Evaluation of a Collaborative Online Community in an Evolving Research Network

or

"Good Luck with That: Collaboration Through Online Communities"

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Abstract

Prior work involving the introduction of a group of online communities to a social economy research network and the analysis of the first 20 months of the content shared via those communities indicated that a majority of the group's members did not register for the communities and that the information shared via the communities was largely administrative. In this paper, findings from interviews with key informants, a case study of an alternate virtual research environment, and self-reports from network members demonstrate further information about the usage, benefits, and design of web communities in a complex network. The online spaces were viewed positively as file repositories, especially by those with administrative roles in networks, but adversely as 'extra steps' in collaboration by research practitioners, at least in the early stages of network building and growth. It appears that practitioners in complex networks embrace web communities for collaborative work efforts only when such technological tools demonstrate a benefit beyond that of current communications strategies. Discussion focuses on identifying factors that may be related to the uptake of an online community in a complex social economy network.

Evaluation of a Collaborative Online Community in an Evolving Research Network

In 2006, partners from the four Atlantic Canadian provinces joined forces to develop a better understanding of the complex and diverse social economy in this region. Recognizing that the social economy is crucial to Atlantic Canada's economic development, the partners proposed to map the elements of the social economy, empower social economy actors through research, and contribute to strengthening the region's social economy. They formed the Social Economy and Sustainability (SES) research network. It involves a collaboration of university-based and community partners.

The SES project involves addressing four main research dimensions, one of which entails researching the combinations of information technology-based and more traditional forms of communication and dissemination processes. One IT-based communication tool that has recently received a lot of scholarly attention, as well as interest from organizations of all sorts, is online communities. An online community can be defined as a social relationship aggregation, facilitated by Internet-based technology, in which users communicate and build personal relationships (Rheingold, 1993), although there is currently no clear consensus on the definition (de Souza & Preece, 2004). The term 'online community' is related to yet not to be confused with 'community of practice' (Johnson, 2001), which is a group that *emerges* around a common knowledge management goal (Bettoni, Andenmatten, & Mathieu, 2007).

The relevance of online communities to social economic practice has attracted recent research interest (e.g., Cameron, 2006; Millen & Patterson, 2000; Willard, 2001) One can easily deduce the potential benefits that online communities pose for community-based organizations or networks. These IT systems can, for instance, transcend geographical barriers, offer all of the information that workers in an organization need, and be used to find answers to common problems at any time of day, resulting in saved time and resources. In the five community economic development networks that she studied, however, Cameron (2006) reported that the majority of network members did not log on to an extranet. To explain the lack of usage, the network administrators that Cameron interviewed reported that some of their network members disliked using passwords and that they needed training to use an extranet effectively. Perhaps successfully introducing an online community to a network requires additional steps that were not examined in Cameron's study that assessed the benefits of ICT tools in existing networks. The relative benefit of online communities versus more routine modes of communication may also account for the low popularity of communities in Cameron's study.

In order to learn more about the efficacy of online communities for a complex (see Duarte & Snyder, 2006) and evolving social economy network, SES partners developed and implemented seven private online communities on the Voluntary Gateway (see Cullen, Scott, Emke, & Rowe, 2008, for further details about the development and implementation of the communities) and then studied the uptake of these communities among the SES Atlantic group. There was one community for the central administrative office (the Node office) and one for each of six research theme-based 'sub-nodes.' A preliminary preference questionnaire indicated the tools network members were most interested in having available in an online space and developers attempted to supply those tools most preferred. The members were provided with opportunity to participate in

training sessions in either Official Language and encouraged to register for the communities that were relevant to their research. In previous work (Cullen et al., 2008), we discovered that less than half of the network had registered to use the online communities twenty months after their development, despite ample opportunity and profuse encouragement from SES administrators. The content analysis also showed that network members were predominantly using the online communities to share administrative documents rather than research-related files.

Three primary areas of research interest emerged from the content analysis regarding online communities in social economy organizations. First, the level of *usage*, as well as issues surrounding usage (or non-usage), of a community by network members was seen as important. Second, the perceived and actual *benefits* of using an online community to communicate are vital. For example, one might question whether the community provides any benefit beyond what could be achieved by using email and telephone conversations. Third, the *design* of the communities and how it may foster or hinder communication in the network, and how it influences or is influenced by the structure of the network, is a highly important feature. Key informant interviews, a case study, and a survey of SES Atlantic members were conducted to gain further understanding of the interplay among these three features and how it influenced the evolving SES network's uptake of the communities and their attitudes toward IT-based communications tools. These methods measures will provide a view of the "success" of the introduction of the communities to the network.

Attracting members to participate in online communities is clearly an antecedent to their success. It has already been shown that less than half of SES members registered for the SES communities, with most of the contributions coming from very few members (Cullen et al., 2008). Several researchers have addressed the participation issue with regard to online communities (e.g., Bishop, 2007; Lin & Lee, 2006; Millen & Patterson, 2002). According to Lin and Lee, members' satisfaction with an online community and the behavioural intention to participate in the community depend on the quality of the system, the information, and the service. Bishop adopted a motivational approach to explaining online community participation. He posited that participating in an online community might satisfy social and esteem needs of an individual, rather than task-oriented needs. Bishop found that encouraging participation in online communities is a tough challenge for community providers. Community members reported lacking the need to post information or believing that they are actually being helpful by not contributing to explain their lack of participation. Millen and Patterson attempted to explain online community engagement by surveying members, evaluating the design of the community, and examining the content of information shared via the community. We adopt a similar approach in the current study. Beyond mere participation, other partial measures of success include trustworthiness among members, the amount of interactivity in discussion forums, the occurrence of uncivil behaviors, productivity, user satisfaction, and the frequency of errors (Preece, 2001).

Nolker and Zhou (2005) discussed the importance of member roles to online community participation. They examined information shared via a public community bulletin board and identified three types of key members – leaders, motivators, and chatters. Leaders are those who respond to many conversations with many other members with a mix of direct responses and those that stimulate further discussion. Motivators are

determined based on their closeness to other members, that is, they are seen as "in the middle." Chatters tend to participate frequently, but mostly in the form of direct responses to other members' items. In the community they examined, individuals emerged to fill these roles. This might also occur in the SES communities, but it is likely that appointed administrators will fill these roles. Nolker and Zhou do not discuss the necessity of these roles for online community success.

From a research perspective, studying the uptake of the SES communities is interesting for two important reasons. First, the SES group is an evolving research network. The online communities were developed very near the network's inception thus the usage of the communities can be monitored as the network grows and transitions through the various stages of the research process. This characteristic of the SES communities permitted developers to obtain information from purported community uses regarding what they desire in an online community meant to facilitate collaboration in the network. Most prior research on online communities has generally involved pre-established communities. In the current study, there is also opportunity to see if online communities might influence the management and structure of the network, rather than vice versa. Second, a substantial portion of the literature on online communities involves newsgroups or other voluntary groups that are open to the public. The SES communities, on the other hand, are private and their membership is limited to individuals involved with the SES Atlantic network.

Through the utilization of key informant interviews, a case study, and a survey of SES members, as well as the previously mentioned content analysis (Cullen et al., 2008), a glimpse into the usefulness of online communities for social economy organizations will emerge. Determinants of absolute success or failure currently do not exist, however. Nor are there normative values of the level of participation to expect in a network such as SES. This research is therefore largely exploratory in nature. We will examine how the online communities were successful in the SES network and attempt to extrapolate findings to online communities in general in order to provide practical guidelines to social economy organizations who are interested in information technology.

Methods

In addition to the prior content analysis of the SES web communities (Cullen et al., 2008), three methodologies were employed to assess the usage of the communities, their benefits to the SES project, and features of the Voluntary Gateway design. First, semi-structured interviews following a 'usage, benefits, and design' framework were conducted with nine key informants. Key informants were originally selected because of their leadership roles on the project. At least one person from each sub-node (except sub-node six[1]), the project's management committee, and the node office was initially asked to participate in the interviews. Those selected appeared to be in positions that involved personal interaction with the web communities and also the opportunity to obtain feedback about the communities from other project members. One additional interviewee was included based on the recommendation of an initial interviewee (because it was felt that in that particular sub-node the initial interviewee was not the most knowledgeable about the SES communities). All but one person contacted for an interview agreed to participate.

[1] Sub-node six members were not interviewed because sub-node six designed and evaluated the online communities.

Seven of the interviewees (hereafter referred to as secondary informants) were asked virtually identical questions. Where appropriate, they were prompted to give further information regarding their responses. For the remaining two interviewees (hereafter referred to as primary informants), the interview questions were adapted because they were expected to possess more information regarding the SES Atlantic network's use of the communities. Interviewees were first asked about their usage of the communities and their sub-group's usage (e.g., what purposes they use the communities for, whether they have a person in their group responsible for handling the communities, and whether or not they participated in a tutorial or training session about the communities). Secondly, interviewees were asked about the benefits that the SES communities hold for the project (e.g., their overall perception of the benefits and any feedback received from other members). Thirdly, they were asked to comment on the design of the communities (e.g., why some people have not used the communities and what aspects of the communities they would alter or not alter).

The idea for a case study of a sub-group of SES researchers arose out of one of the key-informant interviews. An interviewee commented that a small group of researchers in her sub-node was successfully using an online research tool to overcome geographic separation and a lack of funding for travel. Three of four members on that research team, the team's ongoing technical support person, and the developer of the virtual research environment (VRE) were subsequently interviewed to identify factors that allowed their online community to achieve such success, while the SES communities achieved only moderate success (Cullen et al., 2008). The researchers were questioned about their role on the project, the reasons their team chose to use the VRE, the amount of preparation and training that was involved, the team's familiarity with online communities, the indicators that showed their virtual network was successful, the types of tools available on the VRE, and the average age of their team. Technical support persons were questioned about the type of technology used for the VRE, the amount of flexibility in the system, the type and amount of training offered to users, how enjoyable or frustrating users have reported using the VRE is, the types and sizes of groups using the VRE, whether some people seem to resist the technology, and whether they believe that user age is a factor in online community success.

The third methodology employed to gain an understanding of the utility of the SES communities for the SES network was a user survey. It included items intended to further explore relationships that appeared evident based on the interviews and the case study. Administering the survey was also in part an attempt to collect data from those members of the SES network who did not utilize the SES communities. The survey sample included all members of the SES Atlantic research network, except for those who designed the survey. The instrument included 15 items that were used to categorize participants and explore areas of interest identified from prior research (web community content analysis and key informant interviews) on the SES communities. The survey was administered using an online survey tool. A hyperlink to the online survey was emailed to the 111 (65 women and 46 men) of the 114 members of the SES network who had provided their contact information to the project coordinator. After one week, everyone in the sample received a follow-up email informing them that they had four days to complete the survey. On the day prior to the deadline, they received an additional email

notification that emphasized the deadline. The online survey tool automatically stored each participant's responses.

Results

Key Informant Interviews

This qualitative component of the study was used to garner a general understanding of key project members' experiences with the SES online communities. In particular, they provided information about the usage of the communities, the benefits that the communities offer to the SES project, and their opinions about the design of the communities. The results are categorized according to their relevance to the usage, benefits, and design of the communities.

Online community usage. The SES communities are predominantly used as file repositories for locally affiliated groups. The prior analysis of the content of information in the communities and user participation (Cullen et al., 2008) revealed that most of the files were posted to the community by a handful of members. When questioned about this finding, several interviewees pointed to individual roles on the project as an explanation. Those individuals who visited the communities most frequently were in positions (e.g., sub-node coordinator, research assistant) that entailed administrative duties and regular communication with the Atlantic Node. Just one interviewee reported using the communities consistently throughout the project. The project coordinator advocated using the web communities for routine communications with the Node office since early in the project and it appears that this intended use was achieved in a majority of the sub-nodes. The most frequent usage was evident in the sub-nodes that assigned an assistant the task of managing the flow of information to the Node office. In those sub-nodes that did not assign an assistant this task, the sub-node coordinator assumed the responsibility. Sub-node coordinators generally reported lacking the time to manage the online communities. In one sub-node, the coordinator expressed an inability to operate the intranet effectively. In addition to sharing information between the sub-nodes and the Atlantic Node, the project steering committee and some of the sub-nodes also report using the communities to organize their meetings by circulating agendas and other documents. None of the interviewees reported using the communities for collaborative research efforts.

Additional reasons provided by interviewees to explain the varied usage of the communities among those who registered were: a general bombardment of login names and passwords that makes remembering them difficult, uneven access to technology, anxiety or apprehension towards the web communities, and, a lack of perceived benefit of the communities versus email. A substantial majority of those interviewed remarked that age is a major hindrance to web community usage in the SES network. They expressed that uptake of the technology is adversely affected by the middle-agedness of the network members. This assertion was not dependent on the age of the interviewee.

None of the interviewees felt that computer skills or trustworthiness were factors hindering network members' participation. It is likely that everyone in the group is moderately familiar with basic computer functions. One secondary informant speculated that community partners might be more concerned about the security of information in online communities than university employees because of varying research practices.

Online community benefits. The principal benefit of the communities appears to be the centralization of files relevant to the project. In particular, the convenience of having administrative documents and files (e.g., proposals, travel forms, and meeting

minutes) in one location was seen as a benefit by both the project coordinator and others who were involved in administrative duties within their sub-nodes. The communities are clearly beneficial to the administration of the project. It was not felt that the communities provided benefit for the non-administrative aspect of the project, namely collaborative research. According to the content analysis (Cullen et al., 2008), many of the files in the Final Document Folders bucket were final drafts of proposals or abstracts that had to be submitted to the Node for administrative purposes.

Everyone who was interviewed agreed that email, telephone, and face-to-face communication are preferred to online collaboration in this network. Email is especially prevalent for routine communications. Until the communities exhibit a clear benefit over using email, it is likely that this preference will persist. Other benefits of the web communities highlighted by interviewees include the ability to share files too large for an email attachment and the ability to learn about the research of other sub-nodes quickly and conveniently. Some interviewees believe that the communities will become more beneficial as the project moves into the dissemination stage, although specific reasons for the increased benefit were unclear. Some stated that the communities would not be useful for dissemination because any information shared via a community is limited to members of the SES network, whereas the purpose of dissemination is to provide research findings to people outside of the research group.

Online community design. Interviewees expressed several criticisms about the design on the web communities. Although they seem to appreciate the space as a centralized file repository, many expressed concern that the communities are not tailored to the specific needs of the SES network. For instance, some felt that the eight bucket (file folder) categories available were unsuitable. Criticisms about the buckets arose from confusion about where to store files and difficulty finding information shared by another user. Some felt that the bucket labels were the cause for concern, whereas others emphasized the lack of clear instructions about the intended purpose of each bucket. Inconsistency was apparent between where each community tended to post certain types of information. Some interviewees provided suggestions for alternative folder structures involving fewer buckets.

Interviewees also expressed disliking the textual presentation of information in the web communities. Similarly, some users did not like having postings listed chronologically because this made finding older postings difficult. Two interviewees suggested that the site contain a home page so that upon logging in to the Voluntary Gateway, users would be taken to a site presenting important reports or presentations occurring in the network, rather than a directory of file postings.

Findings about the email notification feature were especially mixed. Email notifications are sent to all members of a community when someone posts new folders of information in that community.[2] This feature is enabled by default and can be turned off by a user in account settings. Some people were frustrated by an abundance of irrelevant emails and disabled their email notifications, sometimes upon the recommendation of the web community manager. Others enabled email notification for their own sub-node's community but disabled it for all other communities. This seems to have produced less frustration. Others still disabled all email notifications. One interviewee expressed great

[2] Updates to folders do not generate email notifications; only the creation of new folders issues an email notice.

support for the email notifications because they informed him when it might be important to visit a community. That user reported visiting the communities very infrequently, however.

One alarming finding from a primary informant regarding the design of the communities is that the intranet's structure may have actually contributed to disconnectedness among the sub-nodes. The informant felt that communities based on research themes, as opposed to the existing Sub Node Categories, may have been more useful toward fostering collaboration in the network.

Case Study: Virtual Research Environment in Sub-Node 2

One of the many research projects being conducted in Sub-Node 2, regarding women in fisheries management, involves the Institute of Island Studies (IIS) at the University of Prince Edward Island (UPEI) and the community-based group, Women for Environmental Sustainability (WES). The members of this research project regularly use UPEI's Virtual Resource Environment (VRE) to communicate, and reportedly with much success. There are several considerable differences between the usage, benefits, and design of the VRE as indicated by this group and the results from the SES group. These differences may account for varying degrees of the success achieved by the two groups.

Usage. The IIS/WES group, with just four primary researchers, is much smaller than the SES network. Their average age is also about 20 years younger than the SES group. The VRE site was designed at UPEI and it appears as though, upon the recommendation of the coordinator, the IIS/WES group simply treated it as another available communication/collaboration tool and used it accordingly. Some of the group members attended some initial training workshops to become familiar with the VRE and what it offered, although they participated in little training compared to what was available, according to the technical support person. For all the members, a technical support person employed by UPEI was available for one-on-one assistance when it was necessary. The team was provided with a certain degree of flexibility about what tools they would like within their VRE and opted for a calendar feature, blog space, and file space.

The VRE appealed to the group for several additional reasons. First, they wanted to be able to quickly share data among the researchers, some of whom were located too far from the university to commute regularly. Similarly, they were also having difficulty organizing face-to-face meetings. The VRE provided them with the opportunity to share audio files of primary interviews with each other, immediately following the interview, rather than waiting for transcription. Most importantly, the group was interested in having a shared file space that they could use for collaborative research. Often, they had different people conducting the interviews and transcribing them. By using the VRE, an interviewer could simply upload an audio file and it could then be downloaded by the transcriber, then transcribed and re-uploaded as a text document. By using the calendar tool, they could also update the master interview schedule from any computer to avoid scheduling problems. Their blog space was largely used for updating research progress (e.g., "Interview with John Smith completed. The audio file is in …"). Everyone interviewed agreed that all members of the team supported the initial decision to use the VRE.

Benefits. The VRE met its intended purpose for the IIS/WES group. Interviewees were very positive about the online space. It enabled them to overcome time and space barriers, share files speedily, keep their work organized, decrease their need for other types of communication (and thereby save time and money) without sacrificing their overall level of intra-group communication, and enhance their level of professionalism by avoiding schedule conflicts. Having a centralized record of communication among the group furthermore decreased the likelihood of losing important information.

Design. Like the SES communities, the VRE is a drupal-based online community. As mentioned above, groups who use the VRE at UPEI are granted a certain degree of flexibility in how they would like their VRE site to appear and what tools they would like available. One would expect that comments on the design would be therefore fairly positive. Indeed, only one researcher expressed a criticism of the design. She felt that the online interview schedule (a spreadsheet) should have been made dynamic so that all members could update it themselves. The researcher stated that this would have decreased her workload. She felt that the VRE had much more potential than what the research group was currently using it for.

SES Online Communities Survey

All members of the SES project were invited to participate in the online survey. Of the 111 people who were contacted, 38 (21 women, 13 men, and 4 who preferred not to indicate gender) responded, response rate = .34. The age group most represented among the respondents was 45-54 years (39.5%), 18.4% were 55-64 years old, 15.8% were 35-44 years old, 10.5% were 25-34 years old, 2.6% were 65 years or older, and 2.6% were 18-24 years old.

There were 15 (39.5%) non-users (who indicated that they 'never' logged on to at least one of the SES communities) and 23 users (31.6% almost never logged in, 26.3% logged in occasionally, 2.6% logged in almost daily, and 0 logged in daily) among the respondents. A majority (63.2%) of respondents had been members of the SES Atlantic project for more than two years (since it began) and 21.1% had been with the project for between eighteen months and two years. There were slightly more respondents from universities (47.4%) than community-based organizations (39.5%). Only two respondents (5.3%) indicated that they use dial-up internet when working on the SES project, whereas 89.5% use broadband/DSL. Most of the respondents (68.4%) had registered to use the Voluntary Gateway, 63.2% were members of at least one of the seven online communities, and 47.4% had used an online community other than the SES communities. Most respondents (60.5%) did not participate in a tutorial about using the SES communities, 31.6% completed a tutorial, and 7.9% could not remember whether they had taken a tutorial.

Attitude statements about the usage, benefits, and design of the communities were measured with a 5-point Likert scale from -2 (*strongly disagree*) to +2 (*strongly agree*). The magnitude of the mean rating (MR) represents the strength of the average agreement or disagreement with a statement among the group of respondents. Values close to zero represent a neutral opinion, that the item was not applicable to the respondents, or that the respondent did not know what response to select (i.e., *no opinion*). In addition to the MR for each statement, the response chosen by the largest number of respondents (the mode)

is reported. Regarding the usage of online communities, nearly half (47.4%) of respondents *strongly agreed* that they are comfortable with computer technology (MR = +1.26), 52.6% *agreed* that they were encouraged to use the SES communities by project partners (MR = +0.76), 55.3% *agreed* that they prefer to communicate in person (MR = +0.71), 34.2% *agreed* that finding the time to use the communities is difficult (MR = +0.76), and 44.7% had *no opinion* about whether younger persons adapt to using online tools more easily than older people (MR = +0.50).

Regarding the general benefits of online communities, 47.4% of respondents had *no opinion* whether online communities save time and resources (MR = +0.47), 44.7% expressed *no opinion* about whether research data and content are secure when shared in online communities (MR = +0.50), 47.4% *agreed* that file storage space is an important feature of online communities (MR = +0.82), 42.1% had *no opinion* whether online communities help keep their work organized (MR = +0.24), and 47.4% *agreed* that online communities can help one to establish and maintain work relationships (MR = +0.39).

Statements about the design of online communities were specifically in relation to the SES communities, rather than to online communities in general. For all five statements, the most frequent response was *no opinion* and MRs were near 0. The five items involved the feasibility of the SES communities as a research collaboration tool (MR = +0.34), the difficulty in navigating the communities (mean rating = +0.24), the visual appeal of the communities (MR = +0.11), whether respondents always find what they are looking for in the communities (MR = 0.00), and whether the design of the communities promotes collaboration in the SES network (MR = 0.00). Because the design items were not applicable to the non-users, who had little to no experience with the communities (80% of non-users selected *no opinion* on this item), the data for the 23 users were isolated. With the non-users removed, the MRs changed very little, however (range: 0.04 to 0.11). The only notable difference between the two data sets was that the mode response of the first item was *agreed* among users (MR = +0.43), rather than *no opinion*.

A series of two-tailed *t*-tests was performed to evaluate differences between various groups on responses to the attitudes statements about usage, benefits, and design. In particular, the responses of users ($n = 23$) were compared to those of non-users ($n = 15$), those with online community experience ($n = 18$) to those without ($n = 19$), those who completed a tutorial ($n = 12$) to those who did not ($n = 23$), university partners ($n = 18$) to community partners ($n = 15$), and females ($n = 21$) to males ($n = 13$). A Bonferroni correction was applied due to conducting 15 simultaneous tests (corrected $\alpha = .003$). Because the Bonferroni correction is conservative and the sample sizes are small, however, all differences with a p-value $p \leq .007$ (the likelihood of a Type1 error does not exceed .10) [3] are reported.

Those who reported using the SES communities (MR = +1.09) agreed more strongly that they were encouraged to do so by project partners than those who did not use the communities (MR = +0.27), $t(36) = 2.87$, $p = .007$. Users (MR = +1.13) also agreed more strongly than non-users (MR = +0.33) that file storage space was an important feature of online communities, $t(36) = 3.61$, $p = .001$. Between those with

[3] The likelihood of a Type 1 error was calculated using $\alpha_T = 1 - (1 - \alpha)^k$, where α_T is the total probability of making a Type 1 error, α is the significance level, and k is the number of comparisons.

online community experience beyond the SES network and those with no experience, experienced users (MR = +0.78) more strongly agreed than their inexperienced counterparts (MR = 0.00) that online communities help to establish and maintain work relationships, $t(35) = 3.05$, $p = .004$. Finally, those who participated in a tutorial about the SES communities (MR = +1.33) more strongly agreed that file storage space is an important feature of online communities than did those who did not participate in a tutorial (MR = +0.57), $t(33) = 3.07$, $p = .004$. There were no differences on the attitude statements based on partnership status (all *p*s > .009) or gender (all *p*s > .050).

Because the attitude statements regarding the design of the SES communities were not applicable to non-users, the same *t*-tests were conducted on the five design statements by isolating the data for the 23 users. No significant differences were found (all *p*s > .121). Note that the sample sizes were very small for these *t*-tests.

Chi-squared tests were used to detect relationships among categorical variables. Because these tests were exploratory, only the significant findings are reported. Among users of the SES communities, 65% reported using another online community, whereas just 21% of non-users used another community. These two variables were related, $\chi^2(1, N = 37) = 6.68$, $p = .01$. Similarly, the proportion of users (57%) who participated in a tutorial about the SES communities was larger than the proportion of non-users (0%) and these variables were also related, $\chi^2(1, N = 35) = 12.17$, Fisher's exact $p = .001$.

Online community experience beyond SES was related to whether respondents registered for the Voluntary Gateway, $\chi^2(1, N = 34) = 5.89$, Fisher's exact $p = .039$. Cross tabulation showed that 94% of those with online community experience registered for the Gateway whereas 59% of those with no experience registered.

Participating in a tutorial was related to registering for the Voluntary Gateway, $\chi^2(1, N = 33) = 7.07$, Fisher's exact $p = .012$, and registering for at least one of the SES communities, $\chi^2(1, N = 31) = 8.01$, Fisher's exact $p = .005$. The data showed that 100% of tutorial takers registered for the Gateway and the SES communities, compared to 57% and 53%, respectively, of those who did not take a tutorial. There were no significant relationships between any of the categorical variables and gender (all *p*s > .290) or partnership status (all *p*s > .275).

The final statistical analysis performed on the survey data was to correlate age group with MRs from the attitude statements. There were no significant correlations between the attitude statement responses and age group (all *p*s > .089).

Putting it all together: Key informants, case study, and survey

This paper presented findings from the evaluation of a group of online communities developed for an Atlantic Canadian social economy research network of over 100 members. The success of online communities is difficult to measure empirically and objectively (Lin & Lee, 2006) and perhaps dependent on various characteristics of a community including its intended purpose. The SES network appears to have achieved some successes with their online communities while at the same time ignoring some potential uses of the communities. The purpose of the current study was not merely an attempt to measure the success of the SES communities, however. Introducing the communities to the SES network, which has been referred to as a microcosm of the social economy, and then evaluating their uptake provided an opportunity to explore the use of

technological tools like online communities in social economy networks or organizations. Many interesting themes emerged from the integration of the data from the content analysis (Cullen et al., 2008), key informant interviews, case study, and surveys. Where possible, the later methods were used to gain further knowledge about apparent findings from earlier methods.

Whether network members participated in the online communities appeared dependent on several factors. One's initial interest in using the online communities appears to have influenced subsequent usage. Although initial interest in using the communities was not measured directly, several key informants clearly indicated that some SES members expressed disinterest since the development/evaluation of the communities was proposed. In the IIS/WES group, on the other hand, all members were highly interested and all participated. It is not surprising that gaining the interest of all parties involved is more difficult with the larger SES group. Aside from the size of the group, however, the perception of need may also account for the difference in interest levels (although see Bishop [2005] for an argument in favour of a desire-based, rather than need-based, understanding of online community participation). The decision to use the VRE by the IIS/WES group arose from an actual perceived need to complete an identifiable task (organizing and sharing interview schedules and data). In the SES group, the decision to use the communities, although they have been very beneficial to the administration of the project, was based on a research objective and non-specific perceived benefits (e.g., save time and resources). Also, whereas everyone in the IIS/WES group appears to be have participated in some degree of training about the VRE, a majority of the SES group completed no training about the Voluntary Gateway.

An individual's role in the network also appears to influence online community participation. Most of the key informants specified member role to explain variability in participation. Indeed, all community members who used the communities somewhat regularly were among the key informant sample, and each of these was in an administrative-type role on the project in addition to their research role. Because the project coordinator instructed those involved in administration that the Voluntary Gateway would be the primary mode of sharing administrative information, these individuals were, like the researchers in the IIS/WES group, expected to use the communities for a specific project-related task. Most of the non-administrative members of the SES group are seasoned researchers, thus would likely have had reliable research processes developed previously, and therefore had no need to use the communities.

Poor internet connections, a lack of computer skills, and mistrust were evidently not related to infrequent usage of the communities by many network members. One key informant and one case study interviewee, both of whom reside in Prince Edward Island, discussed low-speed internet as a possible hindrance to online community uptake. Just two survey respondents indicated that they use dial-up internet when they do work for the SES project, however. Key informants were directly asked whether they felt that computer skills or trust issues might be responsible for the uptake deficiency. They unanimously agreed that general computer ability is not a large concern, with some of them pointing out that the SES communities are not difficult to use if one possesses basic computer skills. This was confirmed by the survey where half of the respondents *strongly agreed* that they are comfortable with computer technology and the MR was large and positive. Related to the matter of technical ability, a majority of network members did not

participate in a tutorial or receive any training specifically about the SES communities, although it was offered and encouraged. It appears that most of those who regularly used the communities did participate in a tutorial. This apparent relationship may be a reflection of initial interest more so than a causal relationship, however. In other words, those who were initially interested in using the communities completed the tutorial whereas those who were not interested in using the communities did not. Again, initial interest in the communities stands out as the apparent causal factor. Ironically, in the case study, IIS/WES group members indicated that their interest level increased following the tutorials they attended.

Similarly, key informants unanimously agreed that trust is not a major concern among the researchers in the network regarding the decision to participate in the online communities. This does not support Duarte and Snyder's (2006) assertion about mistrust in complex networks. These researchers have proposed a checklist that rates complexity of a network based on nine characteristics such as whether the members are from the same organization, whether members speak the same native language, and whether all members are from the same geographic region. According to this checklist, the SES network is highly complex, yet interviewees provided no clear indication of mistrust in the network. Several key informants referred to the privacy of the SES communities to explain the lack of concern about trust. Hessan and Schlack (2006) similarly argued that private communities create greater trust as well as personal accountability than do public ones. The most frequent survey response regarding the security of research data in online communities was *no opinion*. The MR was positive, however, indicating some agreement that research data and content are secure, on average. One secondary informant and one primary informant (both university-based) elaborated here that trust might be somewhat of a concern for community partners because the manner in which they disseminate research information may be dictated to a larger degree by funding agencies than in university settings. The survey results did not suggest a significant difference between university and community partners' responses, however, on the item about the security of research data. The same primary informant also mentioned the possibility of a degree of unwillingness to share research on the part of university partners until their research is complete. This type of unwillingness would support the finding that there was virtually no collaborative use of the SES communities for research purposes. The lack of collaboration can also be explained by a noted preference for email, however, combined with a presumably high level of familiarity with email among members of the group.

Following the content analysis, it was clear that the SES communities were not serving the network's primary communication objectives, especially regarding collaborative research. Exploration of this issue with key informants indicated that email serves this purpose for the network. According to Cameron's (2006) survey of five Canadian community economic development networks, network coordinators report that email is beneficial because it allows one to communicate at a convenient time and with either one person or an entire group, and also because everyone tends to check their email routinely. Those interviewed by Cameron were also aware of the potential benefits of extranets (e.g., ensuring documents are up-to-date and monitoring the flow of information for a project), but pointed out that the majority of a network's members tend not to log on to a "special website" and that training must be provided for the effective use of an extranet. The IIS/WES researchers reported using email much less frequently for intra-

group communication since they began routinely using the VRE. In that case, the VRE provided a clear benefit to the researchers whereas in the SES group specific benefits for research collaboration do not appear to have been identified. It is feasible for the IIS/WES group to rely on the VRE for all intra-group communication because all members of the group are also members of the VRE community, whereas this would be highly problematic in the much larger SES group because less than half of its members registered for the SES communities. In order to reach the members who are not registered, email or some other mode of communication has to be used.

It is interesting that although several key informants responded positively when asked whether the SES communities might be more beneficial to the project as it evolves beyond data gathering toward dissemination, none of them could specify any particular mechanisms to support this assertion. Perhaps they felt that any communication tool that provides the opportunity to share information would be useful for sharing their research findings, but upon discussing the idea realized that the (private) SES communities actually permit information distribution among network members only and not with the greater population. One key informant was very quick to note this dissemination limitation, pointing out that dissemination by its very definition involves sharing research findings with those outside of the research group.

Several key informants reported lacking the time to use the communities. One of the primary informants felt that time was mainly a concern among those who had not initially taken some time to familiarize themselves with the technology. She stated that once she familiarized herself with the Voluntary Gateway, including the procedures for sharing and finding information, time was much less of a concern. Survey responses to the statement that it is difficult finding the time to use the communities supported this finding from the interviews. In addition to having to take the time to learn to use and navigate the communities, interviewees felt that the technology itself was not designed to be time efficient. For instance, sharing a file via the community takes longer and requires more steps than sending an email attachment, especially given the relative levels of familiarity with both technologies. Frequent comments on this matter from the interviews included “I just don’t have the time” or “it takes too many steps.” Users expressed discontent that even when notified via email about recently posted information, following the link provided unexpectedly brought them to the Voluntary Gateway login page rather than directly to the information. Especially for infrequent users, frustration might result from needing to recall their username and password in order to see the information, resulting in a decision to give up. Indeed, the project coordinator stated she was contacted frequently to email information to people although it had been previously posted in the appropriate location within the communities. One secondary informant commented that in his experience with attempting to do online surveys, users are easily discouraged by unexpected technological procedures, or as he put it, “If there is any bit of difficulty completing the survey, people will not do it. If they have to self-direct at all, they will not do it.” Perhaps the presence of an identified need or desire to use the technology (or complete the survey) would overpower this tendency to quit in the face of technical difficulty.

A substantial portion of key informants suggested that the age range of SES network members might be a further hindrance to uptake of the communities. It appears that the influence of age on online community usage and attitudes has not been studied

previously, but older adults are generally less computer literate than younger persons (e.g., Poynton, 2004). The case study supported this proposed relationship between age and web community participation. The average age of those in the SES group was at least 20 years higher than that of the IIS/WES group. Many other factors, such as the relative sizes of the groups, the perceived benefit of using an online community, and the overall cohesiveness of the groups, can explain the higher proportion of community users in the IIS/WES group, however. On the survey, two measures assessed the relationship between age and participation. Respondents were asked to indicate their age so that this variable could be correlated with responses to the attitude statements and respondents were also asked to indicate whether they agreed that 'younger persons adapt to the use of online communities more easily than older persons.' Again, the evidence was insufficient to draw a clear conclusion. Age was not correlated with any of the attitude statements, perhaps a by-product of the under-representation of younger persons in the group (58% of respondents were aged 45 to 64 years), and almost half of the respondents had *no opinion* on the age-related attitude statement. Future research should examine the possibility of a relationship between age and community participation in a more age-diverse group.

Although the current study did not follow Nolker and Zhou's (2005) quantitative model for determining member roles in the communities, the importance of roles for web community participation was a common discussion element in the key informant interviews. Key informants generally referred to project roles, however, rather than roles within the community. According to Nolker and Zhou's criteria for determining roles, the SES group appears to lack a clear leader or motivator, although a qualitative examination of the key informant interviews did suggest that one member, the project coordinator, served as both a motivator and leader. She clearly emphasized using the communities in the SES group and frequently referred members to the communities to find project-relevant information. She was faced with several challenges, most notably the failure of a majority of the network to register for the communities, that limited the effectiveness of her motivation attempts. Thus, it appears that profuse encouragement from a leader is not enough to motivate individuals to adopt a new technological tool into their repertoire. Furthermore, the criteria put forth by Nolker and Zhou may require some amendment to adequately capture the range of leadership and motivational styles that can occur in complex networks.

Concluding Remarks

Those interested in using online communities to facilitate communications in a social economy based network can make use of several of the findings from the current research. Members of complex networks will use online communities only when they perceive a specific task-related benefit to doing so. If the task can be performed quickly and easily using more familiar forms of communication, it is unlikely that members will use the online community. On the positive side, online communities appear to be an excellent tool for centralizing project or network relevant administrative files. Perhaps this is due to the fact that there is no currently popular communications tool which achieves this goal. Overall, online communities pose many potential benefits for collaborative networks, but if development and implementation of a community is not to be in vain, communities should arise out of needs that are both specific to and desired by the network.

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