries are among the main markets of the service and these languages were supported in the system. Therefore, it was estimated that we would be able to reach a fair number of respondents. Another reason was the theoretical background of the study, which includes Geert Hofstede's cultural theory, according to which there are significant differences between these nations with regard to their alignment on the individualism–collectivism dimension (Hofstede, 1980).

The survey was open for three weeks, with a reminder sent by e-mail after one week. In addition, to enlarge the potential sample, the invitation to participate in the survey, with links to the three language versions of the questionnaire, was posted on the Facebook page of the Web site studied. In an incentive to participate, each respondent was eligible to take part in a prize draw for five heart-rate monitors provided by the company that owned the service.

In total, 286 respondents completed the online questionnaire. Nineteen of the responses were from users of other than the three targeted nationalities and therefore excluded from the analysis. In addition, nine target respondents were excluded from the cross-cultural analysis on account of missing data. This reduced the final sample size to 258 respondents, of whom 109 were from Spain (42%), 81 from the US (31%), and 68 from Germany (26%). The subjects' age ranged from 19 to 65 years (average age: 40). The gender distribution was uneven, as 95% of the respondents were male. However, according to the representatives of the company running the Web site, this sample was highly representative of the average customer in terms of both age and gender.

In the questionnaire, the participants were asked for background information such as age, gender, nationality, the type of sports they were engaging in, and the frequency of exercising. There were general statements measuring the level of belonging to the

community and collaboration on a Likert scale of 1 to 6 (1 = strongly disagree, 6 = strongly agree). Statements regarding members' satisfaction with the service and its features were also rated on a scale of 1 to 6 (1 = not at all important, 6 = very important). In addition, respondents were asked to rate the benefits gained from online training communities and the service studied in terms of their importance, again using the scale of 1 to 6 (1 = strongly disagree, 6 = strongly agree). On account of the significant age differences between the national groups in the sampling, we chose to use age as a covariate in the statistical analysis, and a series of one-way between-groups analyses of covariance (ANCOVA) was conducted.

3.3.6   Sub-study 6: Literature review

The final sub-study diverged from the previous sub-studies in that, instead of an empirical user study, the data were collected through a literature review examining prior academic work on the topic. For an understanding of how online community participation has been studied and conceptualised in academic research articles, a systematic literature review was conducted. According to Barbara Kitchenham (2007), systematic review is a means of evaluating and interpreting all available research relevant to a particular research question, topic area, or phenomenon of interest that is aimed at presenting a fair evaluation of a research topic by applying trustworthy, rigorous, and auditable methodology. As a method, the systematic literature review is designed to review literature in a systematic manner and not only summarise but also include an element of analytical criticism surrounding the topic (Okoli & Schabram, 2010). Systematic review is a form secondary study; in a standalone literature review, the literature is reviewed without collection or analysis of any primary data (Kitchenham, 2007; Okoli & Schabram, 2010).

Five online academic research databases, the ACM Digital Library, IEEE Xplore, SpringerLink, ScienceDirect, and Google Scholar, were scanned for relevant articles. These databases were chosen for their coverage of conference proceedings and journal articles from various fields of scholarly study that have investigated the topic, including human–computer interaction, information systems, computer science, business, management, and psychology. All searches were narrowed to empirical studies reported upon in peer-reviewed full conference papers and journal articles. The phrases 'online community' and 'participation' were used jointly in the searches to filter for articles that discuss user participation in some manner.

According to Kitchenham (2007), the reliability of the systematic review method lies in its repeatability – though one must bear in mind that searches of digital libraries are almost impossible to replicate – and, therefore, the researcher needs to be explicit

in description of the selection process and inclusion criteria. The articles included in the review fulfilled the following criteria: 1) the research focuses on software referred to as an online community, 2) the study involved collection of empirical data upon which the findings are based; and 3) the paper discusses users' activities in an online community in terms of participation.

Via the procedures described, in total, 83 articles meeting the inclusion criteria were selected for review. The articles selected had been published in 2002–2014. Each of the articles was read, after which it was placed in a concept matrix that featured the following headings: 'Research questions', 'Study design', 'Online community type studied', 'Forms of participation', 'Definition of participation', 'Main findings', 'Design implications', and 'Limitations'. Via the matrix, the articles reviewed were classified and compared with each other for identification of the most frequently occurring research topics and methods. The studies were also compared for purposes of pinpointing differences in, for example, the way online participation was understood and operationalised. This approach rendered it possible to gain an overview of the studies reviewed and their main results. Synthesis of the material followed the guidelines of Kitchenham (2007): at first, the focus was on the analysis of individual studies, after which the set of studies was analysed as a whole.

4 Findings

4.1 Publication I: Visibility

The main aim of the first sub-study was to find out how people socially interact on Flickr.com, a content-oriented Web site designed for online photo-sharing, and, more specifically, how social networks are formed and maintained on Flickr. With Flickr, users are able to choose whether they want to share their photographs in public, share with certain people only, or keep them completely private. However, sharing photographs is the primary way to get connected with others in the service. Because Flickr represents a large social network site that focused on the content – i.e., the artefacts that users produce and post – making social connections is usually not viewed as the main purpose of the site.

Findings from the study reveal that photographs are shared publicly with an expectation of other users viewing and commenting on them. The most important reason for sharing is that receiving feedback and support from others is perceived as important for the user's development as a photographer. This study also confirms that the wish to become seen and to receive recognition from others for the quality of the content shared are the most important motivations for using the site. Therefore, feedback and encouraging comments from others were experienced as the best reward for participation among the participants. Accordingly, the results emphasise the importance of gaining visibility from others in the use of social network sites: the interviewees reported having created various strategies for gaining visibility on the site in order to stand out from other users and for getting attention for their photographs. One important strategy for visibility was creating social networks and friendships on the site by commenting on pictures by other users and being active in subgroups. Other strategies for visibility mentioned by interviewees were promoting one's pictures by adding appropriate tags to them and aiming to be included in the collection of the most popular pictures on Flickr, which is displayed on the front page of the site. The findings show similarities with those in the study of Flickr users by Nov, Naaman, and Ye (2010), who identified several forms of participation among the users: sharing of information artefacts, sharing of metainformation, and joining of the site's social structures by establishing friendships and being active in groups. The same three forms of participation can be identified between the two studies also. Interestingly, Nov,

Naaman, and Ye (2010) found that newcomers are more active in sharing of information artefacts, and that, over time, if they stay on Flickr, they tend to decrease their artefact-sharing and increase participation by sharing metainformation and joining social structures. This indicates that the social aspect has a positive effect on tenure in the community.

The findings of the first sub-study confirm the importance of 'structural embeddedness' – i.e., having many connections – on social network sites, especially on large ones such as Flickr, which is overflowing with content. A similar finding was made by Kalaitzakis, Papadakis, and Fragopoulou (2012), who noticed that the members of MySpace who had not connected with others and who had a small number of friends on the site were those who left it. Also, a study of blogging reveals that visibility is particularly important for new bloggers: they need to post regularly and engage in sufficient self-disclosure to attract new readers (Dennen, 2014). The results from the first sub-study confirm that it is possible for meaningful small groups, in which sense of community can be experienced, to emerge also on a large social network site the main purpose of which is the content, photographs. As Nov, Naaman, and Ye (2010) suggest, when people join social structures of Flickr, they become more comfortable with activity and exposure. However, the results from this sub-study reveal that online sociability also holds strong instrumental value for the users, as it serves, first and foremost, their individual needs for getting visibility and recognition from others. The findings reported in Publication I can be summarised thus: visibility plays a major role in SNS use. In order to be seen on the site, users have to be active in various ways. Unlike in the studies of Blatterer (2010) and Dennen (2014), in this context visibility on the social network site was gained not through self-disclosure but, instead, through actively socialising and participating in the social structures of the site: posting in subgroups, making new contacts, and commenting on pictures by others, rather than just posting content, photographs, as much as possible. However, finding peers requires effort, and continuous social interaction and reciprocity are the glue that keeps the subgroups together.

4.2   Publication II: Evaluation of sociability

With the second sub-study, the goal was to develop and test a practical and easy-to-use tool for evaluating software in terms of the success of its social features. Heuristic usability evaluation has been criticised for measuring performance, time, and errors while ignoring social and hedonistic aspects of Internet use; for example, heuristic evaluation for Facebook revealed that, no matter its popularity, Facebook performed poorly in terms of usability (Hart et al., 2008). This finding is explained with Facebook

providing its users with a great variety of positive experiences and emotions, which compensate for the lack in usability. Accordingly, usability problems have not been identified as the main reason for abandonment of online communities (Brandtzaeg & Heim, 2008). For investigation of the suitability of the heurist evaluation method in assessment of social features of a web service, a set of eight heuristic rules was created on the basis of a literature review focused on online communities (see also Malinen, 2009). The heuristics were created to improve social interaction and identify the most substantial elements with respect to community development and social interaction. The heuristics covered the following eight elements: **self-presentation**, **privacy**, **social presence**, **participation**, **networking**, **user roles**, **rewarding**, and **content.**

The software studied, Movescount.com, is an Internet service intended for tracking exercise. At the time of the study it was in a prototype stage. After the expert evaluations by three evaluators on the research team, the findings were compared with data collected from 10 test users who used the software for three weeks, for understanding of how well users' experiences matched the view of the issues identified by the evaluators. Sociability problems that were identified by all three evaluators were considered the most important hindrances to social activity. These were: 'the system is currently lacking in tools for private person-to-person discussions, which would deepen the interaction and relationships between users'; 'users cannot personalise their privacy adjustments in order to control the visibility of their personal information'; 'there is currently no forum for general and free-form discussions in the system'; 'users are not able to search and filter content'; and 'there is only a small amount of content in the service for users to react to and discuss'.

The results of the study show that most often the participants and the evaluators agreed about the problems related to **social presence and awareness of others**, which both groups considered to be the most important factors for the development of community and facilitation of social interaction with others. On questions regarding **privacy** and **self-presentation**, the participants slightly disagreed with the evaluators, with the evaluators identifying several problems that were not reported by the users. This difference may be partly explained by the research design, in which the service was accessible to only the 10 test users and hence they did not have to consider sharing their personal content with a wider audience.

This study introduced eight general rules for developing social features of Web sites such that the basic requirements for online community development are ensured. With the eight heuristic elements, the emphasis is on users' freedom to express themselves and manage their personal boundaries, on increasing users' awareness of other community members, on the possibility of creating personal networks, on enabling multiple ways to participate, on social rewarding, and on opportunities to personalise the content that is offered. When the participants were asked to rate how well the eight

social elements were presented in the service, the statements agreed with most were 'This service offers me new and interesting content' and 'I can express myself as I want to with this service', whereas 'I can get all the information I want about other users' received the lowest agreement rating. From the the results, it seems that the test users were most satisfied with the content that the service offered, how they were able to express themselves, and the sharing of content with others. In contrast, getting information from other users and joining in with social activities were considered the least successful features of the service. Furthermore, all the social aspects of the service received rather low scores from the users, which indicates that the state of the community did not evolve very well during the three-week test period. Findings from user interviews revealed that the participants had expected interaction with others and that the lack of social connection during the test period was reducing their overall satisfaction with the site. One solution offered by the participants for resolving the lack of social contacts was export their existing social networks from other social network services to the exercise diary site so that they could communicate and share content with people they already knew. This would be a useful idea for those situations in which community members have not created networks within the service and the site needs more content and interactions, which is especially common for a newly launched site. Another interesting finding from the interviews is that the opinions of test users were divided with respect to using social features of the exercise diary. There were clearly two user groups: those who wanted to use the site as a personal tool and those who found sharing of content with others important and motivating. The contemporary implementation of the Web site supported both personal and social uses, as it was also possible to use it only for personal tracking privately without sharing one's exercise details with others. Since it is very likely that large content-oriented sites have both types of users, it is recommendable that service providers make sure that both behavior patterns are supported.

This sub-study confirms that in the creation of online community services, technical accuracy is not enough to make a site successful. However, there do seem to be some minimal technical requirements for online communities, and, by using the heuristic evaluation method, service providers can detect and fix the most apparent sociability problems so that the software supports users' needs for social interaction and reciprocity. In order to attract users to visit frequently and commit to the online community, the site has to not only meet users' needs but also offer them something more valuable than usable technology. Even if the usability and interaction design of a Web site were to be perfect, at the end of the day, the success and community development are still up to the users. In light of previous research, being able to become part of the social structures of the site by making personal one-to-one connections and participating in one-to-many social networks seems to be especially

essential for becoming a community member and building tenure in the community (Nov, Naaman, & Ye, 2010). The participants in the sub-study perceived the user community to be valuable in many ways in their exercise activities – e.g., offering them inspiration, social networking, or peer support. Therefore, it can be concluded that social connection is important for a content-oriented site too. But since some important functions supporting joining the site's social structures were lacking (among them private messaging and a general discussion area), users were frustrated and social interaction or networking did not occur. All in all, the results described in Publication II indicate that the heuristic evaluation method alone appears to be a useful tool, as it identifies the most severe problems and the main factors that hinder social interaction and, consequently, online community formation.

4.3   Publication III: Trust

The third sub-study approaches the question of trust in online context. Lack of trust has usually been identified as one of the main problems of online interaction, alongside the anonymity and lack of non-verbal cues. Trusting in others is particularly hard online because it is more difficult to assess the potential for harm and the good will of other people; therefore, cues that can be drawn from the environment are essential for the establishment of trust (Friedman, Kahn, & Howe, 2000). Trust is particularly important in the context of e-commerce – the future of e-commerce has been seen to be dependent on trust (Wang & Emurian, 2005). Trust has also been viewed as important for sense of community development, and research has identified several user means of producing trust within an online community (Blanchard & Markus, 2002; 2004).

The aim of this study was to investigate via an online survey and user interviews how trust is experienced and formed between users of an online auction site and to identify the factors affecting the experience of trust. The object of study was popular Finnish online auction site Huuto.net, via which users can sell and buy products from each other. In order to complete their business together successfully, the transaction partners need to trust each other. Consequently, online auction sites have developed several mechanisms based on each user's reputation for evaluating users' trustworthiness. At the site of the study, there is a reputation system that enables users to rate their business partners and give additional written feedback after the transaction is completed. Accordingly, each individual user's score in the system displays the measurement of his or her trustworthiness as a transaction partner. The majority of research in the field of business has explored the trust consumers have in the relevant

business, while the focus in the study for Publication III is on trust in consumer-to-consumer context.

The findings reveal that the reputation system provided by the auction site was playing an important part in evaluation of others' reliability. However, there were some situations in which the system was not used how it was meant to be or was perceived as inadequate. A major problem was that the users felt that giving negative feedback is not customary so they avoided giving such a strong negative statement in situations involving what they considered to be minor offences. Because giving feedback was not mandatory, some users forgot to do so or expected the other party to give feedback first. Many participants also mentioned being afraid of revenge linked to giving negative feedback, and they preferred to give no feedback at all rather than take the risk of receiving negative feedback in response. On account of these issues, problems that had occurred in the transaction process often remained invisible in the system: they were not reported at all. As the reputation system is rooted in the assumption that both participants give honest feedback after each transaction, its credibility decreases when people either give inaccurate feedback or do not give feedback at all. Because the explicit system was not considered completely reliable, the users had adopted additional ways of finding information on a seller's trustworthiness. These 'more implicit' cues of trustworthiness were sought in the language and pictures used in the advertisements, the way the item-owner responded to questions and comments, and additional information on users gleaned from the discussion forum of the auction site. Because ability to find this implicit information is honed through experiences of transactions and evolves over time, these strategies were typical especially among more experienced users.

The results reveal that people interpret each other's trustworthiness in various ways, and the technology shapes their impressions by providing information about other users' actions. Therefore, the experience of trust can be improved through choices in interface design. As a concrete result, we made design recommendations aimed at facilitating trust particularly by means of each user's transaction history being more transparent and more diverse tools being offered for giving feedback and communicating in person with others. These suggestions are in line with the idea of 'social cue design' (Riegelsberger & Sasse, 2002; Wang & Emurian, 2005), which emphasises embedding social cues and social presence in the design by adding diverse communication media and thereby increasing the 'human presence' element of the Web site. In the words of Friedman, Kahn, and Howe (2000), 'people trust other people, not technology'.

Even though trust has been studied especially in the context of online shopping, similar findings have been reported from other Web sites as well. In the context of social network sites, research has pointed out that trust is inferred from several cues

and signals that individuals produce to communicate trust and identity for others. On SNSs, people's display of connections presents a set of signals to others, and these are interpreted in assessment of the credibility and reliability of information (Donath, 2007). In other words, when people know each other only superficially, a wider social context that reveals who people know and how they treat and are treated by others is an important source when one is assessing the trust of other people (see also Holland & Skinner 1987).

The findings from this sub-study indicate that, even though explicit reputation mechanisms are important for the assessment of others' trustworthiness, it is essential that the technological setting be rich enough to provide also more subtle cues, which may be more helpful in assessing how reliable other people are.

4.4　Publication IV: Instant access

In the past few years, one of the most noticeable changes in Internet use has been the adoption of mobile technology. The fourth sub-study investigates how the emergence of smartphones and tablet computers has influenced the use of the Internet – in particular, social media. The mobile Internet has led to the availability of quick Internet access almost anywhere and at any time. Consequently, a pattern of 'checking behaviour', brief usage sessions repeated over time, has proliferated among smartphone users, who frequently check the latest updates and happenings from social media by phone (Oulasvirta et al., 2012). The increased mobility has also accelerated a change in the cycle of creation and circulation of digital content: one remarkable change has been wrought simply by mobile cameras and their integration making instant taking and sharing of photographs easy. Pictures can be taken to be shared immediately.

In this study, the main focus is on characteristics of use of social media via a mobile device. The aim was to find out whether the mobility was bringing any additional value to the use of social media in comparison to the PC, and the study identified typical patterns in sharing and browsing of social-media content through mobile-phone applications. At the time of this study, carried out in late 2010, the number of smartphones was rapidly increasing and mobile Internet use was becoming more commonplace. However, there was a lack of accompanying research investigating how mobility affects social-media use. Previous studies had identified characteristics typical of mobile Internet use that might influence how social media are used in the mobile domain. For example, while a mobile phone usually belongs to a specific individual, a PC is often shared with others. For this reason, the mobile phone is generally considered a more personal medium (Kaikkonen, 2009). In addition, a mobile Internet

connection is almost always available and enables quick access almost anywhere, at any time. This results in brief usage sessions becoming a large part of smartphone use: it has been found that the average session with a mobile application lasts less than a minute (Böhmer et al., 2011) and that habitual mobile Internet use is concentrated in 'empty moments', when there is very little else to do (Oulasvirta et al., 2012).

The results of user interviews and detailed social-media usage diaries reveal that, as expected, mobile social-media use consists mainly of brief sessions: the majority of the reported sessions (60%) lasted only one to five minutes. Social media were used mostly in situations wherein a fixed connection allowing Web access was not accessible, such as when people were using public transit, at school, or in bed going to sleep or waking up. Hence, the findings indicate that people at the time of the study still preferred fixed Internet connections over mobile ones when they wanted to browse the Internet more extensively. However, mobility clearly adds value in their use of social media: it enables instant reaction and participation and being up to date with what is going on in one's online social networks. By providing people with a continuous connection with their social-media networks, the mobile phone has intensified online presence and availability, and it has made the use of social media even more pervasive and intense. In the interviews, the participants mentioned feeling a need to read others' social-media updates as soon as possible in order to keep track of what was going on in their networks. Especially with Facebook, having excessively long breaks from social media might cause one to miss out on something important, and participants described some situations wherein they either had failed to notice an important update or would have been left out of something important if they had not been actively checking the latest happenings in their social networks.

Interestingly, the number of occasions of browsing content (97) was more than three times greater than the number of sessions involving content creation (23), which indicates that mobile social-media use is primarily about reading and browsing content, and less about content's creation and sharing. Whilst the participants owned rather advanced smartphones, mobile Internet use was still experienced as more difficult than PC-based use, and participants reported facing many usability problems. At the time of the study, mobile phone's user-interfaces lacked many of the features needed for a full Web experience, and the browsing experience remained narrower than that with a PC. Consequently, mobile Internet use was also perceived as less engaging than PC-based browsing: some tasks, such as writing lengthy passages of text, viewing or adding photographs and videos, or reading long articles, were experienced as too time-consuming and tedious to perform via mobile phone. For this reason, content production was often handled via a fixed-line Internet connection.

Even though mobile Internet use was less common at the time of the study than today, the findings show that social media had already become an integral part of

people's everyday life. Social media were used via a mobile device in a variety of situations in day-to-day life, and, unlike in the study by Oulasvirta et al. (2012), that use was not associated with a particular context. The most important motivation for using social media via a mobile device seemed to be the need for 'perpetual contact' – i.e., seeing the latest updates and what friends have been up to (Joinson, 2008). Social-media application design should support meeting of this need for being constantly aware of what is going on by providing the latest news first and offering the content in condensed form so that users can take a glance and return later if there is something interesting. Also, being able to save or bookmark interesting content in order to find it later with ease would be useful for people who follow this common social-media usage pattern.

The main contribution of Publication IV is in showing that mobile devices – more specifically, the instant access they provide – seem to increase social-media use in general and in this way intensify a person's presence in his or her social networks. In particular, frequent social-media use is associated with increased awareness of others' actions in social networks. In the qualitative user interviews, also the temporal aspects of social-media usage were clearly highlighted, and people stated that content shared via social media, such as photos, events, and news, should be perused at the earliest opportunity. The majority of social-media content was considered to be the most interesting immediately after its sharing.

4.5   Publication V: Influence of culture

As the most popular Web sites are global and attract users from various national and cultural backgrounds, scholars have recently brought up the issue of understanding the various cultural contexts from which Internet users approach their experience. Publication V investigates the influence of users' cultural background in relation to online social networking, content-sharing, and privacy.

The object of the study was the same software intended for tracking exercise that was investigated in Publication II. However, at the time of the more recent study, the software had been available for public use worldwide for more than four months and there were 11 language versions of the Web site. The participants in this study were from three nationalities – US, German, and Spanish – and they were compared for investigation of differences in their relations to social networking and collaboration on the site. The theoretical framework for this study, which lies in Hofstede's cultural dimensions theory (Hofstede, 1980), has been the most often used theory in studies exploring differences between national cultures. Hofstede's theory outlines five cultural dimensions on which national cultures can be ranked, according to how 'high' or 'low'

they score for the dimension in question. Cultures are characterised by their **power distance**, **individualism vs. collectivism**, **level of uncertainty avoidance**, **masculinity vs. femininity**, and **amount of long-term orientation**. Research into social network sites' use has focused mostly on the individualism–collectivism dimension. According to Hofstede, individualism and collectivism are polar opposites in how people define their relationships with others. Members of individualistic cultures prefer loosely knit social frameworks and tend to see themselves as self-reliant. Therefore, competition is encouraged and personal achievement is valued. Members of collectivist cultures, on the other hand, see themselves as interdependent with each other, and they give priority to group achievement and harmony instead of personal success (Hofstede, 1980).

Previous research has identified some cultural differences in social network site use between individualistic and collectivist cultures. In the latter, people have been found to invest more in offline relationships and spend less time online (Jackson & Wang, 2013). Collectivists and individualists differ not in the amount of personal information they share but, instead, in what kind of content is provided for the community: collectivist users provide content that benefits the community by giving advice whereas individualistic users express their opinions as individuals rather more than they share advice and information (Dou, 2011). In addition, people representing more individualistic cultures have larger networks of friends on SNSs, a larger proportion of friends they have not met face to face, and more activeness in expanding their networks and promoting themselves on SNSs than do those from collectivist cultures, but their networks include more weak-tie-type relationships whereas people from collectivist cultures have smaller but denser networks, with higher ratio of socially close strong ties (Choi et al., 2011; Kim, Sohn, & Choi, 2011; Rosen, Stefanone, & Lackaff, 2010). In summary of the main findings from previous studies, it can be said that SNS users from more individualistic cultures are better connected and more active in self-promotion, whereas users from collectivist cultures have fewer contacts but ones that are deeper and more long-lasting.

The data for this study were collected via an online survey. Three hypotheses were set: firstly, we expected the users from the most individualistic culture (the US) to use the service to promote their personal goals more than the collectivist Germans and the Spanish dis; secondly, we expected the Spanish to be more interested in reciprocity, socializing, and forming friendships than the Americans and the Germans were; and, thirdly, we expected the Americans, representing a culture with a high tolerance for uncertainty, to be the least concerned about issues related to privacy and sharing. The findings confirm that cultural background seems to have an effect on how users perceive community features of the Web site. However, only the second hypothesis was supported by the data; in accordance with Hofstede's theory, the Spanish, the

most collectivist culture in the comparison, were clearly the most interested in using the site for social networking and collaborating. The most noteworthy differences were detected between the Germans and the Spanish: the Spanish reported having found new contacts and wished to use the site for maintaining existing contacts and for receiving feedback and guidance from others, whereas the Germans agreed significantly less with these sentiments. The Spanish were also significantly more interested in content posted by others and reported having feelings of belonging to the community represented by the site, unlike the Germans.

Surprisingly, the most individualistic culture in the comparison, the US, did not produce the highest scores for agreement with statements regarding goal-achievement, competing, or self-promotion. Throughout the set of statements, the ratings given by the Americans were close to those from the Spanish, and the Germans scored lowest, which was the expected position of the Americans. This indicates that not all of the differences can be explained by each culture's position on the individualism–collectivism continuum. One possible explanation for the 'individualistic' Americans using the service similarly to the 'collectivist' Spanish may be that their interest in using the social features was driven by individualistic and instrumental motivations instead of a desire to benefit others. However, the findings show that Hofstede's cultural theory, particularly the individualism–collectivism and uncertainty avoidance dimensions considered in this study, does not fully explain the differences seen. The findings are only partly supported by the theory.

In its overall results, the survey revealed that most users wanted to use the service as a tool for personal documentation and following their own level of physical activity. They were less interested in social aspects. In general, social interaction and sharing on an SNS were the least interesting features for the respondents and there was more interest in seeing others' training activity and results. Even though the majority of users were not particularly interested in community elements and did not perceive the Web site as an online community, there were also interactive users who were actively pursuing new connections and collaboration. They felt as if they belonged to a community.

The main contribution of Publication V was in revealing that users' cultural background does seem to have an influence on the use of online community services and social network sites. This finding has implications for design of systems that are intended for a global user base, as awareness of cultural differences is important when one is designing globally distributed online services. Since research on social network site use has so far focused largely on US users, cross-cultural comparisons are particularly important for the generalisability of results and, accordingly, the development of theory. This study also indicates that there can be great variety in

orientations to social interaction and networking with others, even among users of the same Web site.

4.6 Publication VI: User participation

Publication VI reviews previous research into online community participation for purposes of ascertaining how user participation has been viewed and approached through the history of online community studies. Furthermore, an important aim of this study was to identify the most significant gaps in the body of work reviewed, and discuss their implications for future work. In total, 83 empirical research articles published in the years 2002–2014 were selected for the review. During the 12 years that the articles cover, technology of online communities has substantially changed in the evolution from simple text-based forums to sites with more complex structures of multimedia content and personal networks. However, the review indicates that there is still no clear definition for online communities. The concept is used mostly as a general one referring to various kinds of software that enables users to interact or collaborate with each other in some manner.

User participation has been one of the central research themes in the field. In particular, scholars have been interested in finding out how to encourage users to participate in creating content or helping other members voluntarily. The reason for the interest lies in online communities being highly dependent on their members as visitors and content creators. Results of this review show that user participation usually has been approached in terms of its volume, with an assumption that the most active users are also the most beneficial for the online community. However, it is important to note that a high-volume contribution of content is not necessarily an indication of interactivity and that users can be very active in an asocial manner. In contrast to the commonly applied active−passive dichotomy, there is more variety in user activity. For example, in their study of YouTubers, Shoham, Arora, and Al-Busaidi (2013) identified three forms of user participation: that of passive users, who view the content as similar to television programming; active users, who post and comment on content actively without addressing their comments to anyone in particular; and interactive users, who target their comments to specific others in order to create and maintain relationships. Instead of the amount of activity in posting of content, more attention should be paid to the quality of the activity. The YouTube study's write-up points out that the interactive users actively form subgroups and establish connections with others and that, therefore, they have an important role in formation of online community.

Another problem with the simple active−passive dichotomy is that research has focused primarily on the active minority of users who are the most visible members.

Passive users, those who only read and do not contribute by posting or only visit the site briefly, have often remained invisible, and they are viewed mainly as potential active members whose 'under-contribution' has been understood as a problem that should be solved. However, there is evidence that those who participate by reading have an important role in the community and that they may even be more community-oriented than those who post actively. For instance, findings from a study of a newspaper's online discussion forum reveal that participating by reading messages may actually lead to closer attachment to the group, whereas production of content is driven by expected social and personal integrative benefits, such as enhancing one's reputation (Tonteri et al., 2011). Therefore, reading content produced by others should be considered an equally important form of participation.

Experienced sense of community among members has often been seen as a desirable outcome for any online community service. In light of the studies reviewed, it is relevant to ask whether the success of an online community in terms of emergence of community feelings brings the provider any added value. Some studies have suggested that the interests of community members and providers may sometimes be in conflict and that communities begin evolving at the point when users start to pay more attention to each other than to the actual content on the site (Gazan, 2009; Lindholm, Kaptein, & Parvinen, 2012). Therefore, in certain cases, community formation can even be an undesired outcome for some. As Lindholm, Kaptein, and Parvinen (2012) argue on the basis of their findings from an online gaming site, purely from the business standpoint, encouraging active consumers to become more active community members may not be wise, because only a few individuals are active in both spheres.

In conclusion, the findings from Publication VI point out that, so far, the majority of empirical online community research has been industrially driven and, consequently, users have been approached from an instrumental viewpoint. In other words, research has viewed users mainly through the value they add to the online community platform (see also Bechmann & Lomborg, 2012). The less active users have often remained invisible or even been viewed as less important for the community. The findings also reveal that, while the majority of the studies classify users as either active or passive, more nuance is needed in the analysis of online community user participation: research should pay more attention to the influence that members' activities have on other members and on the community as a whole.

4.7   Summary of key findings

In the six sub-studies performed in the dissertation project, I explored online user activity in the context of various technological settings. The central themes of this work are motivations for content-sharing, applicability of the heuristic evaluation method in online community design, characteristics of mobile use of social media, formation of trust in the online context, influence of culture on online sociability, and conceptualisations of user participation in previous online community studies. Together, these sub-studies constitute an attempt to draw a picture of the typical characteristics of online sociability in the context of modern Web sites. I organise the present summary of the main findings in line with the three main research questions addressed in this dissertation.

RQ1: What motivates users to participate in and create content for online community services?

Findings reported in publications II and V confirm that users, even of the same site, may differ greatly in their motivations for engaging with online community services. Some users are driven by interest in content on the Web site, and their motivation is, accordingly, informational or utilitarian, whereas social connection with other users is the main reason for some others visiting the site (publications I and V). Motivations for participation are known to be influenced by many individual traits of users, such as their personality, values, or cultural background, along with their current state of membership and their connectedness with others (publications V and VI). In Publication I, the focus is on the active users of online photo-sharing service Flickr, and the findings reveal that social motivations are essential to active participation and content-sharing. The feedback received from others was considered to be the most important reward for participation. The service studied for Publication II, an online exercise diary site, was still lacking some important social features, so participants were not able to interact with others in the way they had expected, with one result being decreased overall satisfaction with the site. Also the interviews revealed that users wished for more social interaction, and they suggested improvements in the service such as adding the possibility of inviting friends or importing their existing Facebook connections to the service in order to use it in a more interactive manner (Publication II). This indicates that even those who are not particularly community-oriented may have some interest in using social features and seeing content created by others, especially in sharing content with people they already know. If they are given the proper tools, some online-community-style activity may appear over time. The review

of empirical online community research (Publication VI) shows that user motivations are not static; rather, they are likely to change over time and with experience of use. Usually, when people become more involved with a community, their orientation changes from seeker of information to provider of information, and their focus shifts from the topical content to other people.

RQ2: What are the typical practices in forming and maintaining online communities?

My results show that joining the social structures of the site by participating in interest groups and creating one-to-one friendships is important in the creation of online communities (publications I and II). Especially on a social network site with a massive quantity of users and content, an individual user readily remains invisible and goes without attention unless he or she establishes relationships and connections with other users. Findings detailed in Publication I indicate that, in order to get comments from others, one has to comment actively on the content posted by others. For there to be continuous interaction with others, some reciprocity is required. It seems that those users who are more community-oriented (i.e., who accord greater value to the communal aspects of the site) are also more actively looking for connections with others and are more interested in the content posted by others, whereas those who are motivated more from the perspective of the individual use the site in a more personal way (Publication V). Among those who are socially more interactive and better connected, the site is more often experienced as an online community (publications I, V, and VI). The findings show that continuous presence in the social networks and awareness of what is going on are an important part of online community services' use: with the emergence of social network sites that have a constantly updated stream of content and mobile technology that allows us instant access to our online networks almost everywhere, the connectivity has dramatically increased (Publication IV).

The services investigated in the various empirical sub-studies were at different stages in online community development and hence not directly comparable. The service considered in Publication I was already established, and users had been able to form social networks and relationships for several years. Many interviews therefore reported having regular contacts with whom they chatted almost daily and whose activities they followed closely via the site. Publication II describes a very different situation, of a service that was in the prototype stage and still suffered from several technical and usability problems. In addition, the test period was arranged by the research group and therefore artificial. The results showed that there was no community experience and that new connections were not being made between test users. The most important reason for the lack of sociability identified was that the

users had to start the community from scratch yet the test users were frustrated by the lack of content and suitable features. Even though some improvements were made in the user interface during the test period, users' motivation for usage declined toward the end of the period. The results reported in Publication II thus indicate that the lack of pre-existing social networks and content, coupled with the user interface not supporting enough sociability, directed their use toward using the service for personal documentation. For Publication V, the same Web site was studied less than a year after the test period, and the problems mentioned by the test users had disappeared. At that point, with the service having already been running for several months, there was enough content, users were able to create their own networks, and experience of belonging to the community could be detected. Publication V also points out that the same site can be experienced very differently by its users: some of them experienced the case site as a community – or at least saw the potential for it to become one – and others perceived it as a personal diary for tracking exercise, and both of these roles were supported by the user interface. The differing interest in social interaction was explained by users' national background and the associated differences in cultural orientation to communal activity.

Publication III presents a study of quite a different service, an online auction site. With its software, it fits the definition applied for an online community, but, since online transaction sites are understood mainly as places for business, they have usually not been investigated from the perspective of community. Nonetheless, selling and buying in an online auction involves social interaction, often continuous, between the consumers, and for this reason it was interesting to study the sociability aspect. Even though community feelings and behaviours were not actually measured, or even expected, qualitative research revealed that some regular users tended to form continuous business relationships with people they perceived as trustworthy. Especially within some niche groups, such as collectors, people seemed to create social ties with others and extend their customer relationship to discussion forums through which they could interact within the field of their common interests.

RQ3: How can online communities be supported and facilitated?

Publication II showed that there clearly are certain minimum criteria for online communities: if some basic tools for both one-to-many and one-to-one interactions are lacking, people soon lose interest in the site and leave it. As is mentioned in Publication II, one important contributor to the sense of community is awareness of other members and their presence on the site. This could be supported with design decisions by such means as showing the amount of activity, giving a summary of the latest actions, and showing users' visits to the site. For avoiding the feeling of being

alone while one is on the site, a concrete way of seeing what other users do and when they are online is important. Adding visibility and awareness of each other's actions is particularly important with regard to those users who participate by reading, since they have an important role as audience members and, hence, should be made more visible to others (Publication VI).

In Publication III, the focus is on how others' trustworthiness is perceived and facilitated in the context of online transactions. Trust is particularly important in the business context, which involves money, but it is also needed in the context of 'purely social' sites in the making of person-to-person connections and especially in situations wherein people are expected to engage in self-disclosure. The findings in Publication III indicate that trust in other users is fostered by creating a site rich in social cues. In practice, this means that people evaluate each other's trustworthiness by investigating others' history and connections on the site; therefore, each user's activities and social networks should be made visible.

One major technological change that has influenced online sociability in recent years is the emergence of smartphones, as they have provided users with instant access to their social networks, independent of location. Publication IV explores how the smartphone affects the use of social media in general. The results show that for many people availability has become a norm, as online social networks require constant presence if one is to stay updated on what is going on and not miss anything interesting. It seems that current mobile technologies have an important function in maintaining online communities, for they have intensified the use and membership of online social networks by enabling more frequent visits and supporting 'perpetual contact' with others. With a smartphone as a tool, we can be instantly connected to others. The intensified social networking is reflected also in people's expectations of sharing and getting access to content as soon as possible.

Publication VI introduces research into why people lose interest in online communities and points out that most often the reason for abandoning the site or reducing one's participation has been lack of interaction or absence of interesting people rather than technical difficulties or usability problems. Accordingly, a large number of contacts and feedback from others are found to be important for tenure in the community. Therefore, instead of proposing general design guidelines that cover all the various types of online community services, I conclude that supporting users' various social processes of circulating, tailoring, and communicating about the digital content is the most important function of any online community service (see also Section 2.4).

5 Discussion

5.1 The main contribution

The overall aim with this dissertation is to explore online sociability, especially users' social practices for building and maintaining online communities. By providing a unique combination of empirical data, this dissertation has approached online sociability in a holistic way, introducing several important topics to be considered in study of the phenomenon. The empirical findings show that community-like behaviours and feelings can occur in various online settings. These include sites for which the developers' main goal was not the formation of user community, as they were originally intended for content consumption rather than social interaction. Feelings of belonging were identified among users of large-scale social network sites such as an online photo-sharing service (Publication I) or exercise diary site (publications II and V). Even some online auction users communicated beyond the transactions, and members of the associated subgroups tended to favour each other as transaction partners (Publication III).

The transient nature of online communities has often been viewed as the main challenge to their sustainability. Consequently, a large amount of effort has been devoted to finding ways to retain volatile users. The findings reported in Publication IV confirm that continuous presence is an important part of online social networking and that smartphones have an important function in people's social-media use, as they allow more frequent access to social network sites and, thereby, creation of 'perpetual contact'. Furthermore, Publication II reveals the vulnerability of online communities by pointing out how an online community that lacks specific tools for social interaction remains undeveloped. In online groups based on shared interests and goals, feelings of similarity tend to be emphasised, which facilitates the development into a community. However, this connection can be easily lost if the common interest fades away or the technology does not support social interaction. Overall, communities of the late modern era have been described as temporary, voluntary, and non-obligating social organisations, and in an online context leaving is especially easy, since social connections can be terminated with a click of a button. Research agrees that ongoing, continuous interaction forms the foundation for the creation of any physical or online community as it brings members together, allowing them to create new social ties and

strengthen the existing ones (e.g., Rotman & Wu, 2014). Continuous interaction and social presence are particularly important for a-spatial and disembedded online contexts if social networks are to be maintained, and thereby renewed, revalued, and reconstructed, to overcome challenges imposed by physical absence (Miller, 2011, p. 202).

This study has been aimed at broadening the understanding of online participation. As the literature review in Publication VI underscores, the majority of research on online communities has focused on activating members in order to create more traffic on the site in question. However, user participation is a matter not just of the amount of user activity but also of the users' various orientations with regard to interest and involvement in communal activity. In particular, Publication V shows how users can have very different priorities and motivations in their social networking: some are more community-oriented and tend to form social ties actively, while others are not interested in the related functions. This finding is in line with Wellman's results obtained with early online communities: there are different ways of using the Internet, and those who are more community-oriented offline tend to be more social on the Internet too (Wellman et al., 2001; see also Miller, 2011, p. 196). Publication I illustrates how important structural embeddedness, in terms of actively forming networks with others and joining social structures of the site, is for benefiting from the site. Those who were more interactive and better networked also receive more feedback and recognition from others. Previous research has identified a type of community-oriented, interactive user who directs comments to others and in this can be differentiated from those who mostly just engage with content without interacting with others or who comment on content without targeting their comments at anyone specific (Nov, Naaman, & Ye, 2010; Shoham, Arora, & Al-Busaidi, 2013). Furthermore, it has been found that if one wishes to receive benefits, such as social support, from social-network contacts on Facebook, it is important to engage directly with them (Burke & Kraut, 2013). Burke and Kraut add that, because on SNSs users need to keep up with many ties at once, explicit communication is the only way to notify someone that you have seen the content he or she has posted and that it matters to you.

Most of the previous studies have focused on a dichotomy between active and passive when describing user participation, but Publication VI points out that there are more user roles in terms of activity, and each role might be important for the community. I argue that the most important thing to consider for an online community's development is enabling the users to engage in their own networking and socialising practices with people they are interested in. If users are given the possibility of community-building through provision of adequate tools and information about other members, those who are community-oriented are likely to join the social

structures of the site actively. Therefore, instead of pondering whether a site is an online community or not, it may be more useful to talk about users' different orientations toward communal and social aspects of the relevant site. The findings from this study point out that the same site can be experienced as a community or just as a place to store and share content (Publication V). Hence, it is not the technical setting itself that makes a community. Especially for large content-oriented Web sites, the Web design should support diverse ways of using the site, either in a socially oriented or in a broadcast-type manner.

This study has provided empirical findings on several types of online community services, some of which were previously rather unexplored from the sense-of-community viewpoint. Thus, this study contributes to a growing body of research on online communities. Today's online communities are shaped by various technologies, and their size may range from a few dozen members to hundreds of thousands. In terms of structure, today's online communities seem to be vague and fluid, and they can be understood as a complex matrix of individual connections that are not necessarily dyadic. Contemporary online sociability typically is composed of small units, often individual connections with other individual users, which are also the origin of experienced sense of community (see also Rotman, Golbeck, & Preece, 2009). Proceeding from both a theoretical review and empirical findings, I conclude that place-bound closely knit communities are no longer the only source of community experience. In addition to these types of communities, the Internet has given room for various voluntary and temporary community-like groupings. Previous research has reported on many similarities between physical and online communities, but there are also differences, caused by the physical distance and mediating technology. This mismatch between empirical findings on online sociability and the idea of community has sparked debate among scholars. I argue that close comparisons between these two domains are not fruitful. With this dissertation, I have worked on the concept of community for a better match to the social life seen in online networks. Accordingly, this work has contributed to the development of theory in this field and aided in contextualising the phenomenon in today's technological landscape. To allow better understanding of today's online communities, scholars need to capture those communities' scattered, networked, and fluid characteristics in their research.

5.2   Practical implications

Especially in the HCI field, online community research has given plenty of attention to technical platforms and making the right design choices. This study confirms that when the minimal criteria have been met, individual technical features or structures are

not critical for community-building. Publication II approached usability aspects of prototype-phase software and revealed many deficiencies in the technical platform that was being tested. Among the most important shortcomings mentioned was the lack of social presence, which resulted in feelings of being alone on the site, without any idea of when others had visited it and what they had done. This problem can be avoided if the site design provides the latest information on community activity and supports awareness of the other users by making members' presence and current activity visible. Publication II also confirms that recapturing those users who have abandoned the site out of frustration may be impossible later on. Lack of tools for social interaction was found to reduce users' interest in using the site especially clearly, which confirms that when a new site is being launched for users, there are certain basic conditions and means of social interaction, such as facilities for private and one-to-many discussions, that need to be provided. Publication III also highlighted the importance of adequate social cues. Seeing what other users have previously done in the service, their social contacts, and discussions with others was an important prerequisite for trust in the context of an online transaction site. All of these social cues are important signals in the evaluation of another person's reliability and character, and providing them is important for any Web site that is aimed at facilitating trust and, by implication, social ties between users.

One major technology-centred development introduced in this dissertation is the role that smartphones play in the Internet domain, particularly in social-media use. Publication IV illustrates how smartphones have made the Internet more pervasive in everyday life and in these ways intensified social-media usage. In the findings, the need to be aware of the latest activities in one's social networks was highlighted. Awareness includes not only awareness of others' actions but also being able to react and participate in one's social networks in real time. The social awareness streams provided by most SNS applications serve the latest news in compressed form, and the ease of checking the latest news on an SNS is triggering frequent usage. Because the mobile usage pattern consists of brief and frequently recurring visits in a variety of physical contexts, users appreciated quick and easy access to the latest content. There were some limitations with regard to suitability of content for the mobile device. For example, people preferred to view long text items or high-quality pictures on a large screen. Therefore, mobile SNS applications should enable users to have a quick glance at the content wherever they are, then enjoy it when one has access from a PC or similar device.

Because many of today's online communities are associated with large-scale social network sites, their technical structure has been created not for tightly bound groups but rather more for networks constructed by individual members. In terms of their structure, social network sites tend to be fairly individualistic, as they give priority to

the formation of individual relationships. Because SNSs do not necessarily bring large groups together, they do not create a cohesive community that is open to all users. For instance, on YouTube, users are able to follow channels and broadcasts of individual users while a community-wide gathering place is lacking (Rotman, Golbeck, & Preece, 2009). Because with SNSs people can keep tabs on many ties at once and these ties are not always mutual, members may have very different conceptions of community. According to Rotman and colleagues, lack of a community-wide meeting place does not prevent community experience but may limit and narrow it substantially. Hence, one major challenge of design is how to bring people together in order to enable interaction with the community as a whole, instead of just between individual users.

The theoretical and empirical findings reported upon in this work point out that even though online communities are transient by nature, they can be experienced intensively while they exist. Online community providers should therefore enhance the community experience by giving users diverse tools for social interaction and social networking, in addition to an online environment with rich social cues from other users. In order to afford creation of an online community, the site has to enable and encourage users to engage in their social practices of community-building. However, community providers also need to accept that online communities are in a constant state of transformation and renewal, and that leaving is a part of membership, as people's interests and social ties change over time.

5.3 Suggestions for future research

Even though research on online communities has been extensive, there still are many issues to explore, because their technology is constantly evolving. During the dissertation project, new types of online community services emerged and old ones were discontinued or redesigned. Future research on online community membership should approach the topic from a longitudinal perspective in order to gain a life-cycle view of how long-lasting online communities are and how often they are relocated when the technical platform changes or is withdrawn. One major methodological challenge then is how to detect online communities in a longitudinal study, precisely **because** they can take on new forms and move across platform.

One oft-mentioned limitation in online community and social network site studies has been a focus on Western populations. However, according to Elaine J. Yuan (2013), all media, including the Internet, are fundamentally integrated into social, political, economic, and cultural processes. Cultural background, particularly in relation to the idea of community, is known to differ between Western and Eastern cultures (Yuan, 2013). It is important to keep in mind that the concept of community that has

been discussed here has its roots in Western sociology and history. Understanding non-Western concepts of community would require more analyses of historical and religious roots in other cultures. In this dissertation, I have acknowledged the need to investigate how online communities are used globally. Individual Web sites can also occasion interesting mixing of people from varied backgrounds, which results in various and unique online sub-cultures. The findings described in Publication V confirm that cultural variation can be detected even within a rather homogenous group of users of one particular online service between nationalities based in three Western countries. Given that most Web sites are global, it is extremely important to continue cross-cultural research into Internet use. For development of appropriate theory, the impact of cultural variation should be taken into account.

This dissertation, particularly the contribution of Publication VI, confirms that online community membership is a topic much broader than simple categorisation by amount of visible activity. More emphasis should be placed on studying how behaviours of individual members affect the community as a whole. Within this work I have explored modern, structurally versatile online services that enable many distinct functions and, hence, also various user roles. I suggest that researchers should continue investigating various types of Web sites and how communities can emerge in their context. Plenty of research has been conducted with more traditional online groups that have clear boundaries, such as discussion boards, but as sites with new affordances emerge, new and interesting ways of building and maintaining online communities may emerge. We need further research if we are to grasp the variety of online community services and thereby be able to develop generalised online community theories.

5.4   Limitations of the study

The main limitation of this study lies in the single-case-study research design. There may always be limitations to the generalisability of results when one particular case study is used for illustrative purposes. According to Yin (2009, pp. 49–50), a single-case-study design is potentially vulnerable especially if it turns out that the case is not what it was thought to be and the case therefore not representative. However, it can also be questioned whether the aim in case-study research should be generation of rich knowledge of the given phenomenon or less rich but generalisable knowledge of that phenomenon (Moriceau, 2010). This work has introduced a variety of cases that illustrate the multiple forms of current online services instead of studying the most typical and well-known examples of online communities.

In the past, single-case studies have been prevalent in online community research (Gallagher & Savage, 2013). The single-case studies presented in this dissertation can

be referred to as 'snapshots' in the sense that they can only capture a certain type of online community at a specific point in its development. As social constructions, online communities are fluid and open to change, since people can leave when they want to while, at the same time, new people join the community. Hence, a longitudinal study would have brought out the community development better, especially the processes that are visible only over time. Also, the constantly changing technical landscape of online community services poses challenges for research: as the technology of the sites evolves, it may have its own effects on social interaction between users, which is shaped in part by the technology. Comparing a given service across periods of time would probably show differences stemming from the changes in technological affordances over time: features that we are studying now may simply disappear next year; therefore, two studies of a particular site may not be 'contradictory' but actually examine different socio-technical contexts (Ellison & boyd, 2013). Within the work for this dissertation, one of the services was investigated twice, and, as the findings attest, a great difference can be seen between the results of the two studies, conducted at different stages in development of the same Web site.

Another general limitation arises from research data collected via interviews and surveys – the results are based mostly on users' self-reporting. The participants were given the role of experts in describing their online behaviour and the motivations behind it. However, there are certain methodological issues involved in self-report material, which is often subject to response bias stemming from people's tendency to give an idealised image of their behaviour. In order to present themselves in a socially desirable manner, individuals are likely to inflate reports of socially desirable actions or ideas and deflate those of undesirable ones (Paulhus, 1991). To complement self-report data, system data from actual use would have been useful and aided in understanding the structural aspects of social networks.

There may also be some bias caused by the sampling method and sample size, and therefore in the generalisability of the results, particularly in the qualitative studies. In most cases, participants were recruited by means of an invitation shown on Web sites or sent to e-mail lists. Consequently, those who are interested in the research topic were most eager to participate and respond to the research invitations, and they do not necessarily represent the average user so much as a desired user of the service studied. Because we wanted to study active users who were already familiar with the technology studied and using it regularly – some of them could even be referred to as 'lead users' – and set our criteria accordingly, the findings cannot be generalised to the whole population. Had we chosen participants from more diverse backgrounds, the results might have pinpointed many more problems affecting usage. However, we did not want the research to focus on usability issues or technical problems; instead, the goal was to pursue understanding of the needs for service use and social interaction.

Because of this choice, people who are not interested in technology or do not use online community services were not addressed in this dissertation, so the study cannot encompass their opinions and experiences.

As for the demographic distribution of the participants, they represent mostly younger, well-educated adults. Different results might have been obtained through inclusion of greater demographic variety in the sample. One major problem acknowledged in research into online communities is that it has focused mostly on the homogenous group of technologically savvy university students. This is partly explained by the origin of many popular Web sites, especially Facebook, lying in American universities. In the qualitative studies conducted for the dissertation project, practical considerations resulted in selection of users from the geographically immediate area – most of the interviewees were recruited from locations near Tampere. However, the use of multiple sources of evidence within this work brings more validity and reliability to the results. Also, even though in some individual case studies the sample size may have remained small, the total number of people studied within this work is 665. This includes two surveys (N=258 and N=334), along with a survey conducted internationally, which add to the generalisability of this work.

As online community services continuously evolve, conducting research on them can be described as aiming at a moving target. The present study has provided understanding of how online communities are formed in social processes by users, and it identifies several important questions to be considered in the research field. The empirical data present illustrative examples of the phenomenon studied, through provision of viewpoints and descriptions of various forms of online sociability in several technical settings.

6 Conclusion

This dissertation contributes to the understanding of online community formation and maintenance in the context of today's various technological settings. The findings from the empirical studies and theoretical review show that online communities can emerge in various online contexts when there is a possibility of regular ongoing interactions between people. The findings point out that the ability to form personal ties by joining social structures of the site is especially important for communal experience, and if this is not adequately implemented by the platform, online community development may be hindered.

Contrary to the suspicions voiced by some early scholars, the results show that modern technology is indeed capable of nurturing meaningful relationships, as communities exist and flourish in the online world, current technology having even facilitated their emergence. A large part of today's online sociability takes place on large-scale social network sites that focus on production and sharing of content and whose users are geographically dispersed. The findings show that among the users of a site, there may be very different orientations to communal elements; consequently, service members' experience of community varies. Instead of discussing whether a particular site is an online community or not, research should recognise that there are users with different orientations to social networking and use of community features of the site in question. Those users who are more community-oriented are also more likely to create social ties actively and network with others, and consequently to experience the site as a community. This study also recognises that, instead of users following a passive–active split, there is far greater variety in ways of participating in and belonging to an online community.

Online communities are formed in social interaction and shaped by various technical, social, and (especially) user-related factors. Online communities tend to be transient and based on weak-tie-type relationships. Therefore, they usually emerge and fade away quickly. However, they can be experienced strongly by their members, and great importance can be accorded to interaction and group membership in the moments of their existence.

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Strategies for gaining visibility on Flickr

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Abstract

Social network sites (SNSs) have become an important part of daily communication practices and media use for millions of people. SNSs enable people to interact with content such as photographs or videos in a new way, to create user profiles and communicate with others through these online presentations of self. This study examines social practices among the group of active users of the popular online photo-sharing service Flickr. The results of nine qualitative user interviews show that there is ambivalence in people's relation to the community of Flickr; the users distribute their photographs with expectations of getting attention and feedback from others, but they have to be socially active and network with others in order to become noticed at all. This study aims to provide insight into the strategies for gaining visibility for one's personal content on Flickr, and to contribute to the theory of computer-mediated communication.

1. Introduction

In recent years, social network sites and web services that lean on user-generated content, often referred to as social media or Web 2.0, have attracted users of the internet. Social media has changed the role of media users from being merely passive viewers to being active co-producers. As the user-generated content adds value to social media services, the active contributors play an important role in the success of many internet sites.

Development of the communication technology has affected people's social interaction and communication practices in many ways. Contrary to some prior predictions about technology-mediated communication having an impoverishing effect on social interaction [22], it seems that the internet has rather provided users with higher social connectivity and group participation through online social network sites and communities [20]. Previous research about using SNSs indicates that people are using them rather for connecting with people they already know than for meeting new people; especially Facebook is most often used for maintaining existing relationships and seeing how friends are doing [14]

This study focuses on social behavior on the online photo-sharing service Flickr [9], and aims to clarify the role of social interaction in a service that was originally intended for the distribution of photographs. Furthermore, this study describes the social interaction practices enabled by the structure of Flickr, and how the content, the photographs and users' comments on them, can facilitate social interaction between users. The findings can be utilized in the design of social internet sites.

Since social activity is an essential part of SNSs, this study aims to shed light on the questions concerning motivation for participating actively and sharing content in online communities. Understanding the factors behind user motivation and active contribution is important, particularly for designers and administrators of social internet services, as committed and active users are the key to an attractive and socially active website [4,12].

This qualitative study with nine interviews of active users presents user motivations for participating in and contributing to Flickr, and sheds light on social interaction and networking practices on Flickr by describing a subgroup of active users.

2. Related work

Flickr was launched in 2004, and it has become a popular digital photo-sharing website with millions of users worldwide. Boyd and Ellison [6] define social network sites as web-based services that allow users to construct a profile, articulate friend lists, and view and traverse friend lists made by them and others within the system. According to this definition, Flickr presents a typical SNS as it allows the users to create their personal profiles and add others to their contact lists. In addition, they can share their own content, their photographs, comment on them, and communicate with each other through private messages or in the groups created around different topics or shared interests.

Nov et al. [21] distinguish artifact-based online communities from content-based online communities claiming that the major difference between these two types of communities is in the act of contribution: contributing online is the "second act" and a fairly easy step that requires little additional mental effort in addition to the "first act", that is creation of the artifact. Flickr represents the artifact-based community as it enables users to share their photographs, but the sharing is somewhat 'detached' from the process of content creation.

2.1. Photo-sharing in two photographic cultures

Previous research about photo-sharing has investigated the behavior of photographers, and particularly how new technology, such as digital cameras, camera phones, and online photo-sharing services, has influenced it.

During the past years, personal photography has undergone many technological changes. The emergence of new technology has shaped people's photographing practices in many ways. For example, the change from paper photographs to digital images has increased the size of people's personal collections, as photographing has become cheaper and more instantaneous [3,11]. Digital images also allow people to process their photographs in a new way. Kirk et al. [11] introduce the notion of photowork for describing the activities that people perform with their digital photos after capture but prior to end-uses such as sharing.

Miller and Edwards [17] introduce the term "Snapr culture" to describe a photographic style enabled and encouraged by new technology and online galleries such as Flickr. In contrast to "Snaprs", the term "Kodak culture" defined by anthropologist Richard Chalfen [8], refers to a photographic style, in which people take pictures of traditional subjects such as birthdays or holidays and share them with people close to them.

The behavior of Snaprs differs from the Kodak culture type in their relation to photo-sharing, as the representatives of the Snapr culture take photographs for sharing them online, and their interaction takes place through websites rather than face-to-face; they use tagging, commenting and online messaging for maintenance of social bonds [17].

Because the community of Snaprs seems to be tied into the affordances of Flickr, Miller and Edwards [17] suggest that these practices would not even exist without it. Thus, the previous work of photo-sharing indicates that using Flickr or other online photo-services has affected users' photographic practices and changed the ways in which they share and interact through the photographs.

According to Miller and Edwards [17], there are major differences between the two above-mentioned groups of photographers, especially in their relationship to privacy. The Snaprs are not concerned about their privacy or the fact that the photos are viewed by strangers. On the contrary, the Snaprs are motivated by publicity and expect their photos to be viewed, whereas Kodak culture representatives are willing to share their pictures only with the existing contacts.

There are also differences in the forms of social interaction between the representatives of the two cultures since the Snaprs' interaction occurs through a website rather than face-to-face, and with online contacts rather than traditional contacts, such as friends or relatives from real-life. The Snaprs are happy to utilize interaction tools provided by Flickr, and their interaction style is more about tagging and commenting, and photo-sharing is more like blogging as photos are used for presenting one's life and photographic skills. In addition, Snaprs share their photographs mainly with interest groups formed on the website, whereas Kodak culture representatives share pictures with their traditional social connections.

2.2 Role of social interaction on Flickr

Social media sites such as Flickr enable users to network and interact with each other by commenting on the content and rating it. Since Flickr is mostly known as a place for photo-distribution, it is interesting to investigate the role of social interaction on it and to find out whether it is a photo album or an online community for the users.

In a psychological sense, the term 'group' refers to a collection of people who possess a common social identification and are more or less meaningful to each other [7]. On Flickr, the groups are formed by users around common interests, photographs that relate to a certain topic, and users freely join these groups according to their personal interests. As the main form of group participation seems to be posting pictures to groups dedicated to certain topics, it can be concluded that social interaction occurs through the content, the artifacts themselves, rather than through the discussions in the groups of Flickr.

Previous research indicates that Flickr users post their pictures actively to at least one group [19], the main reason being to increase the visibility of their pictures [26]. Although the users participate in groups actively and share their pictures as much as possible,

group loyalty in posting photographs seems to remain quite low since they are posted in many groups at the same time [19]. Thus group participation seems to be motivated by photo exhibition rather than social interaction.

In Flickr, information is gained through social networks, mostly by following the newsfeed of contacts and finding new pictures through photo streams [19]. Van Zwol [26] has analyzed the browsing behavior of Flickr users and found that the number of contacts and pools where the image belongs to, can predict the popularity of a photo. In other words, those who have large networks and post photos to many groups are more likely to have their photos viewed many times. Similarly, the study of Nov et al. [21] indicates that users with a greater structural embeddedness, that is the number of ties in networks, tend to share more photographs.

It seems that some features of Flickr which were not originally designed for social interaction, such as tagging, are used for social purposes as well. Tags are used for example, to make photos easy to find, to communicate contextual information about them, or to gain a reputation as a photographer in the community [2]. Thus, online photo-sharing in Flickr seems to be highly motivated by personal benefits, such as the pleasure of knowing that the pictures are getting attention and the person who takes them is gaining a good reputation as a photographer.

However, in the light of previous research, it appears that the attraction of Flickr is the content, the photographs, as the community aspects do not play such an important role. Even though some social interaction occurs, Flickr seems to be more about photo-blogging and presenting one's own photographs than communicating and creating reciprocal and meaningful social relationships with others.

3. Method

3.1. Data Collection

In order to study the social interaction practices and the role of sociability in Flickr, we chose to conduct a qualitative interview study. Our objective was to gain a deeper understanding of the usage of Flickr and the role that it plays in the photographing practices of the interviewees. The research approach is ethnographic since the informants are given the role of experts and particular care was given to their descriptions and interpretations of their actions. An ethnographic research approach was chosen since it provides an insider's view to the phenomenon studied by

describing activities that the researcher might never experience [5].

The participants of the study were recruited from eleven user-groups of Flickr that were located in the Helsinki city area in Finland. An invitation letter was posted to a discussion forum of the eleven Flickr groups, and interviewees were selected with an electronic screening questionnaire from the basis on their activity on Flickr.

The participants were nine advanced photographers and active users of Flickr who had been members of Flickr for at least one year, and some of them even from the beginning 2004. Two of them were females and seven males, with the age group varying from the early twenties to the early sixties, most of them were 25-35 years old. They were from variety of different, both technical and non-technical backgrounds. However, none of them was a professional photographer.

Rather than to provide a statistically representative sample, our purpose was to focus on the experiences of the Snapr type of photographers, the advanced users who are familiar with sharing pictures with others and interacting through the pictures online. However, we claim that the division into two categories does not cover all the aspects of photo-sharing behavior, since the participants belonged to various kinds of social networks, in some of which the online and real-world contacts were connected. For example, some of the Flickr groups were formed online but they gathered in offline meetings as well.

The participants were studied during eight weeks in January and February 2009. Before the interview, they filled in a questionnaire in which they were asked about background information, such as how frequently they take pictures and visit online galleries, as well as their current photo-sharing practices and most common topics of their photographs.

In the nine semi-structured user interviews, the aim was to find out what motivates the users to share photos, their actual usage of Flickr, and particularly, social interaction and networking practices on Flickr (see Table 1). The interviews were recorded and the interviewees were able to use a computer for presenting their pictures and Flickr pages in the interview.

In order to thoroughly understand the context of the online communication studied, the interviews were complemented with online observations in the social networks on Flickr during the research period. The research group created a user account on Flickr for research purposes and most of the participants added the research group to their contact list.

In online observation, particular attention was paid to public social interactions such as discussions and

comments on photos. In addition, the content and themes of photographs were observed. Altogether, online observation offered understanding of the actual communication by bringing out small details that might have otherwise been forgotten from the interviews. Since ethnographic research is descriptive, research questions are refined throughout the study as all the details become known [5, 23]. Thus observation served as a foundation for interview questions and provided information for refining them.

Table 1. The interview guidelines

- With your own words, tell about your use of Flickr.
- Why do you use Flickr?
- What attracts you in Flickr?
- What kind of content are you interested in? (produced by others)
- What kind of content you have added on Flickr?
- Which groups do you belong to in Flickr? Why?
- What is the purpose of groups?
- With whom do you interact on Flickr?
  - How do you interact with others?
  - Have you met them in real life?
  - Are you interested in meeting them in real life?
  - Why/why not?
- Is there enough social interaction currently in the service? If not, what kind of social activity you would wish for?
- What would you like to tell about yourself to other users?
- What would you like to know about other users?

3.2. Analysis

All the interviews were transcribed and content analysis was carried out. The data analysis started with reading all data repeatedly in order to achieve immersion, which allows researchers the new insights to emerge [13]. In the process of reviewing the transcriptions, special attention was paid to recurring patterns, themes and explanations, and thereafter, occasional items and differences between the users were observed in order to form an overall comprehension of the data.

As Hsieh and Shannon [10] describe, content analysis is not a single method but rather a set of different approaches to textual data. The content analysis strategy applied in this study is *conventional,*

as we used many open-ended questions, and the codes are derived directly from the informants rather than from a pre-existing theory or framework [10].

The qualitative research strategy is about making sense of the data by interpreting and finding meanings from it. Thus, for the validity of the research, it is critical that the interpretations from the data are repeatable, confirmed and correct [16].

However, the analysis of interaction practices, meanings and social uses also revealed some differences and contrasts in the data, which indicate that Flickr is experienced and used differently even within the rather small and homogenous user-group of this study. The findings of the user interviewees were coded and categorized under main themes; these are presented in the following section.

4. Findings

4.1. Documenting everyday life

In the questionnaire, the informants were asked about their current photographing and photo-sharing practices. All the participants reported taking pictures with their digital camera daily or weekly, and visiting Flickr daily. They were all familiar with tagging their pictures since everyone mentioned having tagged and geotagged their photographs. Only one respondent mentioned not having edited his photographs at all, and the rest used regularly Photoshop, Picasa or some other professional software for processing their photographs.

The informants were asked about the most common topics of their photographs. Most often they mentioned photographing subjects of everyday life, such as buildings, views, and people. We also wanted to find out what triggers them to take pictures if they have camera at hand, and the majority reported taking pictures for aesthetic pleasure; in order to show others the beauty of everyday life. They also mentioned being inspired by extraordinary things and occasions of life.

"My mission as a photographer is to show others a different perspective to life than what people usually see." (User 1)

As for their motivations to take photographs, we asked about the meaning of photography for them, and the most often mentioned meanings were *aesthetics and artistic self-expression*, *socializing through them*, and *joy and fun* (these three options were mentioned by all nine participants).

They were also asked how they currently share their photographs. In addition to sharing pictures on Flickr, all except one reported sharing them by

showing them from a computer screen and half of them by sending pictures on e-mail. All nine participants mentioned sharing their pictures with their friends, family members, as well as with unknown people online.

As their background information reveals, the informants were familiar with new photographing technologies and engaged in photowork practices, such as editing. From the basis of their photo-sharing practices, they possessed characteristics of both Snapr and Kodak cultures, as they all shared their pictures online and offline, and with both friends and unknown people.

4.2. Motivations for sharing photos

Our aim was to determine the users' motivation for sharing photographs online. Sharing is known to be one of the major drivers for photography [3]. Sharing photographs is the primary way to get connected with others on Flickr, and the interviewees reported as the most important reason for having joined Flickr to be able to share their pictures online.

For the participants, photography played an important role in their lives, and they reported self-development and becoming a better photographer as the main reasons for sharing pictures. Flickr enables this learning process by offering new ideas, important connections with other advanced and skillful photographers, an opportunity to follow what other photographers have been doing, and above all, a place where one can become noticed as a photographer.

Feedback and peer support were expected and highly valued, most valuable was the kind of feedback that helps to improve the quality of photographs and to learn new things, such as comments about composition or lightning.

"I believe that everyone [in Flickr] wants to become a better photographer." (User 1)

"You can learn a lot from others by following the discussions and participating in them, for example the discussions about a certain camera model or lenses." (User 2)

Many interviewees explained that joining Flickr had affected their photography style and they started to take pictures with the audience in mind. Thus it appears that pictures are taken with the idea of sharing them online, and the sharing seems not to be entirely separated from the process of content-creation. The interviewees emphasized that awareness of the loyal audience that follows them, and regular comments on

their pictures, encourages them to take more pictures and share them online.

"I have uploaded thousands of pictures on Flickr. I didn't take pictures for my own pleasure, but just the opposite, I want others to see and comment on them." (User 8)

It seems that the most important perceived value of Flickr is the community of photographers. Photo-sharing is socially motivated and the pictures are shared with expectations of getting recognition and receiving important feedback from others. Social rewards such as encouraging comments were considered as a major reward in using Flickr. One interviewee puts it like this:

"It is thrilling me when someone who's a total stranger to me has been commenting on my photo. I am amazed by the fact, that someone finds it worth commenting." (User 7)

Similarly to the previous study on blogging as social activity [18], the relationship between audience and a photographer on Flickr is a form of social communication in which both parties are influenced and shaped by each other. The audience is creating the content by commenting and interacting.

4.3. Seeking visibility

The observation of the public content in groups revealed that many groups seemed rather passive at first glance, especially with regard to discussions. It seems that group participation is not so much about having general discussions with others as distributing photos. The results of observation and user interviews seem to support previous studies [19,26], as they indicate that the most important reason for creating groups and posting content to them is to draw attention to one's pictures.

"Thousands of pictures are uploaded to Flickr every minute. Your pictures will get lost pretty soon unless you send them to different groups. Then they are on the top of a pile for a while and get comments." (User 3)

The majority of the interviewees reported, that they did not participate in groups or create them in order to socialize with others. The importance of groups seems to be that they enable the promotion of oneself in the service as active group participation makes the pictures and the photographer more visible in a photo pool that is overflowing with content.

"I created groups so that there would be a place where to send my photos. I don't really see the group participation as a social activity. I'm just marketing my pictures there to get some comments." (User 8)

Even though the groups did not seem to be socially very active, they are an important feature in Flickr, not only for enabling discussions, but above all because they enable the extension of social networks and thus help to gain a larger audience for pictures. Also, the groups of Flickr are especially useful in filtering the enormous amount of content that Flickr provides. Groups are used as a tool for targeting photographs for the right audience and categorizing the content under different themes. Grouping and categorizing the pictures under a certain theme or topic helps to find more viewers and particularly viewers who are interested in a certain topic, since it seems to be common to browse groups in order to search for specific pictures on Flickr.

As receiving recognition for the quality of one's photos and photographic skills seems to be an essential point on Flickr, it has become a challenge to get one's pictures to stand out of the mass and be viewed and commented on by others. Because of this, the users have to devise strategies for drawing attention to their pictures.

In Flickr, there is a feature called "Explore", which is a collection of the top pictures picked up by a computer algorithm based on their "interestingness", i.e. how interesting and popular they are. Hence, the web service is suggesting and offering users interesting content by presenting a collection of the most interesting pictures on the login page. Those participants who had already had their pictures ranked on the Explore page explained that visibility in it brought more publicity to them as photographers and also to their other pictures.

The Explore page seemed to be highly motivating for users, and the admittance into it was experienced very rewarding, like being in a hall of fame. This "struggle for getting to Explore" may sometimes lead to rational calculations in picture-taking and also to well-planned photographs. Since getting to Explore has become so important, there are even groups established for solving the secret, and finding out how the computer algorithm selects the pictures.

"This [Explore] is the place where everyone wants to. The best pictures of the day are shown here for everyone around the world. People are spending ages on pondering how to get here." (User 3)

"People have made a game out of it. They try to solve the secret algorithm and find a way to get their

pictures into the Explore list of the day. It's a sort of conspiracy theory thing." (User 2)

In addition to aiming for Explore, there are some other strategies for getting visibility and recognition for one's pictures on Flickr. Making contacts and socializing actively with others, as well as participating in groups, were also seen as useful ways of getting attention. The results show, that people find new pictures mostly by following newsfeed, through their contact lists, groups, or by searching with tags especially if they are looking for pictures about more specific topics.

The interviewees claimed that being socially active on Flickr is a way to arouse interest in other users, and commenting actively on others' photos usually helped to get visibility for one's own photos too. As one interviewee who had received lots of comments on his pictures states, pictures are commented on with the idea of social exchange in mind:

"People comment on pictures in Flickr because they want their own pictures commented on. That escalates the interaction." (User 8)

Similarly to previous research [2] tagging seems to be used not only for personal, but social purposes as well. According to the interviews, tagging pictures seems to be an important way to organize them according the topic or date and thus construct a narrative photo-blog or a personal memory. But above all, tagging can be also a social tool and as an important way to inform other users about new photographs and their topics; in this way, they can find viewers. The participants tended to tag their every photo, and the tags they used were carefully considered, so that the pictures would find as suitable an audience as possible.

"There won't be much of audience unless you tag your photos. But if you add good and suitable tags, lots of people will come and see them." (User 5)

In addition to the social activity, such as group participation and commenting on others' pictures, tagging and taking of well-planned photographs were considered as the best ways to become noticed on Flickr. Even though taking and distributing pictures with good quality and an interesting viewpoint are essential for gaining recognition from others, these strategies were needed for becoming visible in the large and rather fragmented networks of Flickr.

As the social rewards were expected, not getting any feedback was experienced as frustrating, since that

was taken as a sign of being not such skilled photographer.

"If you aren't getting any feedback from others, your pictures probably aren't very good or interesting." (User 1)

4.4. Self-presentation through photographs

SNSs, including Flickr, offer the users many opportunities for self-presentation, e.g. they can tell about themselves with their own words, create personal profiles and communicate through the content. In Flickr the self-presentation most often occurs through photographs. Photos can be used for example, for storytelling purposes and documentation of one's everyday life, and especially the highlights of it.

According Van House et al. [24,25] self-presentation through pictures is about influencing others' view of oneself, for example, through self-portraits or pictures of friends, whereas self-expression occurs through aesthetic and artistic pictures. As distinct from other SNSs, in Flickr the users wanted to be recognized as good photographers, and thus they were concerned about the quality of the pictures. They usually edited their photographs carefully in order to make them aesthetically better and more pleasing and strongly argued against sharing snapshots without any artistic value. For them, Flickr was about artistic photography and they wanted to present themselves as serious photographers. Most interviewees were concerned about the opinions of other community members and wanted to make an impression on them:

"I'll take hundreds of pictures every day, but only one or two of them ends up to Flickr, after I've been polishing it up with Photoshop." (User 3)

Therefore, the active Flickr users interviewed in this study expressed a norm for good quality and a professional attitude as opposed to taking just "tourist snapshots" or to the traditional "Kodak culture" style of photography. Similarly to previous research [17] Flickr users mostly shared 'artsy' photos and avoided putting snapshots online, which is one important difference between the Snaprs and the Kodak style photographers. The interviewees undervalued posting pictures with non-artistic value just for fun, as one serious photographer says:

"There are also users who take snapshots without any serious thinking. Like 'look, it's me on the beach'. That makes me laugh." (User 5)

As previously described, privacy aspects are a major issue that distinguishes Snapr users from Kodak culture photographers [17]. Participants of this study clearly represented the Snapr culture since above all they wanted publicity for their photographs and did not object to sharing them with strangers. However, all of them were suspicious about their privacy to some extent, and for this reason they had all made some adjustments to privacy levels, so that some of the most personal pictures were visible only to friends or family members.

Similarly to previous research [1] people were especially sensitive about pictures of other persons and locations that were considered private. They did not want outsiders to recognize pictures of personally meaningful places, or add geotags to them. The exact location information of e.g. summer cottage was considered as confidential, since there might be a risk of unexpected quests or burglars in revealing too detailed information.

To summarize, in Flickr, the content, the photographs, play an important role and social interaction evolves around them. Sharing is an important part of photography since pictures are uploaded to Flickr in order to create and maintain social connections. However, rather than just documenting and describing their personal lives or daily activities, they expressed themselves with artistic photos and thus wanted to communicate the identity of a professional photographer.

As Van House et al. [24] are stating sharing photos can be seen as gift-giving and nurturing of social relationships. In the community of Flickr, photo-sharing is more about taking the initiative for interaction and the photographs serve as a common interest or social objects to share and talk about. As one interviewee puts it, content facilitates discussion and communication with others.

"The situation is like a room full of people who are strangers to each other. At first there is silence, but if some music is introduced, this activates people and they start to socialize. The discussion needs a topic, like movie or music, for example, and in one way or another, the pictures will bring out the whole spectrum of life." (User 8)

5. Discussion and conclusions

The focus of this study was on users who are active contributors and participants in Flickr groups, and therefore social motivation was perceived as an essential reason for photo-sharing. For the participants, Flickr is not just a place for photo-storing; it is as

important to become seen and to receive recognition from others for their pictures.

Because masses of new pictures are uploaded to the service every day, differentiation from others has become a challenge for the users who are motivated by publicity and comments from others. They have to seek visibility for their pictures in many ways in order to get the audience and comments they desire.

From the basis of the user interviews, several strategies for getting visibility on Flickr can be identified. Being active in posting to groups, making contacts and socializing with others were the most common strategies for drawing attention to one's photos. Thus, structural embeddedness, in terms of social networking and reciprocity, seems to be important in getting visibility. Participating actively by posting pictures or commenting on pictures taken by others and establishing new connections in networks were motivated by the desire to gain a wider audience. Other often used ways for promoting one's photographs were aiming to have pictures post on the Explore page and using tags for social purposes, such as informing others about the pictures.

As a conclusion, it can be stated that social interaction plays a crucial role in Flickr. However, sociability has an instrumental meaning for the users, as it is first and foremost serving the needs for getting visibility and attention. The results show that social connection and reciprocity were highly valued among users, even though they are motivated by their ambitions for self-development and the search for a good reputation.

The networks and practices of Flickr seem to have affected the photographic behavior of Flickr users, since pictures are taken and edited with the Flickr audience in mind. Therefore, the sharing of pictures online is an important part of photography and cannot be seen as decoupled from the creation.

This qualitative study presents a small sample of Flickr users and thus describes only a small group of Finnish advanced photographers and the meaning of the Flickr community for them. The results cannot be generalized for all the user groups of Flickr, but rather shed light on questions concerning user motivation and social practices connected to online photographs among the active users of Flickr.

There are various uses of Flickr and in this study people not using it for social purposes or participating in groups at all were intentionally excluded. Accordingly, the results emphasize social motivations and the meaning of groups. As this study introduces motivations and practices of those heavy-users who are visible for others for their public activities, it cannot grasp the more invisible ones, who do not participate and contribute actively. In future studies, it might be useful to study various user groups in order to identify the complexity of Flickr and find more generalizable data describing the various uses of Flickr.

6. Acknowledgements

7. References

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Applying the Heuristic Evaluation Method in the Evaluation of Social Aspects of an Exercise Community

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ABSTRACT

Social interaction plays an important role in the use of modern websites. Because the practical ways to improve social interaction through community design often remain unknown, this study aims to provide guidelines for designing and developing social features for websites. In this paper, we introduce the results of a three-week-long qualitative field study with an internet service prototype intended for people who exercise. We aim to provide knowledge of factors that improve the social design of websites by introducing a set of heuristics for evaluating sociability. In order to validate the heuristics, the findings from heuristic expert evaluations were compared with data collected from ten test users of the internet service prototype. We suggest that the Heuristic Evaluation Method with sociability heuristics helps to identify the most fundamental problems concerning sociability and thus serves as a practical tool, particularly in the early stages of the design process of social internet sites.

Categories and Subject Descriptors

A.0 [GENERAL]: Conference Proceedings
H.5.2 [Information Interfaces and Presentation]: User Interfaces—User-centered design; H.5.3 [Group and Organization Interfaces]: Evaluation/methodology, Web-based interaction.

General Terms

Human Factors.

Keywords

Heuristic Evaluation, online communities, social interaction, community-centered design.

1. INTRODUCTION

Social activity is essential for the success and popularity of social internet sites and Web 2.0 applications. The users add value to web services in many ways, for example by creating the content and providing support and help for others. The success of social websites depends on active users and their voluntary contributions, but how to take social aspects into account in the design of online services often remains unclear.

Online communities can be defined as groups of individuals

brought together by shared interests and goals, and communicating, predominantly online, for their common interests, relationship building, and transactions [19,22]. People's online social practices are quite similar to their real-life activities, online participation usually being about looking for information and peer support, sharing experiences, or posting and viewing opinions [19]. The role of technology is primarily to facilitate these practices and support collaboration between users, rather than preventing them in their intentions.

The value of social interaction for the success of the internet services is recognized [19,28,2], and several design guidelines and recommendations for designing social features of websites have emerged [8,10,17,27,28]. Design guidelines for social websites cover purpose, policies, and rules [17,28], designing usability and the selection of technology [27,28], and supporting sociability [8,10,28]. However, the designers and managers of online communities often face challenges when trying to apply these rules and recommendations in practice as there is a lack of practical and easy-to-use methods for evaluating the social aspects of internet services.

This study explores the role of social interaction in the use of online exercising services and aims to provide a practical tool for evaluating and improving social interaction between the users. To evaluate the social features of the user interface, the heuristics for supporting social interaction in online communities are introduced. The reliability of the heuristic evaluation was verified by comparing the findings from expert evaluations with the results of a field study and qualitative interviews with ten real users.

This study aims to answer the following research questions:

- What is the role of social interaction in the use of an internet service that supports exercising?
- Is the Heuristic Evaluation Method a reliable tool for identifying problems that relate to sociability?

2. RELATED WORK

2.1 Exercising as social activity

Exercising is a social activity in which partners often play an important role. Training and wellness services can be used for getting a connection with exercise partners [1,24,36,5]. The presence of others is known to provide motivation for physical activity and better results [5,23,1]. Online training services can also be used for getting feedback and support from others [1] or for finding training partners [36]. Thus, similarly to other social internet sites, peer support and the ability to share and exchange experiences seem to be the main drivers motivating the use of training-oriented services.

In many sporting activities, e.g. jogging, social aspects seem to be important, and people often exercise in the company of others in order to socialize, enjoy it more, or to perform better [24,36]. Previous research [24] shows that when the presence of exercising partners was created through a technical system, the social connection encouraged people to exercise harder and increased the enjoyment of exercising as a whole. In social psychology, this phenomenon is known as *social facilitation*, which refers to people's tendency to improve their performance when an audience is present [35]. Goal-setting and public commitment to certain long-range or short-range training tasks can also be highly motivational in exercising; goals can be self-set, group-set or assigned by an expert or by the service [5,6]. Consolvo et al. [5] introduce design requirements for technologies that encourage physical activity, and propose that giving users credit for activity, providing personal awareness of activity level, supporting social influence, and considering practical constraints of users' lifestyles are they key elements of fitness technologies.

In theories of motivation, intrinsic and extrinsic motivations have been separated from each other; extrinsic motivation refers to motivation that comes from external rewards and sanctions, whereas intrinsic motivation comes from inside of an individual, from the pleasure of doing something and satisfying the need for relatedness [29,32]. User motivations have been studied in online communities as well, and both extrinsic and intrinsic motivations are known to encourage community users to contribute. In particular, social rewards such as a good reputation, social status, and commitment and loyalty to the group seem to motivate users to contribute [20,22,2].

2.2 Heuristic Evaluation Method

The usability of software products is often evaluated with inspection methods, Heuristic Evaluation (HE) [25] being probably the best-known and most commonly used of these methods. The Heuristic Evaluation Method was invented by Nielsen and Molich [25] for identifying usability problems by evaluating the interface with a list of guidelines and passing judgment according to one's own opinion. The method is also known as the Expert Review Method, since the evaluators' experience and knowledge will affect the evaluation results [12,14]. However, Heuristic Evaluation has been criticized for its subjectivity and for being a rather inaccurate method as the individual evaluators find only a part of the usability problems [25], and because it does not provide an understanding of the amount and severity of the problems [33]. From a psychological perspective, the reliability of the Heuristic Evaluation Method has been questioned, since it is based on introspection, and thus the judgment of usability is usually conducted from an expert's point of view, which may differ substantially from how a real user would perceive and use the software [34].

In order to improve the method's performance and reliability, heuristic evaluation should be conducted by several evaluators, as the number of usability problems is known to grow rapidly in the interval from one to five evaluators, and reaches the point of diminishing around the point of ten evaluators [25]. This phenomenon is often referred as the 'evaluator effect', which means that different evaluators evaluating the same system detect substantially different sets of usability issues [12,14]. Heuristic guidelines are usually general, and thus the results of the evaluation depend on the evaluator's expertise and ability to apply these heuristics. Usually, some evaluator effect occurs when several evaluators are used, but the results are more reliable and a larger number of usability issues are identified when more experts are involved [12]. Combining Heuristic Evaluation with other methods and using more specific guidelines seem to improve its reliability, especially when the evaluators are not experienced experts [4].

Despite their weaknesses, inspection methods are cost-efficient and simple for both usability- specialists and non-specialists to carry out [4]. Other advantages of the method are its intuitiveness, ease of use and its applicability in an early stage of the development process [25].

2.3 Eight Heuristics for supporting social interaction in online communities

The traditional usability evaluation methods have been criticized for not capturing all the important aspects of social web use, such as self-expression or social pleasure [11]. The traditional usability heuristics often see the usage in a task-oriented way and exclude social and hedonistic aspects which are often more important contributors to user experience than efficiency or accuracy in the performance of tasks. For example, a study of Facebook users [11] revealed that users are less concerned by the bad usability of the system if there are enjoyable aspects of it that compensate for the usability problems.

In order to understand the user experience of social internet sites more profoundly, new and more holistic design guidelines are needed. Some attempts have been made to include social aspects into heuristic evaluation; Preece et al. [28] present a list of usability and sociability heuristics for evaluating online health communities, and Gallant et al. [8] five heuristics for increasing social ties and social interaction in web-based communities by studying users of Facebook and MySpace. Some recent studies also suggest guidelines for successful online community design: Gurzick and Lutters [9] introduce eight guidelines that are based on design studies, and aim to help in building participatory online community. In addition, Iriberry and Leroy [13] have collected the components and factors of successful online communities. We propose that guidelines that connect online community design with management principles, and also take into account the hedonistic and social aspects of user experience, are needed in the evaluation process.

Therefore, on the basis of an extensive literature review and user studies, we aim to provide a more holistic set of principles concentrating on social and motivational aspects that contribute to the user experience of online communities [21]. In this study, the following eight heuristic rules are applied for evaluating the factors that improve social interaction:

2.3.1 H1: Facilitate self-presentation and creativity in the service

People have needs for self-presentation, identity construction, and sharing their interests with others. They can sometimes be very creative when they are using technology, for example when utilizing the rather limited options of text-based newsgroups [2] or personalizing their user profile on social networking sites [8]. The most popular communities seem to be the ones that allow creativity for their members [8] and therefore, the users should be able to communicate in their own words, to create a personal style, and to differentiate themselves from others. In order to interact personally and in greater depth, each member should be recognized and identified. A personal style is also required for continuous social interaction.

2.3.2 H2: Let the users define the limits of their privacy

Users should have a sense of control and autonomy regarding information about them. Sometimes the use of real names promotes trust and cooperation in an online context; for example, in geography-based groups it can add context and build up foundations for face-to-face meetings [23]. Knowing each other is particularly important if the purpose of the community is to activate users in matters related to their neighborhood or home town. Then again, in those communities where people may want to reveal more information the best practice is to build a virtual identity at first and then to reveal confidential details about their lives over time, when the confidentiality and trust between the members have increased [28].

2.3.3 H3: Create a sense of social presence

In an online environment, anonymity and invisibility are challenges to the building of trust. In an online context, the audience is invisible, whereas in a face-to-face context people have a sense of who they are speaking to [3]. In order to create a sense of community among users, technology should create and strengthen the sense of social presence. There are different tools for increasing the awareness of other users' presence, for example, status information, a camera connection, instant messages, or graphical representations of users and their activity [23].

2.3.4 H4: Facilitate easy participation and content creation

Users are interested in plentiful and up-to-date content. In order to be active, online communities should provide vital and dynamic interactions [8]. Participation in the community's activities should be easy for users, and especially posting to the community should be easy. For example, joining general discussions would be a good way for a newcomer to start participation and then the participation would not require any special skills or expertise. Fast and informal reaction to activities should be possible, for example by commenting on and rating the content.

2.3.5 H5: Support users' networking

One essential motivation for participation in groups is to find people with similar interests and to discuss them in greater depth [31]. There are also different types of ties in social networks; some of them are loose and some tight, and users should be able to choose their communication style accordingly [7,30]. Users should have the opportunity for social networking and becoming acquainted with others, for example with private messages that make possible a more personal level of communication. Private discussions may lead to the emergence of user-generated interest groups, an increased sense of community, and real-world meetings as well.

2.3.6 H6: Support different user roles

The different roles of online community users should be supported in order to attract as many people as possible. There are active contributors and those who prefer to read postings sent by others [22]. Lurking, that is, just observing what others are doing, should also be possible because it is often a way in which newcomers get to know the community and its rules, and get into it.

2.3.7 H7: Reward and give recognition

Loyal and active users can be rewarded by giving positive feedback in the community. Recognition from the administrator may reward and encourage users to put more effort into the quality of the content. Enthusiastic hobbyists in particular are motivated by the opportunity to show their skills and expertise to their peers or a company they value [14]. However, rewarding users with incentives or measurable credits can lead to a great number of contributions at the expense of quality.

2.3.8 H8: Offer the content in a motivating way

Users are looking for new and updated content, and the novelty of it often separates active sites from abandoned ones. Users should be offered personalized and filtered content, as well as personally relevant information by keeping them updated about recent activities in their groups and social networks, for example, with a news feed or notification alerts to a mailbox, as in Facebook, where alerts invite the user to visit the community whenever something new has occurred.

3. METHOD AND DATA

3.1 A Trial field study with the service prototype

The study was carried out in co-operation with Suunto, which is a leading Finnish manufacturer of sports instruments for a variety of training, diving and outdoor sports. Movescount[1], the internet service prototype tested and evaluated in this study, was developed by Suunto, and the aim of the trial period was to identify the most fundamental issues regarding usability and sociability in order to develop the website into an online training diary and community for all kinds of sports exercisers. Movescount was published in May 2010, few months after the trial period.

The actual users, for whom the system is designed for, were involved in the early stage of the community development to ensure that their ideas and opinions will be incorporated in the design. The research approach follows principals of the community-centered development methodology, as it is based on an iterative design-evaluate-redesign paradigm [28].

The research data were collected by using several methods. At first, the research group evaluated aspects of usability and sociability with Heuristic Evaluation. In order to understand the users' perspective, it was followed by a three-week-long qualitative field study with a service prototype. At the end of the trial period, the participants were interviewed about their experiences of using the service, and they filled in a survey in which social aspects of the service were evaluated.

3.2 Heuristic evaluation process

Before the field study started, the service was evaluated by three members of the research team individually. The findings were revealed and discussed afterwards in order to make sure that the evaluators' interpretations did not affect each other. All three evaluators have a background in Human Computer Interaction/Usability, and one of the reviewers has a scientific background in Social Psychology as well. Furthermore, two of the evaluators had previous experience of usability evaluation. The aim of the evaluation was to find the most significant problems in

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[1] http://www.movescount.com

usability before starting the trial use. In addition, the social aspects of the service were analyzed in order to gain an understanding of the "state of the art" of community design. The expert evaluation was conducted with a set of two heuristics, which were Ten Usability Heuristics by Jacob Nielsen [26] and eight heuristics for supporting social interaction by a research group [21].

3.3 Participants
The participants were recruited from a customer database of Suunto; all of them regularly used or had been using, a heart rate monitor manufactured by Suunto. The participants were aged from 23 to 45 years, the average being 36 years. Five of them were females and five males. Three participants were students and seven worked full-time in different occupational fields. None of the participants was an information technology professional. All of them exercised regularly, even though the level of intensity of their exercising varied to some extent, since two of them were competing athletes and eight exercised in order to maintain a good condition.

3.4 Data collection
The field study lasted for three weeks during which the participants used the service freely. They were advised to exercise as usual and use the service as a normal part of their everyday activities, just as they would use it if they were not participating in a study. Each time they logged on to the system, they were advised to fill in a structured diary in which they briefly described their feelings and experiences during the trial use. They were advised to document each time how long they used the service for, how they used the service, whether any problems occurred in their use of it, and how they perceived their overall experience of the service.

In the interviews conducted after the trial period, the diaries were discussed together with the interviewees in order to form an understanding of the use of the service during the trial period. The main themes of the ten semi-structured interviews were: *User experiences of the field study*, *Content*, *Social interaction*, *Profile information*, and *Privacy*. The interviews were recorded and the participants were able to use a computer to show more specific features and functions of the service during the interview.

In order to investigate how the users perceived the different social aspects of the service, eight survey questions were formulated on the basis of sociability heuristics. Each question relates to the corresponding heuristic numerically.

The following questions were estimated with a Likert scale from 1 (= strongly disagree) to 7 (= totally agree).

1. I can express myself as I want to with this service. (H1)

2. I can decide how much I tell about myself to others. (H2)

3. I can get all the information I want about other users. (H3)

4. I can easily get into the activities and discussions of this service. (H4)

5. I can find people with similar interests from this service. (H5)

6. I am able to do everything I want to with this service. (H6)

7. This service encourages me to activity and sharing content with others. (H7)

8. This service offers me new and interesting content. (H8)

As the service that was being studied was a prototype with rather limited features at the moment of the user study, and it was used only for three weeks by an invited group of ten people, questions 2 and 5 were considered irrelevant, and were therefore left out of the final survey. In order to make their numerical estimations more specific, they could explain their viewpoint by responding to an additional open question.

4. RESULTS

4.1 Findings from the expert evaluations
The internet site prototype was evaluated according to its usability, sociability and community features, but since the focus of this study is on sociability evaluation, the results regarding usability are excluded and most of the usability issues were repaired at a very early stage of development.

4.1.1 Positive findings
At first, the evaluators identified positive sociability findings (see Table 1). There were seven findings that were considered as essential aspects of community development; three of them were identified by all the evaluators.

The features that contribute to sociability positively are *browsable user profiles*, as they enable users to find interesting people and gain an understanding of other members; *adjustable settings for personal information*, which give the users freedom to limit the visibility of personal information according to their own needs; and *sharing of personal content*, as easy sharing and viewing of exercises are clearly the main functions of the community.

Positive sociability findings	Number of evaluators agreed (max 3)	Number of the heuristic rule
Browsable user profiles	3	H3,H5
Adjustable profile and privacy settings	3	H5
Possibility of presenting and sharing training programmes	3	H1,H2, H4
Presentation of community statistics	2	H3, H7, H8
Latest activities presented on the front page	2	H3, H7, H8
Possibility of creating groups	2	H5
Possibility of following other users	2	H5, H6, H8

Table 1. Positive sociability findings identified in Heuristic Evaluation

4.1.2 Sociability problems
All three evaluators identified six sociability problems, from which two were considered as the most severe ones (see Table 2). However, regarding the minor problems and design recommendations, there was more inconsistency in the evaluations, since almost all of them were listed by only one or two evaluators. The results of sociability evaluation thus indicate that some evaluator effect had started to occur already with three evaluators.

Sociability problems that were identified by all three evaluators and therefore considered as the most important hindrances for social activity are: the system is currently lacking tools for private *person-to-person discussions*, which would deepen the interaction

and relationships between users; users cannot personalize their *privacy adjustments* in order to control visibility of their personal information; there is currently no forum for *general and free-form discussions* in the system; users are not able to *search and filter content;* and there is only a *small amount of content* in the service for users to react to and discuss.

Sociability problems that were identified by one or two evaluators and considered as less important, relate to the following issues: the system does not support *different user roles and activity levels* since active users are not able to present their expertise; not all sports activities listed in the service are currently *matching real life;* there is no *social rewarding system;* pre-selected group topics do not enable *free and creative group formation;* and possibility to *easy participation* through low-level interaction, e.g. rating or voting, is lacking.

Sociability problems found	Number of evaluators agreed (max 3)	Priority	Number of the heuristic rule
Small amount of content in the service	3	2	H8
No facility for person-to-person discussions	3	2	H3, H5
Privacy adjustments can be made only for limited information	3	2	H1, H2
No area for general discussions	3	2	H1, H4, H5
Need for tools for searching for users	3	3	H3, H5
Need for tools for filtering users	3	3	H3, H5
No support for different user roles and levels of participation	2	2	H6, H7
Limited selection of sports activities to choose from	2	2	H6, H8
There is no reward system for active users	2	2	H6, H7
Groups can be created only around specific topics	1	3	H5
There is no easy participation through low-level interaction, e.g. rating and voting	1	2	H1, H4

Table 2. Sociability problems identified in Heuristic Evaluation

4.2 Findings from the survey

In order to find out how the participants evaluated the social aspects of the community, their opinion was sought through a survey. The respondents' evaluations of the social aspects of the Suunto Community are presented in Table 3. As shown in the

table, the best-rated social features were "This service offers me new and interesting content" (mean 3.9), and "I can express myself as I want to with this service" (mean 3.7), whereas the statement that was rated the lowest among the users was "I can get all the information I want about other users" (mean 2.1). According to the results, it seems that they were most satisfied with the service for getting new information with it, being able to express themselves, and sharing their training data and experiences with others. Then again, getting information from other users and getting into social activities were considered the least valuable features of the service. However, all the social aspects of the service scored rather low among the users, which indicates that the state of the community did not evolve very well during the three-week trial period with the service prototype.

After each question, the participants were asked to explain their response with an open response. The analysis of the open responses reveals that the most frequently mentioned problems were that they did not know how to find other people or to contact them, since the service did not support the awareness of others enough.

Finally, they were asked how likely they would be to use the service in their everyday lives (mean 4.5), and whether they would recommend the service to their friends (mean 4.5). Surprisingly, their replies were more positive and despite the deficiencies, all of them except two stated that they would be likely to use the service in the future. The analysis of the open responses shows that the service was clearly perceived as a prototype and thus unfinished, and they expected the final version to be more complete and offer more possibilities for social interaction.

On a scale from 1-7, how strongly do you agree with the following statements?	Mean	Standard Deviation
This service offers me new and interesting content. (H8)	3.9	1.37
I can express myself as I want to with this service. (H1)	3.7	1.06
This service encourages me to activity and sharing content with others. (H7)	3.6	1.58
I am able to do everything I want to with this service (H6)	3.5	1.51
I can easily get into activities and discussions on this service. (H4)	2.3	1.42
I can get all the information I want about other users. (H3)	2.1	1.60

Table 3. Users' evaluation of social aspects of community

4.3 Findings from the user interviews

The ten user interviews were transcribed and content analysis was conducted by categorizing the results under main themes. In the interviews, the participants were asked how they used the service during the trial, and how would they like to use it in the future. The results are divided into two main categories, *personal* and *social uses*, and presented below according to their order of frequency.

4.3.1 Personal Uses

Documentation of exercises. (H1, H4) Keeping a personal training diary and recording one's personal training data were reported as the most important reasons for using the web service. The primary function of the online exercising service should be to allow users to follow and analyze their own exercise data. Similarly to the study by Consolvo et al. [5], the test users wanted to be aware of their current activity level by following their training history and comparing it with their current status. As an interviewee says, it would be interesting to be able to browse one's training history for a longer period: *"It would be nice to be able to see my exercises after half a year, to see what I did, what the weather was like, and so on."* (Male, 44)

Comparison of results. (H2, H3) Other people's results and goals encouraged users in their own training. Additional data regarding others' exercises, for example, heart rates or jogging routes, were wished for in order to analyze the condition and success of others. As one interviewee describes, sometimes the comparison of results may cause feelings of social pressure: *"When I looked at the jogs added by others, I got embarrassed for a while: they were so much longer than mine."* (Female, 25)

Searching for information. (H8) The third frequently mentioned personal use was utilizing the service as a database for getting practical information about issues that relate to exercising, such as training places, sporting equipment, nutrition facts, and the treatment of injuries.

Getting inspiration and ideas. (H8) User-generated content and other people's activities were an important part of the online service. The interviewees reported wanting to use the online sporting service as a source for inspiration and new ideas for training; for example, other people's jogging routes or training programmes were mentioned as inspiring. - *"I am interested in new kinds of sports, and learning about them motivates me to try new things."* (Male, 23)

4.3.2 Social uses

Sharing content with others. (H5, H6) In the use of the online training service social motivation seems to be high, since all the participants except one reported wanting to share their training results with others and explore the exercises of others. Age seems to affect the willingness to share information to some extent, as younger participants were more willing to share their exercises with everyone, older participants only with their existing friends. Younger participants also expected to be able to view other users' training data on the service, while the older participants did not find following the activities of people they do not know in real life interesting. As for gender, there were no differences in male and female attitudes to sharing content.

Networking with others. (H5) The participants were interested in online social networking with their existing training partners from real-life, as well as using the service for finding new people engaged in the same sports: *"It would be nice to discuss with similar-minded people. In a way, that would be extending your hobby."* (Male, 40 years)

Because the prototypical version lacked some social features, e.g. private messages, at the time of the research period, they were not able to communicate as variedly as they wished for, and therefore networking with others remained low.

Peer support. (H3, H5) One important function of the service mentioned by the participants was to receive peer support and to exchange training experiences with others. Similarly to the previous study by Consolvo et al. [5], people expected recognition and support from others and experienced that enjoyable and encouraging. Competition and sparring between trainers on the same level or between friends was desirable.

Getting feedback. (H5) Receiving feedback from others is important for user participation and adding content to the service. Comments made by others motivate to exercise harder. For example, after a good performance recognition from others would serve as a reward. Furthermore, the participants wished for the opportunity to learn from the valuable feedback from expert users of the service, as well as to be able to comment on other users' exercises in order to be able to give advice to others.

4.3.3 Designing sociability

On the basis of the results of the expert evaluations and user studies, we present the most important elements of sociability that should be promoted with web design below.

1. Awareness of others (H3) is outstandingly important as it helps the formation of an overall understanding of the structure of the community and its members. The awareness can be best supported by presenting user statistics, a newsfeed of latest activities, or, for example, showing how many times the content is viewed and which content is the most popular. As many interviewees stated, social connection is created through an awareness of other members and is an important contributor to the sense of community: *"I felt that I am the only one who is online, and others have been there at different times. I did not get the feeling of community."* (Female, 42)

2. Social presence, (H3, H6) that is, an understanding of who the other members are and what are they like, makes it easier to post and participate in the group. In an exercising community, knowing something about their background is particularly important, since the users were interested in the training levels of others and wanted to choose their contacts accordingly: *"I would like to see a picture and some background information on them. It is important to find out how much the person exercises and uses the service. It gives some idea of the person."* (Male, 44)

3. Groups (H2, H4) were perceived as a core social feature in which the interaction would occur most often. Inviting interesting people or existing training partners to groups is the easiest way to socialize.

4. Private messages (H5) were wished for as they are an easy way to contact others and communicate one to one. They are also an important channel for building relationships online, sometimes with expectations of meeting in an offline context as well.

5. Filtering and *searching (H8)* for content becomes important after the early stages of the community, when there are masses of users and activities in the online service. The service that was studied facilitated this by *following others,* that is, to network with friends or interesting people and become visible for them in the community. The *follow* feature is also a way to filter the content and enables users to choose which activities to observe. Most often they wanted to select users according to a sport or a place of residence: *"I want to find everyone who skis or runs."* (Male, 44)

6. Dynamic and updating content (H8) that allows the formation of social activity around it, e.g. discussions, ratings, or commenting, supports easy participation. In online communities the content serves as social objects that facilitate interaction and around which the social activity takes place. To support easy

participation, users should be able to find new content easily each time they visit the site. *"When you see an exercise added by someone, you should be able to comment or ask about it. Just like on blogs."* (Male, 45)

5. CONCLUSION

According to the interviews, the users expected participation in social interactions through the online sporting service. They perceived the community to be valuable in many ways in their exercising activities, as it can offer them inspiration, social networking, peer support, and the opportunity to share their exercises and thus receive recognition from others. However, the results of the trial use indicate that they were not able to communicate with others as they wanted to and the overall estimation of the social aspects of the service remained rather low.

The results of user studies show that social connection plays an important role both in the exercising and in the use of the online service that supports exercising activities. Social rewards such as feedback, recognition from others, and status in the group motivate the participants to physical activity, as well as to generating content for the online service. In addition, awareness of others and their presence seems to motivate people to train and makes the experience of training more enjoyable. Thus, the social aspect seems to be very important in training activities, not only concerning team sports but individual sports as well.

We suggest that the Heuristic Evaluation Method is suitable for evaluating the social aspects of a web service, and that the most significant problems in social interaction can be identified with the heuristics for supporting sociability. Most often the participants agreed with the evaluators about the problems of *social presence* and *awareness of others,* as they were considered the most important contributors to the evolution of a community and social interaction with others. In questions that related to *privacy* and *self-presentation* the participants slightly disagreed with the evaluators, since the evaluators identified several problems that were not reported by the users.

In the trial, the privacy concerns did not come out very clearly, partly because the trial use was only for a restricted group of people and the service was not yet open to the public. Therefore, the research frame was somewhat different from what the real use of the service would be. Furthermore, needs relating to privacy and self-expression are subjectively experienced, and there are individual differences regarding these among the test group of ten people.

When the results of the expert evaluations are compared with the data gathered from the user studies, it seems that Heuristic Evaluation with sociability heuristics conducted by three expert evaluators predicted the most important problems in the user interface. However, some evaluator effect occurred, especially in the identification of positive findings. This may be a result of positive findings sometimes being so obvious to the evaluator that they are ignored, while more attention is paid to problems.

6. DISCUSSION

We suggest that the accuracy and reliability of Heuristic Evaluation can be improved by increasing the number of evaluators from three. Concerning aspects of sociability, false alarms are not likely to occur; instead, using many evaluators can bring out more design ideas and recommendations. In order to avoid the subjectivity of expert evaluators, collecting data from users too is essential for understanding the needs of specific community members. In this study, the user interviews offer important information on motivation, individual needs, and the context of use. However, HE alone appears to be useful in the design and development of a service prototype, as it identifies the most severe problems and factors that hinder social interaction, and, thus, the formation of an online community. Furthermore, the results of this study show that using HE for identifying problems in online communities does not necessarily require prior expertise concerning social aspects from the evaluators, as it can be used as a practical and easy-to-use tool in the community design process.

In the creation of online communities, technical accuracy is not enough to make a site successful. In order to attract users to visit and commit, an internet site has to meet users' needs and offer them something more valuable than usable technology; the social interaction creates the community, and the role of technology is either to facilitate or constrain it [16]. Even though usability and interaction design of the website would be perfect, in the end, the success of the community is up to the users.

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Perceptions of Trust Between Online Auction Consumers

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ABSTRACT

Trust between partners is a precondition for business transactions. The perceptions of trust were studied among the users of a popular Finnish online auction site, 'Huuto.net'. Results are based on interview and survey data collected from 358 users. According to the interviews, a reputation system that is based on user feedback is essential for the evaluation of other users and their reliability, but the more experienced users had also adopted more advanced strategies for looking for additional reliability cues. The results of the survey indicate that experienced users with a longer transaction history often tend to establish regular contacts, and, partly for this reason, perceive online transacting as reliable. The experienced users were also more positive about the system and its administration than less experienced users. As a practical result, in this paper, the authors examine which kinds of design elements of the service support the experience of trust.

Keywords: C2C, Electronic Commerce, Online Auction, Reputation System, Social Interaction, Social Sciences, Trust

INTRODUCTION

Trust is the basis of interpersonal relationships, and as a social phenomenon, it emerges from and maintains itself within the interactions of people (Weber & Carter, 2003). Trust is known to emerge especially in personal face-to-face interactions, and therefore the online context has been considered to be challenging for the evolution of trust between people (Friedman et al., 2000; Toma, 2010). In computer-mediated communication the nature and amount of information available from others are altered (Hancock & Dunham, 2001).

Trust plays an important role in business transactions between people as well. There are two types of e-commerce sites, business-to-consumer (B2C) and consumer-to-consumer (C2C), in which the trust experienced between consumers plays a different role. In C2C business, which includes online auction and web forum transactions, there is a bigger risk of cheating because the consumers are able to enter and exit the market, and stay anonymous on the service (Yamamoto et al., 2004). Especially for C2C e-commerce and online trading sites, in order to be successful, it is essential both the system and the people using it to be experienced as being trustworthy, as a climate of trust eases and facilitates cooperation between people and adoption of the service (Shneiderman, 2000).

The more trustworthy people perceive the system as being, the more willingly they will transact. Therefore, technology has an important role in the formation of trust, as it can either assist or hinder the process (Friedman et al., 2000). There are different systems for facilitating trust on e-commerce sites that are developed in order to compensate for the lack of face-to-face presence in an online context, and in particular, systems that are based on users' feedback and ratings from others have been widely used for communicating reputations, and thus facilitating trust between the users of the site.

As trust is an important prerequisite for successful transactions, it is essential to understand how people interpret each others' trustworthiness, and how the technology shapes these impressions. In this study, data were collected in two stages from a total of 358 respondents about their experiences as buyers and sellers on a popular Finnish online auction site, Huuto. net. At first, in order to understand how trust is experienced and formed between the users of the online auction site, we conducted a qualitative interview study of 24 active users of the online auction site. In order to study the factors that affect the experience of trust, a follow-up online survey study with 334 respondents was conducted on the online auction site. In the survey we aim to find out if the experience of use in terms of the number of completed transactions and years as a registered member affects trust, transaction practices, and satisfaction with the features of the online auction site. As a practical result, we conclude the findings by presenting guidelines on how the climate of trust can be supported by the successful design and policy of online trading sites.

RELATED WORK

Trust is about expectations of the future (Shneiderman, 2000). The term 'trust' implies a belief in other people's good intentions; that a person will behave reasonably and do what he or she says (Preece, 2004). However, there is an element of risk in the definition of trust: one can never be sure about the actions of another. As Luhmann (1979) says, if one could, there would not be a need for trust. Because online environments are used by people from different backgrounds, and often anonymously, social interactions can sometimes be risky and unpredictable (Jensen et al., 2002). In online interaction it is more difficult to assess the potential for harm and goodwill of other people, and cues that can be drawn from the environment are essential for the establishment of trust in other people (Friedman et al., 2000).

In previous studies of computer-mediated communication, it has been noted that the evolution of trust takes more time in an online context, as the facelessness and anonymity make it difficult to identify others and create enduring relationships with them (e.g., Hancock & Dunham, 2001). In face-to-face interaction people are able to draw inferences from non-verbal elements and cues which are absent online, and therefore they can evaluate and respond to each other's emotions and thoughts more accurately (Feng et al., 2003). Jones and Leonard (2006) studied the formation of trust on C2C commercial sites, and noticed that when consumers do not know one another, they take cues from social signals when dealing with others.

To overcome the challenges that anonymity, facelessness, and dependency on a technological system impose on e-commerce, many popular C2C transaction sites, such as eBay (http://www.ebay.com), have developed their own reputation systems in order to facilitate trust and minimize abuse. These systems, usually based on feedback from persons with whom they have previously conducted transactions, serve as a proxy for real-world reputation (Green, 2007; Dellarocas, 2003; Resnick et al., 2000). There are several types of reputation systems; some of them require explicit activity from users, while others collect data about users' previous activities and provide information on what kinds of patterns the users follow (Jensen et al., 2002). Reputation systems can contain negative or positive information: a negative system is based on the exclusion of badly behaving users by distributing their histories to everyone

(Kollock, 1999; Yamamoto et al., 2004). The experiences of other people are known to be very valuable information in the evaluation of trustworthiness (Jensen et al., 2002), for this reason, peer-based reputation systems that are based on recommendations from others play a particularly significant role in customers' decision making.

Since C2C e-commerce consumers have not usually met prior to their transaction, the initial trust developed from the perceived quality of the website is very important (e.g., Jones & Leonard, 2006). The experience of the system being safe and reliable affects trust, as does the awareness of what people tend to do in the service. Friedman et al. (2000) present the characteristics that support and facilitate trust in technological systems, and claim that in online commercial transactions people are vulnerable to violations of trust in at least two ways; loss of money and loss of privacy. In order to avoid financial harm, mechanisms that minimize such violations are needed, e.g., an insurance system with a promise to compensate for possible financial harm can create a sense of responsibility. Additionally, third party institutions are known to help to reduce some of the risk of an online transaction and increase overall trust (Jones & Leonard, 2006).

Unlike a traditional face-to-face market, in which the buyer is able to see and examine the product before the purchase is made, in an online market the buyer needs to pay for the product before receiving it. In e-commerce the risk is usually on the buyer's side, which is known to be one of the major obstacles to the development of e-commerce (Jarvenpaa & Tractinsky, 1999). Therefore, perception of trustworthiness is an important factor when a seller is chosen by potential buyers. Previous research (Strader & Ramaswami 2002; Ye et al., 2009), has investigated factors that contribute to seller trustworthiness and affect the selection of the seller, and the results indicate that the most important factors are seller's reputation and the quality of previous transactions, from which honesty and good intentions can be directly evaluated. On the contrary, factors that were of minimal importance for trustworthiness were the type of the seller, an individual or a business, and how long the seller has been in the business, which indicates that an individual can be perceived as reliable as a business (Strader & Ramaswami, 2002). Trustworthiness can also act as an incentive for a seller, since buyers are even willing to pay more when buying from a trusted seller (Strader & Ramaswami, 2002).

THE ONLINE AUCTION SITE

Huuto.net (http://www.huuto.net/fi/), the leading online auction site in Finland, was founded in 1999. In March 2011, there were over 1.4 million registered users and over 1.2 million items on sale on the auction site. The service is owned and administrated by the European media group Sanoma, and it is intended for both private and professional sellers.

Registered users are able to sell and make bids for items. Huuto.net follows the protocol of real-life auctions, so that users can see the highest offer and the history of the bids that were made during the auction. The users are encouraged, but not obliged, to give feedback to their business partners after each transaction. The current feedback system consists of the sum of all the negative, neutral, and positive feedback given by others and ratings with a three-point scale can be complemented by a free-form textual description. As a result, each registered user has a publicly visible history of past transactions on the service that serves as their online reputation as well. Each user has a personal profile page to which they can add a brief written description of themselves, and along with the score received through peer reputation this forms the online presentation of the user.

METHOD AND SAMPLE

Qualitative Interview Study

During the initial phase, a qualitative interview study of 24 users of the online auction site

was conducted in February and March 2010. Twenty of the participants were selected from the database of the online auction site by the service provider, and four pilot interviewees were recruited by the research team. All 24 participants were active users of Huuto.net who had been both selling and buying items through the service during the previous couple of months. Half of them were female and half male, with their ages ranging from 22 to 61 years (average age 39 years). All of them were long-term users of the online auction site as they had been registered for an average of 7 years. The majority of the participants visited the service daily (63%) or weekly (25%). Half of the participants (12) reported mostly selling items, 9 reported selling and buying equally, and only 3 mentioned mostly buying via online auctions.

All the interviews were recorded in audio format, and in order to conduct a content analysis, all of the interviews were transcribed and uploaded to the qualitative data analysis software QSR NVivo 8. The approach of content analysis was summative (Hsieh & Shannon, 2005), as it started with the identification and quantification of certain themes with the purpose of understanding the contextual use of the words.

Online Survey

As a follow-up study to the interview phase, we chose to conduct an online survey of a larger population of online auction site users in order to find out if the findings can be generalized to a larger group of users. The online questionnaire was open for six days during February 2011 on the front page of the online auction site, and a total of 334 respondents filled in the questionnaire. The sampling method was random as both sellers and buyers from all the online auction categories were reached through the survey software, and the system picked up one out of 300 users for the survey.

In addition to the basic demographic questions, they were asked how long they had been registered with the online auction site, how many transactions they had completed, and whether they sell or buy more often via

the online auction site. The participants were asked to indicate on a five-point Likert scale the degree to which they agreed with statements regarding the online auction and the current implementation of several features that were considered as relevant for trust-building.

The gender distribution of the sample was unequal as the majority (65%) of the respondents was females and only 35% males, their average age being 36 years (age range 13 to 76 years). The majority (64%) of the respondents reported having completed 200 transactions or less, and only 19% can be described as "heavy users" that had completed more than 500 transactions. They had been registered with the service for an average of 5 years; however, the majority of the respondents were rather new to the online auction site since half of them (51%) had been registered with it for three years at most, and 12% of the sample was newcomers who reported having created their account less than a year previously. As for their roles on the online auction site, the majority of respondents (40%) mostly acted as buyers, 27% as sellers, and 33% reported selling and buying on the auction site equally.

FINDINGS FROM THE INTERVIEWS

Importance of Trust

The interviewees had different expectations regarding trust in other users and the level of trust they experienced affected their activities as sellers and buyers. Presumably, buying was perceived as riskier than selling, since it is assumed that is the buyer who sends money and pays before seeing the product. For this reason, buyers inspected the reputation more closely than sellers. However, being able to see the reputation of the business partner was important for sellers as well.

The interviewees were asked if they had encountered any problems in transactions, and surprisingly, the majority had not had any negative experiences. Only three out of 24 reported having experienced misuse which

required intervention from the administrator or authorities. Given the number of transactions that had taken place, they had a relatively small amount of experience of misuse or cheating. The presence of an intermediary improved the reliability of the transaction process, as in the event of conflicts, it is easy to check the details, such as price or postage, from the system data-base, where information is recorded and stored for a couple of months after the deal is closed. Therefore, the system itself was considered reliable, although they admitted that the presence of other people can sometimes create a sense of mistrust, as the users are able to cheat if they want to.

In the interviews, everyone agreed that without any trust in other users, transacting online would be impossible. However, in order to become a trustworthy business partner one has to possess some previous history. Therefore, the most difficult stage for the members is being a newcomer without any history of previous transactions on the service. In cases where a user has no history at all, it is impossible for others to estimate whether the person is a newcomer or someone whose previous account was closed as a result of misuse. Because it is difficult to evaluate the honesty of a newbie, in order to minimize risks, all the interviewees claimed that they would rather not buy anything from someone with no reputation at all.

"They have nothing to lose. If you have a history or even some negative feedback, then you have something to lose" (male, 56 years).

In cases where there was something suspicious about the business partner or a lack of reputation, the users needed additional methods to ensure that the deal would be carried out successfully. Meeting face-to-face and being able to examine the product personally were important ways to avoid risks. Similarly to previous research (e.g., Bhatnagar et al., 2000), the price of the product also affected the experience of trust: if the item was cheap, the risk taken was smaller and the potential buyer was less cautious about reliability.

In order to overcome reliability problems, many participants preferred buying from certain sellers that they already knew to be reliable. Therefore regular contacts were formed between sellers and buyers, especially among users with shared interests, e.g., collectors. Regular contacts were perceived as being beneficial for both parties, and there were more negotiations and more flexibility in the rules in dealings between them.

The Reputation System

"If you can see for yourself that a person has plenty of positive feedback, you can send items before the payment, because two hundred people can't be wrong" (female, 30 years).

According to the interviewees, a feedback system that is based on peer rating plays an important role in online auction sites. Maintaining a good reputation is particularly important for heavy sellers and buyers, and they expected others to want to protect their reputation as well, because a good reputation is a prerequisite for doing business successfully. The heavy sellers took their reputation especially seriously because they saw that even a small amount of non-positive feedback would result in their losing trading partners and would harm their business.

The reputation system was perceived as an essential feature in the assessment of reliability, and the interviewees saw the system as helping them in avoiding the biggest risks. But they admitted that people can still find ways to cheat others in an online auction, and there are some flaws in the current implementation of the reputation system. As the system is based on the assumption that both participants are giving honest feedback after each transaction, its reliability will be open to doubt in situations in which people either give false feedback or do not give feedback at all.

One major problem of the current system identified by the majority of interviewees was that they felt that giving negative feedback is not customary. Only in the most obvious cases

of lying or cheating did they think that negative feedback can be given. Otherwise they experienced difficulties in making such a strong statement to another person, because that would be harmful for him or her. Many interviewees also mentioned being afraid of revenge when giving negative feedback, as giving feedback is a two-way process and they would probably receive negative feedback in turn. Some also stated that they could not be honest with the feedback because the three-point scale of ratings was considered too harsh.

As negative feedback was perceived as being so harmful, the participants reported that if any problems occurred, they would rather cancel the deal than take the risk of any damage to their reputation. As a result, problems in the transaction process often remain invisible to other users since they are not documented at all. Other reliability problems of a peer reputation system mentioned by the users were that the feedback was not given for each transaction, because not everyone is interested in giving it. The system also makes it possible to gain a positive reputation in terms of a score, but still cheat on some occasions, when the amount of non-positive feedback remains small and does not affect their reputation significantly.

Evaluation of Seller Trustworthiness

The interviews show that virtual reputation is a primary tool for estimating others; their reliability is assessed on the basis of the feedback score and their previous activities as business partners. However, since the explicit reputation information provided by the system was not seen as completely reliable, the users reported having adopted other ways of finding information on a seller's trustworthiness.

The advertisements can give some cues about credibility and the person behind a user profile; good and detailed photographs and well-written text are considered signs of trustworthiness, whereas brief product descriptions that lack details and photographs reduced the trust in a seller. Surprisingly, some interviewees also stated that too much praise and descriptions that are too positive may seem suspicious as well. As one of the participants says, "As for the advertisements, everyone claims to be selling only new and perfect stuff."

Because of the lack of credibility in advertisements, they felt a need to look for implicit cues of trustworthiness too. The experienced users, who were familiar with the current online auction practices, had learned to recognize cheats on the basis of their advertisements. On the basis of the user interviews, several strategies for finding additional information on a particular seller can be identified.

- By *analyzing the advertisements* the potential buyers were looking for cues about the seller and his or her expertise.
- From the way in which a seller *responds to feedback* it is possible to draw conclusions about his or her trustworthiness.
- Potential buyers appreciated expertise and knowledge about the items on sale, and they were measured by *putting additional questions*, sometimes even irrelevant ones, in order to make sure that a seller is selling a real product.
- *Information* about the seller was *sought for* from the discussion forum of the online auction site in order to find more details for the assessment of reliability.

We suggest that these strategies for finding additional information are an important part of the selection of the buyer since the majority of users mentioned having looked for more implicit information than just the score of peer ratings. Because finding implicit information may require previous experiences of transactions and evolve over time, we assume that they are typical, especially for more advanced users, such as the interviewees of this study.

Table 1. Perceived trust and risks on the online auction site

On a scale from 1-5, how strongly do you agree with the following statements?	Mean (N=334)	Standard Deviation (N=334)
The ratings and score of the seller play an important role when I am making a bid.	4.14	1.00
Huuto.net is a reliable trading site.	4.00	0.78
Users usually operate by the rules of the service.	3.96	0.76
Sellers on Huuto.net are reliable.	3.79	0.78
I will make a bid only if the advertisement is well-written and clear.	3.77	1.01
Buyers on Huuto.net are reliable.	3.68	0.77
Buying from online stores is as reliable as buying from ordinary stores.	3.50	1.01
For me, it is important to see the merchandise before making the decision to buy.	3.38	1.12
I always give negative or neutral feedback if I am not satisfied with the transaction.	3.36	1.20
I haven't experienced any problems with the transaction partners on the service.	3.24	1.43
I will make a bid only if the seller has a verified account on the service.	2.20	1.13
I have received negative feedback unjustly.	2.12	1.49
The merchandise bought from the online auction site does not usually match the description of the advertisement.	2.08	0.86
I only buy from sellers who are already familiar to me.	1.82	0.97

FINDINGS FROM THE SURVEY

Evaluations of the Online Auction

In the survey, the respondents were asked to evaluate 15 statements regarding their experiences of trust and risks in transactions via the online auction site. As shown in Table 1, the following statements received the best ratings: "The ratings and score of the seller play an important role when I am making a bid" (mean 4.14), "Huuto.net is a reliable trading site" (mean 4.00), and "Users usually operate according to the rules of the service" (mean 3.96). The results indicate that the auction site is experienced rather positively since their overall ratings of trust were rather high, whereas the negative statements regarding trust were rated the lowest.

The respondents were also asked to evaluate the current implementation of several features of the online auction site, and the statements "On the basis of the user feedback it is easy to evaluate the reliability of transaction partners" (mean 4.24), and "I am able to see how the previous transactions of my transaction partners have succeeded" (mean 4.18) were rated the highest, whereas the statements "In the event of any problems, I can easily get help from the administration of the service" (mean 3.5), and "The rules and policies of the service are clear to users" (mean 3.91) were rated the lowest. The results indicate that the current features (Table 2) enable them to evaluate others' reliability and see their histories, whereas the clarity of rules and policies, and the administration's ability to solve disputes were given lower estimations.

Table 2. Evaluations of the current features of the online auction site

On a scale from 1-5, how well are the following things actualized in the service?	Mean (N=334)	Standard Deviation (N=334)
It is easy to evaluate the reliability of transaction partners on the basis of the user feedback.	4.24	0.68
I am able to see how the previous transactions of my transaction partners have succeeded.	4.18	0.71
I can communicate with my trading partners easily through the service.	4.07	0.88
The rules and policies of the service are clear to users.	3.91	0.89
In the event of any problems, I can easily get help from the administration of the service.	3.50	0.91

Table 3. Findings from the ANOVA tests compared with years of being registered with the online auction site

Statement (on a scale 1-5)	F	Sig.
I only buy from the sellers who are already familiar to me.	5.322	0.001
I haven't experienced any problems with the transaction partners on the service.	29.644	0.000
I have received negative feedback unjustly.	17.32	0.000
Buying from online stores is as reliable as buying from ordinary stores.	2.777	0.041
Users usually operate by the rules of the service.	3.106	0.027

Comparison with Independent Variables

In order to compare demographic variables (age and gender) and the statements on a scale from 1-5, One-Way ANOVA tests were conducted. The analysis shows that there was a significant difference between men and women in their rankings of the variable "In the event of any problems, I can easily get help from the administration of the service" ($F=5.446$, $p<0.05$), as the ratings given by males (mean=3.35, SD=0.87) were lower than those given by females (mean=3.59, SD=0.92).

When compared with the age variable, differences depending on the age group were found regarding several statements (Table 3). The older respondents seem to be more careful when buying from the online auction site than the younger ones; "I only buy from the sellers who are already familiar to me" ($F=7.273$, $p=0.000$); "I will make a bid only if the seller has a verified account on the service" ($F=4.565$, $p<0.005$). The older respondents also reported being disappointed with the merchandise more often ($F=3.425$, $p<0.05$), and having experienced problems with their transaction partners ($F=3.671$, $p<0.05$). However, the older respondents' rankings of the statement "I can communicate easily with my trading partners through the service" were higher than the younger ones' ($F=5.348$, $p=0.001$).

When the statements on the scale from 1-5 were compared with their status as a seller, buyer, or both on the service, a statistically significant difference ($F=8.33$, $p=0.000$) was

Table 4. Findings from the ANOVA tests compared with the number of completed transactions

Statement (on a Scale 1-5)	F	Sig.
Huuto.net is a reliable trading site.	2.807	0.040
For me, it is important to see the merchandise before making the decision to buy.	3.796	0.011
I haven't experienced any problems with the transaction partners on the service.	4.255	0.006
I have received negative feedback unjustly.	3.240	0.022
Users usually operate by the rules of the service.	3.106	0.027

found on their ratings of "I haven't experienced any problems with the transaction partners on the service", as the buyers reported experiencing the fewest problems (mean=3.62, SD=1.35) compared to sellers (mean=2.92, SD=1.42), and to those who buy and sell equally (mean=3.04, SD=1.42). There is also a statistically significant difference in their opinions about receiving negative feedback unjustly (F=5.14, p<0.05) since the sellers (mean=2.51, SD=1.72) felt they had received it more often when compared to buyers (mean=1.86, SD=1.25), or to those who sell and buy equally (mean=2.13, SD=1.51).

In order to test the main hypothesis, whether experience on the auction site affects the transaction practices and the experience of trust, One-Way ANOVA Tests were conducted to compare variables that measure experience (years as a registered user, the number of completed transactions) with the statements regarding trust and online auction transaction practices. The results show that there are statistically significant differences depending on the number of years one had been a registered member and some of the statements (presented in Table 3).

The findings indicate that consumers who have been registered longer tend to have established transaction contacts. Maybe partly because of this, those who have been registered with the service for the longest time report having fewest problems with their transaction partners. Even though the users who have been registered with the service for the longest time reported having received negative feedback unjustly, they also seem to be the most confident about other people behaving according to the rules of the online auction site, and the reliability of online shopping in general.

When the statement variables are compared with the experience in terms of the number of completed transactions (Table 4), the test results show that the users with 201-500 transactions and the ones with more than 500 completed transactions found the auction site more reliable than those who had a smaller number of completed transactions. In addition, users with more than 500 transactions were the least interested in seeing the merchandise before making a decision to buy, and they also felt more confident about other users usually operating by the rules of the auction site. The group of users with 50 or less transactions completed with the service reported having experienced problems with their transaction partners more often than the users with more experience. However, the group of experienced users did report having received negative feedback more often than the group of less experienced users.

FACILITATING TRUST ONLINE

As a practical result, we will conclude our findings from the empirical user studies as design guidelines for facilitating trust between users of C2C transaction sites. The guidelines are divided

into five main categories which include more detailed design recommendations.

Category 1: Visible User Histories and Previous Activities in the System

The history of transactions plays a major role when looking for cues of trustworthiness. Both the interview and survey results indicate that the transparency of the previous activities is an important factor when evaluating sellers in the service and making predictions about future transactions.

Show History of all The Previous Transactions, Including Cancelled and Open Auctions

Since giving feedback is currently not obligatory, the history of transactions should be made visible in another way. User histories should include unsold items and cancelled auctions in addition to the completed auctions.

Category 2: Detailed and Easy-to-Use Feedback System

Evaluations from other users are considered the most valuable source of information, and therefore ratings from others form a core feature for gauging others' reliability. The statement "On the basis of the user feedback it is easy to evaluate the reliability of transaction partners" (Table 1) was scored the highest (mean 4.24). As giving feedback requires explicit action from users, it should be made fast and easy to use. If the feedback system remains unused, it has no real value for the system.

Design a Reliable and Robust Feedback System

It is vital that the feedback system can be trusted and false feedback should not be given easily. The feedback system will have an impact on users when it is severe enough, and in the case of any misuse the cheats are warned or banned from the service.

Giving Feedback Should be Made Obligatory

Giving positive feedback on the transactions was customary among participants, but when there were problems in the transaction process, giving negative feedback was considered difficult, and this sometimes leads to falsely positive ratings.

Giving Feedback Should be Quick and Easy

Giving feedback on transactions should be capable of being done with the minimum time and effort. In addition, if there is something unexpected or especially satisfying, the users should be allowed to write more accurate descriptions.

Category 3: Social Features and Communication

The communication that relates to online transactions covers both the advertisements that facilitate the communication of the product on sale and all the other interaction channels between transaction partners during and after the auction (e-mail, direct messages, and phone calls).

Keep the Most Important Information Required in the Advertisements

In order to avoid missing information in the advertisements, make the most important information obligatory. The online auction service has to serve different kinds of sellers and buyers, but at the same time there is a need to remain consistent, which can be accomplished by guiding and requiring users to fill in the necessary information every time.

Allow Different Users to Communicate in Different Ways During and After the Auction

Misunderstandings and disappointments cannot be fully avoided in transactions between people. In order to solve disputes and negotiate deals,

people need opportunities for fluent person-to-person communication.

Category 4: Active Control and Interventions by the Administrators

In conflicts, users expect the administrator to solve the dispute. When there is awareness of active administration and knowledge that problems are being solved fast by interventions on the part of the administrators, trust in the system increases and people are encouraged to use it. An awareness of control also prevents part of the misbehavior; therefore the actions that the administration takes should be visible to the users of the auction site.

Make the Administration Policy Visible to Users

According to the results of the user interviews an survey, it seems that the presence of the administration is not always visible and administration's policy in dispute solving could be more active. Due to its absence, using the system may sometimes feel uncontrolled.

Category 5: Clear Policy and Visible Rules

In order to create an experience of trust on the auction transaction site, users have to be aware that any misbehavior, e.g., problems in payment or product delivery, is taken seriously by the service administrators.

The Rules of the Service Should be Clear and Visible

In the event of any unwanted or unexpected situations, users need to have clear rules on how to proceed, and the opportunity to check the rules of the service. When the rules of the auction are stated clearly, the number of misunderstandings decreases.

CONCLUSION AND LIMITATIONS

This study aims to describe how trust is formed in interaction between users of a C2C online auction site. Similarly to previous research (Strader & Ramaswami, 2002), reputation based on peer reviews and the quality of the user history are the most important factors that contribute to the perception of trustworthiness. However, there were some deficiencies in the reputation system and it was not considered completely reliable. For example, they did not want to give negative feedback about minor abuses as they felt that the current three-point scale of the feedback system did not always match their views.

The results from both the interviews and survey indicate that the more experienced users, who had the biggest number of transactions and who had been registered users of the auction site for the longest time, were the most satisfied with the system and had also usually established regular transaction contacts. The more experienced users had also adopted more advanced strategies for looking for additional reliability cues. For a climate of trust, it is essential that the technological system supports the important cues in the assessment of the trustworthiness of other people.

There are some limitations regarding the quantitative part of this study. As the majority of our sample consists of active internet users who reported using the internet daily, we were not able to use the amount of internet use as an independent variable. Furthermore, we were not able to study the differences between consumers from different product categories as the majority of the respondents reported the same product

categories (clothing and household goods) as their main interests.

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Cultural influence on online community use: a cross-cultural study on online exercise diary users of three nationalities

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Abstract: This study investigates the influence of culture on the use of a website intended for tracking exercise activities. The data was collected using an online survey with 258 respondents from three national backgrounds: Germany, the USA and Spain. In the analysis, the focus was on determining whether users' cultural background impacts their use and perception of the site, especially as concerns social networking and the sharing of content. The Spanish were most interested in social networking, collaboration and sharing content with others, whereas the German participants were the least interested in these activities. The applicability of Hofstede's cultural theory in the explanation of differences between national cultures in online community use is discussed.

Keywords: online communities; social network sites; SNSs; cross-cultural research; health and wellness applications.

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1   Introduction

Online communities, and in particular websites aimed at social networking, often referred as social network sites (SNSs), have become hugely popular among internet users. Even though SNSs have been adopted worldwide, so far the majority of user studies have focused on American university students, which may be explained by the origin of many SNSs being in the USA. However, cultural affiliation may mobilise users towards or against a particular service, and therefore motivations for use, the actual use and the time investment in the use of the sites cannot be assumed to be universal (Vasalou et al., 2010). As it can be difficult to apply research findings on the use of a single online community in a specific culture to a wider population with great cultural variety, cross-cultural comparison can help to validate the results and their broader generalisation (Gallagher and Savage, 2013). There is some evidence that cultural differences have an impact on how online communities are used and which features are preferred. Especially differences between users from individualistic and collectivistic cultures have been investigated (e.g., Ji et al., 2010; Rosen et al., 2010), which is also the main theoretical starting point for this study.

Previous research has mostly focused on friendship-based services, Facebook in particular, instead of those dedicated to a specific topic or interest, which may inspire different use of the site. Due to a lack of research on how interest-based, in particular exercise-related online communities are used in different cultures, this study explores the usage and perceived benefits of the social features of such a service, with the aim of adding to the limited amount of research on the topic. The subject of this study is an online exercise diary called Movescount (http://www.movescount.com), a website open to everyone with an interest in tracking their exercises and connecting online with peers. The research data was collected via an online survey targeted at users of Movescount hailing from three different national backgrounds: Spain, Germany and the USA. The aim of this study is to examine the influence of national background in relation to social networking, content sharing and privacy.

2 Background

2.1 Friendship and content-oriented social networking

SNSs are online community platforms where people can create and edit social networks based on their personal preferences. As a consequence of the popularity of SNSs by the amount of users, many websites have adopted features typical of them (Lange, 2008; Ellison and boyd, 2013). According to Ellison and boyd (2013), SNSs have changed people's engagement with online communities by making a shift from interest-driven groups to friendship-driven networks. Because users can belong to multiple networks unlike in traditional online discussion forums, the structure of SNSs can make the conception of who belongs to the 'community' more complicated (Ellison and boyd, 2013). As SNSs evolve, defining them has become challenging. According to a definition given by boyd and Ellison (2007), SNSs allow individuals to construct a public or semi-public profile, create a list of other users with whom they share a connection, and view and navigate their list of connections and those made by others within the system.

SNSs can be divided into two main categories according to the purpose of the site in question. The first group is friendship-based services, such as Facebook, where the main goal is to socialise with other users, the second group consisting of content-based SNSs, such as YouTube, that people visit mostly to view content, placing the resulting social connection in secondary position. Interaction with content and networks is different in these services depending on their affordances. In 'purely social' type of SNS, the relationships are usually symmetrical and mutual, whereas in an SNS focusing on content they are asymmetrical and directed, as the aim is to follow interesting people or subscribe to desirable content (Laine et al., 2011). Unlike friendship-based SNSs that connect individuals who know each other in a real-life context, content-based networks tend to connect strangers around a common interest or topic, and therefore the motivations to participate in them are different. Usually, in content-oriented networks, people use nicknames and are partially anonymous, thus presenting only one side of their personalities (Golbeck, 2011; Armstrong and Hagel, 2000). When joining a website based on a common interest, there is an expectation to meet people who share our interests, and this presumption of similarity is known to make other people more attractive (Baym, 2010; McKenna et al., 2002). Hence, this type of online social networking is likely to lead to connections that might not form otherwise.

Previous research has identified different user types based on their motivations to participate in online communities. According to Velasquez et al. (2013), those who are more individually oriented participate to get recognition from others or build their personal skills, whereas more socially-oriented users participate to build personal relationships or foster the goals of the site. Shoham et al. (2013) noticed that YouTube users differ in how socially-targeted their interactions are, and found that the majority was using YouTube in an asocial manner without interacting with others. Those who actively pursue social interaction with others are more likely to perceive YouTube as an online community than those who use the site passively for content consumption (Shoham et al., 2013). Even though SNSs are centred on people's individual interests

rather than shared interests of a group, communities have been found to form on SNSs as well when groups of people create affective bonds (Cullen and Summer, 2010). For instance, analysis of MySpace (Kalaitzakis et al., 2012) detected 171 different communities, as users formed small but dense subgroups. This indicates that even in large social networks people with same interests and motivations are able to form subgroups identified as communities. In this study we aim to inspect if users' differences in terms of social orientation of participation can be explained by their national background.

2.2   Influence of culture on online social networking

Cultural background has been found to influence how we use and perceive technology. Hofstede's (1980, 2001) cultural dimensions theory has been found a useful tool for understanding differences between national cultures (Marcus, 2005). It has also been used as a reference in cross-cultural comparisons regarding online social networking (Dou, 2011; Ji et al., 2010; Rosen et al., 2010; Jackson and Wang, 2013; Choi et al., 2011; Kim et al., 2010).

Hofstede's theory provides five cultural dimensions measured on a scale from 0 to 125 for the purpose of ranking national cultures in terms of power distance, individualism vs. collectivism, uncertainty avoidance, masculinity vs. femininity and long-term orientation. In the context of cross-cultural SNS research, Hofstede's individualism-collectivism dimension has been particularly popular when exploring the impact of culture on social networking and online behaviour (Rosen et al., 2010; Jackson and Wang, 2013; Dou, 2011; Choi et al., 2011). According to Hofstede (1980, 2001), individualism and collectivism are polar opposites differing in how members of a certain culture define their relationships with others. Members of individualistic cultures prefer loosely-knit social frameworks and tend to perceive themselves as self-reliant. Therefore, competition is encouraged, and personal achievement is valued. In contrast, members of collectivistic cultures perceive an interdependency between themselves and others. As a result, they emphasise group achievement and harmony over individual success. Most of previous research on cultural influence in online communication has focused on comparisons between collectivistic Asian and individualistic Western cultures, with the USA commonly featuring as the dominant 'Western' culture (Gallagher and Savage, 2013).

Uncertainty avoidance, the degree to which members of a group are uncomfortable with or, correspondingly, avoid change, ambiguity and uncertainty, is a cultural dimension that has been found useful in explaining differences in internet use and particularly in the users' relationship to privacy and the sharing of personal content online (Karl et al., 2010). In countries with high uncertainty avoidance, people tend to be risk averse, resistant to change and intolerant of rule-breaking. These countries typically apply rules, conventions, and rituals specifically intended to minimise unpredictability (Hofstede, 1980, 2001).

Previous research suggests that cultural differences may inspire different types of behaviour in relation to SNS use. In individualistic cultures, people have less investment in real-world relationships and therefore spend more time online (Jackson and Wang, 2013). In a comparison between Facebook users in China and the USA, Jackson and Wang (2013) found that for individualistic users with a greater investment in self, SNSs may serve as ideal venues for self-promotion, as the number of friend connections is

greater, but friendships are more shallow and short-lived. Similarly, a comparison of the US and Korean college students indicated that Americans tend to expand their networks in SNSs more widely than Koreans, resulting in larger but looser networks with a far greater portion of weak ties, whereas the networks of Koreans were smaller and denser with the bigger ratio of socially close strong ties (Choi et al., 2011; Kim et al., 2010). According to Jackson and Wang (2013), in collectivistic cultures the importance of family and friends may constitute a reason for lesser use of SNSs, whereas in individualistic cultures the importance of self and having more but less close and more short-lived friendships may be the reason for the greater use of SNSs. Also studies by Choi et al. (2011) and Kim et al. (2010) suggest that even though the US students possessed larger networks in SNSs, the Koreans' networks were generally at a more advanced stage and tighter than those of the Americans. This implies that even though in the US people may be more inclusive in their network building, the nature of their relationships with others is more casual and instrumental (Kim et al., 2010). Similar findings are reported by Rosen et al. (2010), as participants who identified with individualistic cultural backgrounds were found to have larger networks of friends on SNSs, a greater proportion of friends they had not met face-to-face, and to share more photos online, as opposed to participants who identified with collectivistic cultural backgrounds. Based on the difference, they concluded that people from individualistic cultures tend to be more inclined towards self-promotion and better connected than those from collectivistic cultures.

Yang et al. (2011) compared people's social question-asking behaviour on SNS between Asians (India and China) and Westerners (UK and USA), and found that Asians attached more importance to receiving answers than Westerners, and also opted for social search over search engines, as it allowed for the inclusion of more context and provide them with access to the subjective opinions of their social network. Asians were found to use SNSs more professionally and to perceive them as a convenient and efficient way to seek information, whereas Westerners pursued fun and focused on the entertainment aspects (Yang et al., 2011). Similarly, a cross-cultural comparison of Twitter users in the USA and Ukraine revealed that for Ukrainians it is a source of objective information and news, whereas US users tend to post personal updates and use it for socialising (Pentina et al., 2013).

Karl et al. (2010) explored controversial content that students posted on Facebook, and found that US students were more inclined to post problematic information than their Germans counterparts. The finding was explained by cultural differences, as according to Hofstede's theory people from the USA tend to be more individualistic and lower in uncertainty avoidance than Germans and therefore less concerned about rules and conventional expectations for behaviour. According to Karl et al. (2010), another explanation can be that because the USA has a much larger population than Germany. US users may feel more anonymous and less accountable for their behaviour than Germans.

Despite successful research to explain internet use with cultural impact, difficulties in utilising Hofstede's theory have been met. For example, Dotan and Zaphiris (2010) studied Flickr users from five cultures (Peru, Taiwan, the UK, Iran and Israel) and even though cultural differences were detected, they were too contextualised and sometimes too general to be interpreted using Hofstede's theory. In addition, Ji et al. (2010) found it hard to explain motivations to use SNS and the difference in SNS usage by it, because all cultures as well as the online environment are continuously evolving, and involve various

types of users. Consequently, they recommend that additional factors, such as infrastructure or geography, should be taken into account in further analysis (Ji et al., 2010). In addition, the sample and the national cultures included in the studies should be considered as factors influencing results.

2.3   Tools to support exercise

Regular physical activity rewards people with better general and health-related quality of life, better functional capacity and better mood states (Penedo and Dahn, 2005). However, despite the obvious benefits of exercising, people often need extra motivation to engage in it regularly. Consequently, digital tools have been developed to provide means for social support, visualise the perceived benefits of being active, give feedback on the workout and help set appropriate goals (Ahtinen et al., 2008; Munson and Consolvo, 2012). Previous research on online exercise diaries (Malinen and Ojala, 2011) and sports tracking applications (Ahtinen et al., 2008) shows that both personal and social uses can be identified for the tools.

Personal use in the form of tracking, saving and storing data on exercise has been found to motivate people to increase or maintain their current level of physical activity (Harjumaa et al., 2009; Munson and Consolvo, 2012). In fact, the tracking of performance can be a source of motivation in itself with no need for additional rewards (Harjumaa et al., 2009). On the other hand, research on websites dedicated to goal-setting has provided evidence that individuals using the social features of the sites perform better in relation to their goals than those uninterested in the social aspect of the sites (Burke and Settles, 2011). In goal-setting, public commitment seems to play an important role: by sharing their goals with others, people tend to feel a social pressure to stick to them (Burke and Settles, 2011; Consolvo et al., 2006). Furthermore, user may use the social features as a resource to seek advice (Ploderer et al., 2008b), to find training partners (Consolvo et al., 2006) or to get training motivation and inspiration by reviewing other users' exercise logs and jogging routes (Ahtinen et al., 2008; Malinen and Ojala, 2011) or progress pictures of their trained bodies (Ploderer et al., 2008a). At the same time, self-promotion in the form of pointing out personal accomplishments with pictures has motivational value for the user (Ploderer et al., 2008b). In addition, sharing workouts through an online training diary was seen as an additional way of keeping in touch with people the users were friends with also offline (Ploderer et al., 2008b). For this reason, the online interaction was mentioned as a significant factor in their continued physical development and both online and offline interactions provide support and reinforce the values underlying the shared passion (Ploderer et al., 2008b). Despite the many positive aspects of the social features of exercise tools, users may be cautious or even feel negatively about using them. For instance, users do not want to bother their friends, they may suspect that sharing exercise data could be deemed boring or boastful, or be concerned about the loss of privacy (Munson and Consolvo, 2012). Moreover, they may not be able to see any value in sharing their exercise data with others (Ahtinen et al., 2008). In a study by Munson and Consolvo (2012), not even the use of support groups diminished the avoidance of sharing. On the other hand, in the same study, some participants who shared their information with support groups were disappointed by the lack of support, i.e., participants did not get any likes on their posts.

We suggest that different cultural backgrounds inspire different uses of the online exercise diary as concerns two main functions, tracking and socialising. In particular, we

expect differences in social networking behaviour and how and why users share content and interact with others.

2.4 Hypotheses

In this study, we chose to examine differences between the USA, Spanish and German users of a website dedicated to the tracking of exercise-related activities. Of the 53 countries in Hofstede's (1980) original data, the USA ranked number one in individualism worldwide with a score of 91, whereas Germany's score on the dimension was 67 and Spain was listed among the collectivistic countries with the score of 51. The scores and the positions of the cultures are displayed in Figure 1. When compared to each other, Spain is considered a collectivistic culture, whereas Germany and, in particular, the USA can be deemed individualistic cultures.

Figure 1 Three national cultures of the study presented on the Hofstede scale
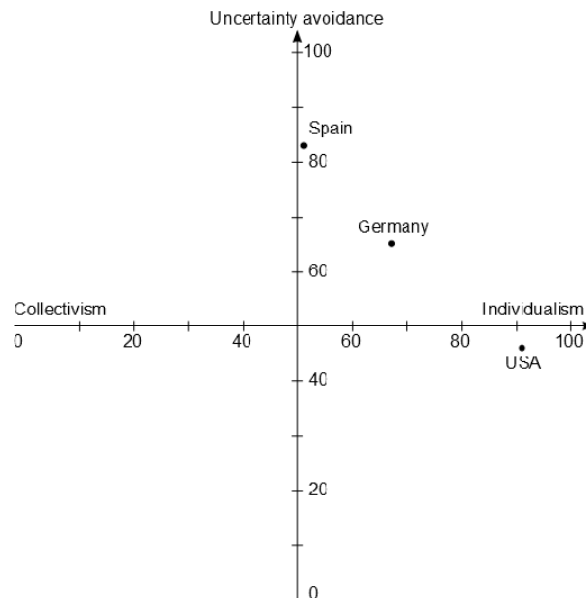
Personal hedonism and goal achievement are valued among members of individualistic cultures, while social bonding, hierarchy, and harmony are highlighted in collectivistic cultures that stress interdependence and group-bonding (Choi et al., 2011). With regard to social networking, it could thus be expected that participants from individualistic cultural backgrounds, represented here by the USA and Germany, would engage in more self-promotion, have more connections and post more actively compared to the representatives of a more collectivistic culture, i.e., Spain. Conversely, Spanish participants might be expected to use the website in a more social way, with an emphasis on real-life connections and reciprocity.

When comparing the three countries in relation to uncertainty avoidance, the USA ranked the lowest with a score of 46 indicating a high tolerance for uncertainty, followed by Germany at 65, and finally Spain, with the very high score of 83 (Hofstede, 1980).

Based on this, it could be expected that participants from the culture the most accepting of uncertainty, i.e., the USA, would be the least concerned about the content they share with others when compared with the Spanish and the Germans.

The question of prime interest, therefore, is whether the cultural differences between the USA, Germany and Spain are indeed manifested in the use and appreciation of the different features of the social networking site intended for people engaging in exercise. The following hypotheses are proposed and tested within this empirical study.

H1   Respondents from the USA use the service to promote their personal goals to share information on their exercising more than the Germans and the Spanish do.

H2   The Spanish are more interested in reciprocity, socialising and forming friendships compared to the Americans and the Germans.

H3   Representing a culture with a high tolerance for uncertainty, the Americans are the least concerned about issues relating to privacy and sharing.

3   Method

3.1   Movescount

Movescount, a website intended for the documentation and sharing of exercise data. The English version of the service was launched officially at the beginning of May 2010, and ten other language versions, including German and Spanish, in July 2010.

There are two main uses for the website:

1   as a personal online exercise diary for tracking one's training sessions

2   as a social networking site for sharing and viewing entries made by other members.

This duality is evident in the links 'private' and 'community' displayed at the top of the main page. 'The private' aspect of the service contains personal content including the user's profile page and training statistics, whereas under 'community', users may access information on other members, for example based on location, type of exercise or popularity. In the 'community' aspect of the service, users can create new groups or join existing ones. The service enables registered members to connect with others through becoming someone's 'fan' and writing public comments or 'shouts'. The most common way of creating content is adding exercise activities, i.e., 'moves' or marking routes on a map.

3.2   Data collection and measures

Users from three countries, Germany, USA and Spain, were chosen as the main targets of the online survey. The participants were recruited with the help of Suunto, the company maintaining the website. They provided the e-mail addresses of 1,000 website users (392 USA, 214 GER, and 394 ESP) who had agreed to receive marketing material (including invitations to surveys) from Suunto at registration.

The questionnaire was provided in the participants' respective languages. In the questionnaire, the participants were asked background information such as age, gender, nationality, the type of sports they engage in and the frequency of exercising. There were

general statements measuring the level of belonging to the community and collaboration on the scale of 1 to 6 (1 = strongly disagree, 6 = strongly agree). Statements regarding member satisfaction in Movescount and its features were also rated on the scale of 1 to 6 (1 = not at all important, 6 = very important). In addition, respondents were asked to rate the benefits gained from online training communities and Movescount in particular in terms of their importance again using the scale of 1 to 6 (1 = strongly disagree, 6 = strongly agree). In order to a compare the ratings with the participants' backgrounds, statistical tests were conducted.

3.3 Participants

In total, 286 respondents completed the online questionnaire. 19 of the responses were from users of other than three targeted nationalities and thus excluded from the analysis. In addition, nine target respondents were excluded from the cross-cultural analysis due to missing data, reducing the final sample size to 258 respondents, out of whom 109 were from Spain (42%), 81 from the USA (31%) and 68 from Germany (26%). Participant demographics are presented in Table 1.

Table 1 Participant demographics presented in percentages or in means (standard deviations)

	USA N = 81	Spain N = 109	Germany N = 68	Total N = 258
Gender				
Male (%)	95.1	97.3	92.7	95.4
Age	41.3 (9.4)	37.2 (7.6)	41.2 (7.5)	39.6 (8.4)
Living in country of origin (%)	98.8	98.2	98.5	98.4

The gender distribution was uneven, as 95% of the respondents were male, excluding gender comparisons from the statistical analysis. The age of the respondents ranged from 19 to 65, with the average at 40. According to the representatives of the company running the website, the sample of this study is highly representative of the average customer in terms of age and gender. A one-way between-groups analysis of variance was conducted to compare ages between the nationality groups, and a significant age difference was found between users from the three countries [$F(2,257) = 7.8$, $p < .005$]. The Tukey post hoc comparison indicated that the Spanish respondents (M = 37.23, SD = 7.60) were significantly younger than the Americans (M = 41.31, SD = 9.38, $p < .005$) and the Germans (M = 41.16, SD = 7.54, $p < .01$), whereas the Americans and the Germans did not differ in age. Due to the significant age differences between the national groups in our sampling, we chose to use age as a covariate in the statistical analysis.

4 Results

4.1 Belonging to an online training community

Belonging to the Movescount community and the overall importance of collaboration and sharing were measured using several statements. Preliminary checks were conducted to ensure that there were no serious violations of the assumptions of normality, linearity, the

homogeneity of regression slopes and the reliable measurement of the covariate. However, in some items there were some violations of the homogeneity of variance assumption (Levene's test). A series of one-way between-groups analyses of covariance (ANCOVA) was conducted to test the hypotheses. Age was used as a covariate in all tests, as it increased the power of the analysis by ensuring that all three national groups are comparable. The independent variable was nationality (three categories), and the dependent variable consisted of the scores measuring agreement with the statements concerning the respondents' level of interest in community features and socialising. All statements with statistically significant differences between national groups are displayed in Table 2.

Table 2   Age-adjusted means and standard errors of statements with a significant effect of national background according to nationality

	Germany N = 68	Spain N = 109	USA N = 81	Sig
Belonging to Movescount community:				
I feel that I am a part of Movescount community.	3.24 (0.166)	4.11 (0.133)	3.76 (0.152)	.000
I have got new contacts through Movescount.	1.81 (0.163)	2.53 (0.131)	2.23 (0.150)	.003
Input made by other members has been useful to me.	2.95 (0.168)	3.72 (0.134)	3.36 (0.154)	.002
It motivates me to exercise when other people can see my profile and my Moves.	3.18 (0.188)	3.50 (0.150)	3.82 (0.173)	.042
Benefits of a training online community:				
Communicating with people with same interests.	3.32 (0.159)	3.99 (0.126)	3.75 (0.145)	.006
Learning from other people.	3.57 (0.140)	4.70 (0.112)	4.36 (0.128)	.000
Creating new contacts.	2.76 (0.149)	3.36 (0.119)	3.27 (0.137)	.006
Getting feedback and guidance from others.	2.89 (0.162)	4.26 (0.129)	3.82 (0.148)	.000
Maintaining and strengthening existing contacts.	3.00 (0.163)	3.73 (0.130)	3.42 (0.150)	.003
Sharing information of myself and my exercising.	2.72 (0.164)	3.55 (0.131)	3.12 (0.150)	.000
Setting goals in exercising.	4.17 (0.144)	4.70 (0.115)	5.08 (0.132)	.000
Seeing statistics of my training and development.	4.82 (0.131)	5.32 (0.105)	5.51 (0.121)	.000
Seeing my profile on 'most popular' lists.	2.27 (0.172)	2.99 (0.137)	2.81 (0.158)	.005
Competing with others by comparing results.	2.54 (0.164)	3.14 (0.131)	3.07 (0.151)	.011

Table 2   Age-adjusted means and standard errors of statements with a significant effect of national background according to nationality (continued)

	Germany *N = 68*	*Spain* *N = 109*	*USA* *N = 81*	*Sig.*
Benefits of using Movescount:				
It gives me new information of sports and training.	3.51 (0.159)	4.07 (0.126)	3.80 (0.145)	.022
I can see statistics of my training and development.	4.75 (0.136)	5.22 (0.109)	5.16 (0.125)	.020
I can get feedback and guidance from others.	3.26 (0.160)	4.12 (0.128)	3.66 (0.147)	.000
I can communicate with people with same interests.	3.16 (0.163)	3.83 (0.130)	3.32 (0.150)	.004
I can learn from other people.	3.29 (0.151)	4.26 (0.121)	3.80 (0.139)	.000
It helps me to set goals in exercising.	3.85 (0.148)	4.79 (0.118)	4.74 (0.136)	.000
I can share information of myself and my exercising.	3.36 (0.176)	4.05 (0.141)	3.59 (0.162)	.007
I can see how others are exercising.	3.47 (0.162)	4.10 (0.130)	3.81 (0.149)	.011
It is easy to use.	4.28 (0.149)	4.70 (0.119)	4.79 (0.137)	.031
It looks nice.	4.48 (0.137)	4.56 (0.110)	4.94 (0.126)	.025

A significant effect of nationality was detected in the scores for the statements 'I feel that I am a part of Movescount community' $[F_{(2,254)} = 8.35, p < .001]$ and 'I have gained new contacts through Movescount' $[F_{(2,254)} = 5.68, p < .005]$. The post hoc tests (Bonferroni) reveal that the Spanish agreed with these statements significantly more than the Germans. The statement 'Input made by other members has been useful to me' was rated significantly higher among the Spanish compared to the Germans $[F_{(2,254)} = 6.42, p < .005]$. Nationality also had a moderate effect $[F_{(2,254)} = 3.21, p < .05]$ regarding the statement 'It motivates me to exercise when others can see my profile and moves' indicating that the US respondents were more motivated by showing their results compared to the German respondents.

4.2   *Benefits of an online training community*

The effect of nationality was found in relation to several statements measuring benefits offered by an online training community (presented in Table 2). Regarding statements about social networking, there was significant differences between the Spanish and the Germans: 'communicating with people with same interests' $[F_{(2,254)} = 5.12, p < .01]$, 'maintaining and strengthening existing contacts' $[F_{(2,254)} = 10.68, p < .005]$, and 'sharing information of myself and my exercising' $[F_{(2,254)} = 7.97, p < .001]$ were rated significantly higher by the Spanish than the Germans.

The following benefits relating to collaboration were rated significantly higher by the Spanish and the US participants than by the Germans: 'creating new contacts' [$F_{(2,254)}$ = 5.24, $p < .01$], 'learning from other people' [$F_{(2,254)}$ = 19.32, $p < .001$)] and 'getting feedback and guidance from others' [$F_{(2,254)}$ = 21.72, $p < .001$]. Benefits relating to goal-setting were also found to be affected by nationality, as both the Spanish and the US participants rated 'setting goals in exercising' [$F_{(2,254)}$ = 10.96, $p < .001$] and 'seeing statistics of my training and development' [$F_{(2,254)}$ = 8.10, $p < .001$] significantly higher than the Germans did. The benefit 'competing with others by comparing results' was affected by nationality [$F_{(2,254)}$ = 4.56, $p < .05$], indicating that the Spanish and the US participants valued competing with others more highly than the German respondents. With regard to competitive aspect of the site, the impact of nationality could be perceived, as 'Seeing my profile on the most popular list' was rated significantly higher by the Spanish than by the Germans [$F_{(2,254)}$ = 5.51, $p < .01$].

4.3   Benefits from using Movescount

Based on their user experience of Movescount in particular, the respondents were asked how they felt they benefited from using the service. Statistically significant differences between the three nationalities are presented in Table 2. The benefits 'It gives me new information on sports and training' [$F_{(2,254)}$ = 3.86, ($p < .05$), and 'I can see statistics of my training and development' [$F_{(2,254)}$ = 3.98, $p < .05$] were rated significantly higher among the Spanish in comparison to the German users and the benefit 'It helps me to set goals in exercising' was significantly more valued by the Spanish and the US participants than the German respondents [$F_{(2,254)}$ = 14.18, $p < .001$].

The ratings of the benefit 'I can communicate with people with same interests' were significantly affected by nationality [$F_{(2,254)}$ = 6.26, $p < .005$], indicating that the Spanish rated it more highly than the German and the US participants. A significant effect of nationality [$F_{(2,254)}$ = 8.30, $p < .001$] was also detected in the ratings for 'I can get feedback and guidance', indicating that this benefit was significantly more appreciated among the Spanish than the Germans. Also, 'I can share information on myself and my exercising' was affected by nationality [$F_{(2,254)}$ = 5.00, $p < .01$] indicating that the Spanish found sharing more important than the Germans.

The statement 'I can learn from other people' was rated significantly more highly by the Spanish when compared to others; also, the scores given by the Americans were significantly higher than those from the Germans [$F_{(2,254)}$ = 12.35, $p < .001$]. As concerns 'I can see how others are exercising' [$F_{(2,254)}$ = 4.57, $p < .05$], the Spanish were more interested in viewing information on others' exercise habits than the Germans were.

Also, benefits related to usability and the appearance of the site were influenced by the respondents' national background. Compared to German participants, participants based in the USA were significantly more in agreement with the statements 'It is easy to use' [$F_{(2,254)}$ = 3.52, $p < .05$] and 'It looks nice' [$F_{(2,254)}$ = 3.73, $p < .05$], indicating that US users had a more positive view of the site design.

4.4   H1, H2 and H3: self-promotion, social networking and privacy

When testing the first hypothesis, we expected that US participants would use the service more for promoting their personal goals by sharing information on their exercising and

would be more motivated by visibility than the Germans and the Spanish. There was some evidence that the US participants were more motivated by the opportunity to share information on their exercising than the German respondents. However, no significant differences were detected between the Americans and the Spanish in terms of interest in sharing information on exercising, competing with others by sharing results, goal-setting, or seeing their profile on the 'most popular' list. Throughout the survey, the responses of these two nationalities, located in the opposite sides on individualism-collectivism dimension, were similar and also statistically significantly different to those of the Germans, who are considered as individualistic as Americans and are situated close to Americans on the Hofstede scale. The findings therefore indicate that differences cannot be explained with the individualism-collectivism dimension.

The second hypothesis suggests that the Spanish are the most interested in reciprocity, socialising and forming friendships. In the tests, evidence was found to support H2, as the Spanish were clearly more interested in communicating with people with similar interests and learning from others than the two more individualistic nationalities. The most notable differences were detected between the Spanish and the Germans: the Spanish had found new contacts and wished to use the service for maintaining existing contacts, and for receiving feedback and guidance from others. The Spanish were also significantly more interested in content posted by others than the Germans were and felt that they belonged to a Movescount community. However, in the majority of statements, statistically significant differences were not detected between the Spanish and the US participants, indicating that not all the differences can be explained by the culture's position on the individualism-collectivism dimension.

The third hypothesis was to test if Americans are the least concerned about issues relating to privacy and thus more open to sharing on SNSs. There was no support for this hypothesis, as no significant differences were detected between the nationalities as concerned keeping the profile private. Also, the opinions of the Spanish about sharing personal information were the most positive when compared to those of the USA and German participants. The findings indicate that the cultural level of uncertainty acceptance does not explain views on privacy and sharing in the context of online exercise diary.

5   Discussion and conclusions

The present study clearly indicates that users of the same website can have very different orientations regarding social interaction and networking with others. Similarly to previous research, even though the majority of users was not interested in community features and did not perceive the website as a community, there were also interactive users who were pursuing new connections and collaboration, and felt like belonging to a community. As expected, national background appears to have a significant role in users' relationship to social networking, collaboration, and in the emergence of community behaviours and feelings in general, as differences between nationalities were detected. However, Hofstede's cultural theory, in particular the dimensions individualism-collectivism and uncertainty avoidance used in this study, does not fully explain these differences as the findings are only partly supported by the theory.

In accordance with the theory, the Spanish, the most collectivistic culture in the comparison, were clearly the most interested in using the site for social networking and collaborating (i.e., creating new contacts and maintaining existing, getting feedback and learn from others). However, across the statements, the ratings given by the Americans were situated close to the Spanish, and the Germans scored lowest, which was the expected position of the Americans. Regarding self-promotion and goal-directed behaviour (i.e., sharing exercise statistics and setting goals), the most individualistic culture in our sample, the Americans, were expected to score highest and the Spanish lowest, but they scored similarly, and the Germans again had the lowest score.

There are several possible explanations for mixed findings relative to Hofstede's theory. First, we did not obtain enough information about the motivations of the respondents: even though both nationalities were equally active in social networking, they may have had different motivations for using it. In a study by Rosen et al. (2010), users from a more individualistic culture were more interested in social features for self-promotional reasons. In our study, it may be that the Americans used it exactly for that reason (i.e., to self-promote and to gain benefits for themselves as increased motivation to exercise), whereas the Spanish may have been motivated to share their exercises for the sake of others (collectivist behaviour). In addition, findings of Dou (2011) show that the collectivistic and the individualistic may not differ as concerns the amount of personal information shared but, instead, differences are more likely to be found in the type of content provided to others. The content shared by collectivistic users may be more beneficial to others, consisting, for example, of advice and help, whereas the individualistic are more inclined towards self-promotion and merely express their personal opinions (Dou, 2011).

Secondly, we had insufficient data on the participants' exercising behaviour. Thus, the contradictory findings may not relate to culture, but to the different goals to use the site that may overrule the cultural behaviour. It may be that the respondents had personal goals in exercising of different levels, and for example, the Spanish may have been more professional and goal-directed which could explain their interest in sharing, while the interest to communicate may derive from the cultural background. In order to find out if user activity is more about social interaction, self-promotion, or goal-directed, we need more specific qualitative data on their motivations and the type of content they have shared.

Using geographical countries as a unit of culture in cross-cultural research on internet use has also attracted criticism. Gallagher and Savage (2013) argue that given the non-geographical and networked nature of internet, the boundaries of a geographical country can only have some influence on the culture within. The internet has generated a globalised worldwide user base, which is likely to result in SNSs representing an increasingly diverse mix of cultures (Gallagher and Savage, 2013). However, Hofstede (2001) admits that even though comparisons between geographical countries may not constitute the optimal method of comparing cultures, they are often the only units available to us in this respect. To analyse cultural effects in a more specific manner, more detailed data on the users' backgrounds needs to be collected. In future studies, research must approach cultural identity more specifically and take into account the various ethnic and cultural backgrounds instead of mere nationality.

To conclude, even though cultural background alone cannot explain user behaviour, it is clear that cultural differences exist in online community use. As online communities are global and continue to expand their reach to new audiences, there is a need for the

localisation of platforms, and designers cannot assume that all of the features hold universal value (Vasalou et al., 2010). For designers, it is important to understand how people from different cultures use websites to enhance the development of their features to better accommodate the characteristics of their users. However, along with national culture of users, the designers should consider the culture of the specific community they are designing for, as the community-specific norms and rules affect the behaviour of the users as well. Cross-cultural research has been acknowledged as an emerging topic in the field of online community studies (Gallagher and Savage, 2013). Understanding cultural variations is important for online community theory development, as it can improve the generalisability of results. As a practical result, designing culturally specific features can increase member satisfaction of users in multiple cultures.

Acknowledgements

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Understanding user participation in online communities: A systematic literature review of empirical studies

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A B S T R A C T

Online communities have become a popular and widely studied research topic. As active participation has been acknowledged as essential for the sustainability of the communities, research has focused largely on the most visible participants with the greatest financial value for community providers. However, users can engage with the sites in different ways, which calls for a more diverse classification of participation, instead of a simple active–passive dichotomy. This systematic literature review discusses empirical studies on online community participation. The results indicate that despite the large amount of research conducted on the topic, a theoretical and conceptual framework for user participation remains undefined as most of the research has approached participation in terms of its quantity. The complexity of online participation and its implications for methodology in future studies is discussed.

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1. Introduction

Since their introduction over 20 years ago, online communities have become one of the most popular forms of online services globally. Consequently, a large number of studies exist on the topic. While online communities have been studied in various contexts, there has not been a cohesive review that would synthesize the results obtained on the various topics and contribute to theory development in the field. In this article, we make an attempt at creating such synthesis while placing particular emphasis on participation as a criterion for online community formation. In this study, online communities are understood as web-based online services with features that enable members to communicate with each other. From a historical perspective, listservs, bulletin boards and chatrooms were the first technologies of online communities. For this reason, online communities are often understood as text-based discussion forums. However, with the constant emergence of new technologies, today's online communities are supported by a wide range of software.

The Internet is generally considered to enhance participation by encouraging and enabling more people to voice their opinion. However, not only users benefit from online participation: one of the most fascinating and at the same time the most challenging aspects of online communities is their dependency on users for

the generation of content, as any user can act as a producer of the content consumed on the sites (Baumer, Sueyoshi, & Tomlinson, 2011; Velasquez, Wash, Lampe, & Bjornrud, 2013). Encouraging participation and building thriving communities are frequently cited central challenges for any online community provider. Therefore, understanding what makes users participate has become a key question in online community studies. Research has found that online participation is connected to many positive outcomes as it indicates greater member loyalty and satisfaction with the online community (Blanchard & Markus, 2004). All in all, social media has dramatically changed the user's role by collapsing the distinction between media consumers and producers, and making users who participate by generating and circulating content the key element of any social media site (Miller, 2011). In this sense, participation is essential for the sustainability of online communities.

This systematic review seeks to analyze empirical findings on online community participation to date in order to provide an overview of main research themes and methods, as well as implications for future research and practice. The objective of this study is twofold: first, we review articles in order to understand the current state of research, particularly how the concept of participation has been defined. Second, we discuss the main issues influencing user participation based on the empirical findings presented in the reviewed studies. In conclusion, we aim to point out emerging research topics and the most important gaps in the field to help the direction of future work.

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2. Background

2.1. Definitions and approaches to online communities

The first and presumably the most cited definition of an online community was produced in 1993 by Howard Rheingold, who described them as "social aggregations that emerge from the Net when enough people carry on public discussions long enough, with sufficient human feeling" (Rheingold, 1993, p. 5). Jenny Preece (2000) approached online communities from the administrator's viewpoint, emphasizing that developing them constitutes a practical activity and that a definition of an online community is needed to guide the practice. According to Preece, an online community consists of people interacting socially and sharing a purpose, of policies to guide these interactions, and of computer systems to facilitate the sense of togetherness (Preece, 2000, p. 10). In social scientific theories, definitions of community have emphasized the significance of experiences and meanings within a community over the role of appearances and structures. In the notion of symbolic communities introduced by Cohen (1985), a community exists in the minds of its members and is constructed symbolically through shared meanings, norms and culture. Later, Blanchard and Markus (2002, 2004) defined shared emotional connection and a feeling of belonging in a group, *a sense of community*, as another distinctive feature of online communities.

Despite the large amount of research on the topic, the term 'online community' has been the subject of debate, as the question whether communities can exist online or not has been addressed by a number of scholars (Miller, 2011; Roberts, 2006; Wittel, 2001). This is partly explained by personal associations of the word 'community' as something "warm and fuzzy" (Preece, 2000) but also by the differences between online and geographically-based communities, especially in when it comes to intimacy and shared history between community members (Brint, 2001; Miller, 2011; Wittel, 2001). Research has shown that community feelings, or a sense of community, can also be experienced online. Yet, not all websites can be labeled as online communities, nor will they eventually become ones (Blanchard & Markus, 2002). In fact, lack of user activity and contributions has been the most frequently cited reason for the failure of online communities (e.g. Ling et al., 2005). Consequently, the importance of user participation for has been widely acknowledged among scholars.

According to Hercheui (2010), research on online communities has so far been descriptive rather than theory-driven and significant emphasis has been placed on the novelty of the phenomenon. There is still a lack of consistency in the field, as a wide range of community types varying in terms of structure, purpose and user base have been compared under the heading online community (Gallagher & Savage, 2013). The main challenge of research has been identified as the constantly evolving nature of the subject, of which research can only capture a snapshot view (Iriberri & Leroy, 2009). Such snapshots do not provide an accurate representation of the dynamic nature of online communities. Research into online communities is currently at an exploratory, developing, and dynamic stage, where membership and activity are increasing at a rapid pace, and more research is needed in order to improve the generalizability of results (Gallagher & Savage, 2013).

2.2. Active participation

Motivating users to participate in community activities has been seen as key to successful online communities (Koh & Kim, 2004; Koh, Kim, Butler, & Bock, 2007). Nov (2007) explored types of motivations in relation to the volume of contributions to

Wikipedia and found that top motivations for volunteering were fun and ideology. In particular, fun as a motivation correlated positively with the number of contributions. In their examination of factors that stimulate participants' posting and viewing of community content, Koh et al. (2007) found that passive participation (viewing) and active participation (posting) were motivated and hindered by different factors. Previous research has characterized two types of community participation: active members, who post the majority of the content, and passive members, who browse and take advantage of the benefits offered without contributing to community activities (Okleshen & Grossbart, 1998; Preece, Nonnecke, & Andrews, 2004). Passive members have generally been referred to as "lurkers". A large number of lurkers may increase the popularity of a community in terms of figures, because they generate website traffic and increase hits, but they do not necessarily contribute to the success of an online community in terms of content (Ridings, Gefen, & Arinze, 2006). However, both types of activity are needed and reflect the members' level of commitment to the community (Koh & Kim, 2004).

From the viewpoint of community designers and administrators, a central question has been how to improve the user interface in order to make the site more attractive to users. Research has produced design guidelines for the creation of communities and for facilitating sociability (Preece, 2000). The concept of participation has been seen as essential for the survival of communities but has also been used as an indicator of their success: websites abandoned by their users have been referred to as "ghost towns" (Preece & Maloney-Krichmar, 2003). For the purpose of evaluating online community success and measuring the impact of new design elements, researchers have developed success metrics. According to Iriberri and Leroy (2009), the most commonly employed metrics are the volume of contributions and the quality of relationships among members. This is based on the assumption that the larger the volume of messages posted and the closer members feel to each other, the more successful the online community.

When participation has been studied in the context of physical communities, evidence has been found that participation in civic society increases social capital (Cullen & Sommer, 2010) and active community members possess a greater number of close social ties in their immediate surroundings (Oliver, 1984). Online participation has been found to have similar effects: those who participate actively are the most connected (Laine, Ercal, & Bo, 2011), and the more people are involved in online organizational and political activity, the more they are involved in these activities offline as well (Wellman, Haase, Witte, & Hampton, 2001). Online social networking can also increase social capital and promote psychological well-being (Ellison, Steinfield, & Lampe, 2007; Wellman et al., 2001). In the context of online consumer communities, user participation has been found to increase customer and brand loyalty, and benefit community providers in many ways (Holland & Menzel Baker, 2001).

To conclude, active user participation has been identified as a key component to any successful online community. However, more research is needed to understand other forms of participation and particularly their influence on the communities. The main objective of this review is to integrate previous empirical research on online community participation. The following four research questions are explored:

RQ1. What are the main topics and types of software studied in online community research?

RQ2. How has user participation in online communities been conceptualized and operationalized in empirical studies?

RQ3. What are the most important factors that have been found to affect user participation in the reviewed studies?

RQ4. Which are the most significant gaps in the reviewed studies, and what implications do they have for future research?

3. Selection of studies

Systematic literature review was chosen as a method in order to identify and review how online community participation has been understood in academic research articles. A systematic review is conducted using a systematic, rigorous standard, aiming not only to summarize existing research on the topic but also to include an element of analytical criticism (Okoli & Schabram, 2010). In a stand-alone literature review, literature in a chosen field is reviewed without collecting or analyzing any primary data; at most, results from the reviewed studies might be analyzed as data for the literature review (Okoli & Schabram, 2010).

Initially, four online academic research databases, ACM Digital Library, IEEE Xplore, Springer Link and Science Direct, were scanned for relevant articles. ACM and IEEE were chosen as they contain conference proceedings from major conferences on human–computer interaction, information systems, and computer science. The focus of this study was particularly in these fields because the usage of websites and applications has been an extensively studied topic in them. Springer Link and Science Direct cover several important journals from various scholarly fields such as business, management and psychology. In order to increase the reliability of the search results and ensure that articles from various scholarly fields will be included, the search was repeated with Google Scholar, which resulted in seven new included articles. All searches were narrowed down to empirical studies reported in peer-reviewed full conference papers and journal articles. The phrases 'online community' and 'participation' were used together in the searches in order to find articles that discuss user participation in some manner.

The first hundred search results of every search were recorded and manually checked to determine their relevance for the selected topic. Multiple publications of the same data were excluded from the review because according to Kitchenham (2007), duplicate reports would seriously bias the results. The articles included fulfilled the following criteria:

- The research focuses on software referred to as an online community.
- The research has included collection of empirical data upon which the findings are based.
- The research discusses users' activities in an online community in terms of participation.

As a result, a total of 83 articles meeting the inclusion criteria were selected for the review. The selected articles were drawn from the following databases in the years indicated in Fig. 1 below. The selected articles were published in the years 2002–2014. The overall sample centered around the most recent research, one important reason for this being that a less current term 'virtual community', commonly used in the 90s and the early 2000s, was not used as a search term and was replaced by more the current term 'online community'. It can be assumed that some of the oldest articles on the topic were left out of the sampling because of this. As 'social network site' was also not used as a search term, most studies of websites classified as SNSs were excluded from the sampling.

Each of the articles was read, after which they were placed in a concept matrix that contained the following headings: 'Research questions', 'Study design', 'Online community type studied', 'Forms of participation', 'Definition of participation', 'Main findings', 'Design implications', and 'Limitations'. In the matrix, the reviewed articles were classified and compared with each other in order to identify the most frequently occurring research topics and methods. The studies were also compared to identify differences, for example, in the way online participation was understood and operationalized. This way, we gained an overview of the reviewed studies and their main results. Studies were synthesized obeying the guidelines by Kitchenham (2007): first, the focus was on the analysis of individual studies, then, the set of studies were analyzed as a whole.

4. Results

4.1. Online community types

The selection of studies covers a wide spectrum of websites; the most actively studied sites were discussion forums or bulletin boards dedicated to a certain topic, such as health or a specific hobby (21), communities of practice intended for learning or professionals (11), enterprise communities or communities of transaction (9), social network sites (7), wikis (5), creative communities including open-source software development (5), and question–answering sites (5). The sizes of the communities varied from huge globally popular sites with millions of users, such as Wikipedia, to small niche communities with only 10–20 members. Almost all of the studied communities were "real" in terms that they consisted of actual members; only in three of the studies (Firpo, Kasemvilas, Ractham, & Zhang, 2009; Kim & Sundar, 2014; Sungwook, Do-Hyung, & Han, 2014) the website was created for research purposes.

4.2. Methods applied

In the past, online community research has primarily employed single-case studies to develop a theory (Gallagher & Savage, 2013). Here, too, most of the papers reviewed consist of descriptions of a single community. In the reviewed studies, the number of participants in the sampling varied from eight online questionnaire respondents (Raghavun & Vassileva, 2011) to interaction data from 32,029 users (Xu & Bailey, 2012).

Fig. 2 illustrates the number of quantitative, qualitative and mixed methods in studies. Based on the review, the research field is dominated by quantitative research as the majority (64%) of the studies were quantitative and only 16% qualitative. Of the studies, 20% applied mixed methods combining survey or system data with qualitative methods, such as interviews, content analysis or observation. The most commonly used methods were survey and Social Network Analysis (SNA). In the latter, the server log data was collected and the focus was usually on the volume of traffic and on the density and patterns of the networks. The sample also included several experimental studies, which were conducted in order to test the effect of an intervention, for instance to analyze the situation before and after changes in a user interface design process (Harper et al., 2007; Kilner & Hoadley, 2005; Masli & Terveen, 2012; Violi, Shneiderman, Hanson, & Rey, 2011).

Comparison of methods and research topics shows that qualitative techniques were used to gain an in-depth understanding of subjective experiences, such as user roles, motivations, values and needs (Cook, Teasley, & Ackerman, 2009; Hsueh-Hua Chen & Been, 2009; Maloney-Krichmar & Preece, 2005; Maloney-Krichmar et al., 2002), whereas large sets of user activity data were collected
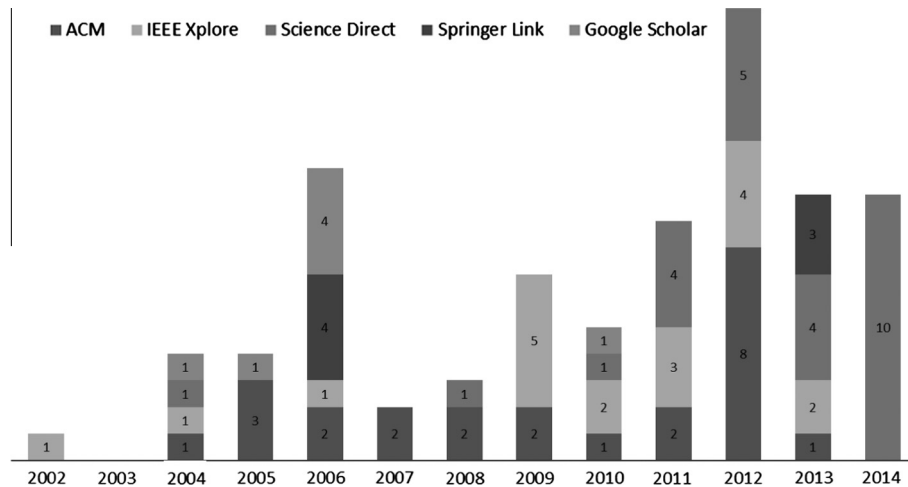
Fig. 1. Selected articles and databases according to publication year (total = 83).
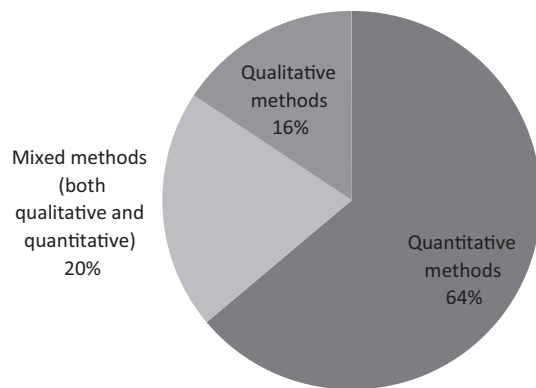

Fig. 2. Research methods applied in the reviewed studies (total = 83).

particularly to analyze behavioral patterns and identify different user types (Bernier & Ganley, 2009; Bisgin, Agarwal, & Xiaowei, 2010; Kalaitzakis, Papadakis, & Fragopoulou, 2012; Lindholm, Kaptein, & Parviainen, 2012; Shi, Zhu, Cai, & Zhang, 2009). Ethnographic techniques – observation and field research – were applied when investigating how users' behavior changes over time. In the reviewed studies, the observation period varied from 16 weeks (Goggins, Laffey, & Tsai, 2007) to 2–6 years (Cook et al., 2009; Dennen, 2014; Gazan, 2009; Maloney-Krichmar & Preece, 2005; Zhang et al., 2014).

4.3. Conceptualizing user participation

On the whole, no specific definition is offered for participation in the reviewed studies. An active–passive dichotomy based on the visibility of activity seems to be the most common way of conceptualizing participation. Some of the authors reflect on whether only those who are actively contributing to the community can be referred to as community members. Cullen and Morse (2011) suggest that creating an account constitutes an active and purposeful action, and hence visible participation is not required in order for a user be considered a part of a community. Most commonly, research in the field has labeled anyone who has visited a site and engaged with it in some way as a participant. However, Suhonen, Lampinen, Cheshire, and Antin (2010) argue that defining who is a user is not a simple task. A user's understanding of whether he or she is a user may not always match with the

designers' definition: users who log onto a site only once and then forget about it may not view themselves as users, even though from the perspective of the system designer they may constitute an essential type of user (Suhonen et al., 2010).

Typically, participation has been operationalized in terms of its quantity. The most commonly employed quantitative measures include duration of membership, time spent online, number of visits, number of hits/views of content, number of contributions, and density of social interaction with others. Overall, the quantitative success metrics focus on the volume of activity, and the more traffic there is at the site, the more successful it is considered to be. Unlike the majority of studies, Shang, Chen, and Liao (2006) asked explicitly an individual's lurking time in the survey and included both lurking and posting time in their definition of online participation. However, numbers alone are not sufficient to explain participation in community activities, and qualitative metrics have also been developed. Self-report questions have been formulated to understand subjective experiences, regarding topics such as how respondents classify themselves as community members in terms of making contributions to the community (Wang & Fesenmaier, 2004). The most commonly applied qualitative metrics measure the subjective experiences of member satisfaction, belonging to the community, and the quality of relationships between members. The use of these metrics is explained by the assumption that high member satisfaction, experienced sense of belonging, and friendships formed in the community predict a low turnover rate and increase participation (Cullen & Morse, 2011; Escobar, Kommers, & Beldad, 2014; Park, Gu, Leung, & Konana, 2014). In order to develop more comprehensive metrics for understanding member behavior, intentions to contribute and the usefulness of contributions made in the community have been used to test the impact of active participation in the success of the community (Kang, Tang, & Fiore, 2014).

In addition to measuring the volume of participation and member satisfaction, research has also produced usability metrics and design recommendations for evaluating and developing user interfaces (Brandtzaeg & Heim, 2008; Maloney-Krichmar & Preece, 2005; Nov, Arazy, López, & Brusilovsky, 2013; Raghavun, 2011; Sahib & Vassileva, 2009). Maloney-Krichmar and Preece (2005) have identified a number of success metrics relating to usability and policy; instead of effective moderation they suggest the supporting of group norms, so that the groups can become self-moderating. Other suggestions include reliable software, supporting subgroup formation, a clear statement of the community purpose,

and particularly for health support groups, credible and trustworthy informational resources (Maloney-Krichmar & Preece, 2005). In their work, Sahib and Vassileva (2009) describe their experiences from launching a niche community for women working in the field of science and engineering. They emphasize the role of functionality in meeting a unique need that defines the community; finding a balance between user anonymity and social translucence; setting realistic expectations for the levels of participation (as niche communities will never become very large); and allowing for the personalization of the community interface because, for instance, younger users tend to be more visually oriented than older ones (Sahib & Vassileva, 2009).

In order to analyze how different types of communities use technology, Muller et al. (2012) compared 188 online enterprise communities in terms of participation rate, relationships and sharing. Their conclusion was that even with the same technologies available, community owners and members make novel use of those resources to achieve different organizational forms and outcomes (Muller et al., 2012). These results put to question the generalizability of community success metrics and suggest that each community type should be analyzed separately. Interestingly, studies have also confirmed that the most important role in community success is not played by technology and that members can be satisfied when only the minimum usability criteria is met (Hsueh-Hua Chen, 2009; Maloney-Krichmar & Preece, 2005; Wang & Chen, 2012). Instead, psychological, social and technical factors are all known to affect participation.

4.4. Types of participation

Most of the research on online communities has focused on visible and active community members. However, literature does not offer a conclusive definition to either 'poster' or 'lurker' to indicate for how long a user needs to stay passive in order to be defined as a lurker but rather view lurking as a transformation from a newcomer to a regular member. For example, in a study of Wikipedians by Bryant, Forte, and Bruckman (2005), participation is understood as a transformation from consumer to creator. This transformation from newcomer to experienced member or from lurker to active poster has been also described as moving from periphery to the center of the community (Bryant et al., 2005; Gray, 2004). However, according to Gray (2004), the process is not that straightforward since members can move back and forth between the center and the periphery, and both types of participation are legitimate ways of learning about the community through an online experience.

Studies investigating non-visible forms participation are often motivated by the aim of finding effective ways to encourage passive members to participate, thus rendering these invisible users more visible on the site (Nonnecke, Andrews, & Preece, 2006; Rafaeli, Ravid, & Soroka, 2004; Soroka & Rafaeli, 2006; Suhonen et al., 2010). Finding out whether lurking is transitory and if lurkers will eventually become regular posters has been in the interests of researchers, as converting lurkers into active participants has been seen as a critical goal in creating vital online communities. Thus, the active–passive dichotomy includes an expectation of passive members becoming or evolving into "real" members. Lurking has been found typical among newcomers, as it can serve as a good way to get to know the community and its rules, although the chances of de-lurking decrease with time (Rafaeli et al., 2004; Soroka, 2006).

Nonnecke et al. (2006) claim, that lurking is a passive but non-negative way to enjoy an online community, and lurkers have a lessened sense of community and membership compared to active posters. However, lurking may also be motivated by a sense of community, as interacting with content created by others can make a person feel that he or she belongs to the group (Soroka, 2006). According to study by Tonteri, Kosonen, Ellonen, and Tarkiainen (2011), both forms of participation, reading and posting, have a positive influence on the development of a sense of community, and spending time in the online community and reading messages may actually lead to closer attachment to the group. On the whole, researchers agree that lurkers hold the important position of audience in the communities. Since perceptions of activity and social presence may be crucial when browsing a site that does not have a high volume of new content, lurking and other passive activities should be made more visible through displays of site usage, for instance, in the form of the number of recent visitors or current page views, or ratings and voting tools (Soroka, 2006; Suhonen et al., 2010; Tonteri et al., 2011). In this respect, a major challenge is posed by finding suitable methods for studying passive members, since tracking their behavior is difficult because they often remain implicit and leave fewer traces (Soroka, 2006).

Even though the majority of the studies classify users as either active or passive, more complexity is needed in the analysis of participation. In a study by Shoham, Arora, and Al-Busaidi (2013) focusing on interaction around a YouTube video, the researchers explored how socially-targeted and interactive the commenting was, in other words, whether active participants posted general comments or targeted their comments to certain persons. Shoham et al. (2013) identified three different types of content consumption: interactive consumption that employs YouTube as an interactive tool; passive consumption that takes place when users passively view the content similarly to television; and active consumption that happens when users actively comment on the content but do not address their comments to other users. Those whose interactions are more targeted to specific others, for example in the form of chatting and messaging in order to create and maintain relationships, are found to be more important for community formation, as interactive users form subgroups and tend to be more community-oriented (Shoham et al., 2013). These findings reveal that a large volume of content contributed is not necessarily an indication of interactivity and that users can be very active in an asocial manner. Participation on YouTube was mostly of a passive kind with a small proportion of users participating actively and even fewer interacting with others. As can be expected, interactive participants who pursue social contacts are more likely to perceive YouTube as an online community, whereas non-interactive and passive users use it as a channel similar to television (Shoham et al., 2013).

Another study that has approached participation without active–passive categorization is by Nov, Naaman, and Ye (2010) who studied online photo-sharing service Flickr, and suggest that participation can be divided into two main types: sharing information with others in the community and joining social structures within the community. The social structures depend on the website in question, and they can involve, for example, joining in one-to-many relationships such as groups, or creating one-to-one ties with other members by adding them as "friends" or "contacts" (Nov et al., 2010). Hence, in this classification, participation is not viewed only trough content sharing but also establishing connections with other members is understood as a form of participation.

To conclude, a central theme in research on participation that seems to divide opinions is whether lurking is participatory activity or not. One major problem in studying lurking has been the invisibility of activities which has made difficult to analyse it. However, research on lurking has become more diverse and does not only view lurking as under-contribution problem (see e.g. Ling et al., 2005); instead, many studies have brought out how lurking can be beneficial for community. By bringing lurkers' actions visible, for example, by showing statistics of their activities,

their presence in the community can be increased (Suhonen et al., 2010; Tonteri et al., 2011).

4.5. Factors that explain participation

4.5.1. Motivations

Understanding users' motivations for participation has often been highlighted as a key issue for analysis, because joining online communities can be inspired by several different motivations. As long-term participation is important for the survival of a community, motivations for both joining and staying active have been studied (Arguello et al., 2006). On the one hand, by investigating the motivations passive users have for joining communities, administrators are able to create more effective and more persuasive communities for potential users; on the other hand, by understanding the motivations of long-term users to continue to participate, administrators are better able to retain them (Violi et al., 2011).

Research suggests that motivations to participate can be different depending on the type of community. In Wikipedia, altruism and ideology constitute important drivers: the authors are contributing for public good (Nov, 2007). In creative communities (e.g. photography and music), the opportunity to present their skills motivates people to contribute and the main motivation is to gain diverse feedback on creative work (Cook et al., 2009; Nov et al., 2010; Xu & Bailey, 2012). In a photography community, also instrumental motivations, such as building relationships with other photographers, establishing a reputation and promoting professional services, seem to be present (Xu & Bailey, 2012).

Motivations have been divided into intrinsic and extrinsic, in the sense that intrinsically motivated users do not expect external incentives for their contributions, as participation acts as its own reward (Cook et al., 2009). In their study of a creative music community, Cook et al. (2009) noticed a difference between amateurs and professionals, as the professionals were less likely to contribute back to the community. In a study on a Q&A site on mathematics, Tausczik and Pennebaker (2012) obtained opposite results, as people with the most expertise used the site more for helping others, and found no difference in reputation building as a motivation between the experts and non-experts. Fuglestad et al. (2012) investigated the possibility of predicting which of the newcomers in a movie-rating community would become active participants and classified motivations for volunteering as other-oriented, i.e. for the purpose of learning about or benefitting others, and self-oriented, i.e. geared toward obtaining benefits for oneself. Other-oriented motivation predicted higher basic engagement, so that people with higher community involvement were also more likely to develop feelings of a sense of community (Fuglestad et al., 2012). In a study of online photo-sharing, Nov et al. (2010) identified four types of motivations: enjoyment and commitment which are driven by intrinsic motivations, and self-development and reputation building, which are extrinsically motivated. They found a negative relation between the self-development motivation and the amount of information artifacts shared: people post less content but provide more information and join the social structures at the site in order to draw attention to their shared photographs (Nov et al., 2010). The finding is explained by a trade-off between quantity and quality of contribution, that is, users with a self-development motivation focus on quality instead of the quantity of content (Nov et al., 2010).

The importance of understanding motivations has also been questioned. Wohn, Velasquez, Bjornrud, and Lampe (2012) criticize researchers for assuming that users are rational individuals who are always aware of what they are doing and why. According to them, non-conscious habits can explain why users engage with websites and participate without actively thinking about it. Habit plays a stronger role especially in tasks that require less cognitive effort; therefore habit is linked to light-weight content production, such as ratings and messages, and particularly to content consumption (Wohn et al., 2012).

4.5.2. Personality traits

Aside from studying a general user population, research has also explored how personality traits affect participation. Some differences have been detected, not only in the amount of use but also concerning what people do online. Extroverts may spend less time online but are more prone to social networking, sharing and voicing their opinions, whereas those high in neurotic traits look for a sense of belonging (Nov et al., 2013). Findings by Cullen and Morse (2011) show that individuals high in neuroticism were less likely to actively participate in the online activity of the community, and motivations for participating varied according to personality trait, as those high in agreeableness were motivated by helping others whereas the main motivation for those high in conscientiousness was finding useful information. Cullen and Morse (2011) also included gender in the analysis of personality traits and found that women who are high in extroversion ask fewer questions online but seek friendship more actively compared to men with the same trait.

Some characteristics typical of online communication, such as asynchronicity, anonymity and invisibility, can make it a more attractive channel for introverts who are more cautious and seek to minimize risks associated with their behavior (Nov et al., 2013). A test of the effect of audience size cues on contributions revealed different reactions among extroverts and introverts, so that when a large audience size encouraged extroverts to contribute, it decreased contributions by introverts (Nov et al., 2013). When Nov et al. (2013) tested the effect of design cues indicating the behavior of others, such as prior visits and ratings, they found that cues representing others' opinions had a greater impact on those who are high in neuroticism, as they were found to adapt their ratings to better match those provided by others. Personality traits have thus been found to influence people's behavior online and their motivation to participate. However, no indication was found that the group of active participants would have been dominated by a particular personality type (Cullen & Morse, 2011). Concerning the possible utilization of the findings regarding different personality types, Nov et al. (2013) suggest that personality targeted user-interface design can enhance online participation and the features of the sites could adapt to users' personal attributes by providing them information that makes them feel comfortable.

4.5.3. Values

As the user base of online communities can be global, they are likely to involve a blending of cultures. According to Grace-Farfaglia, Dekkers, Sundararajan, Peters, and Park (2006), active participation in online communities may reveal emergent individual and cultural values. The cross-cultural comparison of online participation among three nationalities, the US, Netherlands and South Korea, revealed that South Koreans, who as a nation tend to value collective activities, were more likely to seek out and participate in both online communities of interest and organizations within their own local communities (Grace-Farfaglia et al., 2006). Overall, online community involvement was significantly higher for the low context cultures (NL and US) compared the high context culture of South Korea, indicating that text-based interaction lacking in environmental context may not involve sufficient social presence for South Koreans to have meaningful interactions (Grace-Farfaglia et al., 2006).

In the same study, the community's value orientation was added to the analysis to find out whether cultural values differ

between the communities. The comparison revealed that materialistic values were the highest among goal-oriented sports and multiplayer communities, in which the emphasis is on achievement and competition, whereas in religious, social support and health communities the values were the least materialistic (Grace-Farfaglia et al., 2006). These findings indicate that individual values behind online participation are influenced by national cultures and online subcultures, suggesting that the Internet creates a technological convergence between nationalities, not a cultural global village (Grace-Farfaglia et al., 2006).

4.5.4. Group processes

In addition to users' individual characteristics, there are various group processes that affect online participation as well. Bisgin et al. (2010) studied the role of homophily in the formation of new ties on two social network sites – a blogging site and the online radio last.fm. The notion of homophily refers to a greater likelihood of similar individuals associating with each other compared to others. Research in sociology has pointed out that similar groups of people come together to form communities (e.g. McPherson, Smith-Lovin, & Cook, 2001). Often, the choices for creating new ties in real world are influenced by socio-demographic factors, such as age, gender, education or geographical and organizational locality, but online these factors are usually absent, and instead, people share their interests and experiences (Bisgin et al., 2010). The results demonstrate that the creation of new ties in online communities does not depend on interests but seems to be a rather random process, as the whole population on the SNSs studied appeared to have similar interests and the subgroups that emerged formed randomly based on the density of ties among a group of individuals (Bisgin et al., 2010). Also Casaló, Flavián, and Guinalíu (2013) have studied the effect of individual perceptions of reciprocity and similarity in relation to community success. They found that both perceived reciprocity and similarity with other group members positively influenced members' satisfaction and intention to participate in community activities. In particular, response speed, value, and frequency are key elements in the reciprocity of a community due to being conducive to dialogue (Casaló et al., 2013).

Scholars have been interested in detecting how and when a website becomes a community. Gazan (2009) studied a general Q&A site and found that when people concentrate less on the specific content of the website and more on each other, the community begins to evolve. In the study in question, a critical development occurred when the focus of content shifted from factual questions and answers to more inward-looking questions about individual users and the community itself (Gazan, 2009). Similarly, Bryant et al. (2005) noticed that when Wikipedians became drawn into the community, their perception of the site changed and they started to view it as a community rather than a collection of articles. According to them, becoming a community member can be seen as a shift from peripheral participation to the center of community activity (Bryant et al., 2005). In a study of a blogging community, Dennen (2014) found that newcomers may start as commenters and later on, when they have an established identity in the community, they start their own blogs. Individuals become community members by observing those already engaged in the practice and mimicking their activities while also interacting with them, thus newcomers are expected to observe others and learn how to fit in (Dennen, 2014).

Rodgers and Chen (2005) studied the life-span of user participation in the context of breast cancer bulletin board. They found that over time and frequent participation the members' orientation changed and there was a shift from being a seeker of information to a giver of information, i.e., instead of looking for information they started to benefit others by sharing information (Rodgers & Chen, 2005). One explanation for this shift may be that when participants feel more comfortable with the group, they also become more confident in providing information and support to other members (Rodgers & Chen, 2005). Similar changes in user participation have been identified in the context of consumer community as well. In a longitudinal study of online poker players, Lindholm et al. (2012) noticed that over time the amount of money spent on the site was reduced and the users became more involved with the community. This phenomenon can be seen as a trade-off between community activity and consumption, suggesting that high involvement in consumption and high involvement in community activities are mutually exclusive and substitute activities (Lindholm et al., 2012).

4.5.5. Technology and policy

User participation has often been observed on a temporal dimension: a website needs to gain new members, but it is equally crucial to maintain the old members over time. Research has identified critical stages for when users tend to leave sites, with the redesigning of sites as one of them. According to Gazan (2011), redesign can disrupt communication patterns and restrict access to collective content. In the beginning, many sites suffer from "the cold start" problem, when the site does not yet have content or users. Particularly sites based on personal recommendations or reviews suffer from lack of content, as this has a negative impact on the reliability of the site (Sahib & Vassileva, 2009). As a solution for attracting new members, research has suggested personal invitations that encourage joining the community (Harper et al., 2007; Violi et al., 2011). More specifically, personalized introduction messages that emphasize social interaction were found to significantly increase participation (Harper et al., 2007; Sahib & Vassileva, 2009; Violi et al., 2011).

The level of anonymity has been found to influence participation. Anonymity may be useful especially at the beginning of the relationship, but later on subsequent offline interactions can help connect people and facilitate interaction (McCully, Lampe, Sarkar, Velasquez, & Sreevinasan, 2011). The use of real names may limit what users feel comfortable to say (Liao, Pan, Zhou, & Gan, 2012). However, the comparison of different anonymity conditions has revealed that total anonymity is the least desirable condition, as it leads to negativity, whereas using pseudonyms is the preferred profile option, as it increases contributions and significantly reduces negative postings (Kilner & Hoadley, 2005).

It has been acknowledged that participation changes over time. For instance, users who began using a site for the purpose of seeking information or entertainment may want to stay because of social interaction with other members (McCully et al., 2011). Usually users contribute less or engage less in communication with others over time and become "latent", most often this is caused by changes on the site or in user's personal life (Velasquez et al., 2013). Attempts have also been made to determine why some users subscribe to a site but leave it only after a short while. Analysis of users who have registered to a site but remained inactive, referred as "tourists", indicates that they are members who have not connected with others and have a small number of friends on the site (Kalaitzakis et al., 2012). Therefore, a large number of contacts with other members and participation in the community keep users from abandoning the site. Also community response is found to be critical for new members, as the newcomers who received feedback and responses to their questions were more likely to stay on the site and become active members (Singh, 2012). Similarly, in Brandtzaeg and Haim's (2008) investigation of why users reduce participation or leave an online community, lack of interesting people or friends on the site and non-interesting content were named as the most important reasons.

In studies on the effect of rewarding and incentives on participation, immaterial incentives such as prestige and reputation have

been identified as the most effective rewards (Cook et al., 2009; Kilner & Hoadley, 2005; Park et al., 2014; Tausczik & Pennebaker, 2012). In particular, a strong sense of belonging is an important incentive to contributing and makes people feel they should contribute to the community without monetary reward (Park et al., 2014). Similarly, explaining members the value of their contributions was found to increase the contributing, in particular, when this was done in a subtle manner (Rashid et al., 2006). Monetary rewards are found to be successful only in corporate websites (Liao et al., 2012). Even though reputation systems might be encouraging for users, popularity rankings can also have negative outcomes through making less popular users feel unwelcome (Cook et al., 2009). In a study of a creative music community, amateurs and professionals were found to have different motivations and professionals were less likely to contribute back to the community, as, unlike the amateurs, they did not perceive the non-monetary rewards as sufficient (Cook et al., 2009). Investigation of different moderation styles has also confirmed that users appreciate indirect forms of control and a positive, rewarding and non-punishing moderation style is the most effective (Matzat & Rooks, 2014).

Research on usability has focused on identifying the main barriers to participation. When studying an online health community, Maloney-Krichmar and Preece (2005) found that even though the technology was not designed to support social interaction, users were able to adapt to the system's limitations, form their own roles and subgroups, and develop strong relationships and community norms. The reviewed studies clearly indicate that the key challenges facing online communities are not simply technological. It also becomes clear that technical problems or poor usability are not the main reasons for abandoning a community. Instead, users value interesting content and people, and are highly likely stop frequenting an online community if these cannot be achieved.

5. Discussion

The research on online community participation can be categorized into five main research types. The majority of the reviewed studies have focused on users' *individual characteristics* and investigated their relation to participation. Among the individual characteristics are psychological topics such as motivations, personality traits, values, and benefits that are perceived from participation. Research on individual characteristics has identified different user types and their relation to both information seeking and social interaction, indicating that people have different orientations for online community participation. However, these orientations are not permanent but have been found to change over time and experience (e.g. Rodgers & Chen, 2005). According to the reviewed studies, less effort has been put in understanding *social influence* that people have on each other in online communities. Studying social influence and group processes usually requires longitudinal research approach and observation, and methodological constraints may partly explain the lack of research. The reviewed studies have mostly adopted a descriptive approach to online participation; despite introducing a rich level of detail, descriptive studies often lack in explanations of online behavior and descriptions of the impact of the social context (Hercheui, 2010).

Research focusing on *technology* has investigated how to facilitate participation with successful user-interface design and create optimal conditions for participation. Particularly, in the early years of online communities many design guidelines were created in order to create minimum standards to ensure the success of an online community (e.g. Maloney-Krichmar & Preece, 2005). Even though the perceived usability problems may limit interaction,

research has confirmed that usability problems are not the major reason behind leaving an online community (Brandtzaeg & Heim, 2008). *Organizational* viewpoint is adapted particularly in studies that focus on professional and learning communities. From this perspective, online community can serve as, for instance, an instrument of knowledge-sharing in organization (Hara & Hew, 2006) or a platform that enables collaborative work on assignments (Goggins et al., 2007). Studies from organizational viewpoint include various topics and community functions, such as knowledge-sharing, professional development, organizational management, rewarding, and moderation (Cook et al., 2009; Gray, 2004; Liao et al., 2012; Matzat & Rooks, 2014; Sing & Khine, 2006). The fifth research type views online community participation from *business* perspective. In this category users are viewed as consumers and value-creators. Online communities have been found to benefit companies in many ways, as they can increase brand loyalty, trust, and interest in the products (Shang et al., 2006; Tsai & Pai, 2012), improve customer relationship, and attract new customers (Kang et al., 2014).

Bechmann and Lomborg (2013) have divided studies on participation into user-centric and industry-centric, based on different interests in value-creation. In user-centric studies, the user is given the role of an agent actively shaping and managing the social realities of everyday life, whereas industry-centric studies view users more as means to an end, based on the financial value they create for companies through their creative activity (Bechmann & Lomborg, 2013). According to the reviewed studies, the majority of research on online communities has viewed user participation from an industry-centric perspective, in which the active user functions as a tool for financial value creation through creative content production. For community providers, the most important goal has been to gain more critical mass manifesting itself as 'clicks' on their sites. Therefore, visible participation has been often seen more valuable than lurking. The most frequently recurring research question throughout the reviewed studies has been, 'How to encourage users to participate?' Moreover, several attempts have been made to find ways to motivate passive members and to examine the most active users in order to find reasons for their contributions. From this viewpoint, user participation is treated as an instrument for community maintenance, and users' creative actions are encouraged because of the financial value they create to companies maintaining the sites. Therefore, it is relevant to ask if the emergence of community feelings brings any extra value to the provider. Some studies have suggested that the interests of community members and providers may sometimes be in conflict and that communities begin to evolve at the point when users start to pay more attention to each other than the actual content of the site (Gazan, 2009; Lindholm et al., 2012). In some cases, community formation can even be an unwanted outcome. Purely from the business point of view active consumers should not be encouraged to become more active as community members, because only a few individuals are active in both types of participation (Lindholm et al., 2012).

Research on online communities involves several methodological issues. Obtaining a representative sample and generalizable results may be challenging, as online communities usually contain a large amount of content and several different types of interactions for the researchers to focus on. Particularly when analyzing user-generated content, such as discussion threads or wiki entries, the data may cover tens of thousands of items. This makes it particularly challenging to generalize the findings with the aim of explaining the entire user base of a website. Usually, single case studies can only provide a snapshot of a certain type of a community and thus have value only in terms of documenting a specific point in the development of a particular community (Iriberri & Leroy, 2009). Research has indicated that online communities

evolve over time when people become aware of themselves as group members, feel ownership of the content, feel attachment to the group and helping others as their responsibility (Bryant et al., 2005; Dennen, 2014; Gazan, 2009; Rodgers & Chen, 2005). Longitudinal research would bring more validity to the results and therefore data that explores the long-term effects of group participation is needed in order to understand the influence of participation in online community formation (Iriberri & Leroy, 2009; Rodgers & Chen, 2005).

When studying users via self-report surveys, it is necessary to consider certain general methodological issues. Tausczik and Pennebaker (2012) claim that people are likely to report an idealized image, and the solution is to measure actual behaviors indicating motivations. However, focusing analysis on exclusively on explicit activity leaves researchers in the dark concerning, for example, reasons for leaving the site or the quality of interaction. In the quantitative studies and system data analysis, the most commonly cited limitation was the lack of qualitative, more interpretative data that would reveal more subjective information. Similarly, qualitative research requires more generalizable numeric data covering large groups of users. The best results are therefore gained with a combination of qualitative and quantitative data. In the past few years, quantitative research, and more specifically Social Network Analysis, has become a prominent method, as the tools for analysis have evolved. However, a purely structural approach to social relations is not sufficient to explain the social processes that construct an online community (Yuan, 2013). In the reviewed studies, qualitative research is in the minority, which can perhaps be seen in the lack of studies focusing on experiences or meanings.

The main limitation of this review lies in the selection of publications. The databases used for searches are centered on human–computer interaction, computer science and engineering, whereas social scientific research was less present. The majority of studies included in the review present applied research that is usually guided by practical goals. Hence theoretical considerations may have not been given much notice in the majority of them. According to Okoli and Schabram (2010), a systematic review will always be shaped by subjective interpretation, but a detailed description of selection method increases reliability and allows others to repeat the same procedure. As suggested by Kitchenham et al. (2009), clear criteria for inclusion and exclusion were created to ensure the unbiased selection of articles, as described in Section 3. This review has approached online community participation from a broad perspective, as the main goal was to gain a general view of the phenomenon. However, because of the large amount of empirical research available on the topic, some relevant studies may still have been left out of the sampling, making generalizations less reliable.

6. Conclusions

Several issues have emerged from the review to be considered in future studies. First of all, there is still no universally accepted definition for online communities, and when definitions have been employed, they originate from the early online community studies, with Jenny Preece (2000) as the most often cited source. In the majority of the studies, 'online community' is used as a general term to describe software that allows people to interact and share content in the same online environment, while the existence of community feelings or behaviors remains unexplored. Therefore, this review suggests that the understanding of the concept of online community has not been expanded in any substantial way through empirical research conducted on online community participation. The field of online community research being dominated by a descriptive research approach may result in a lack of

theory development in the field. As for the second key term of this review, 'participation', there is plenty of empirical research investigating user participation through the volume of activity, but the concept itself has been usually left without definition. Even though research has focused on the quantity of participation, in practice, participation has been simply understood as being a member and having logged into a system, including passive users, indicating that mere presence in the service can be a form of participation.

Empirical studies of online participation have typically focused on the most visible and dominant participants who in reality represent a minority among community members. Instead of focusing on the amount of user activity, more attention should be paid to the quality of activity in terms of its relevance for the community. Some users are focused on self-promotion and share content in order to obtain personal gain, whereas others prefer to share content that is useful for others with the aim of helping other community members. In terms of numerical data, their activities may appear similar, even though some types of contributions benefit the community more than others. In the context of this review, no research was carried out on anti-social and disturbing behavior such as trolling, lying or harassing others. In these cases, it is possible that active participation may even be harmful for the online community.

There have been several of attempts toward creating design guidelines and policies for flourishing communities. However, as the community platforms differ greatly from one another in several aspects, attempts at universal design recommendations remain few. Technology has changed dramatically during the twelve-year-period covered by the reviewed studies, and research has viewed online communities at very different stages of development. The majority of the websites studied represent traditional and simple text-based discussion forums. Recently, the emergence of social network sites has facilitated real-time sharing and participation, and mobility has freed users from the restrictions of a geographical location. SNSs allow users to create individually constructed networks and share information to more restricted audiences, in contrast to discussion forums where the content is available equally to all members. As new types of online communities emerge, researchers need to understand their structural differences, which also affect the forms of social interaction.

There are plenty of emerging topics for future work that require a broad-based approach to communities, such as the cultural impact on Internet use and the long-term development of membership and technology. One important question to be considered is the relationship between the activity of participation and community success, or more specifically, whether or not it is possible to identify other factors contributing to the formation of thriving online communities than the number of contributions. We suggest that in order to grasp the richness of the different forms and dimensions of participation, future studies should investigate the quality of participation and particularly, the influence of participation for community.

Appendix A. Supplementary material

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.chb.2015.01.004.

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